sartorius intec
A Minebea Group Company

Instrument Manual

Process Controller Maxxis 4
PR 5500

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Please note

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1 Introduction

- ▶ Please read all the instructions carefully and completely before using the instrument.
- ▶ Read the safety precautions carefully.
- ▶ These instructions are part of the product. Keep them in a safe and easily accessible location.

Symbols and Signs

The following symbols are used in this manual:

⚠ Danger	Warning of dangerous electrical voltage. DANGER indicates death or severe, irreversible personal injury which will occur if the corresponding safety measures are not observed.
⚠ Warning	Warning of a hazard area. WARNING indicates that death or severe, irreversible injury may occur if the corresponding safety measures are not observed.
⚠ Caution	Warning of personal injury and/or property damage. CAUTION indicates that minor, reversible injury or damage to property may occur if the corresponding safety measures are not observed.
Note	User tips, useful information, and notes.

- ▶ Indicates a required action
- ▷ Describes the result of an action
- - Indicates an item in a list
- [ ] Encloses menu items and soft keys

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2 Safety Information

2.1 Electrical Protective Class

⚠ Warnung

Warning!
This instrument has been built and tested in compliance with the safety regulations for measuring and control instrumentation for protective class I (protective grounding conductor) according to IEC 1010/EN 61010 or VDE 0411. The instrument was in perfect condition with regard to safety features when it left the factory. To maintain this condition and to ensure safe operation, the operator must follow the instructions and observe the warnings in this manual.

2.2 Intended Use

This instrument is only intended for use in weighing and metering systems, and is especially well-suited for tank and container scales, weigh bridges, platform weighers, crane weighers, dispensing systems and as a weighing indicator in intelligent control systems. Product operation, commissioning and maintenance must be performed by trained and qualified personnel who are aware of and able to deal with the related hazards and take suitable measures for self-protection.

The instrument reflects the state of the art. No warranty is given that the product is free of faults, especially not in conjunction with third-party software and hardware components required for operation.

The manufacturer does not accept any liability for damage caused by other system components or due to incorrect use of the product. The use of this product signifies recognition of the stipulations listed above.

2.3 Initial Inspection

Check the contents of the consignment for completeness. Check the contents visually to determine whether any damage has occurred during transport. If there are grounds for rejection of the goods, a claim must be filed with the carrier immediately. The Sartorius Intec sales or service organization must also be notified.

2.4 Before Commissioning

Visual inspection!

Before commissioning as well as after storage or transport, inspect the device visually for signs of mechanical damage.

2.4.1 Installation

Design	Protection class	Installation
Control cabinet housing	IP 65, back IP 20	Control Panel Cut-Out

To ensure proper cooling of the instrument, make sure air circulation around the instrument is not blocked. Avoid exposing the instrument to excessive heat; e.g., from direct sunlight. Ambient conditions must be taken into account at all times.

With outdoor mounting, make sure that adequate weather protection is provided (for temperatures, see Chapter 12.4.1).

2.4.2 Opening the Instrument

⚠ Danger

High Voltage!
Working on the instrument while it is switched on may have life-threatening consequences.
Disconnect the instrument from the supply voltage.
When removing covers or parts using tools, live parts or terminals may be exposed.
Please note that capacitors in the instrument may still be charged even after disconnecting the device from all voltage sources.

This instrument contains electrostatically sensitive components. For this reason, an equipotential bonding conductor must be connected when working on the open instrument (antistatic protection).

2.4.3 Mains Connection and Protective Grounding Conductor for PR 5500

2.4.3.1 Version 230 V AC

Mains connection

Safe interruption of both supply voltage conductors must be provided for, either by disconnecting the power connector or using a separate switch.

The instrument is protected via two fuses (see Chapter 12.3.4) on the back of the device (primary side).

The instrument is equipped with a wide range power supply and covers AC systems with a frequency of 50 Hz/60 Hz and a voltage range of 100 V AC to 240 V AC +10%/-15 % automatically (without manual selection).

The power supply is protected against short circuits and overloads, and disconnects automatically in case of a fault.

If the electrical protection has triggered:

- Disconnect the device from all power sources and wait at least 1 minute.
- Determine and eliminate the cause of the error.
- Reconnect the device to the supply voltage.

Protective grounding conductor

The instrument must be connected to a protective ground via a protective grounding conductor (PE) in the power connector.

The power cable contains a protective grounding conductor which must not be interrupted inside or outside the device. The protective grounding conductor is connected to the back of the housing inside the instrument.

2.4.3.2 Version 24 V DC

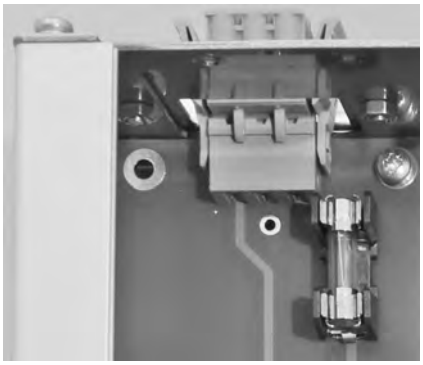
Mains connection

This version is designed for 24 V direct current.

The supply is established via three spring clamp terminals (+ PE -). The instrument is protected against incorrect polarity.

Protective grounding conductor

The protective grounding must be connected to the central terminal (PE).



Fuse

The instrument is protected in the + line via a fuse (see Chapter 12.3.5) inside the device (primary side).

2.5 RF Interference Suppression

The device is intended for use in the industrial sector and can cause RF interference if used in residential areas (see Chapter 12.4.3). In this case, the operator may be required to put suitable countermeasures in place.

2.6 Failure and Excessive Stress

If there is any reason to assume that safe operation of the instrument is no longer ensured, shut it down and make sure it cannot be used. Safe operation is no longer ensured if any of the following is true:

- The instrument is physically damaged.
- The instrument does not function.
- The instrument has been subjected to stresses beyond the tolerance limits (e.g., during storage or transport).

2.7 Important Note

Make sure that the construction of the instrument is not altered to the detriment of safety. In particular, leakage paths, air gaps (of live parts) and insulating layers must not be reduced. Sartorius Intec cannot be held responsible for personal injury or property damage caused by an instrument repaired incorrectly by an operator or installer.

2.8 Repairs and Maintenance

Repairs are subject to inspection and must be carried out at Sartorius Intec. In case of defect or malfunction, please contact your local Sartorius Intec dealer or service center for repair. When returning the instrument for repair, please include a precise and complete description of the problem.

Maintenance work must be carried out only by a trained technician aware of the involved hazards, whereby the relevant precautions must be taken in account.

2.8.1 Static Sensitive Components

This instrument contains electro-statically sensitive components. Therefore, potential equalization must be provided when working on the device (antistatic protection).

2.8.2 Replacing Fuses

Warning!

The use of repaired fuses and bypassing the fuse holder is prohibited.

Only the fuses specified in Chapter 12.3 are allowed.

⚠ Warning

3 Process Controller

3.1 General Information

This instrument is equipped with a TFT color display, and a function/alphanumeric keypad. With the corresponding application, this device is a powerful system for managing/documenting weighing and dosing processes. It combines the functions of a user-friendly interface as well as a weighing and dosing instrument, PLC and interfaces.

The instrument is programmable according to the IEC 61131-3 standard (requires the PR 1750/60 development tool accessory).

3.2 Overview of the Instrument

- Accuracy 10.000 d at 0,5 µV/d for the weighing electronics
- High-speed conversion with response times from 5 msec
- Weight display with status and weight unit on a TFT color display
- Housing for installation in a control cabinet. Protection type front IP 65, else IP 20
- Integrated LAN connection (10/100 Mbps) for data transmission
- USB 2.0 connection (Type A, i = 200 mA), integrated for printer, USB stick, PC keyboard, barcode scanner, external splitter (hub)
- SD card slot (incl. SD card)
- Integrated RS-232 interface, e.g. for connecting a PC, printer or remote display
- Can be expanded using the following plug-in cards:
  - 2x RS-485 interface card PR 5500/04
  - Analog E/A interface card PR 5500/07
  - Weighing electronics board PR 5500/10 (W1)
  - Digital E/A interface card PR 5500/12
  - Digital E/A interface card PR 5500/13
  - Digital E/A interface card PR 5500/17
  - 2x RS-232 interface card PR 5500/32
  - Fieldbus cards PR 1721/6x
- Wide range power supply for 100 to 240 V AC, protection class I (protective grounding conductor)
- Version for 24 V direct current
- Plug-in connections on the rear side of the device for load cells, inputs/outputs, LAN connection, serial interfaces
- Alternative operation using PC tool (Browser/VNC)
- Calibration using weights, by entering mV/V values, or directly, using load cell data (Smart Calibration)
- Software configuration of the interface cards, e.g. for remote display or printer
- Analog test for the weighing electronics
- Overwrite protection:
  - via a max. of 3 CAL switches (two on the main board and one on the weighing electronics board)
  - via software

Communication Protocols

For the internal RS-232:

- Remote display protocol
- Printer
- ModBus protocol
- xBPI protocol
- SBI protocol
- EW-Com protocol

For the internal LAN interface:

- ModBus-TCP
- Ethernet-TCP/IP
- OPC

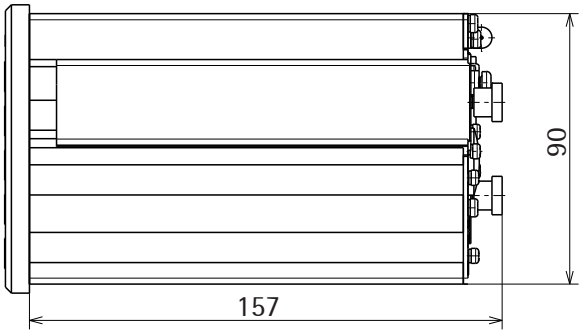
Fieldbus slave (accessories):

- PR 1721/61 ProfiBus DP
- PR 1721/64 DeviceNet
- PR 1721/65 CC Link
- PR 1721/66 ProfiNet I/O
- PR 1721/67 EtherNet IP

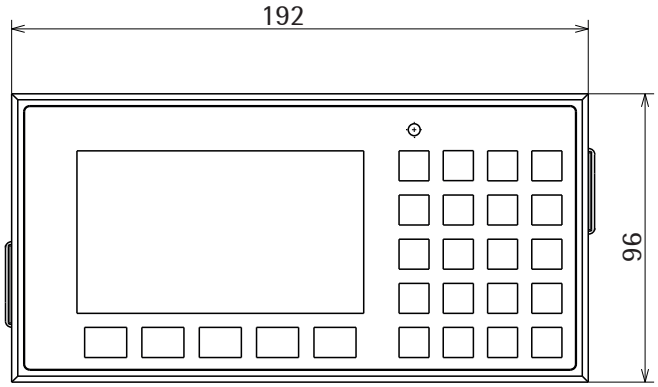
3.3 Housing

3.3.1 Housing dimensions

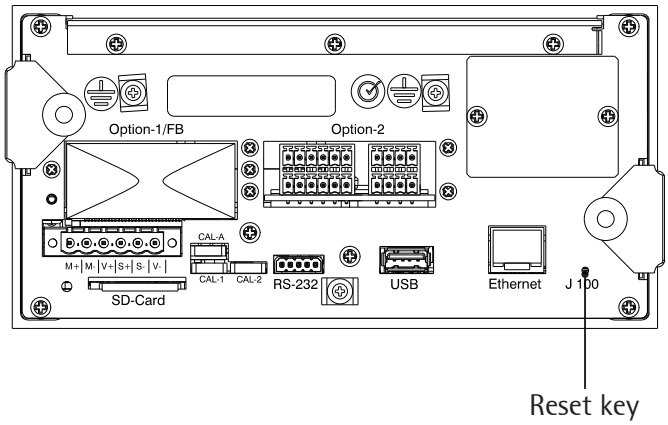
The keypad and the display form one unit with the front. A rectangular cut-out is required for the installation. Cable connections are made at the back of the housing.



Front view



Side view



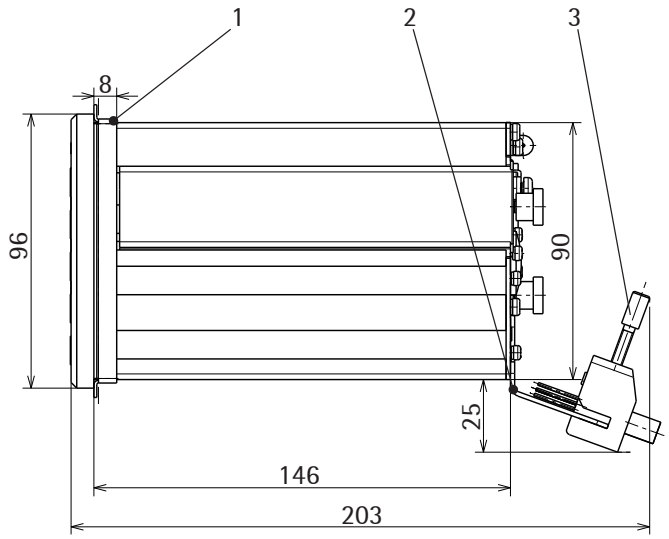
Back view

Note	All dimensions in mm.

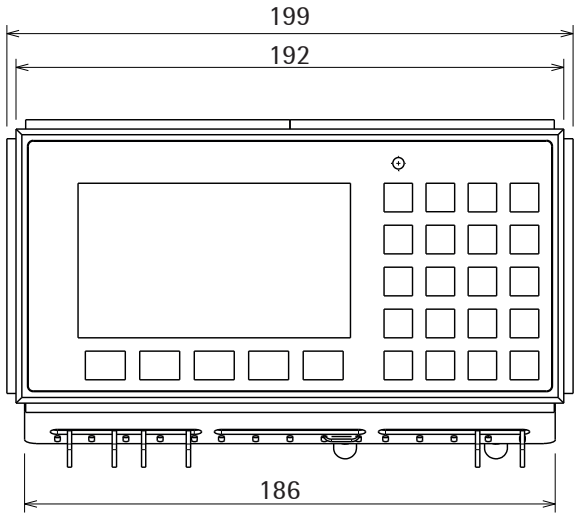
3.3.2 Housing Dimensions with Strain Relief and Reinforcing frame

The dimensions with the following options must be observed for installation:

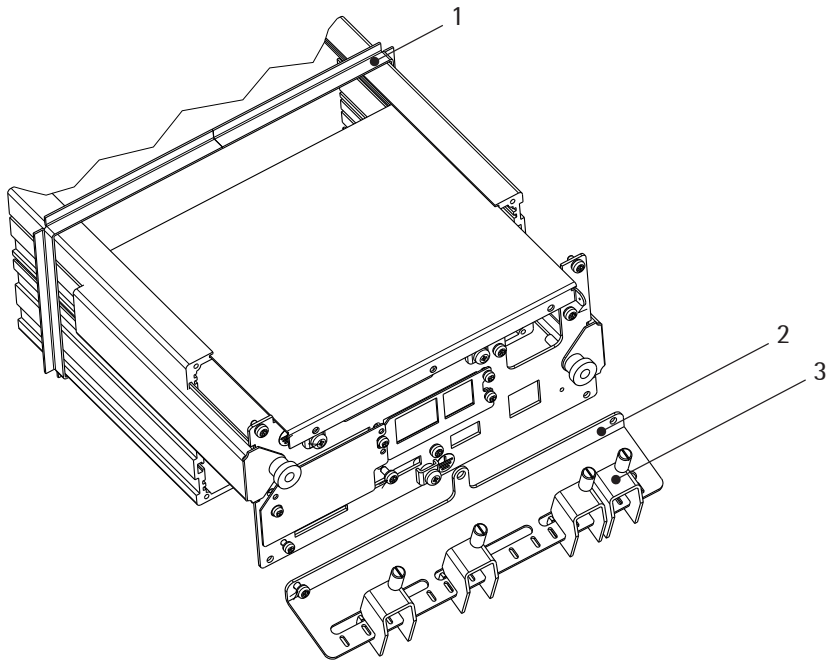
Pos.	Designation
1	Reinforcing frame
2	Screen clamping rail
3	Cable clamps



Side view



Front view

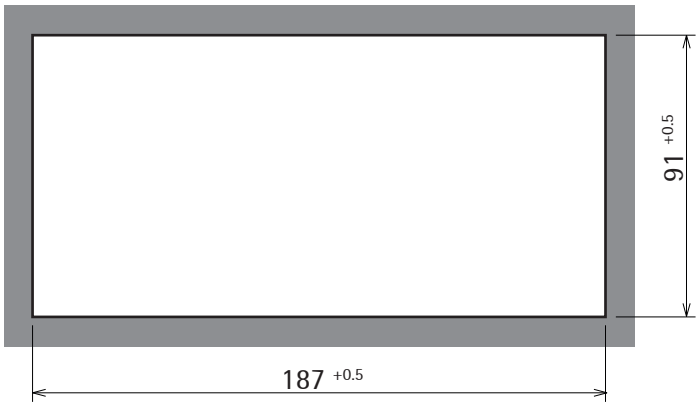


Back view

Note	All dimensions in mm.

3.3.3 Control Panel Cut-Out

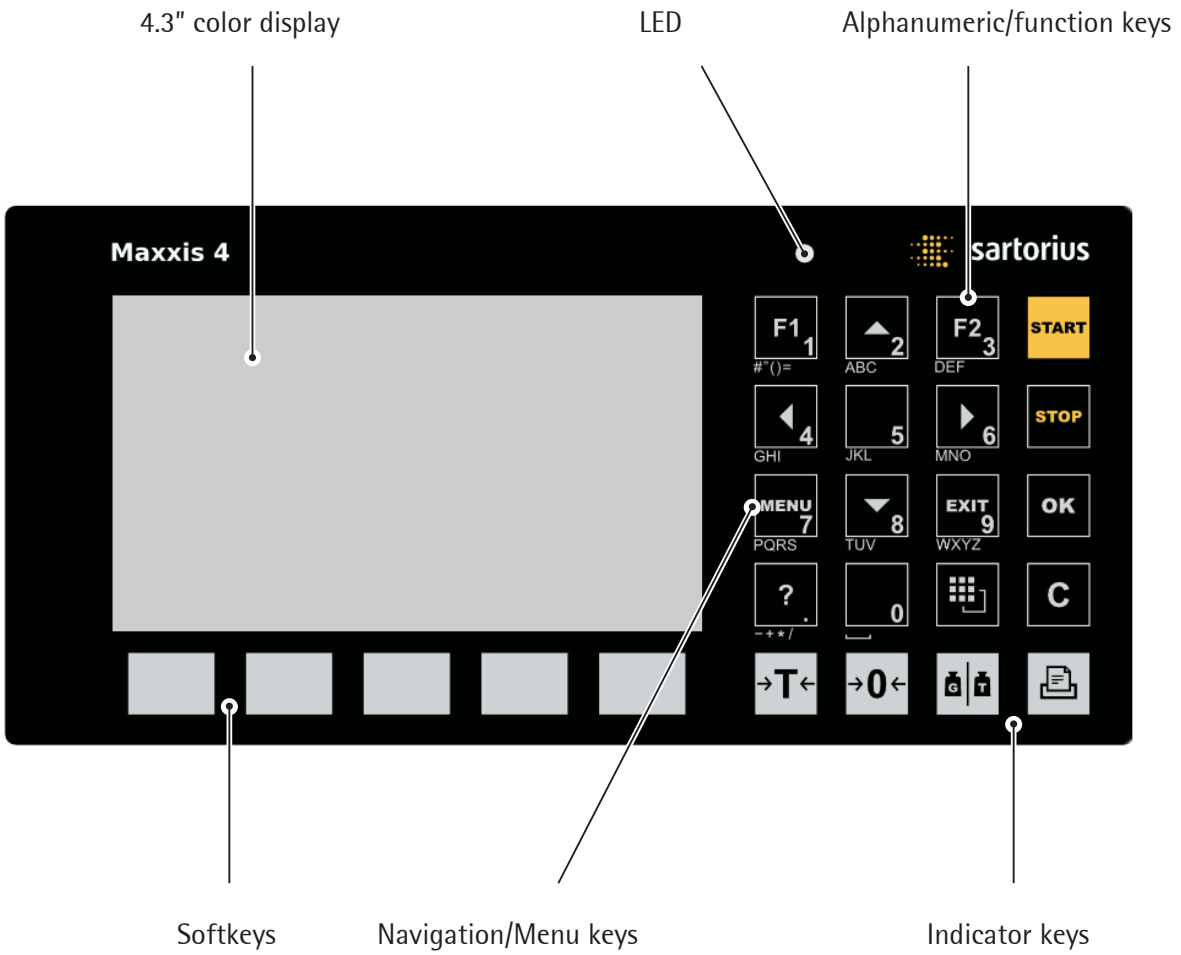
The control panel cut-out must be made before installing the unit.



Note	All dimensions in mm.

3.4 Display and Control Panel

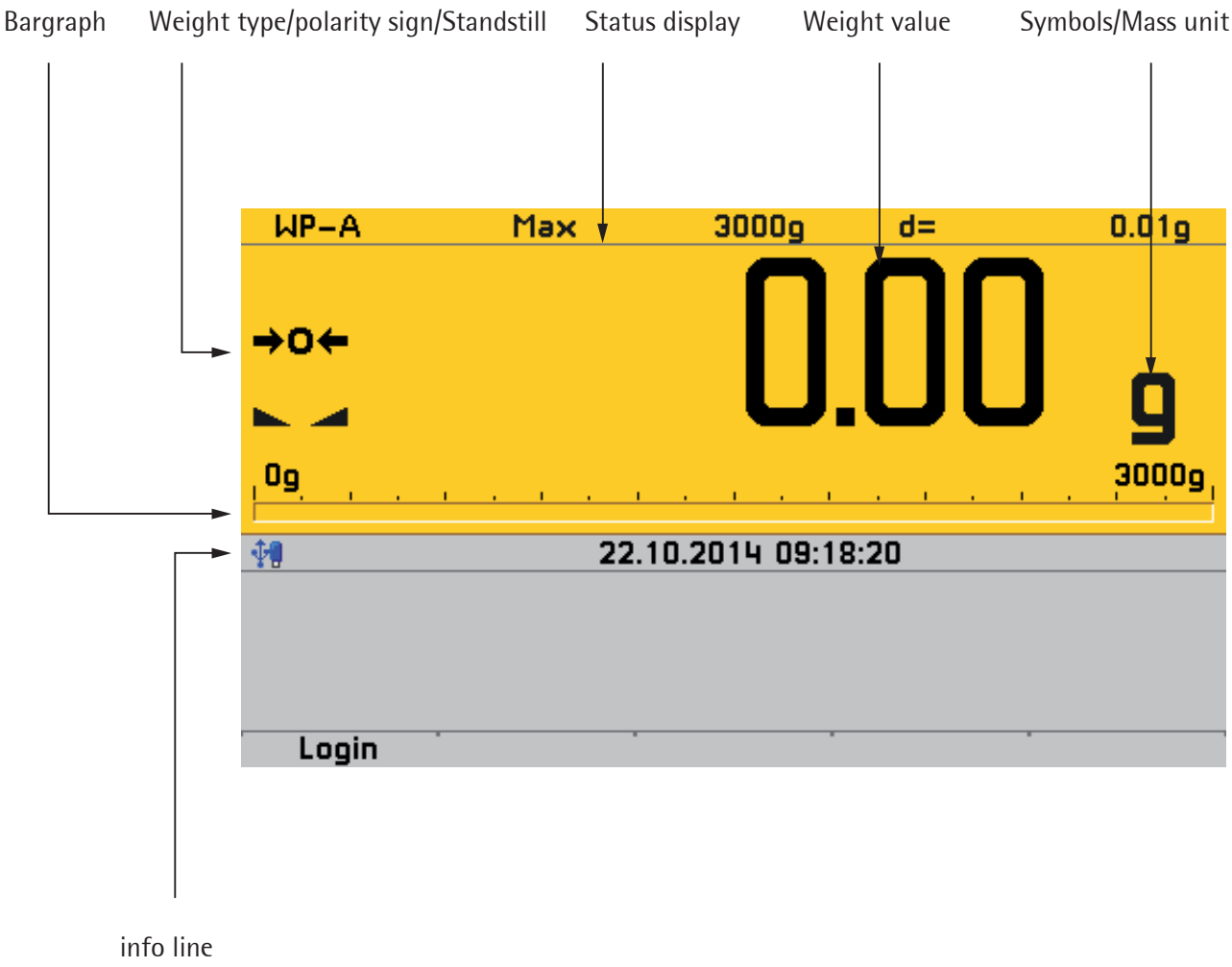
3.4.1 Overview



3.4.2 Display

The TFT display shows weight values of up to 7 digits with a decimal point and a plus or minus sign. Available weight units are t, kg, g, mg, lb and oz.

The current weight value is displayed under the weight display as a bar graph in relation to the maximum capacity. When the maximum capacity (Max) reaches 100 %, the bar graph is located on the right.



Value type/Polarity sign		Zero/Standstill/Dosing/Monitor.		Symbols		Mass unit
B	Gross weight	◣◢	Weight value standstill	⚠	Value not permissible in legal metrology (e.g. 10-fold resolution, deactived load cell)	t
G	Gross weight in NTEP or NSC mode	→0←	The gross weight value is within ±¼ d of zero			kg
NET	Net weight (Net = gross - tare)	◇	Filling mode: flashes when filling is "held"; rapid flashing indicates "error"			g
T	Tare weight					mg
PT	Preset tare not tared					lb
no indication	- Test value - Gross, not tared		Pendeo load cells: plausibility monitoring; average value deviation of each load cell	**R1**	Range 1	oz
				R2	Range 2	
				R3	Range 3	
				WP-A	Weighing point A	
User **Setp** **Diff**	additional weight value, application-specific function		Pendeo load cells: Temperature control; 1...n load cells are above/below the permissible temperature	**Max**	Maximum capacity (weighing range)	
				Min	Minimum weight	
+	Positiv value					
−	Negativ value					

Status icons in the info line

Icon	Description
	Remote control via VNC (Virtual Network Computing) is active.
	- The clock battery is empty. - The standby battery is empty.
	The standby battery is too hot and is not charging. If this does not go away, then the ambient temperature must be checked, see Chapter 3.4.3.2.
	- A USB device has been connected that is not supported. - The max. current of i_{max} = 200 mA has been exceeded.
	Check newly connected devices.
	USB stick recognized and ready for use.
	Stick is in use and may **not** be removed.
	IP address conflict in network settings

3.4.3 Operating Elements

3.4.3.1 Front keys

The following table shows the basic meanings of symbols for the front keys. The keys could have additional meanings depending on the applications used.

Indicator keys			
→T←	Tare The current gross weight is stored in the tare memory if - the weight value is stable - the device is not in error status (function dependent on configuration)	G/T	Display gross/tare weight You switch to the next weight by pressing the key (only tared scale). During calibration, pressing this key switches the weight to a 10-fold resolution for 5 seconds.
→0←	Sets gross weight to zero if - the weight value is stable - the weight is within the zero setting range (function dependent on configuration)		

Application keys	
	Starts an application-specific printout.

Navigation/menu keys			
▲	Scroll up in the menu	**OK**	Confirm entry/selection
▼	Scroll down in the menu	**EXIT**	- Cancel entry/selection (after a security prompt), without saving the change. - Exit the parameter/menu window
◄	- Cursor moves to the left - Selection - Exit the menu window	**C**	Pressing the Delete key deletes individual characters (within an entry) or entire character sections, see also page 17.
►	- Cursor moves to the right. - Selection - Confirm entry/selection	Soft key 1... 5	Select corresponding menu functions, see also Chapter 3.4.3.2.
		MENU	Switches to the Operating menu.
Function keys			
F1	Assign with a defined function (Operating parameters menu).	START	Starts an application-specific function.
F2	Assign with a defined function (Operating parameters menu).	STOP	Stops an application-specific function.
?	Displays the corresponding Help window.		

LED			
Operating state	**Color**	**LED status**	
Normal operation		turned off	
Power failure <5 seconds	red	flashing slowly	After 5 seconds, the unit will continue normally.
Power failure >5 seconds	red	flashing quickly	The device performs a data backup. Is then the power on, the unit returns to the normal operation (LED turned off).
After backup the power failure is still existing		turned off	The unit turns off.
Power voltage is on		turned off	The device performs a warm start, see Chapter 5.1.3.

Alphanumeric keypad

Toggle key

Pressing this will toggle between the following input modes:

- Cursor
- Uppercase letters
- Lowercase letters
- Pinyin
  When Chinese was selected or set under [Operating parameters] - [Input method].
- Hepburn
  When Japanese was selected or set under [Operating parameters] - [Input method].
- Numbers
- Units

  Double-click on the toggle key opens a small selection window.

  Select the unit with cursor keys ▲/▼ and confirm with **OK**.

Input without character table

Pressing this once will display the first character, e.g. 'A' in the cursor position. Pressing it twice will display 'B' in the cursor position and three-times will display 'C.'

Waiting approx. 2 seconds will complete the character entry.

If only numeric values are required for input, letters are not enabled.

You can delete the character to the left of the cursor by pressing the Delete key **C** during entry.

Numerical value input (e.g. weight value):

Delete the content of the input field by pressing the Delete key **C**.

Input with character table

Double-clicking the key displays the character table.

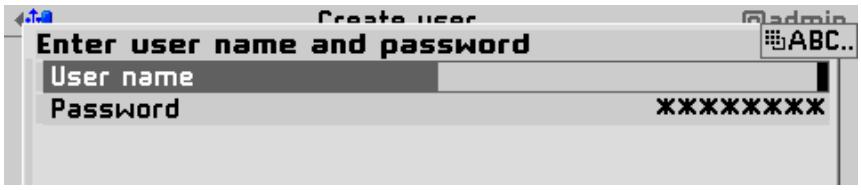
Note The toggle function is turned off.

Procedure

- ▶ Select the desired character with the cursor.
- ▷ The selected character is shown magnified in the field at the top right.
- ▶ Press the **OK** key to enter the character in the input field.
- ▶ Another double-click on the toggle key and other characters can be input as described previously.

Input field

Left of the input field is displayed whether numeric and/or alphabetical characters can be entered.



The respective setting is displayed.

Keyboard shortcuts

STOP + **EXIT**	Trigger a cold start, see also Chapter 5.19.3.

3.4.3.2 Operation Using Soft Keys

The functions of the five soft keys below the graphic display are indicated in the bottommost text line of the display. In the descriptions of operating sequences which entail the use of soft keys, the soft key function to be selected is shown in square brackets; the soft key symbol is not displayed, e.g. [Save].

Standard				**Save**

3.4.3.3 Selection using the Navigation Keys

Menu

You can navigate menus using the cursor keys, the **OK** key and the **EXIT** key.

Parameters

Individual parameters are selected using the ▼/▲ keys.

The required values/texts are entered via the alphanumeric keys.

Checkmarks are set ☑ using the **OK** key.

If the list of parameters is long, a vertical bar graph on the left (black/gray) shows which part of the list is displayed.

Available selection lists are indicated by the following arrow ▶.

The parameter is selected in the selection list via the **OK** key.

3.4.3.4 PC Keys

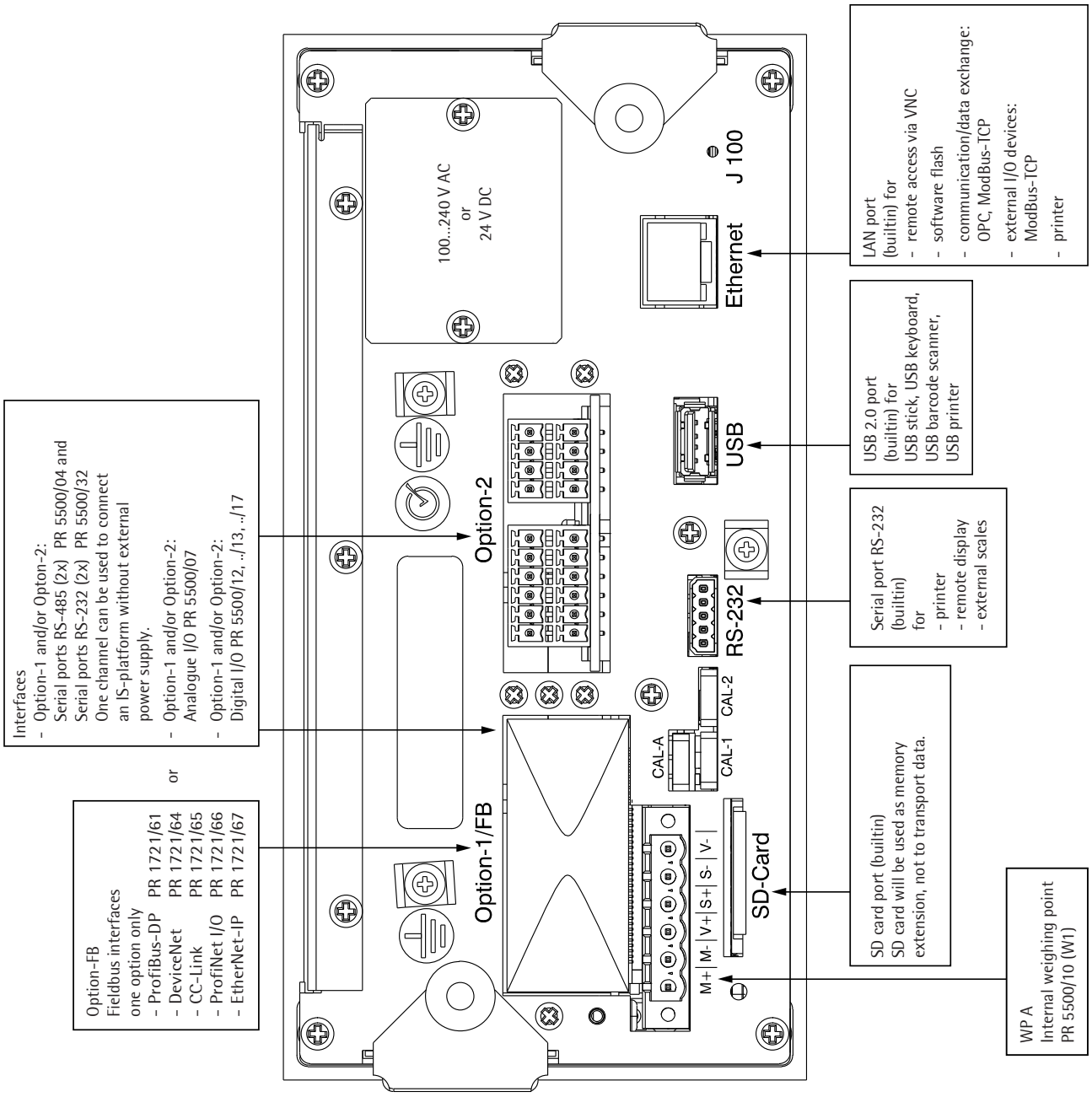
The device can also be operated via a PC keyboard. The corresponding key assignments can be viewed in the following table, see also Chapter 4.3.3.2.

PC keyboard	Front keypad
F1	F1
F2	F2
F3	?
F4	MENU
F5 to F9	Soft key 1 to 5
F10	
F11	START
F12	STOP
ESC	**EXIT**
Cursor keys: ↑, ↓, ←, →	▲, ▼, ◀, ▶
ENTER	**OK**
Backspace	**C**
Numeric keypad	Alphanumeric keypad

3.4.4 Operation using the VNC Program

User interface, see Chapters 3.4.1, 3.4.2 and 3.4.3.1.

3.5 Overview of Connections



3.5.1 Plug-in Cards

Product ID	Description	Position
PR 5500/04 2 serial RS-485 interfaces	The interface can be configured via the software. For more information, see Chapter 4.4.1.	Option-1/FB and/or Option-2
PR 5500/07 1 analog input 1 analog output	Analog input: internal 14 bits binary = 20,000 counts, @ e.g. 0 to 20 mA/0 to 10 V Analog output: internal 16 Bits = 65536 counts, resolution of 20,000 @ 20 mA For more information, see Chapter 4.4.3.	Option-1/FB and/or Option-2
PR 5500/10 (W1) Weighing electronics	Internal weighing electronics for connecting load cells or weighing platforms in non-hazardous areas. A max. of two internal weighing electronics systems can be connected. For more information, see Chapter 4.4.4.	WP A
PR 5500/12 4 digital inputs 4 digital outputs	4 passive opto-decoupled inputs 4 relay outputs with potential-free change-over contacts For more information, see Chapter 4.4.5.	Option-1/FB and/or Option-2
PR 5500/13 4 digital inputs 4 digital outputs	4 active opto-decoupled inputs 4 relay outputs with potential-free change-over contacts For more information, see Chapter 4.4.6.	Option-1/FB and/or Option-2
PR 5500/17 6 digital inputs 8 digital outputs	6 passive opto-decoupled inputs 8 passive opto-decoupled outputs For more information, see Chapter 4.4.7.	Option-1/FB and/or Option-2
PR 5500/32 2 serial RS-232 interfaces	The interface can be configured via the software. For more information, see Chapter 4.4.2.	Option-1/FB and/or Option-2

Product ID	Description	Position
PR 1721/61 ProfiBus-DP	ProfiBus-DP-V0 Slave with 9.6 kbit/s to 12 Mbps, Auto baud rate detection; For more information, see Chapter 4.4.8.	Option-1/FB (Carrier card installed in reversed position)
PR 1721/64 DeviceNet	DeviceNet Master-Slave with 125, 250 and 500 kbps For more information, see Chapter 4.4.9.	Option-1/FB (Carrier card installed in reversed position)
PR 1721/65 CC-Link	CC-Link Slave with 156, 625 kbps, 2.5, 5, 10 Mbps For more information, see Chapter 4.4.10.	Option-1/FB (Carrier card installed in reversed position)
PR 1721/66 ProfiNet I/O	ProfiNet I/O with 10 and 100 Mbps Autodetection (10/100, HalfDX/FullDX) For more information, see Chapter 4.4.11.	Option-1/FB (Carrier card installed in reversed position)
PR 1721/67 EtherNet/IP	EtherNet-IP with 10 and 100 Mbps Autodetection (10/100, HalfDX/FullDX) For more information, see Chapter 4.4.12.	Option-1/FB (Carrier card installed in reversed position)

3.5.2 Application Licenses

Examples of application licenses:

Type	Function
PR 5500/92	PR 1792 OPC server (AccessIt 2.0 license incl.)
PR 5500/83	Batching

Examples of application packages:

Checkweighing
Automatic dosing and manual filling

For product details, see corresponding data sheets/manuals.

Applications purchased from Sartorius Intec may only be changed as per a source code agreement.

3.6 Instrument Versions

3.6.1 Combinatorics for the Options

Name	Accessory	Code no.	Description	Chapter
Housing:				
Control cabinet housing			Standard	3.3.1
Housing mounting parts:				
Strain relief for connecting cables		L14		3.3.2
Reinforcing frame		L15		3.3.2
Elektronik:				
Analog/digital converter	PR5500/10	W1	WPA: Weighing electronics board	4.4.4
Power supply:				
Power supply		L0	100-240 V Version; standard	2.4.3.1
		L8	24 V Version	2.4.3.2

Name	Accessory	Code no.	Description	Chapter
Interface cards:				
2x RS-485 interface	PR 5500/04	B15	Option-1/FB: 2 serial interfaces	4.4.1
		B25	Option-2: 2 serial interfaces	
Analog inputs and outputs	PR 5500/07	B16	Option-1/FB: 1 analog input and 1 analog output (0/4 to 20 mA)	4.4.3
		B26	Option-2: 1 analog input and 1 analog output (0/4 to 20 mA)	
Digital inputs and outputs	PR 5500/12	B18	Option-1/FB: 4 passive opto-decoupled inputs and 4 relay outputs	4.4.5.1, 4.4.5.2
		B28	Option-2: 4 passive opto-decoupled inputs and 4 relay outputs	
Digital inputs and outputs	PR 5500/13	B17	Option-1/FB: 4 active opto-decoupled inputs and 4 relay outputs	4.4.6.1, 4.4.6.2
		B27	Option-2: 4 active opto-decoupled inputs and 4 relay outputs	
Digital inputs and outputs	PR 5500/17	B19	Option-1/FB: 6 passive opto-decoupled inputs and 8 passive opto-decoupled outputs	4.4.7.1, 4.4.7.2
		B29	Option-2: 6 passive opto-decoupled inputs and 8 passive opto-decoupled outputs	
2x RS-232 interface	PR 5500/32	B14	Option-1/FB: 2 serial interfaces	4.4.2
		B24	Option-2: 2 serial interfaces	
Fieldbus cards:				
ProfiBus-DP	PR 1721/61	C21	Option-1/FB (carrier plate is mounted reversed)	4.4.8
DeviceNet	PR 1721/64	C24	Option-1/FB (carrier plate is mounted reversed)	4.4.9
CC-Link	PR 1721/65	C25	Option-1/FB (carrier plate is mounted reversed)	4.4.10
ProfiNet I/O	PR 1721/66	C26	Option-1/FB (carrier plate is mounted reversed)	4.4.11
EtherNet-IP	PR 1721/67	C27	Option-1/FB (carrier plate is mounted reversed)	4.4.12

Name	Accessory	Code no.	Description	Chapter
Applications/Alibi memory/OPC server:				
Basic		H0	Standard application	see corresponding manual
Phase	PR 5500/81	I4	Application (OPC license incl.)	
Batching	PR 5500/83	I6	Application	
IBC	PR 5500/86	I11	Application	
Tilt Correction	PR 5500/87	I12	License (only ‚Basic' application)	
Alibi Memory	PR 5500/91	E5	License	
OPC server	PR 5500/92	E6	Use of the PR 1792 OPC server (AccessIt 2.0 license incl.)	
Batch modes	PR 5500/93	E9	Special license for using in individual programming	

Device Model

The marking (e.g. PR 5500-W1-L0-C21-B15-B27-H0-E5) of the device model (basic device + options) is located on a label on the back of the instrument.

4 Device Installation

4.1 General Information

Before starting work, please read Chapter 2 and follow all instructions.

Further procedures:

- Check the consignment: make sure that all components are present.
- Safety check: inspect all components for damage.
- Make sure that the on-site installation is correct and complete including cables, e.g. power cable fuse protection, load cells, junction box, data cables, console/cabinet, etc.
- If necessary, install the plug-in cards (device must be disconnected from all voltage sources).
- Follow all device installation instructions related to application, safety, ventilation, sealing and environmental influences.
- Connect the cable from the junction box or platform/load cell.
- If applicable: connect other data cables, power cables, etc.
- Connect the power cable.
- Check the installation.

4.2 Mechanical Preparation

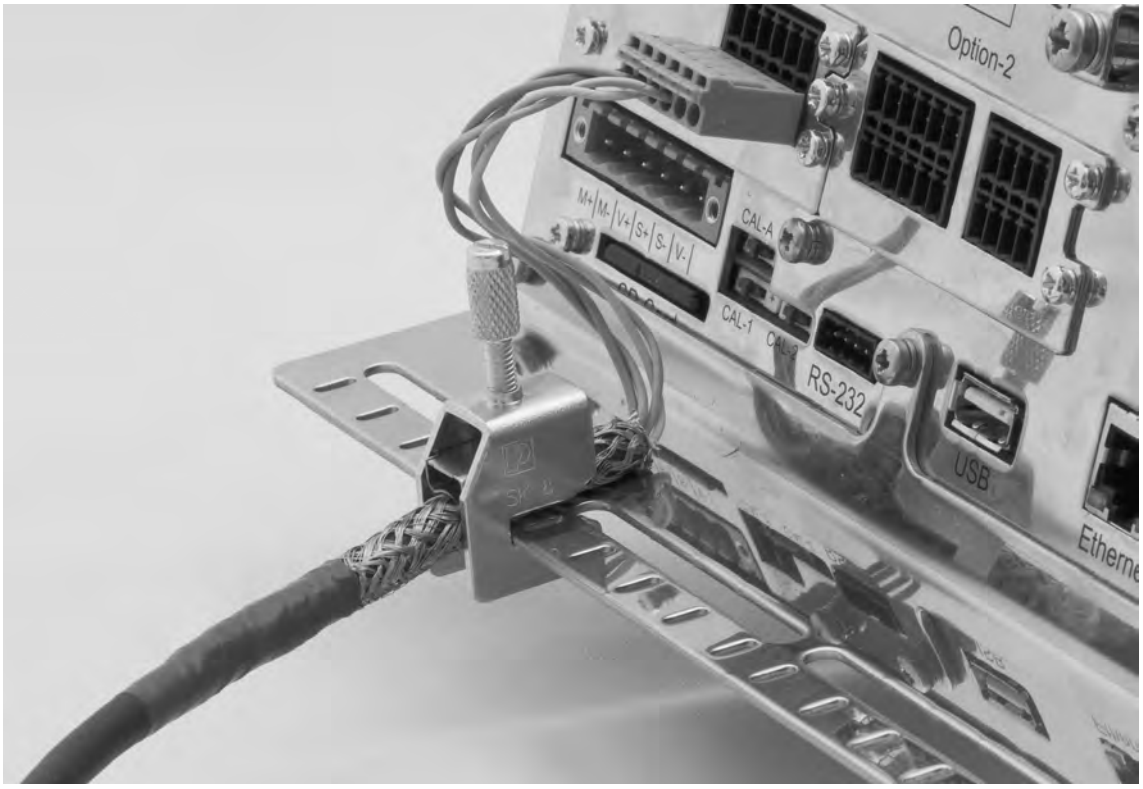
Have all required parts, technical documents and tools at hand for installation.

- Measurement cables should be kept away from power equipment.
- Signal cables and measurement cables should be installed separately from electric power lines.
- It is recommended to lay measurement cables in separate cable conduits.
- Data cables should be crossed at right angles.

▶ For the control panel cutout for the device made e.g. in the control cabinet door; see Chapter 3.3.3.
▶ Install device.
▶ Secure the cable at the place of installation; e.g., using cable ties.
▶ Remove the insulation from the cable ends and keep the strands short.
▶ Connect the screen to device grounding terminal or screen clamping rail; see Chapter 4.2.1.1
▶ Connect the ground or equipotential bonding conductor to the device grounding terminal; see Chapter 4.2.1.2.

4.2.1.1 Connecting the Screen to the Screen Clamping Rail

The screen must be connected to the screen clamping rail using delivered screen clamps as pictured below.

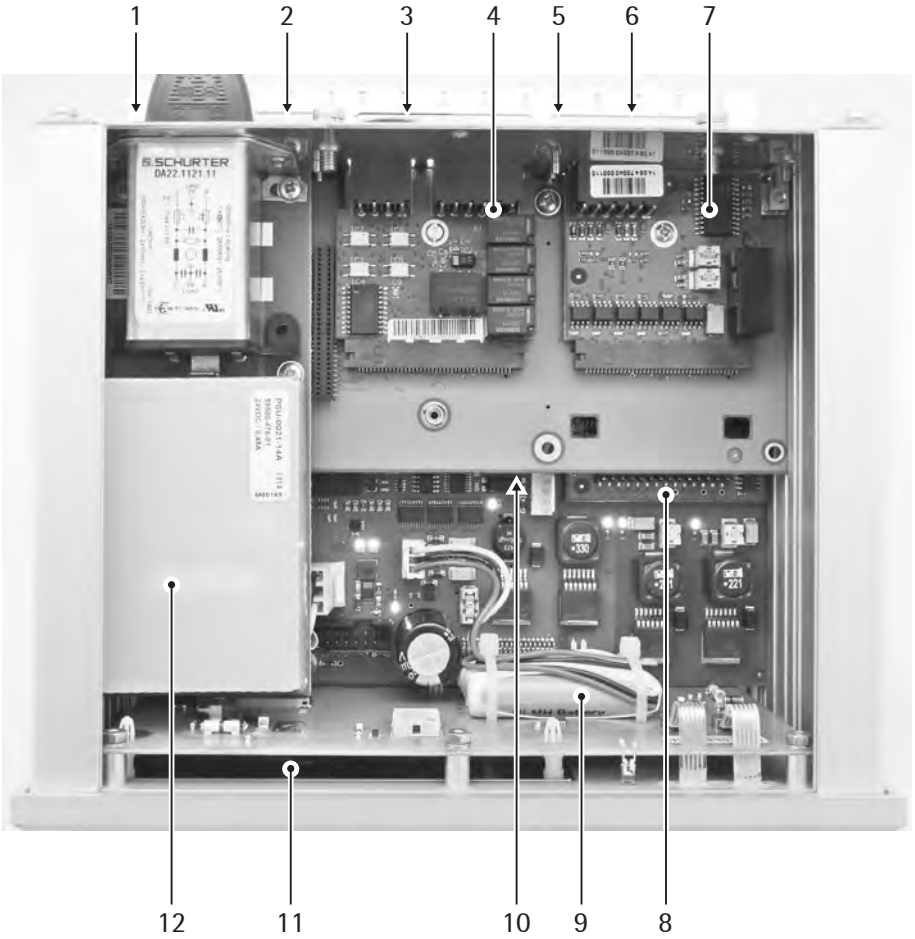


4.2.1.2 Connecting the Equipotential Bonding Conductor

The equipotential bonding conductor (1) must be connected as pictured below.

4.3 Hardware Construction

4.3.1 Main Board



The following elements are located on the main board:

Pos.	Name	Pos.	Name
1	Reset key	7	Slot for fieldbus and option cards, Option-1/FB
2	Ethernet port, internal	8	Weighing electronics board W1
3	USB connection	9	Stand-by battery (for data recovery)
4	Slot for option cards, Option-2	10	Clock battery (see Chapter 9.1)
5	Connection for RS-232 interface, internal	11	Color-graphic display
6	SD card slot	12	Power adaptor

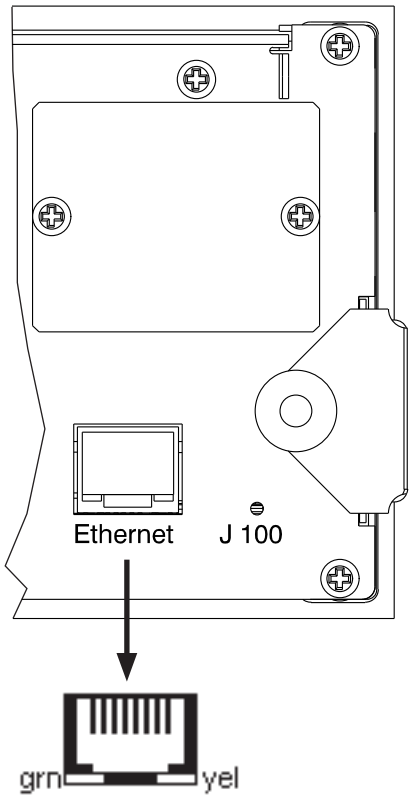
Note	LED list see Chapter 13.4.

4.3.2 Network Port

The device has an internal Ethernet port.

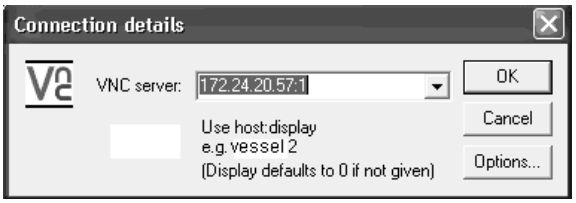
4.3.2.1 Ethernet Port

The Ethernet port contains a powerful TCP/IP interface connection with transfer rates of 10 or 100 Mbps. Function tests can be made via the LEDs (green and yellow) in the RJ-45 socket.



Transmission rate	10 Mbps (10 Base-T), 100 Mbps (100 Base-T), full/half duplex, auto-detection
Connection mode	Point to point
Cables	CAT 5 patch cable, twisted pair, screened
Cable impedance	150 Ω
Potential isolation	Yes
Cable length	Max. 115 m
Connection	RJ-45 socket on the device back Yellow: lights up when there is an existing connection (link) Green: flashes when there is data traffic (activity)

4.3.2.2 Notebook/PC Connection



Remote operation of the device from a notebook/PC is possible (install VNC software version 3.3.7* on the notebook/PC).

For network address settings, see Chapter 5.6.1.

* Sartorius Intec guarantees the functionality only if this version is used.

4.3.3 USB Connection

The USB connection is located on the back of the device.

Type	USB 2.0, Type A
Max. current	i_{max} = 200 mA
Possible Connection Devices	- USB stick - External keyboard - Barcode reader - Printer (non-GDI) - External splitter (hub)

Data integrity cannot be guaranteed in the case of a power failure when using a USB stick via a splitter (HUB).

⚠ Caution

4.3.3.1 USB Stick

All commercially-available USB sticks can be used.

4.3.3.2 External PC Keyboard

The device has an alphanumeric keypad and a USB connection for an external PC keyboard on the back of the device. Both operating functions are equivalent and either one can be used.

PC keyboard	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
Keys	F1	F2	?	MENU	Soft key 1	Soft key 2	Soft key 3	Soft key 4	Soft key 5		START	STOP

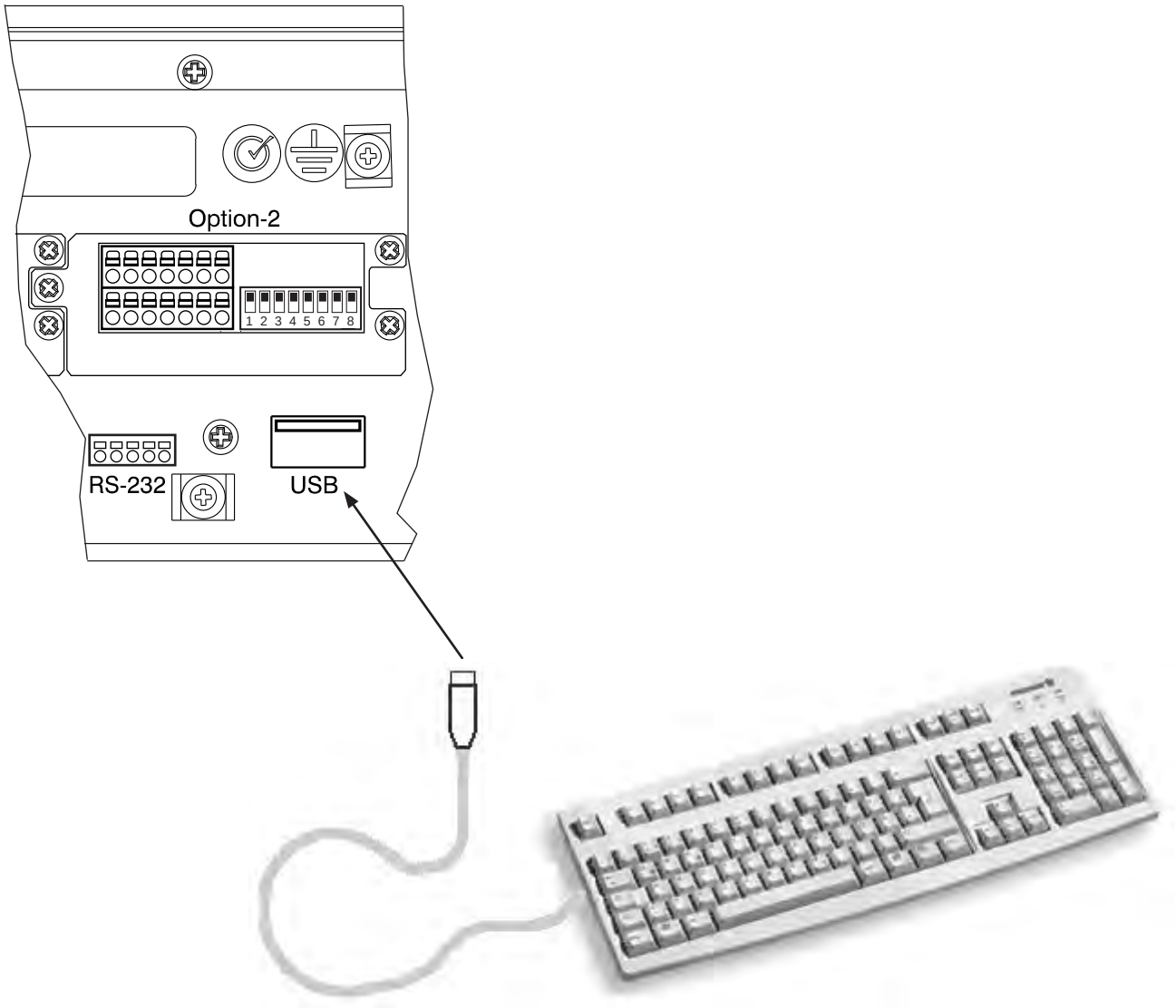
PC keyboard	Esc	←	↵	↑ ← ↓ →
Keys	EXIT	C	OK	▲, ▼, ◀, ▶

You can set the key assignment for the connected keyboard under [System Setup]-[Operating Parameters]-[USB keyboard layout]:

- [German QWERTZ]
- [French AZERTY]
- [Italian QWERTY]
- [Spanish QWERTY]
- [English QWERTY]
- [Russian QWERTY/йцукен]

Before connecting the keyboard, make sure: Current consumption i <200 mA.
An electronic current limiting prevents overloads.

⚠ Caution

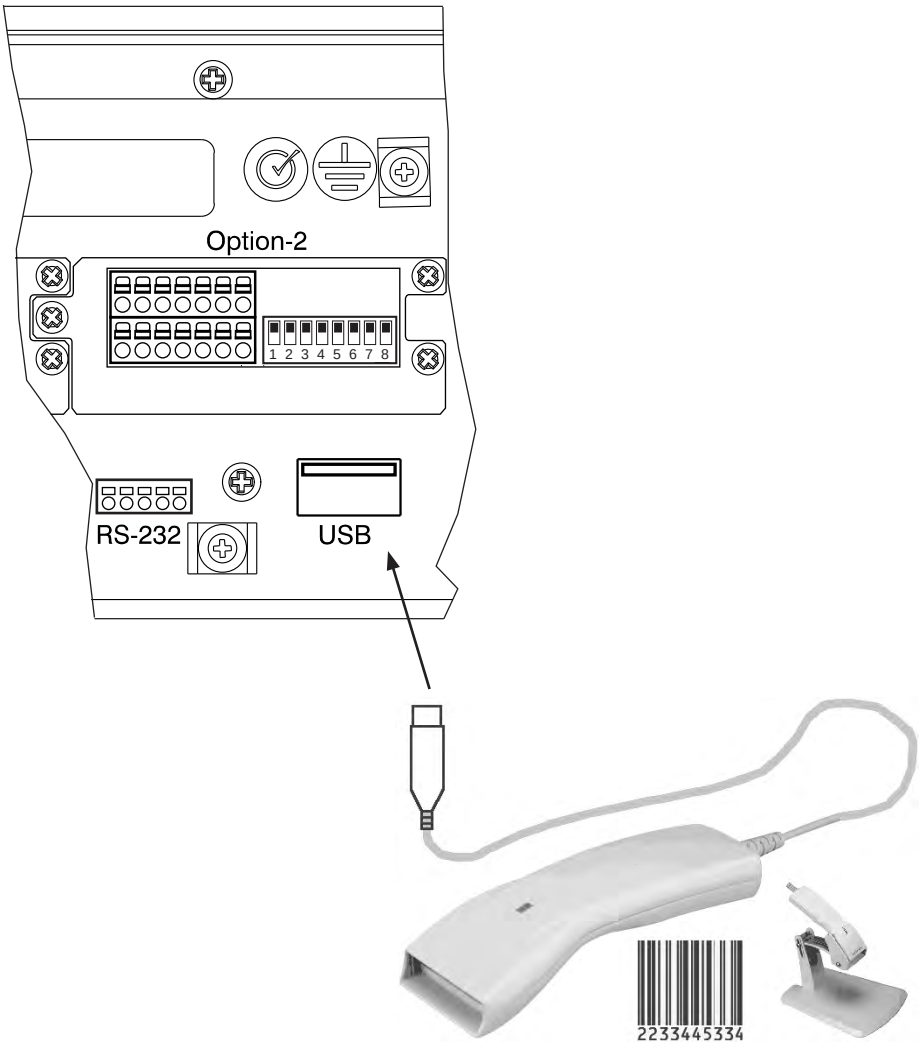


4.3.3.3 Barcode scanner

A barcode scanner can be connected to the USB interface on the back of the device as an alternative to an external keyboard.

Before connecting the barcode scanner, make sure: current consumption i <200 mA. An electronic current limiting prevents overloads.

⚠ Caution



Barcode scanner settings are made by scanning the corresponding code (see manual).
We recommend setting 3 redundant read processes to ensure secure read values.
To confirm each read process via the key field, the automatic CR function of the scanner must be switched off.

4.3.3.4 Printer

The following USB printers can be used:

- YDP14IS-OCEUV
- EPSON TM-U220 und EPSON LQ-300K
- Line printer
- Printer with ESC/P2 control
- Printer with PCL5 control

4.3.3.5 External HUB

All commercially-available HUBs can be used.

All connected USB devices + HUB: current consumption i <200 mA or use a power supply for the HUB.

⚠ Caution

4.3.4 SD Card Slot

The internal SD card slot is located on the back of the device. It comes with an appropriate SD card. The SD card is only used for storage; it is not used for data transfers.

Note	Only Sartorius Intec-supplied SD cards may be used. There is no warranty for third-party cards.

The following data are saved to the SD card:

- The backup directory for the configuration and database
- A copy of the current version of the BIOS, firmware and application
- A copy of the delivery version of the BIOS, firmware and application
- Manuals

You also have the option of saving application data.

⚠ Caution

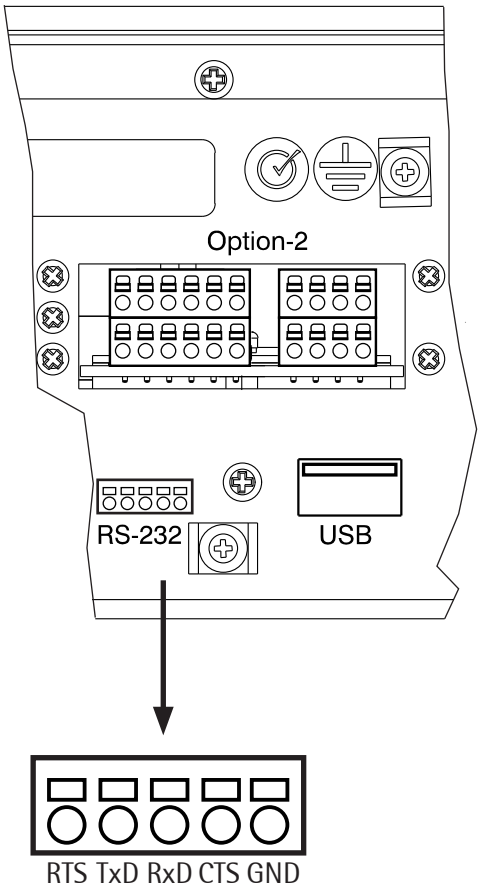
The SD card is a fixed component of the device.

- **The SD card may only be removed together with the SIL chip during servicing (replacing a defective device, see Chapter 13.7).**
- **The SD card may not be used for data transfers.**
- **The SD card may not be used in Notebook/PC.**

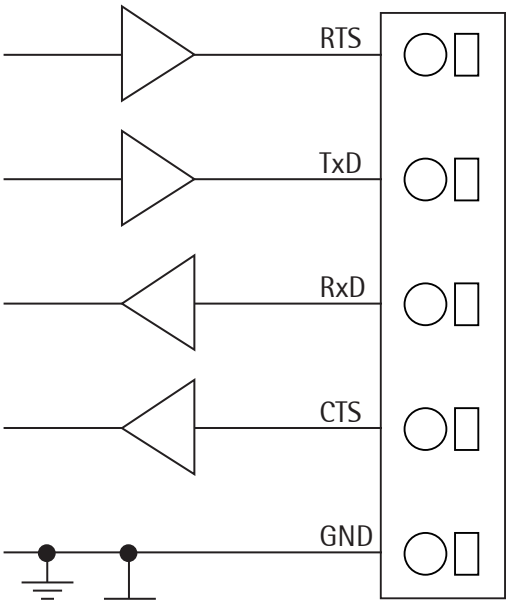
The SD card is protected by a battery in case of a power failure, i.e. the current process running (e.g. reading data) is carried out and completed.

4.3.5 RS-232 Interface (built-in)

The device is equipped with an integrated RS-232 interface. This interface is configurable, and can be used, for example, for data transmission to a remote display or printer.

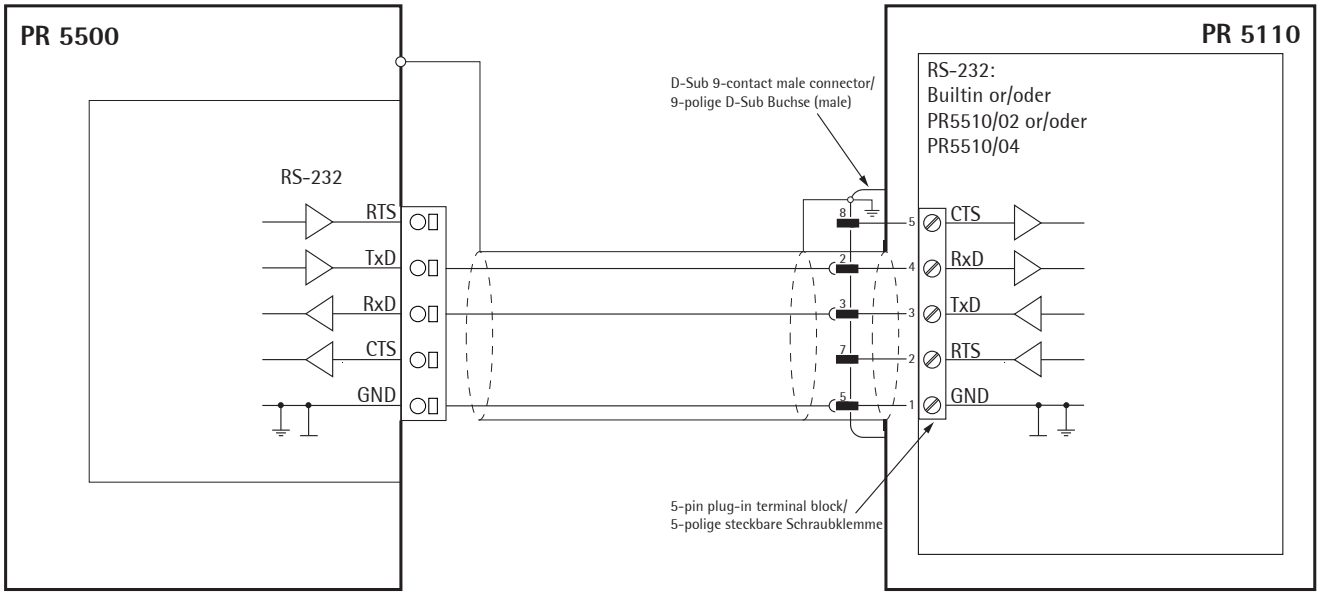


Connection	Terminal, 5-pin
Number of channels	1
Type	RS-232, full duplex
Transmission rate	300 to 115k2 Bit/sec
Parity	None, odd, even
Data bits	7/8 bit
Input signal level	Logic 1 (high) - 3 to - 15 V Logic 0 (low) + 3 to + 15 V
Output signal level	Logic 1 (high) - 5 V to - 15 V Logic 0 (low) + 5 V to + 15 V
Number of signals	Input: Rx, CTS Output: Tx, RTS
Potential isolation	none
Cable gauge	max. 1.5 mm^2
Cable length	max. 15 m
Cable type	Twisted pair, screened (e.g. LifYCY 3x2x0.20), 1 pair of wires for ground (GND).



4.3.5.1 Connecting a PR 5110 Remote Display via RS-232

The remote display can be connected via the built-in RS-232 interface.



PR 5500 Configuration

[System setup] – [Connected devices] –
[Remote display] – [Interface] – [Built-in RS-232]

PR 5110 Configuration

Setup - oP 10 - LInE - rS232

Setup - oP 12 - toKEn - oFF

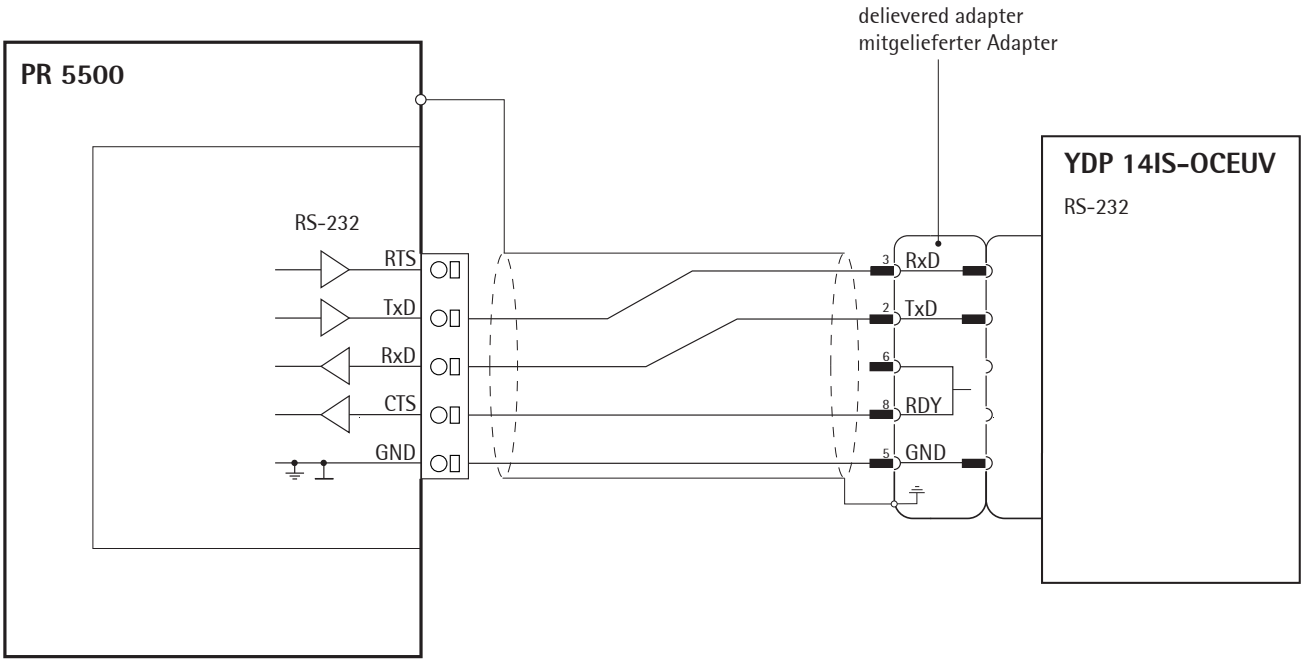
Setup - oP 13 - SEndModE - SEnd

Setup - oP 14 - WEIGHt - FoLLoW

Setup - oP 15 - WPrEY - SELECt

4.3.5.2 Connecting a YDP14IS Ticket Printer via RS-232

The YDP14IS-OCEUV ticket printer can be connected via the built-in RS-232 interface.



PR 5500 Configuration

[System setup]-[Connected devices]-[Printer]-[Interface]-[Built-in RS-232]:

- [Protocol] to 'RTS/CTS'
- [Baud Rate] to '9600'
- [Data Bits] to '8'
- [Parity] to 'none'
- [Stop Bits] to '1'
- [Printer Type] to [Unchanged]

Printer Configuration

The printer must be set to Line Mode (the factory setting is Page Mode). Press the FEED button to change modes; please refer to the operating instructions delivered with the printer.

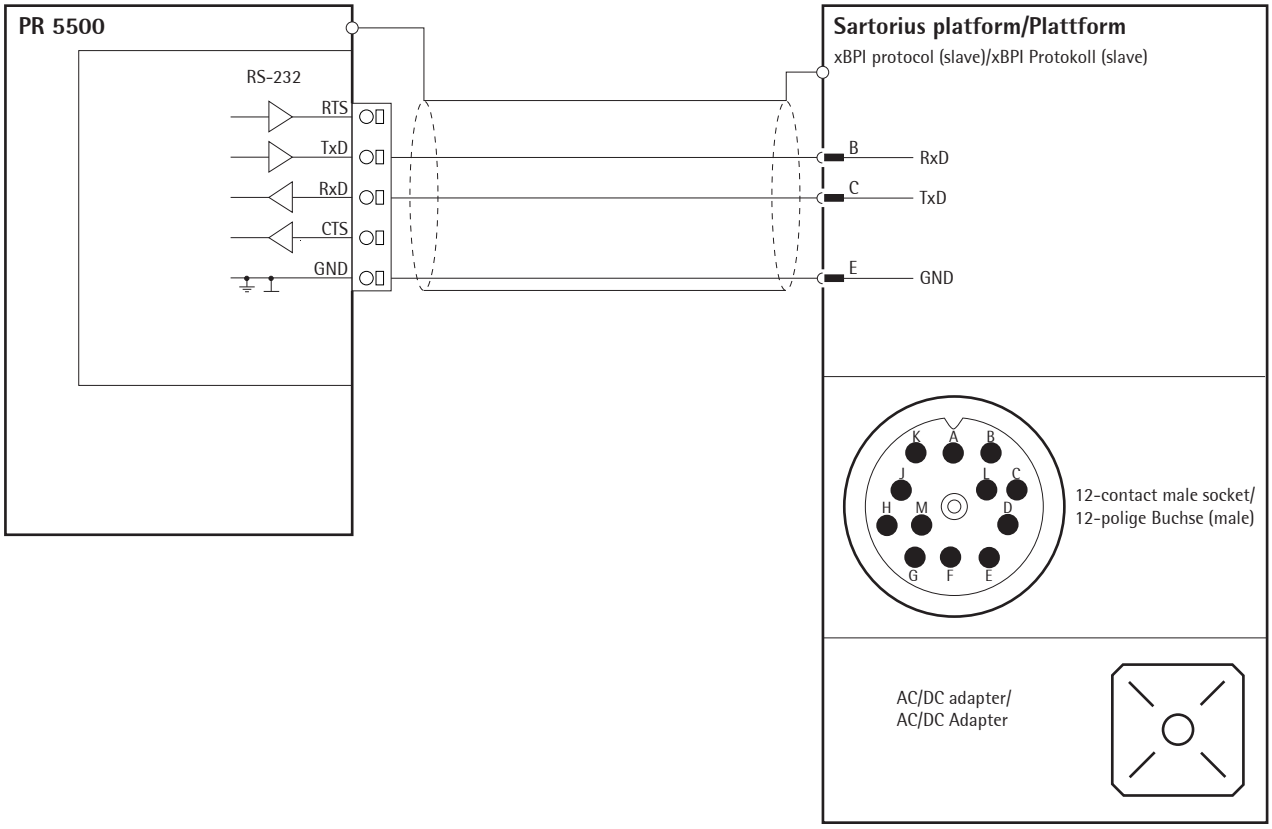
4.3.5.3 Connecting Additional Printers

The following serial printers can also be used:

- Epson TM-U295
- Printer with ESC/P2 protocol

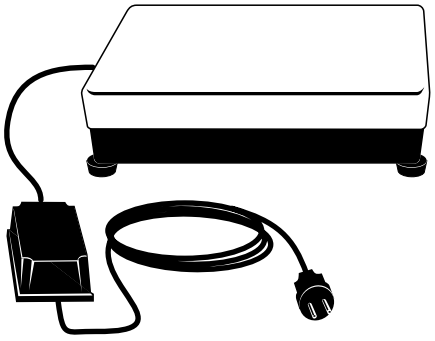
4.3.5.4 Connecting an IS Platform via RS-232

A platform using an xBPI or SBI protocol can be connected via the built-in RS-232 interface.



Configuration

[System setup] – [Weighing points] – [Weighing point X]: [xBPI scale]
[Interface]: [Built-in RS-232]

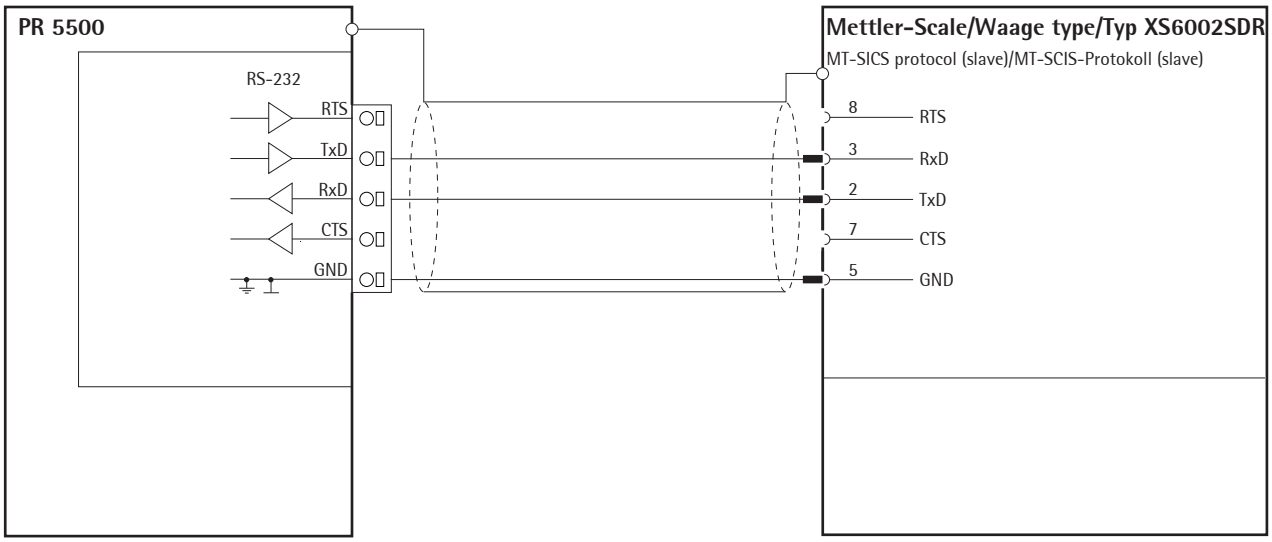


Note	For more information, see the platform manual.

4.3.5.5 Connecting a Mettler-Scale via RS-232

A Mettler-Scale using MT-SICS protocol can be connected via the built-in RS-232 interface.

Example: Type XS6002SDR



Configuration PR 5500

[System setup] – [Weighing points] – [Weighing point X]: [Mettler-Scale]
[Interface]: [Built-in RS-232]

Parameter settings Mettler-Scale

see Chapter 5.17.2.

Note	For more information, see the Mettler-Scale manual.

4.4 Accessories

4.4.1 PR 5500/04 2x RS-485 Interface

The plug-in card contains two channels. One channel can be used for connecting an IS platform without an external power supply.

Note	Either the internal Weighingpoint or an IS platform without external power supply can be used.

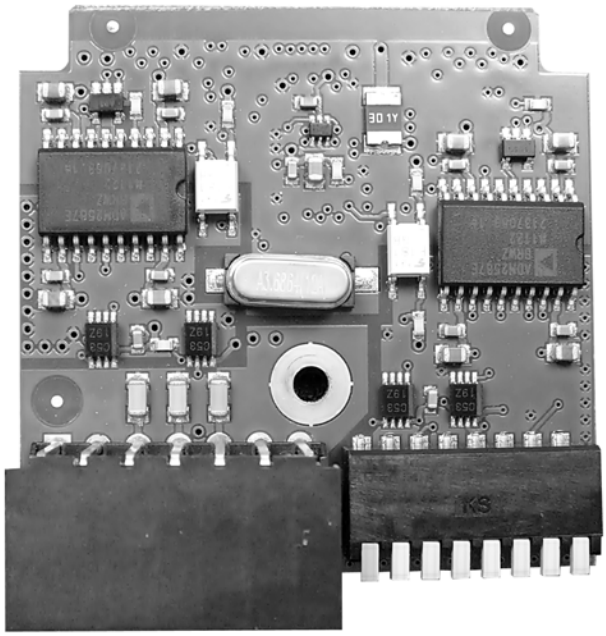
The RS-485 interface can be selected and configured in the Setup menu.

Using the RS-485 interface is compulsory with a multi-point connection (Tristate status).

The RS-485 interface can also be used as a point-to-point connection.

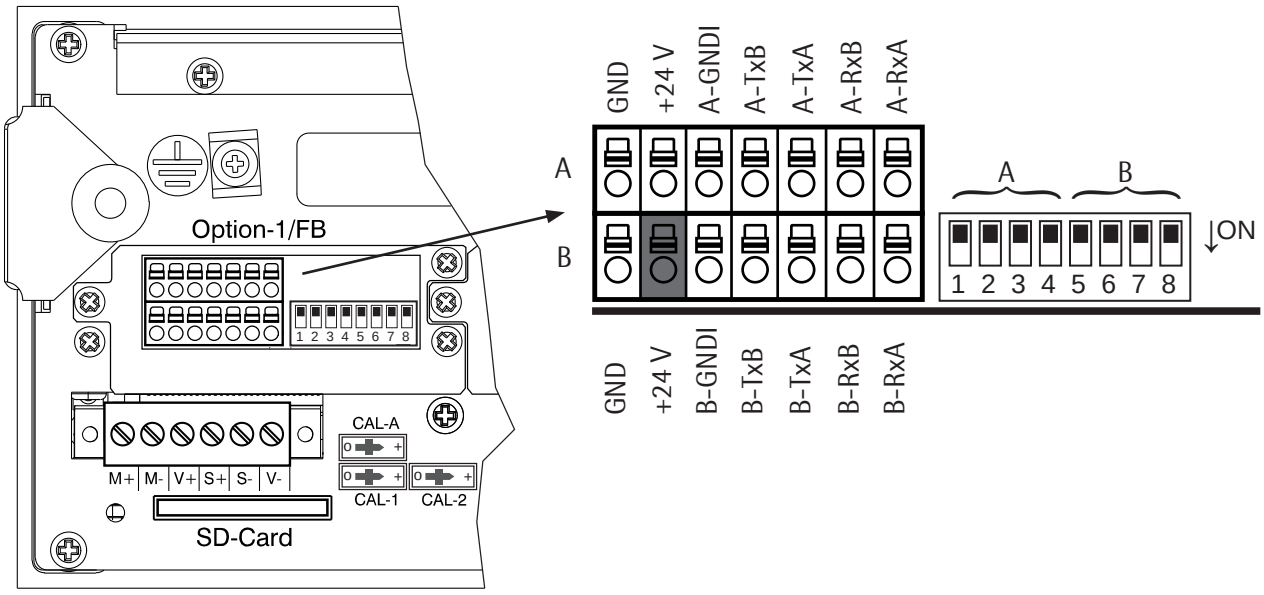
The card is inserted in the Option 1/FB and/or Option 2 slot.

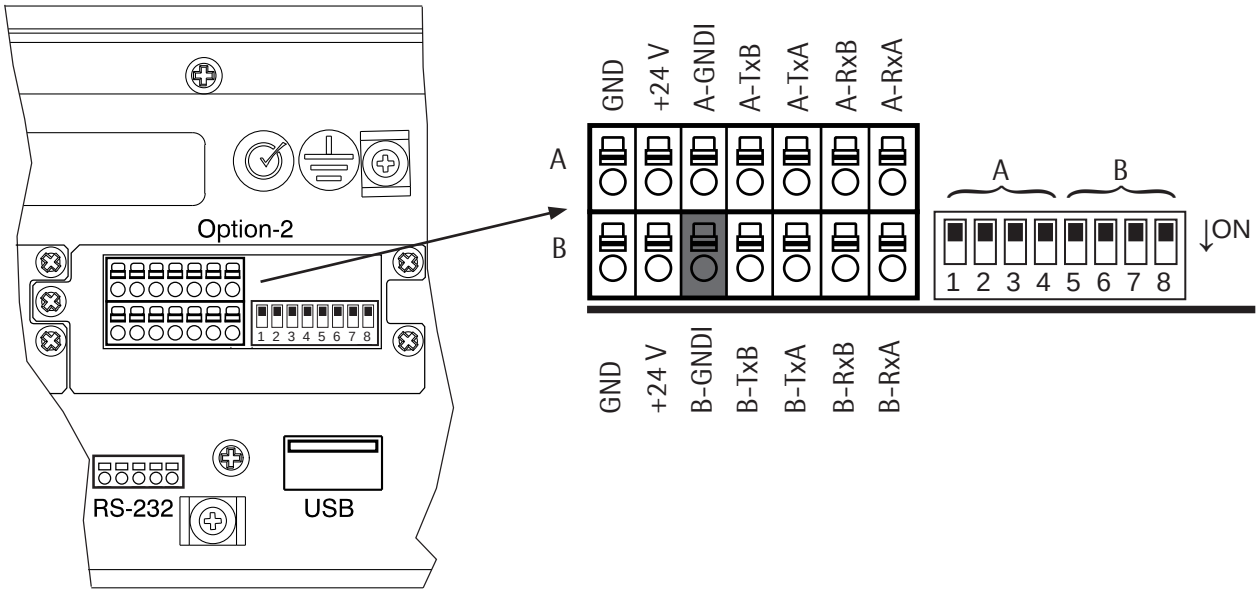
A max. of 2 PR 5500/04 cards can be installed!



Internal Connection	Contact strip
Number of channels	2
Type	RS-485, full duplex (4-wire) RS-485, half duplex (2-wire)
For external power supply	U= 24 V, 3 W (briefly up to 6 W)
Transmission rate	300 to 115 K2 Bit/sec
Signals	TxA, RxA, TxB, RxB
Potential isolation	Yes
Cable gauge	max. 1.5 mm^2
Cable length	max. 1000 m
Cable type	Twisted pair, screened (e.g. LifYCY 3x2x0.20), 1 pair of wires for ground (GND).
External connection	2x terminal, 7-pin
Dimensions (LxWxH)	50x45x18 mm
Weight	Approx. 35 g

PR 5500/04 2x RS-485 Interface



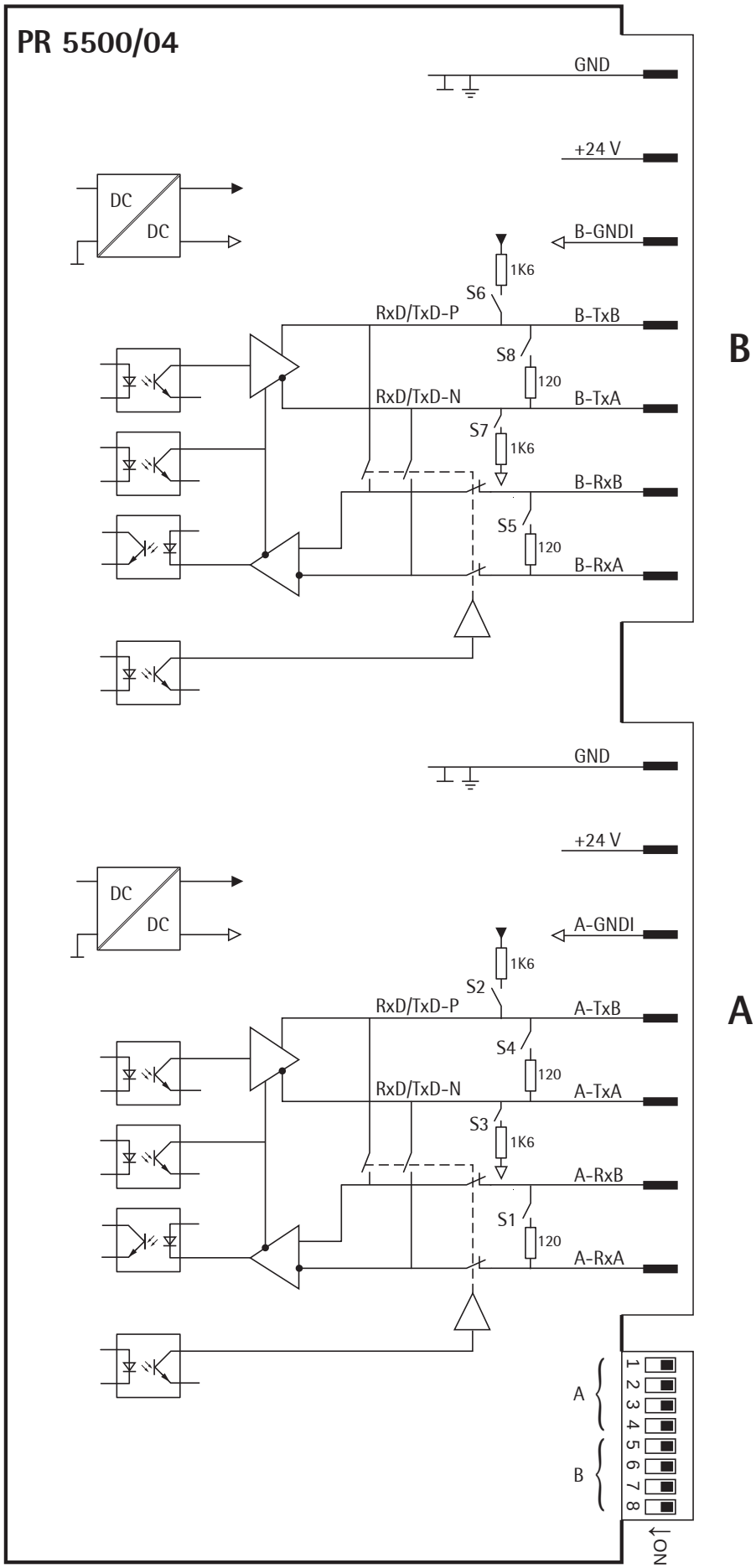


Coding of Option-1/Option-2

- ▶ Terminal block: Insert the coding pin into the slot of the position marked in gray.
- ▶ Terminal: Remove (pinch off) the corresponding coding ridge.

Note	The terminal coding is described in Chapter 13.5.

Block diagram 2x RS-485



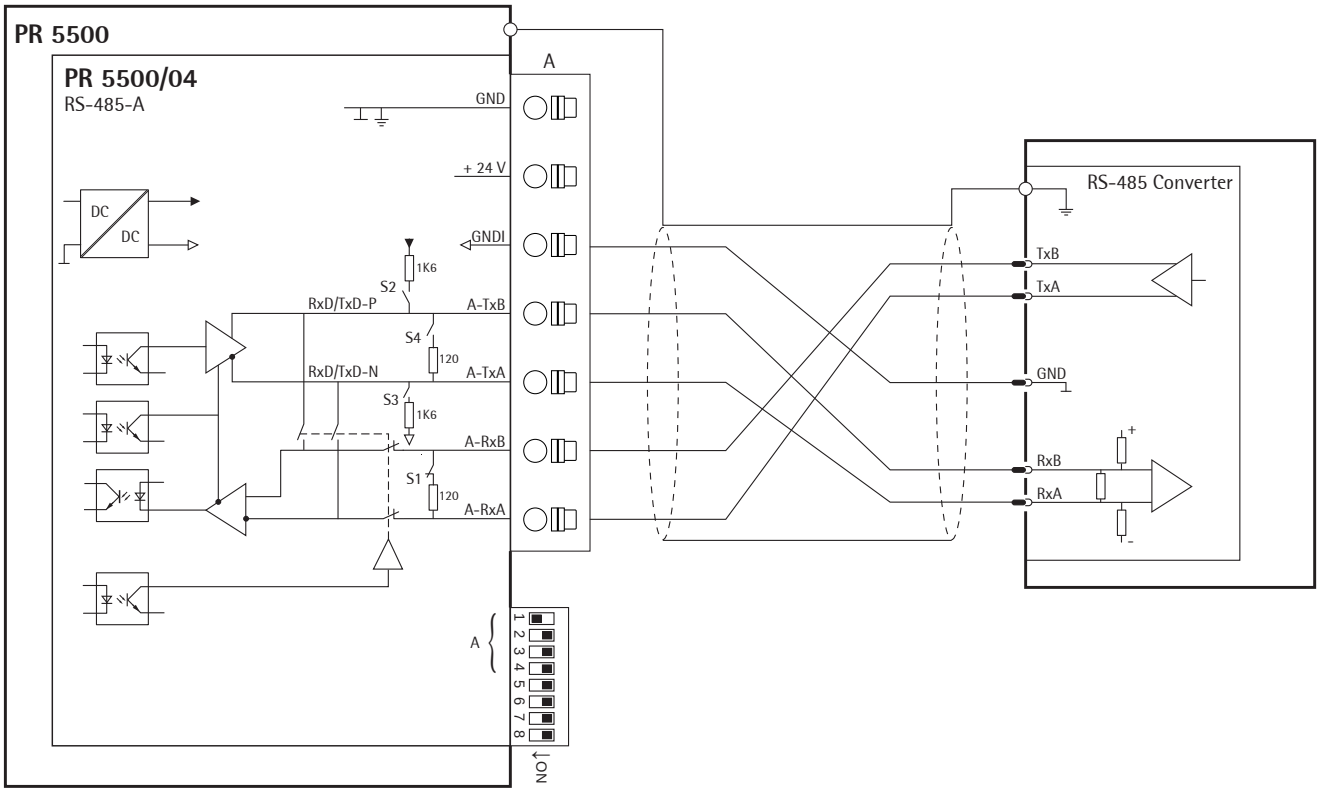
S	Function	Settings for RS-485	
1	Rx bus termination	OFF: not connected	ON: (A-RxA 120 Ω A-RxB)
2	Tx pull-up resistor	OFF: not connected	ON: (A-TxB 1K6 Ω +V)
3	Tx pull-down resistor	OFF: not connected	ON: (A-TxA 1K6 Ω -V)
4	Tx bus termination	OFF: not connected	ON: (A-TxA 120 Ω A-TxB)
5	Rx bus termination	OFF: not connected	ON: (B-RxA 120 Ω B-RxB)
6	Tx pull-up resistor	OFF: not connected	ON: (B-TxB 1K6 Ω +V)
7	Tx pull-down resistor	OFF: not connected	ON: (B-TxA 1K6 Ω -V)
8	Tx bus termination	OFF: not connected	ON: (B-TxA 120 Ω B-TxB)

Note See block diagram on page 44.

4.4.1.1 Connecting to a PC or RS-485/RS-232 Converter

Point-to-point connection for the EW Com protocol (4-wire)

Example



Switch settings

ON: S1

OFF: S2, S3, S4

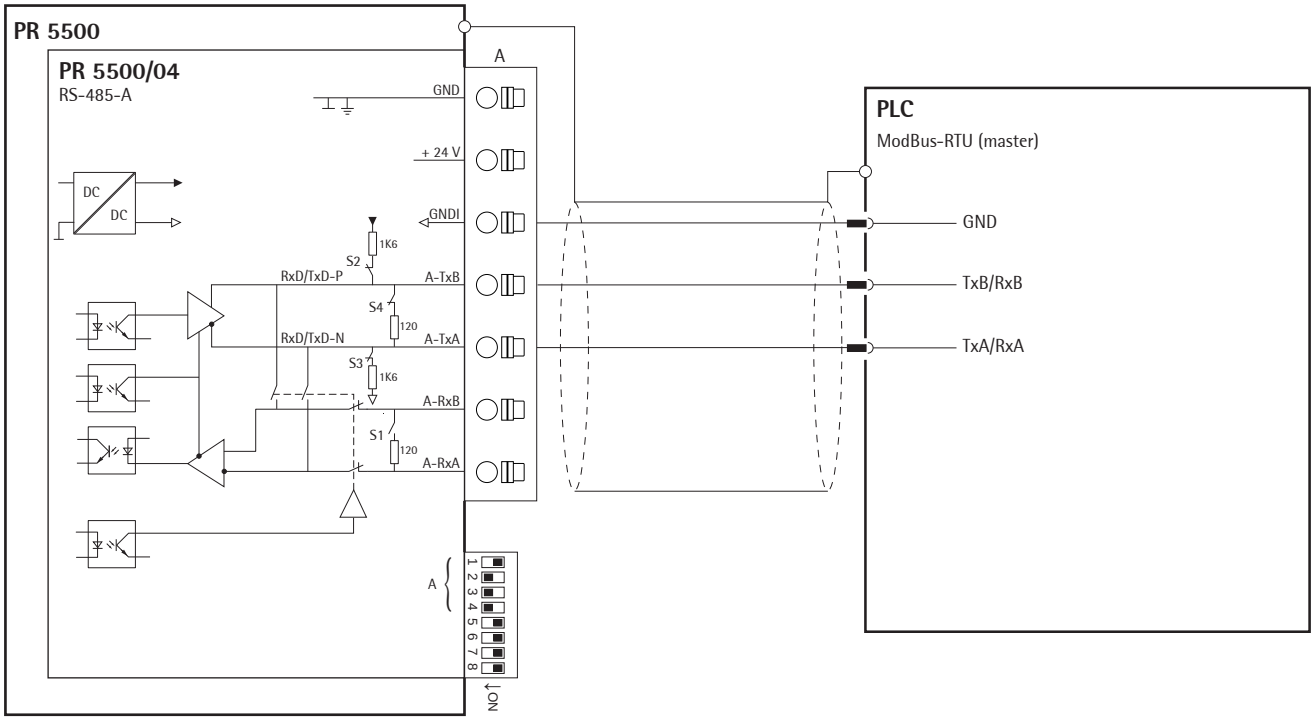
Configuration

[System setup] – [Connected devices] – [PC via EW Com] – [Interface] – [Option-1 RS-485-A]

4.4.1.2 Connecting to a PLC or RS-485/RS-232 Converter

Point-to-point connection for the ModBus protocol (2-wire)

Example



Switch settings

ON: S2, S3, S4

OFF: S1

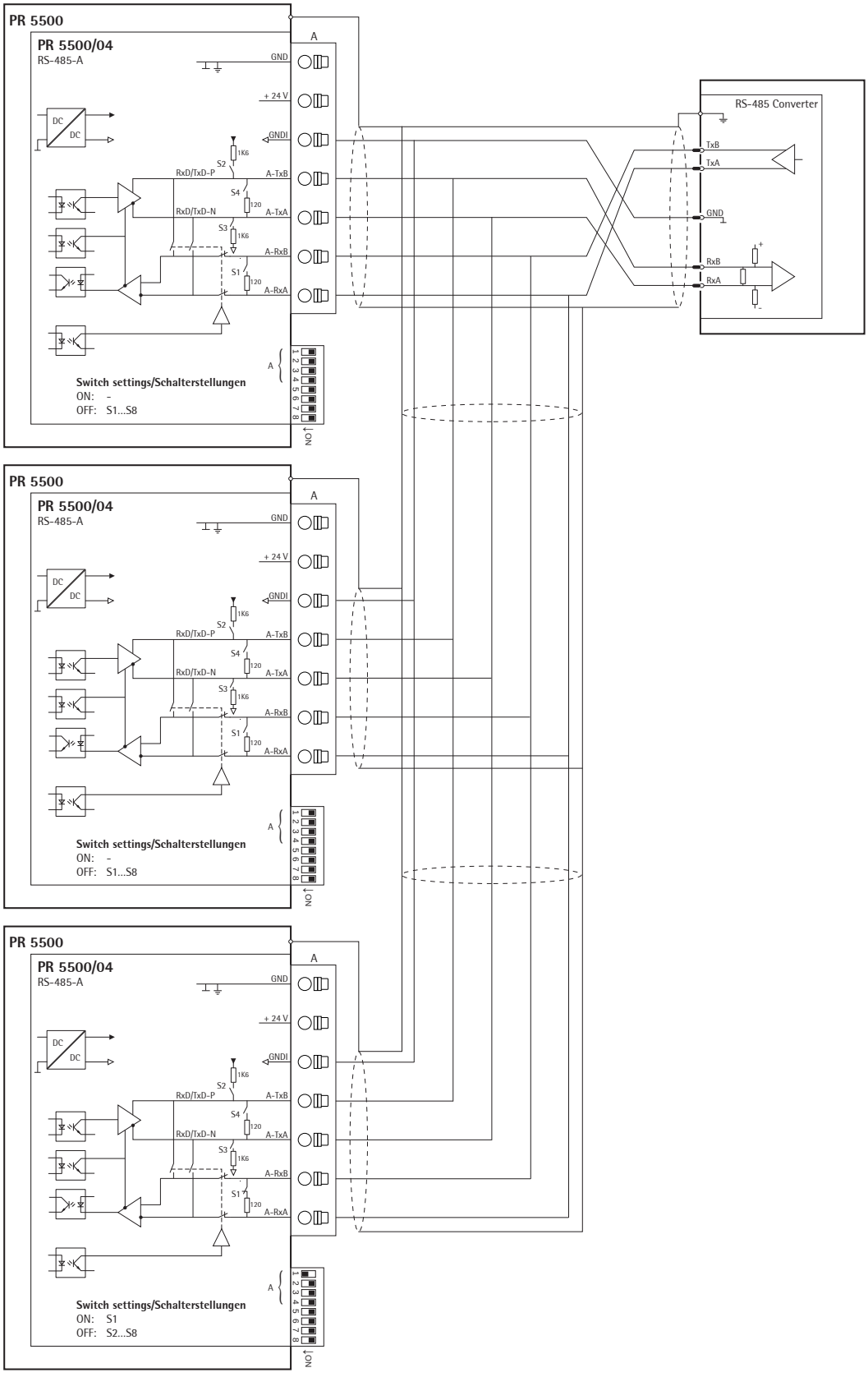
Configuration

[System setup] – [Connected devices] – [ModBus-RTU master] – [Interface] – [Option-1 RS-485-A]

4.4.1.3 Connecting several PR 5500 Devices to a PC or RS-485/RS-232 Converter

Connection for the EW Com protocol.

Example



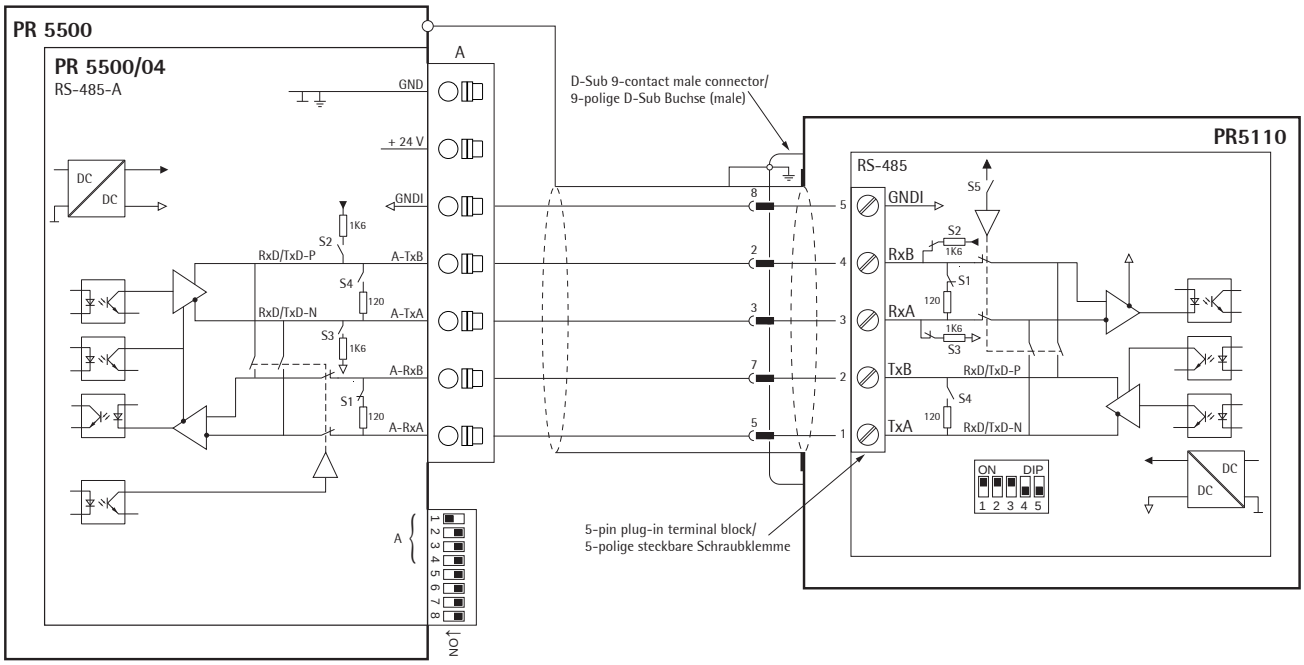
Configuration

[System setup] – [Connected devices] – [PC via EW Com] – [Interface] – [Option-1 RS-485-A]

4.4.1.4 Connecting a PR 5110 Remote Display via RS-485

Connection via the RS-485 interface, 4-wire transmission, point-to-point, full duplex (simultaneous sending and receiving possible) with the PR 5110 remote display.

Example



PR 5500 Switch settings

ON: S1

OFF: S2, S3, S4

PR 5110 Switch settings

ON: S1, S2, S3

OFF: S4, S5

PR 5500 Configuration

[System setup] – [Connected devices] – [Remote display] – [Interface] – [Option-1 RS-485-A]

PR 5110 Configuration

Setup – oP 10 – LInE – rS485

Setup – oP 12 – toKEn – oFF

Setup – oP 13 – SEndModE – SEnd

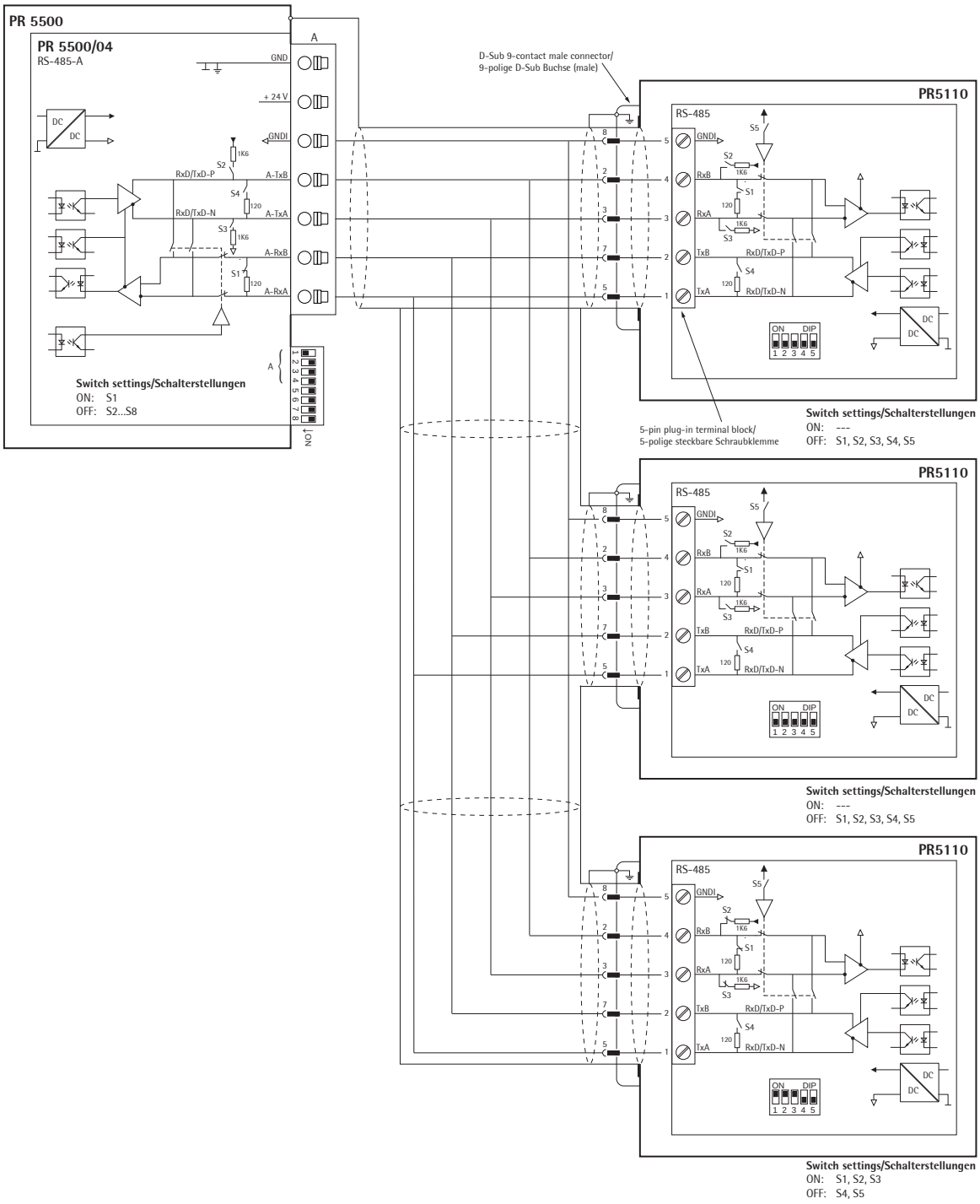
Setup – oP 14 – WEIGHt – FoLLoW

Setup – oP 15 – WPKEY – SELECt

4.4.1.5 Connecting multiple PR 5110 Remote Displays via RS-485

Connection of several remote displays via the RS-485 interface, 4-wire, full-duplex (simultaneous sending and receiving possible).

Example



PR 5500 Configuration

[System setup] – [Connected devices] – [Remote display] – [Interface] – [Option-1 RS-485-A]

PR 5110 Configuration

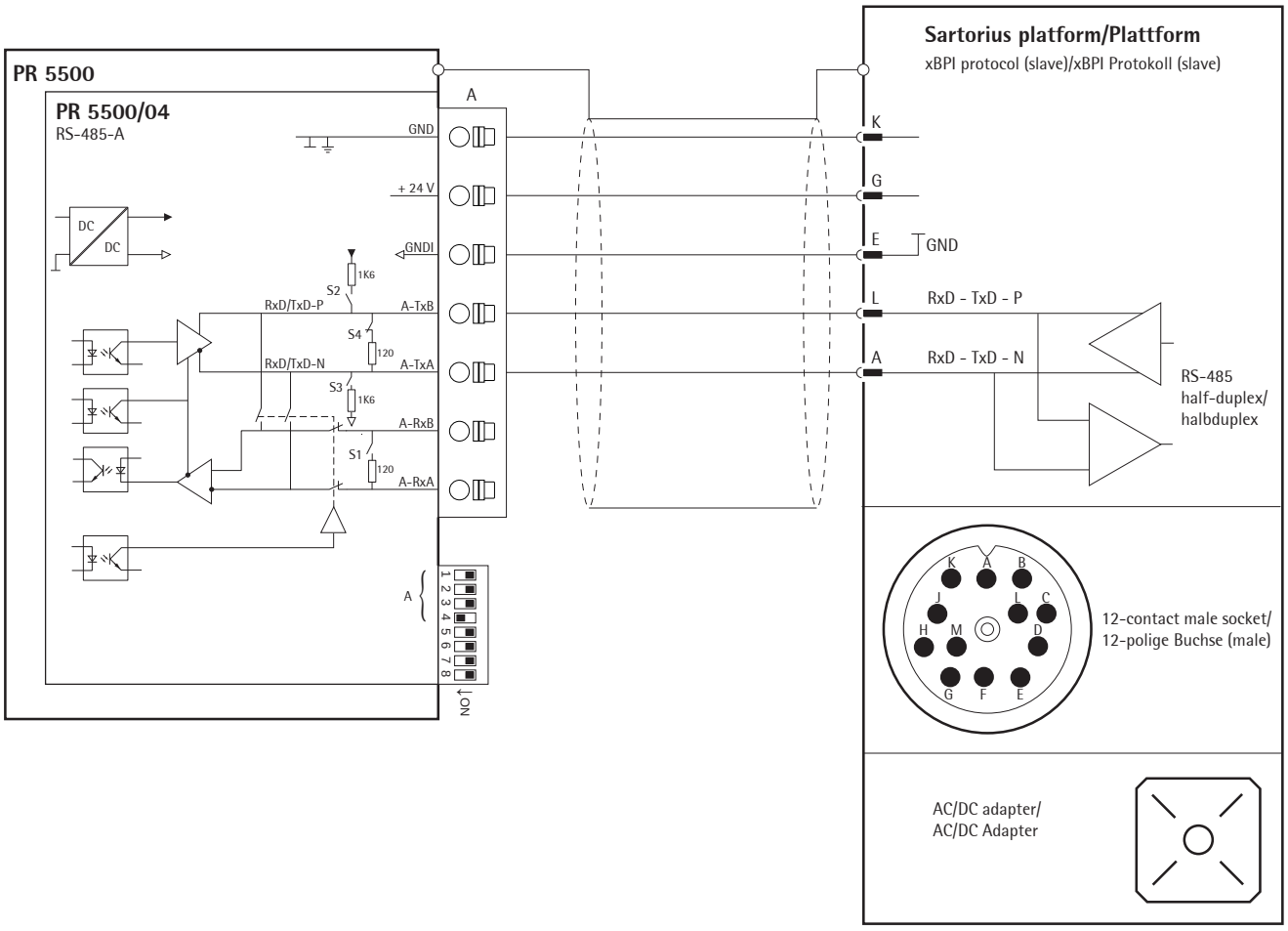
Setup – oP 10 – LInE – rS485
Setup – oP 12 – toKEn – oFF
Setup – oP 13 – SEndModE – SEnd
Setup – oP 14 – WEIGHt – FoLLoW
Setup – oP 15 – WPKEY – SELECt

4.4.1.6 Connecting the IS Platform via RS-485 (2-wire)

A platform using an xBPI or SBI protocol can be connected via the RS-485 interface.

Note	Only one platform can be supplied with power from the PR 5500 and the weighing electronics board PR 5500/10 must not be connected.

Example



Switch settings

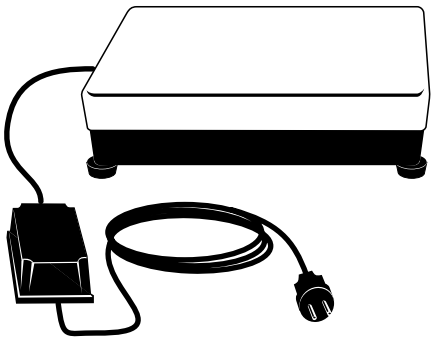
ON: S2, S3, S4

OFF: S1

Configuration

[System Setup] – [Weighing points] – [Weighing point A]: [xBPI scale]

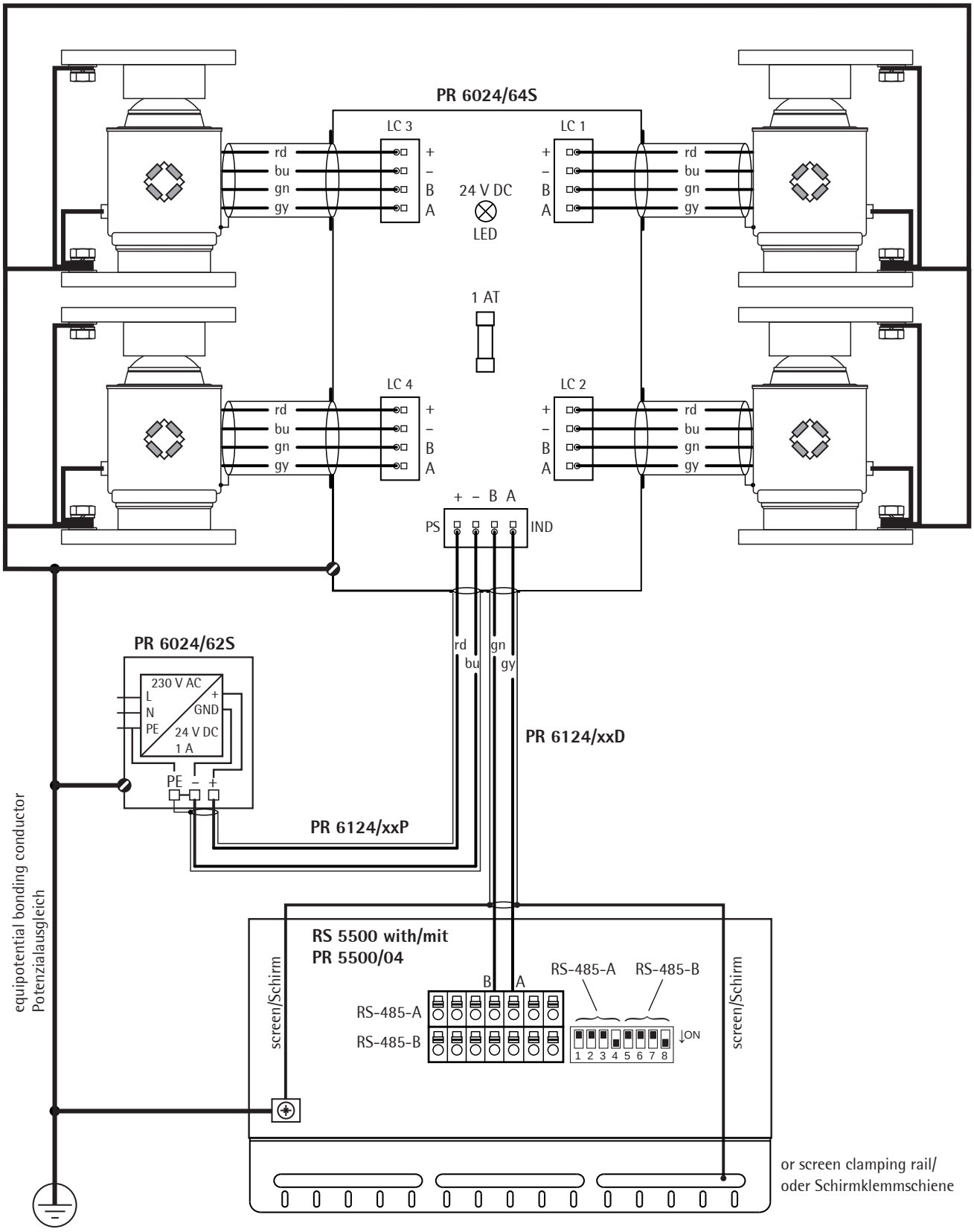
[Interface]: [Option-x RS-485-A]



Note	For more information, see the platform manual.

4.4.1.7 Connecting 4 Load Cells PR 6204 ‚Pendeo® Process'/PR 6224 ‚Pendeo® Truck' via RS-485

Example



Note	For more information, see the load cell and junction box manuals.

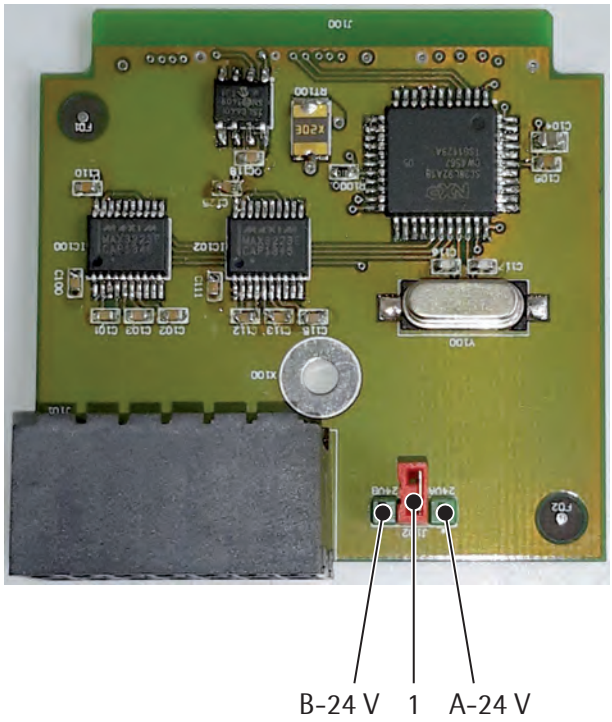
4.4.2 PR 5500/32 2x RS-232 Interface

The plug-in card contains two channels. One channel can be used for connecting **one** IS platform without an external power supply. The jumper (1) must then be plugged onto A-24 V or B-24V. When an IS platform is connected without an external power supply, no analog weighing electronics board or no load cells may be installed in the device.

The RS-232 interface can be selected and configured in the Setup menu.

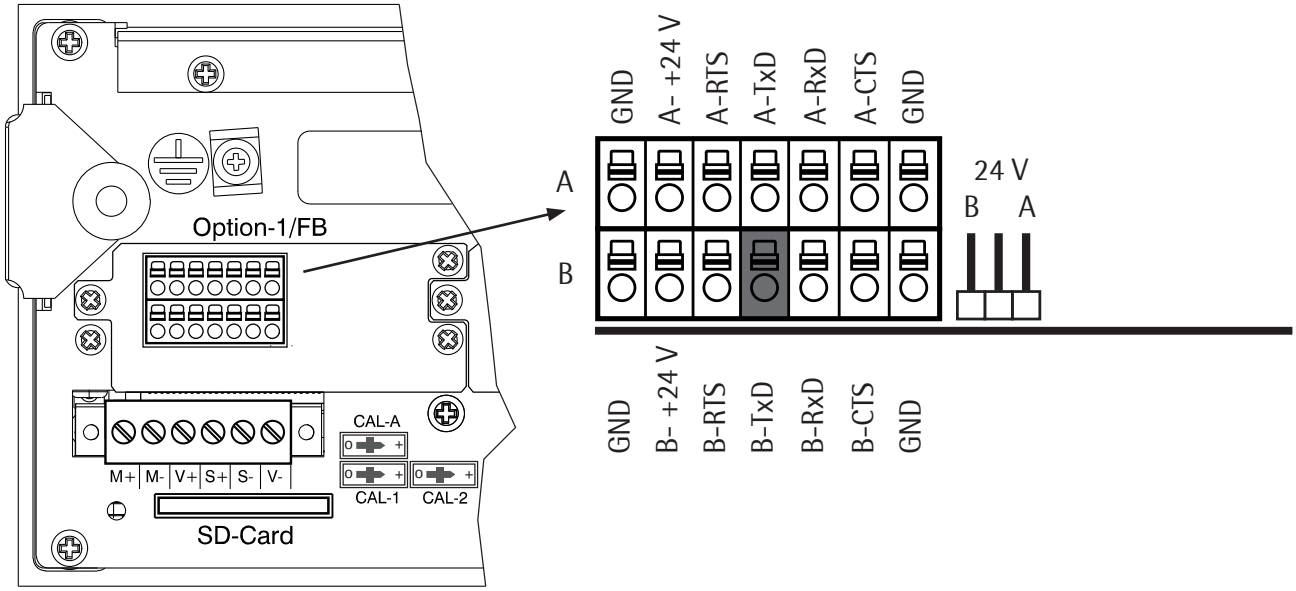
The card is inserted in the Option 1 and/or Option 2 slot.

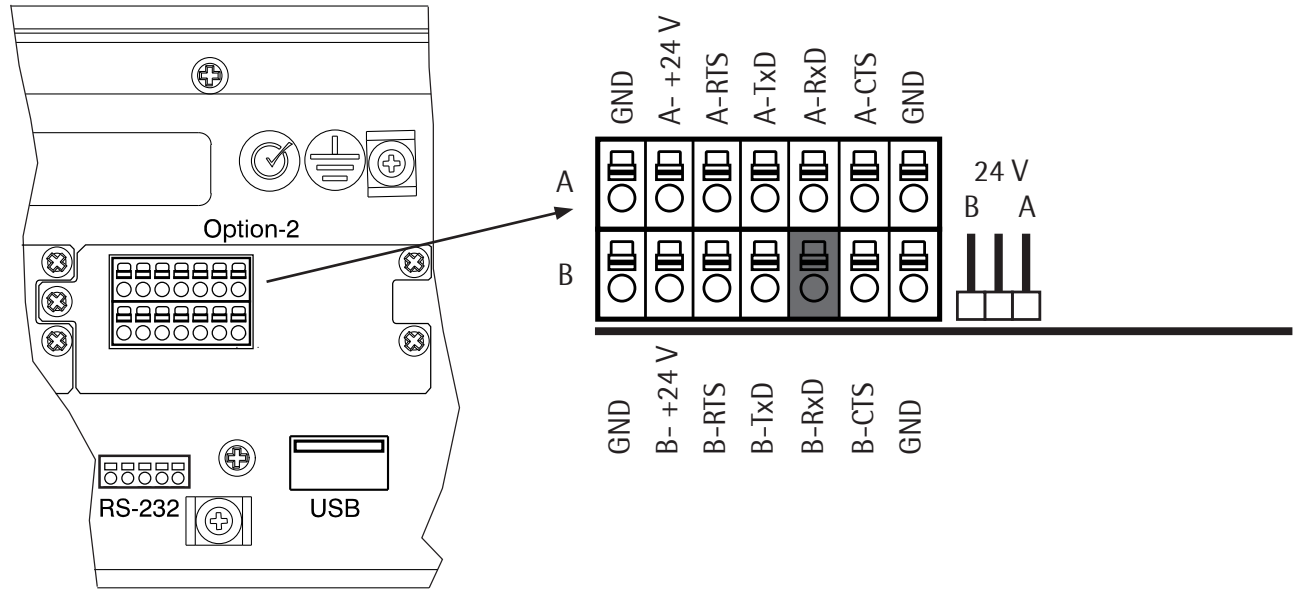
A max. of 2 PR 5500/32 cards can be installed!



Intern. connection	Contact strip
Extern. connection	2x terminal, 7-pin
Number of channels	2
Type	RS-232, full duplex
Transmission rate	300...115K2 Bit/sec
Parity	None, odd, even
Data bits	7/8 bit
Input signal level	Logic 1 (high) - 3... - 15 V Logic 0 (low) + 3... + 15 V
Output signal level	Logic 1 (high) - 5 V... - 15 V Logic 0 (low) + 5 V... + 15 V
Number of signals	Input: RxD, CTS Output TxD, RTS
Potential isolation	none
Cable gauge	max. 1.5 mm^2
Cable length	max. 15 m
Cable type	Twisted pair, screened (e.g. LifYCY 3x2x0.20), 1 pair of wires for ground (GND).
Power supply for IS platform	switchable to channel A or B
Dimensions (LxWxH)	50x45x18 mm
Weight	Approx. 35 g

PR 5500/32 2x RS-232 Interface



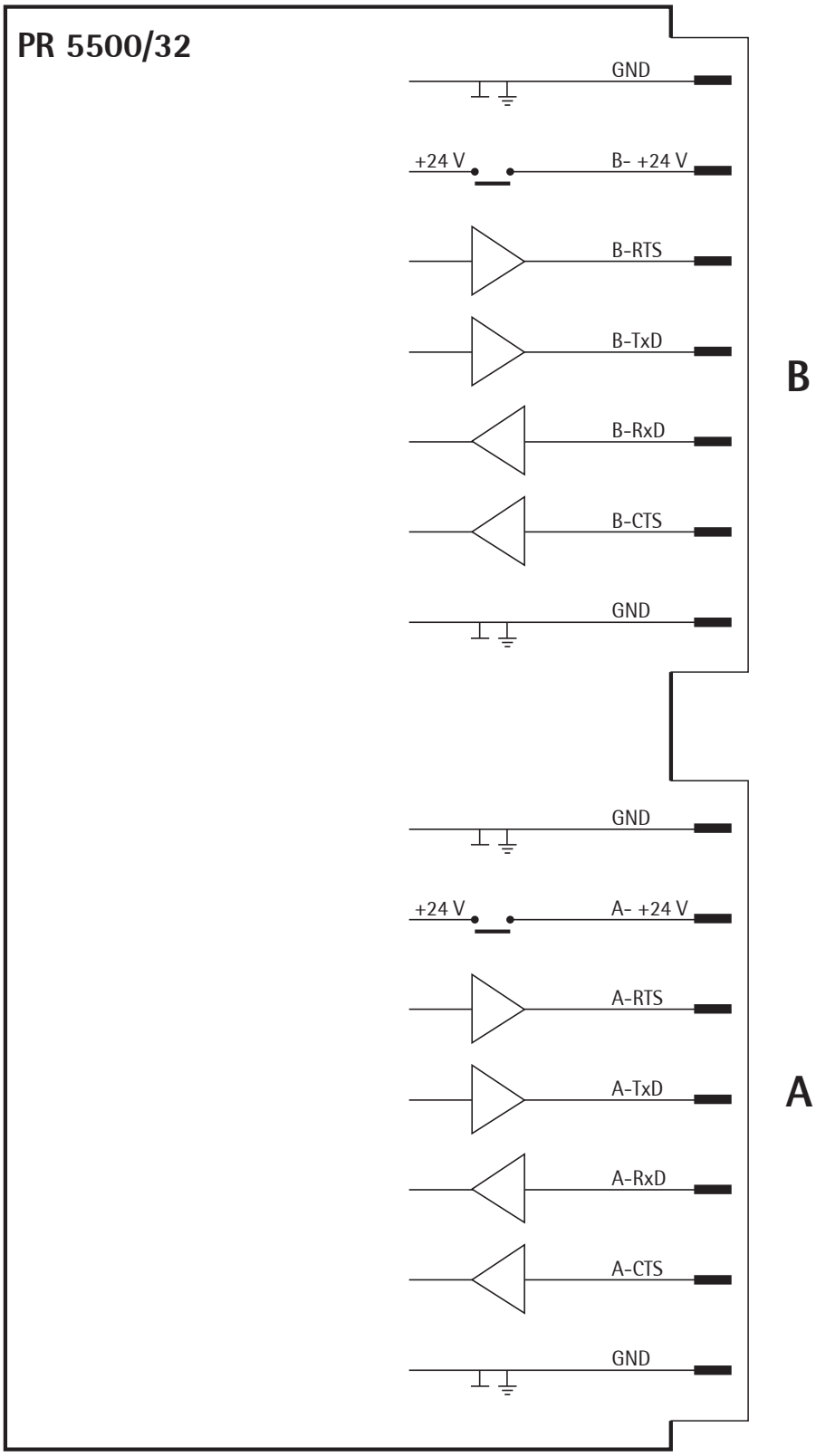


Coding of Option-1/Option-2

- ▶ Terminal block: Insert the coding pin into the slot of the position marked in gray.
- ▶ Terminal: Remove (pinch off) the corresponding coding ridge.

Note	The terminal coding is described in Chapter 13.5.

Block diagram 2x RS-232



4.4.2.1 Connecting peripheral devices via RS-232

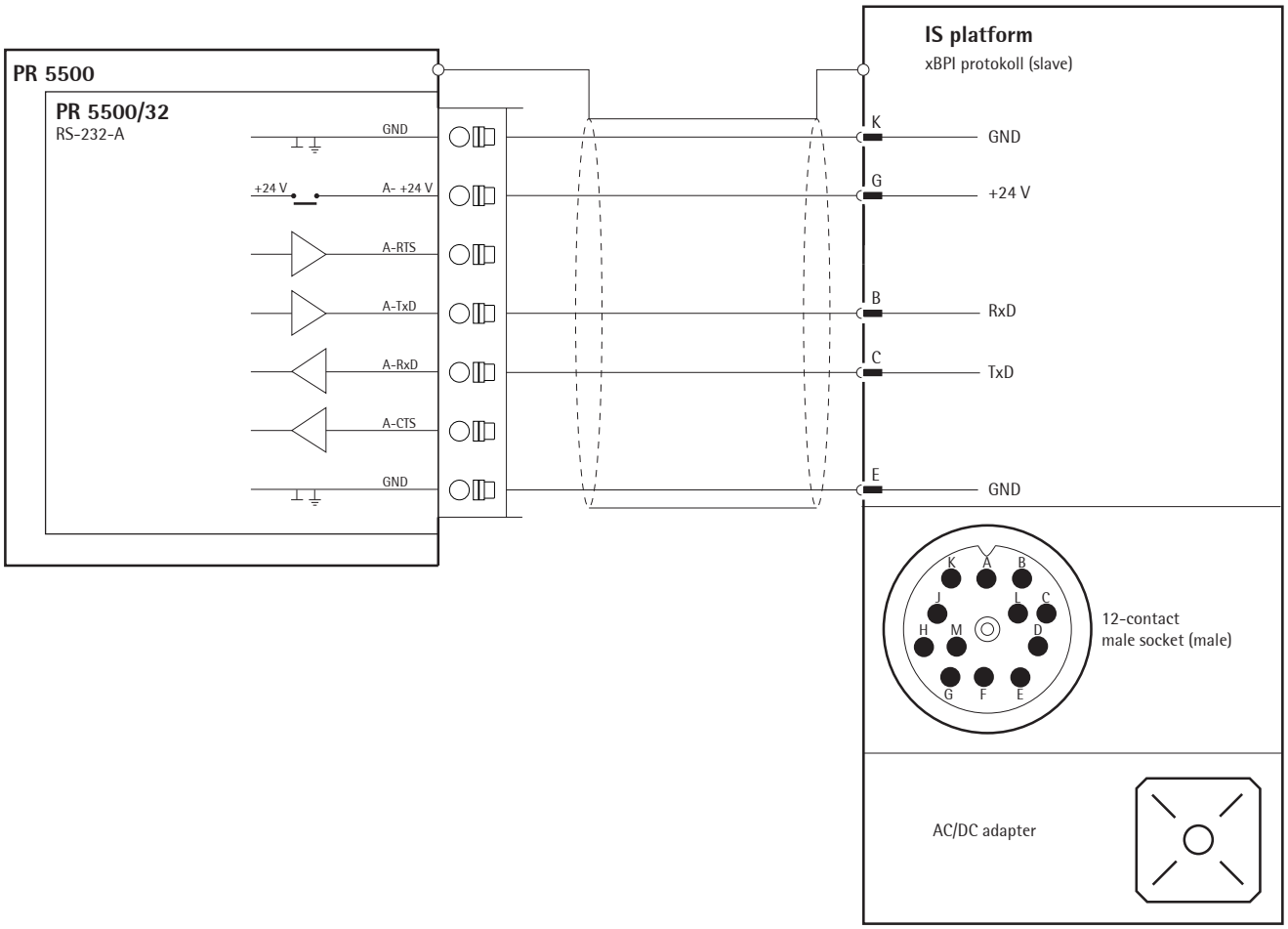
- Connecting the PR 5110 Remote Display via RS-232 (see built-in RS-232, Chapter 4.3.5.1)
- Connecting a YDP14IS Ticket Printer via RS-232 (see built-in RS-232, Chapter 4.3.5.2)
- Connecting a Mettler-Scale via RS-232 (see built-in RS-232, Chapter 4.3.5.5)

4.4.2.2 Connecting the IS Platform via RS-232

Using these option cards, you can connect an IS platform using the xBPI or SBI protocol.

Note	Only one platform can be supplied with power from the PR 5500 and no load cells may be connected to the weighing electronics board PR 5500/10.

Example

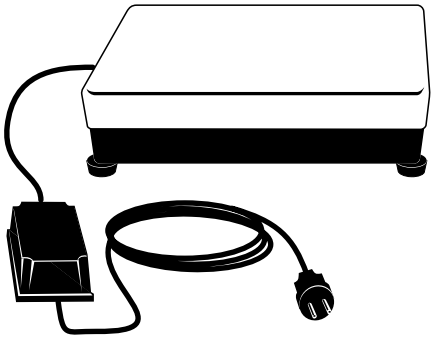


Jumper setting

Channel A A- +24 V

Configuration

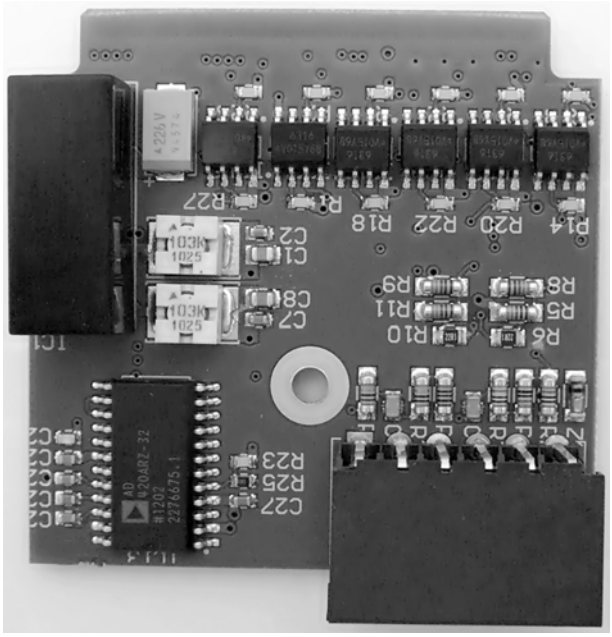
[System Setup] – [Weighing points] – [Weighing point A]: [xBPI scale]
[Interface]: [Option-x RS-232-A]

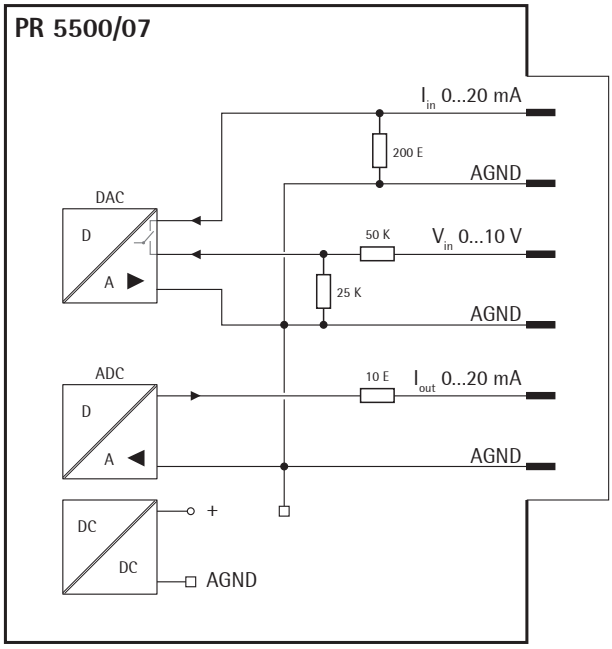


Note	For more information, see the platform manual.

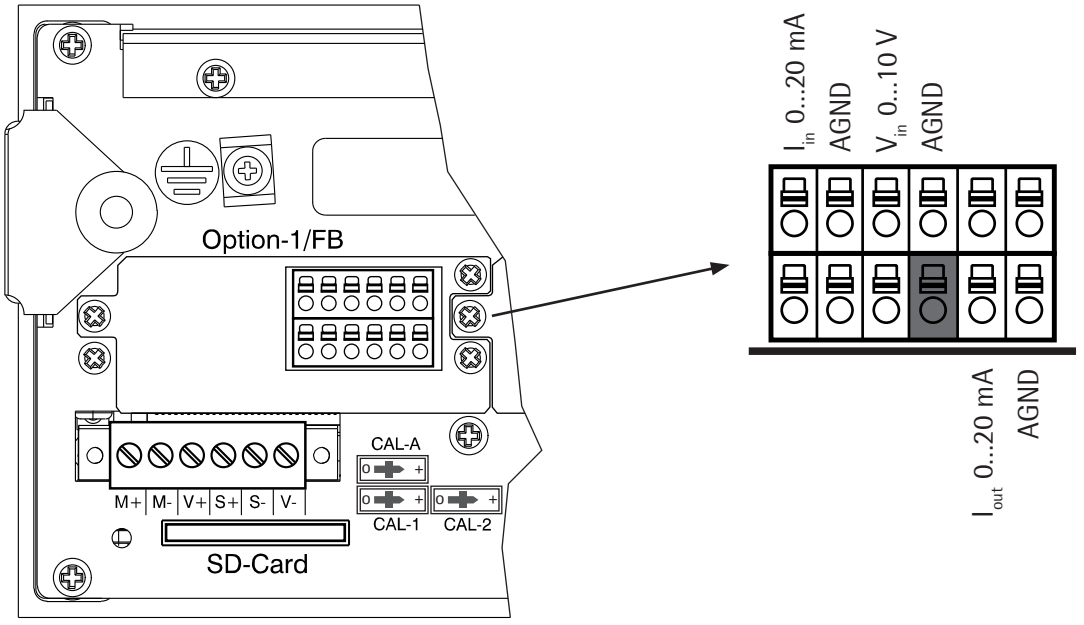
4.4.3 PR 5500/07 Analog Inputs and Outputs

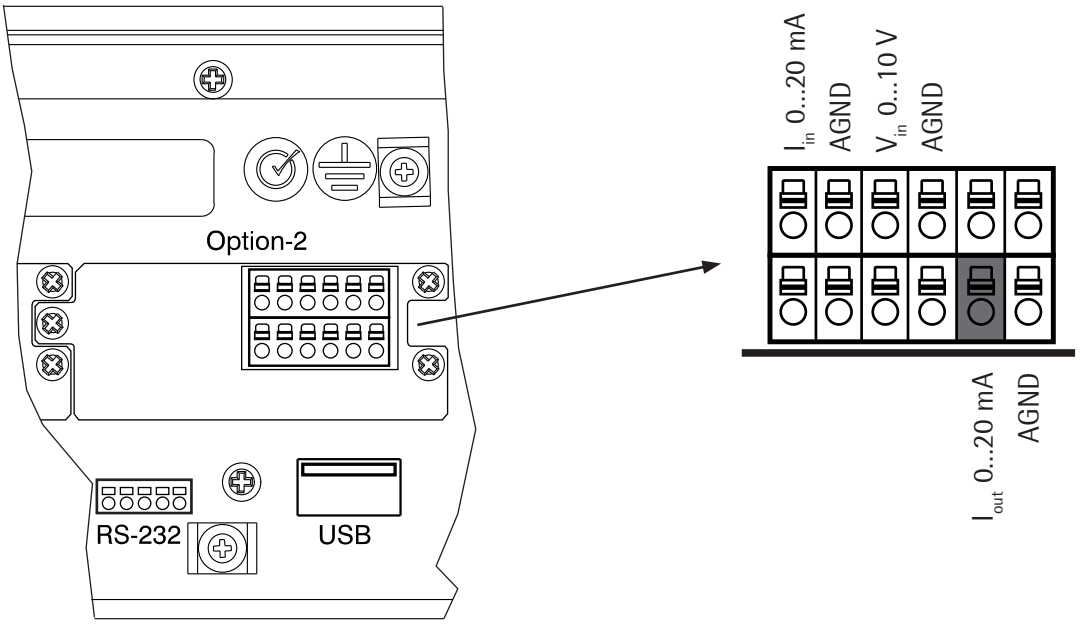
The plug-in card for the available analog channels has 1 analog output (active) and 1 analog input.
The card is inserted in the Option 1/FB and/or Option 2 slot.
A max. of 2 PR 5500/07 cards can be installed!





Output	1 active current output: 0/4 to 20 mA (max. 24 mA), 10 V output voltage via an external 500 Ω resistor
Output function	Gross/Net/Display follows or application-dependent
Output range	0/4 to 20 mA, configurable
Output resolution	Internal 16 Bits = 65536 counts, resolution of 20,000 @ 20 mA
Linearity error output	@ 0 - 20 mA: 0.04 % @ 4 - 20 mA: 0.02 %
Temperature error output	<100 ppm/K
Zero point error output	0.05 %
Max. error output	<0.1 %
Load	max. 0 to 500 Ω
Potential isolation	Yes
Cable	<150 m screened
Input	1 current or voltage input
Input range	0...10 V or 0...20 mA
Input resistance	100 kΩ for 10 V measuring input 200 Ω for 20 mA measuring input
Input resolution	internal 14 Bits binary = 20,000 counts, @ e.g. 0 to 20 mA/0 to 10 V
Max. error input	0.2 %
Linearity error input	<0.02 %
Temperature error input	<75 ppm/K
Reserve input	±15%, i.e. –1.5 V to +11.5 V
Potenzialtrennung	Yes, joint inputs and outputs
Cable	<150 m screened
Intern. connection	Contact strip
Extern. connection	2x terminal, 6-pin
Dimens. (LxWxH)	50x45x18 mm
Weight	Approx. 40 g





Coding of Option-1/Option-2

- ▶ Terminal block: Insert the coding pin into the slot of the position marked in gray.
- ▶ Terminal: Remove (pinch off) the corresponding coding ridge.

Note	The terminal coding is described in Chapter 13.5.

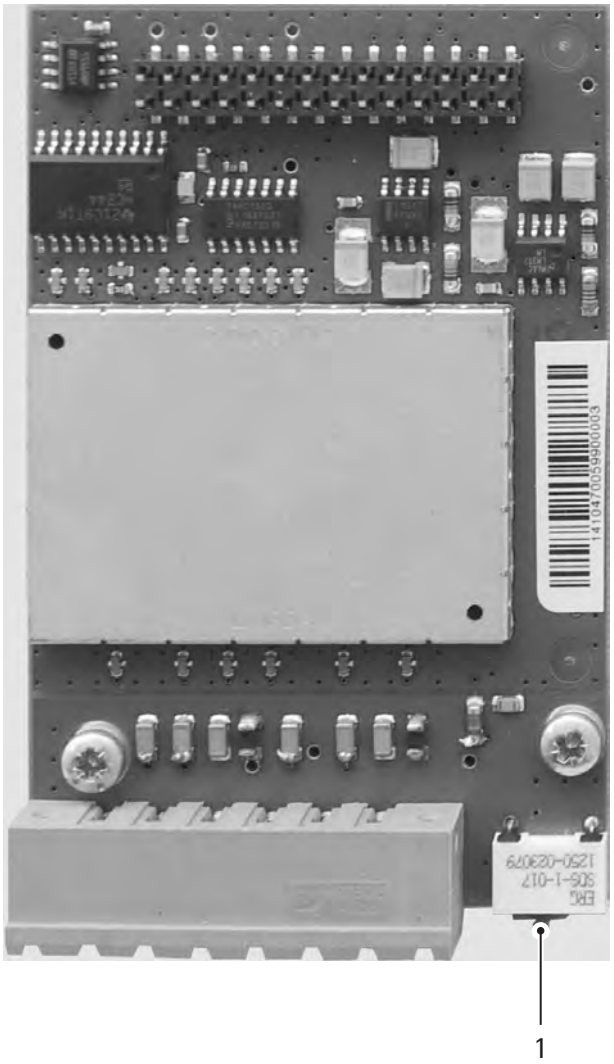
4.4.4 PR 5500/10 Weighing Electronics Board

4.4.4.1 Specifications

The weighing electronics board is inserted in the WP A slot.

The CAL switch A (1) are located on the board.

Adjustment data and parameters are saved to the EAROM (non-volatile memory) of the weighing electronics board.



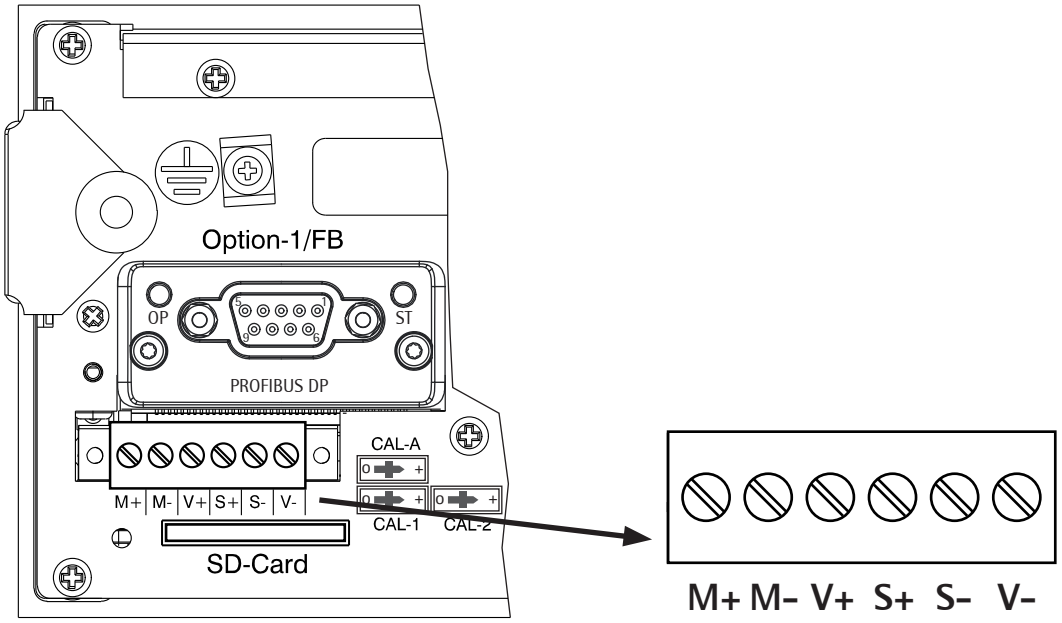
Internal connection	Pin strip, 28-pin
Load cell supply	12 V DC, symmetrical to zero (U = ±6 V DC, I_{max} = 160 mA)
Capacity (number of load cells)	≥75 Ω, corresponding to 8 load cells with 650 Ω or 4 load cells with 350 Ω
Sense input	±6 V DC, with monitoring
Measurem. input	0 to 36 mV DC, symmetrical to zero
Dead load suppression	max. 36 mV DC (dead load + range)
Sensitivity, min. signal	according to OIML R76 Class III
Min. measuring signal	10,000 d: 0.2 mV/V at 12 V excitation [0.24µV/d]
Max. resolution	7.5 million counts internal
Linearity	<0.003 %
Temperature coefficient zero (Tk_0)	<0.05 µV/K RTI, ≤0.004 %/10K @ 1 mV/V
Temperature coefficient Vst (Tk_{span})	<±4 ppm/K
Cable length	max. 300 m
Cable type	6-wire with screen for total cable and screen for measurement cables, e.g. PR 6135/..
Extern. connection	7-pin plug (male), screen connection on housing and on GNDA
Dimens. (LxWxH)	85x50x25 mm
Weight	approx. 60 g

4.4.4.2 General Information

There is one connection on the back of the housing for analog load cells or analog platforms (e.g. CAPP series) depending on the model. The supply voltage is protected against short circuit and overload.

Do not shorten the load cell cable. Connect the prepared cable end and roll up the remaining cable.

⚠ Caution



Terminal block	Connection	Description
+ M	+ Meas.	+ Signal/LC output
– M	– Meas.	– Signal/LC output
+ V	+ Supply	+ Exitation
+ S	+ Sense	+ Sense
– S	– Sense	– Sense
– V	– Supply	– Exitation

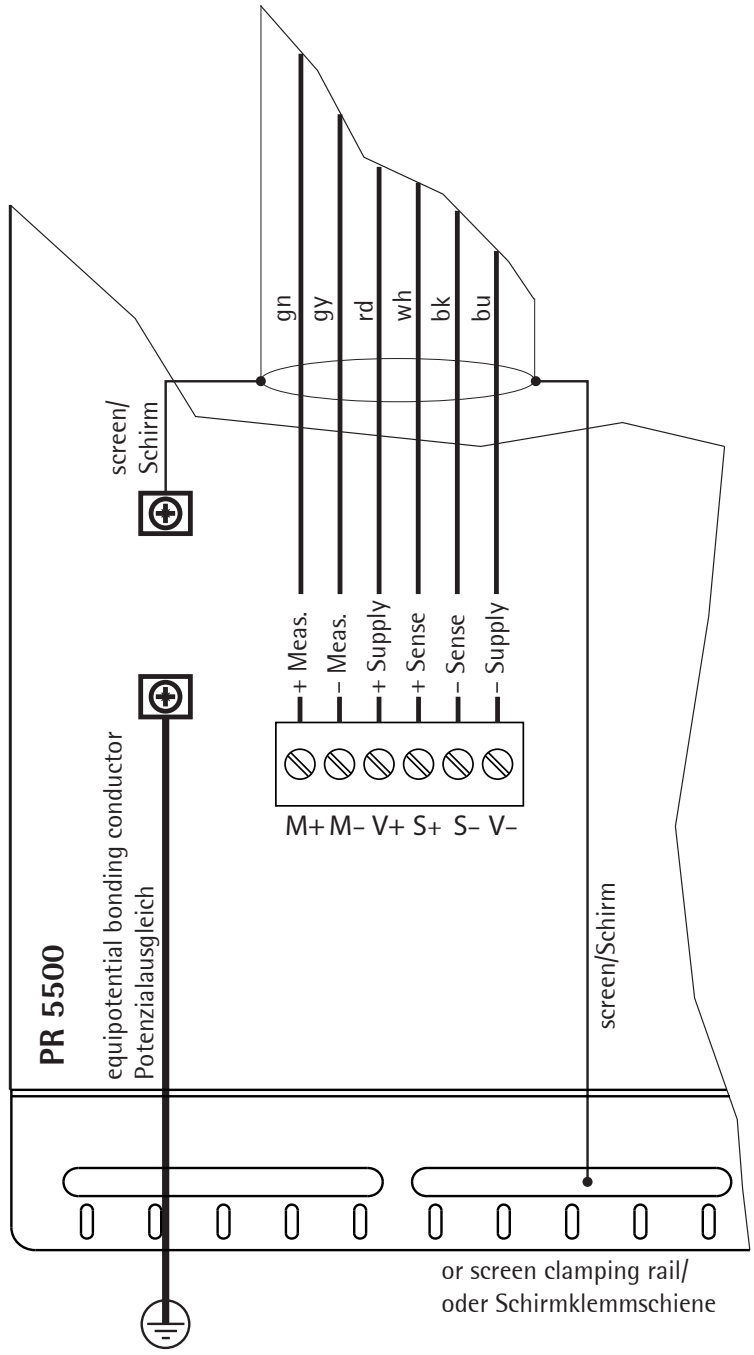
4.4.4.3 Connecting a Load Cell with a 4-Wire Cable

⚠ Caution

The cable colors shown here are valid for Sartorius Intec load cells.

Color code:

bk	=	Black	rd	=	Red
bu	=	Blue	wh	=	White
gn	=	Green	ye	=	Yellow
gy	=	Gray			



Place the following links directly on the terminal block:

❶ between + Supply (+V) and + Sense (+S)

❷ between – Supply (-V) and – Sense (-S)

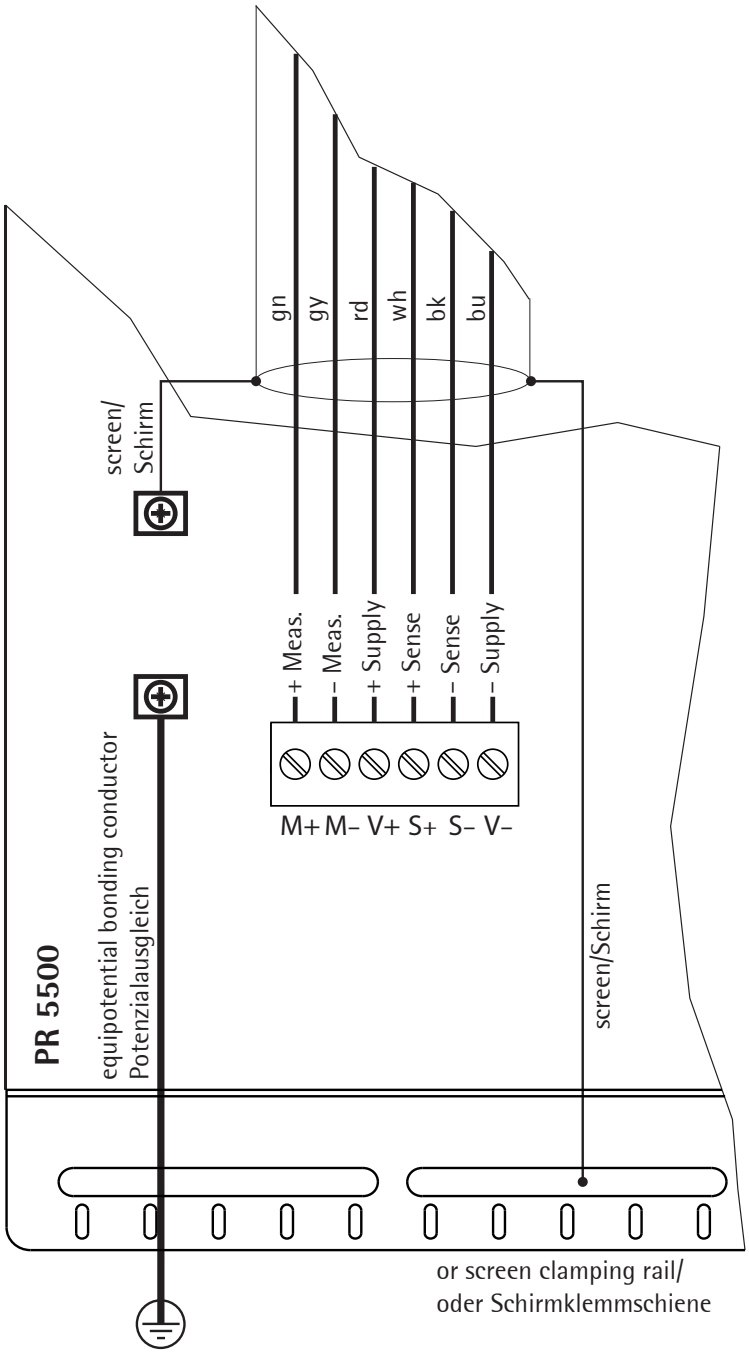
4.4.4.4 Connecting a Load Cell with a 6-Wire Cable

Caution

The cable colors shown here are valid for Sartorius Intec load cells.

Color code:

bk	=	Black	rd	=	Red
bu	=	Blue	wh	=	White
gn	=	Green	ye	=	Yellow
gy	=	Gray			



4.4.4.5 Connecting up to 8 Load Cells (650 Ω) using a 6-Wire Connecting Cable

Connections are made via junction box PR 6130/.. using connecting cable PR 6135.

The cable colors shown above are valid for Sartorius Intec load cells and connecting cable PR 6135.

Color code:

⚠ **Caution**

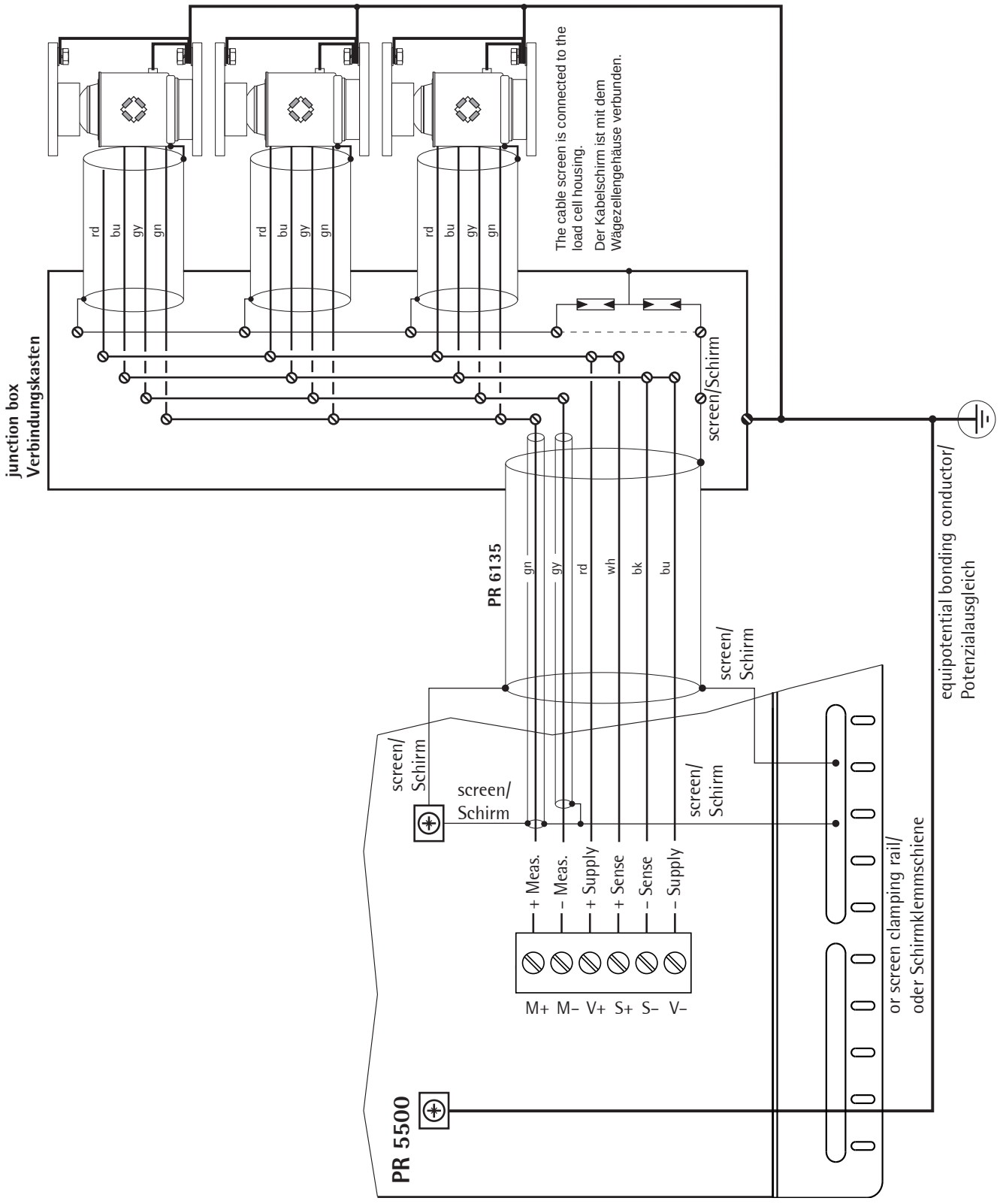
bk	=	Black	rd	=	Red
bu	=	Blue	wh	=	White
gn	=	Green	ye	=	Yellow
gy	=	Gray			

Recommendation

- Install cable in steel pipe connected to a ground potential.
- The distance between the measuring cables and the power cables should be at least 1 m.

Load cell supply circuit

- Load resistance of load cell circuit ≥75 Ω, e.g. 8 load cells of 650 Ω each
- Supply voltage is 12 V DC, for further data, see Chapter 12.3.


junction box
Verbindungskasten
rd
bu
gy
gn
The cable screen is connected to the load cell housing.
Der Kabelschirm ist mit dem Wägezellengehäuse verbunden.
screen/Schirm
PR 6135
gn
gy
rd
wh
bk
bu
screen/
Schirm
screen/
Schirm
screen/
Schirm
screen/
Schirm
+ Meas.
– Meas.
+ Supply
+ Sense
– Sense
– Supply
M+ M– V+ S+ S– V–
PR 5500
equipotential bonding conductor/
Potenzialausgleich
or screen clamping rail/
oder Schirmklemmschiene

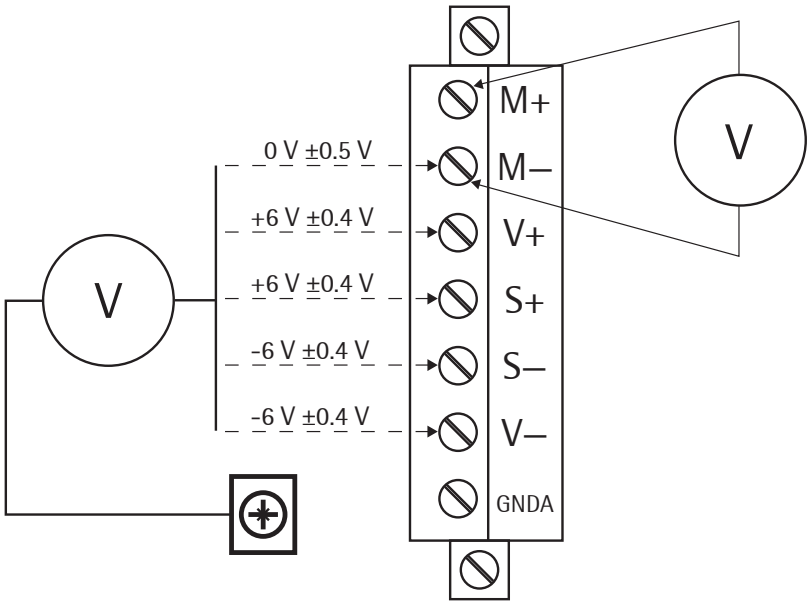
4.4.4.6 Testing the Measuring Circuit

You can perform a simple test on connected load cells using a multimeter (The internal load cell power supply does not apply to load cells supplied externally.):

Measuring voltage:

0 - 12 mV = @ LC with 1.0 mV/V

0 - 24 mV = @ LC with 2.0 mV/V



4.4.4.7 Connecting Load Cells to an External Supply

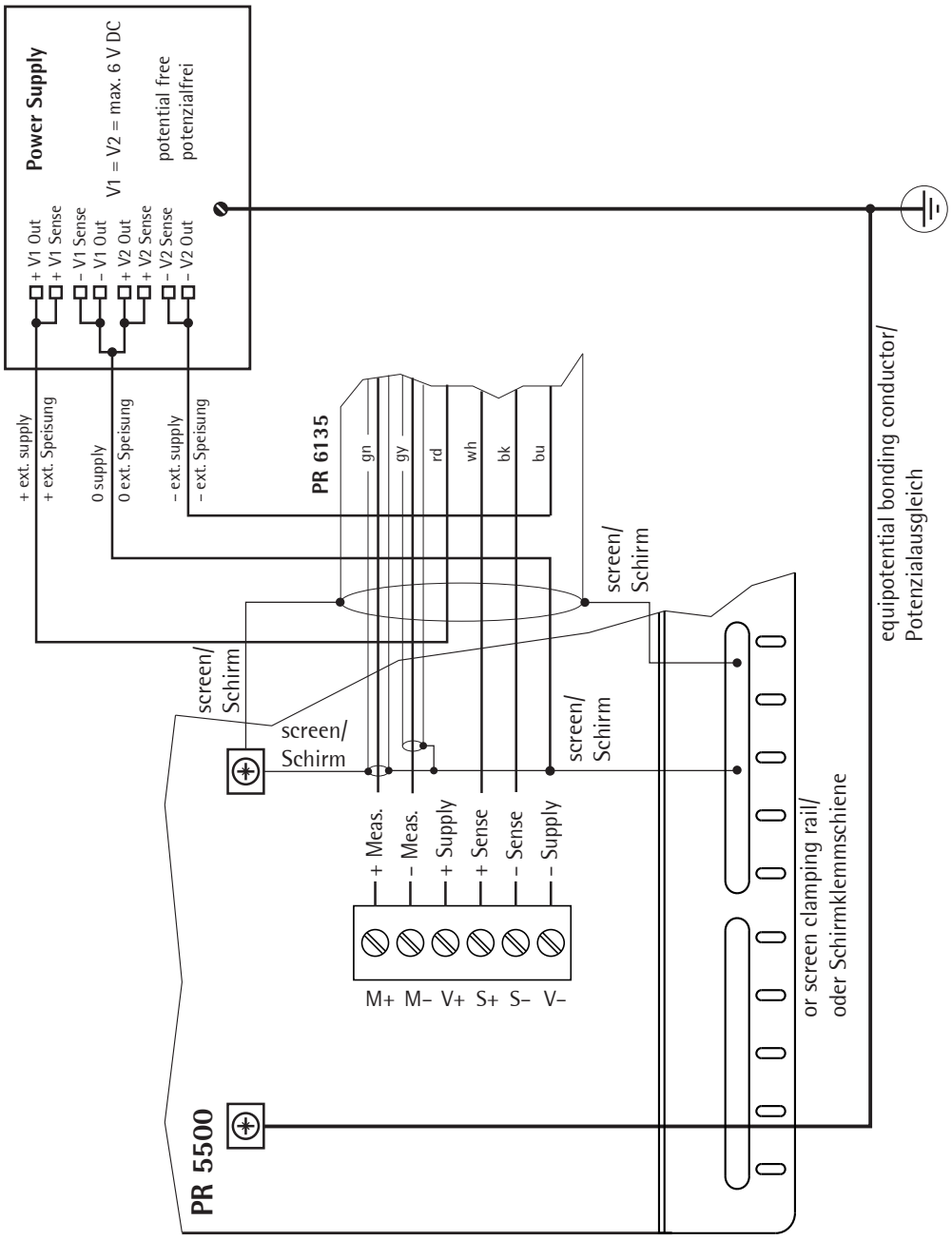
When the total resistance of the load cells is ≤75 Ω (e.g. more than 4 load cells with 350 Ω), an external load cell supply is required. In this case, the internal supply is replaced by a potential-free external supply. The center of the external supply voltage (0 ext. supply) should be connected to the housing to ensure that the voltage reacts symmetrically to 0. The internal supply is not connected!

⚠ Caution

The cable colors shown here are valid for the PR 6135 connecting cable.

Color code:

bk	=	Black	rd	=	Red
bu	=	Blue	wh	=	White
gn	=	Green	ye	=	Yellow
gy	=	Gray			



4.4.4.8 Connecting Weighing Platforms (CAP)

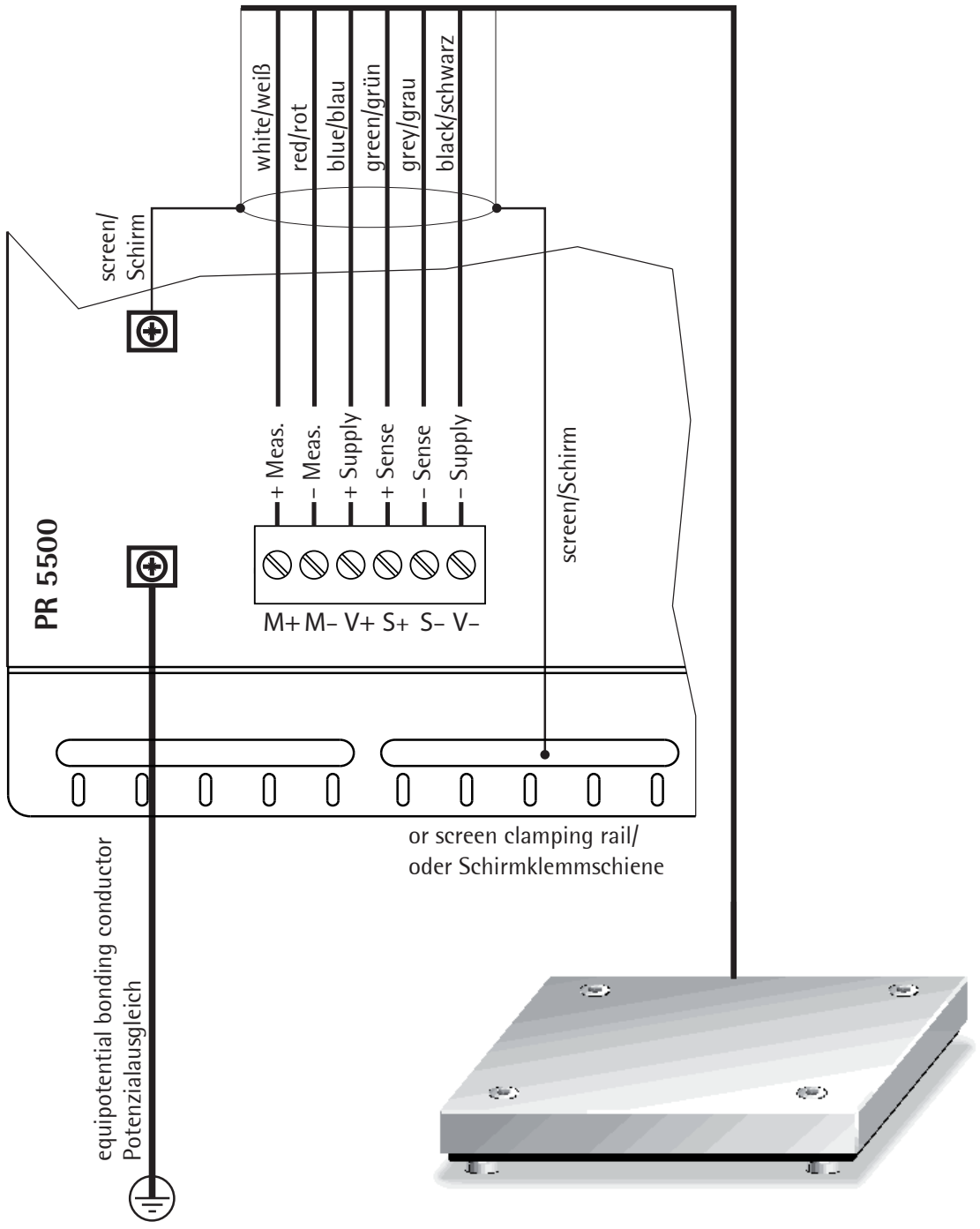
Up to 2 Combics analog platforms (CAP series) can be connected to the internal weighing electronics connections depending on the model.

The cable colors shown above are valid for a CAPP4 500 x 400 and a CAPP1 320 x 420, for example.

The assignments of cable colors are listed in the platform operating instructions.

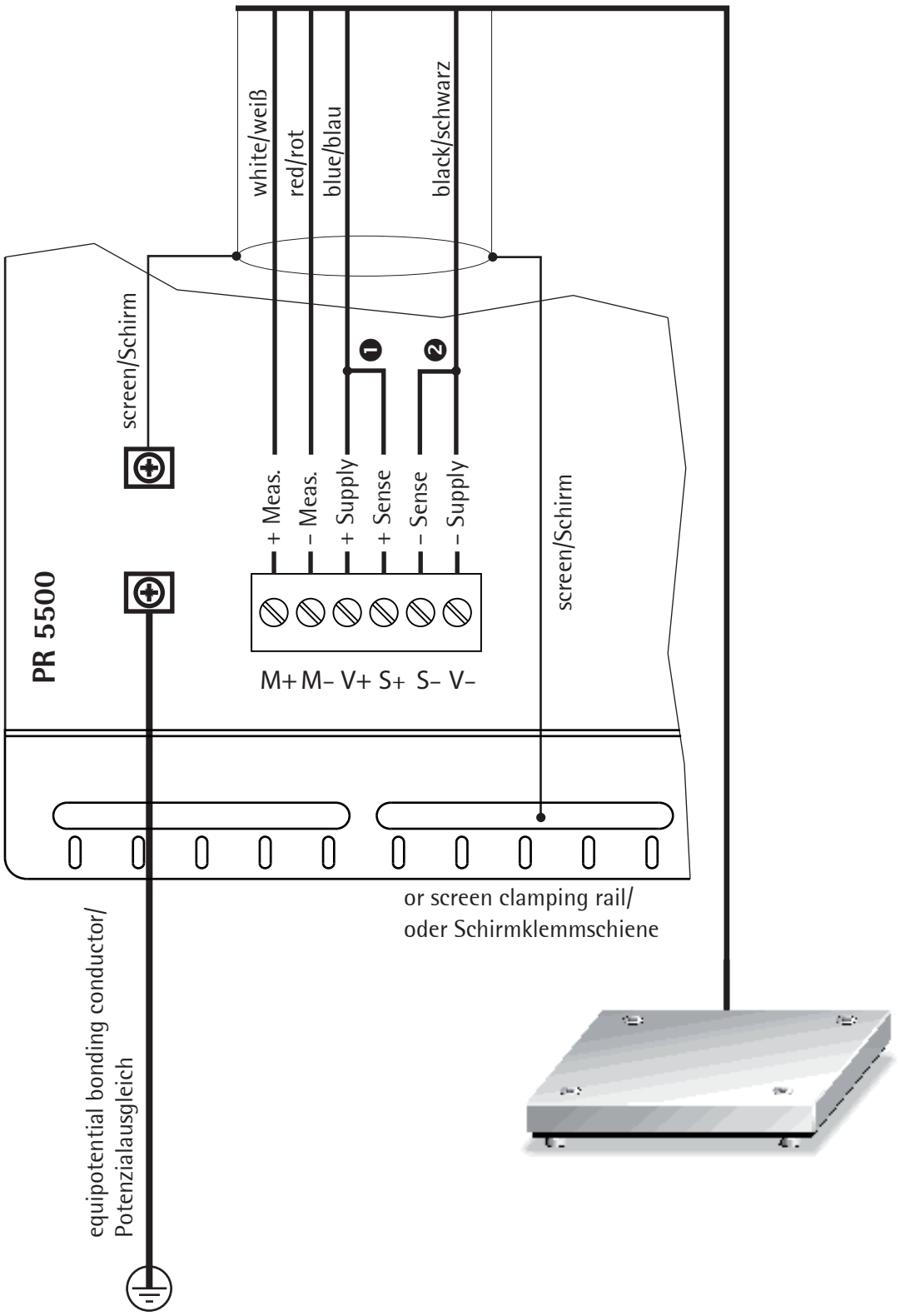
⚠ Caution

The following example shows a platform with a 6-wire connection:



Cable screens should be connected to the device earthing terminals or screen clamping rail.

The following example shows a platform with a 4-wire connection:



Cable screens should be connected to the device earthing terminals or screen clamping rail.

The following links should be set directly on the terminal block for platforms with a 4-wire connection:

❶ between + Supply (+V) and + Sense (+S)

❷ between – Supply (-V) and – Sense (-S)

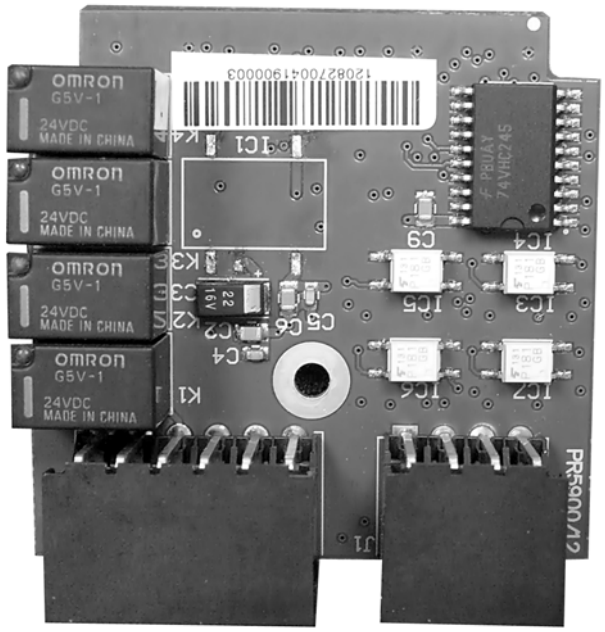
4.4.5 PR 5500/12 Digital Inputs and Outputs

The plug-in card has 4 passive opto-decoupled inputs for process control.

The plug-in card also has 4 digital outputs with potential-free two-way contacts for process control.

The card is inserted in the Option 1/FB and/or Option 2 slot.

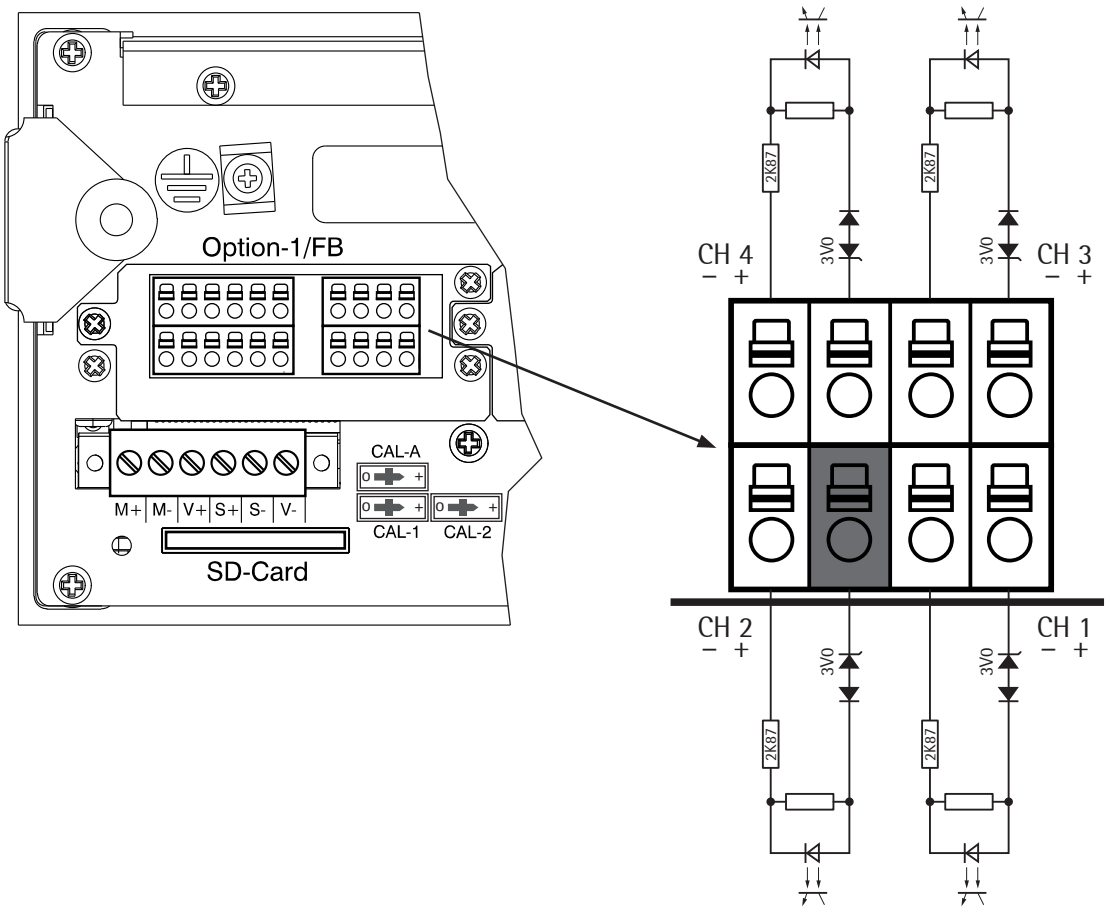
A max. of 2 PR 5500/12 plug-in cards can be installed!



Internal connection	Contact strip
Digital inputs/ outputs	4 (CH1, CH2, CH3, CH4)
Input voltage	Logic 0: 0 to 5 V DC or open Logic 1: 10 to 28 V DC Passive, external power supply required
Input current	<7 mA @ 24 V <3 mA @ 12 V Protected against incorrect polarity
Input frequency	max. 200 Hz (50% ratio)
Output	Two-way contact Max. switching voltage 30 V DC/24 V AC Max. switching current: 1 A
Switching frequency	max. 0.5 Hz
Potential isolation	Inputs: Yes, via optocoupler Outputs: Free relay two-way contact
External connection	2x terminal, 6-pin 2x terminal, 4-pin Wire gauge max. 1.5 mm^2
Cables	Screened Connect the cable screen to the device.
Cable length	max. 50 m
Dimens. (LxWxH)	60x106x22 mm
Weight	70 g

4.4.5.1 Digital Inputs (PR 5500/12)

Illustration:
terminal coding and internal circuit

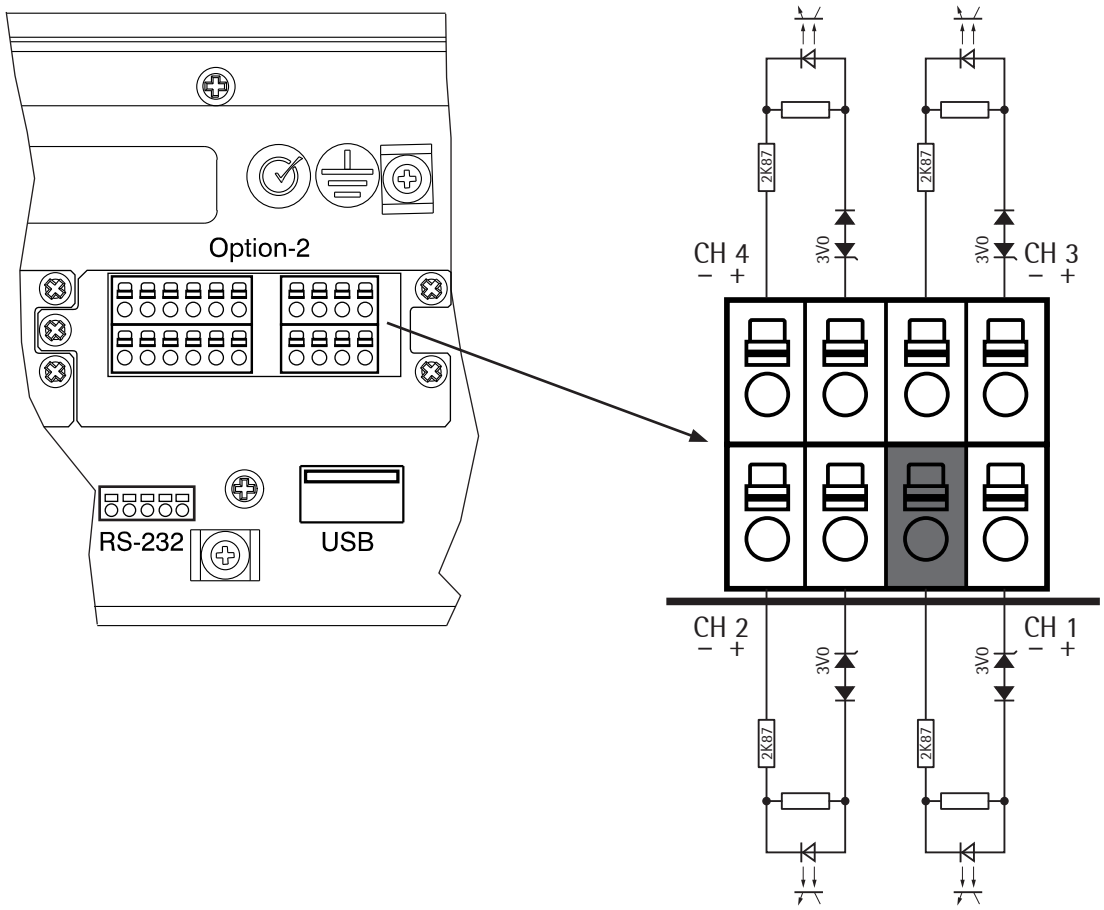


Coding of Option-1

- ▶ Terminal block: Insert the coding pin into the slot of the position marked in gray.
- ▶ Terminal: Remove (pinch off) the corresponding coding ridge.

Note	The terminal coding is described in Chapter 13.5.

Illustration:
terminal coding and internal circuit

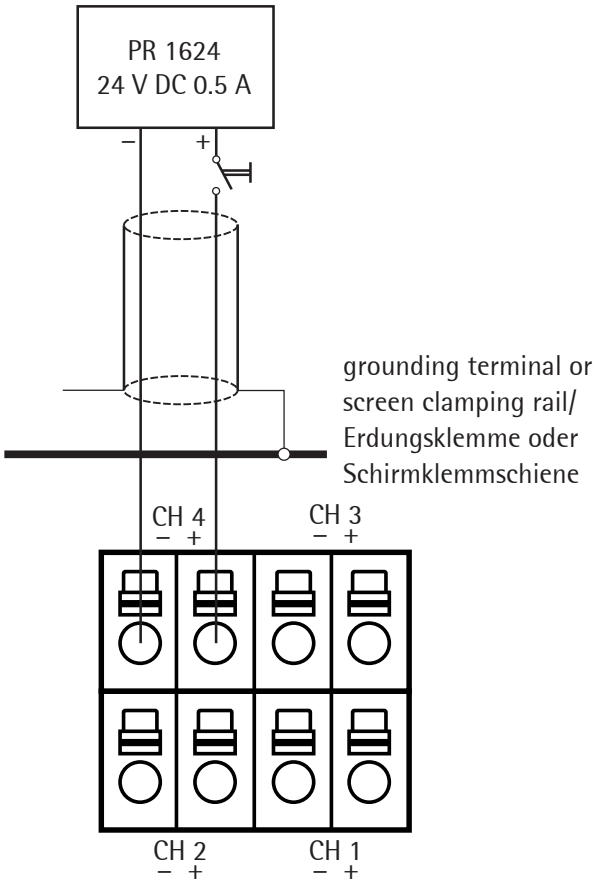


Coding of Option-2

- ▶ Terminal block: Insert the coding pin into the slot of the position marked in gray.
- ▶ Terminal: Remove (pinch off) the corresponding coding ridge.

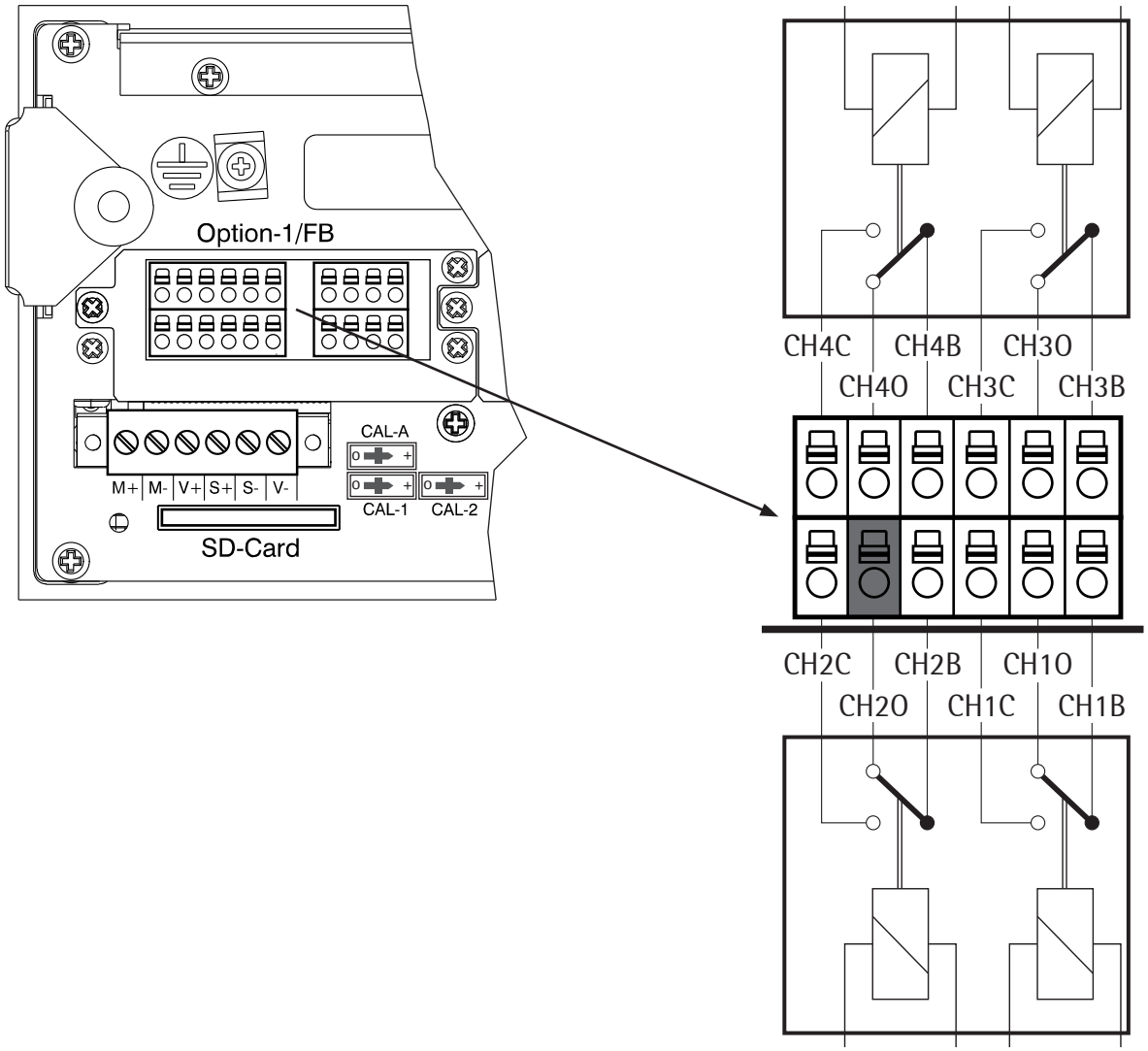
Note	The terminal coding is described in Chapter 13.5.

Connection example for PR 5500/12: Digital Inputs



4.4.5.2 Digital Outputs (PR 5500/12)

Illustration:
terminal coding and internal circuit

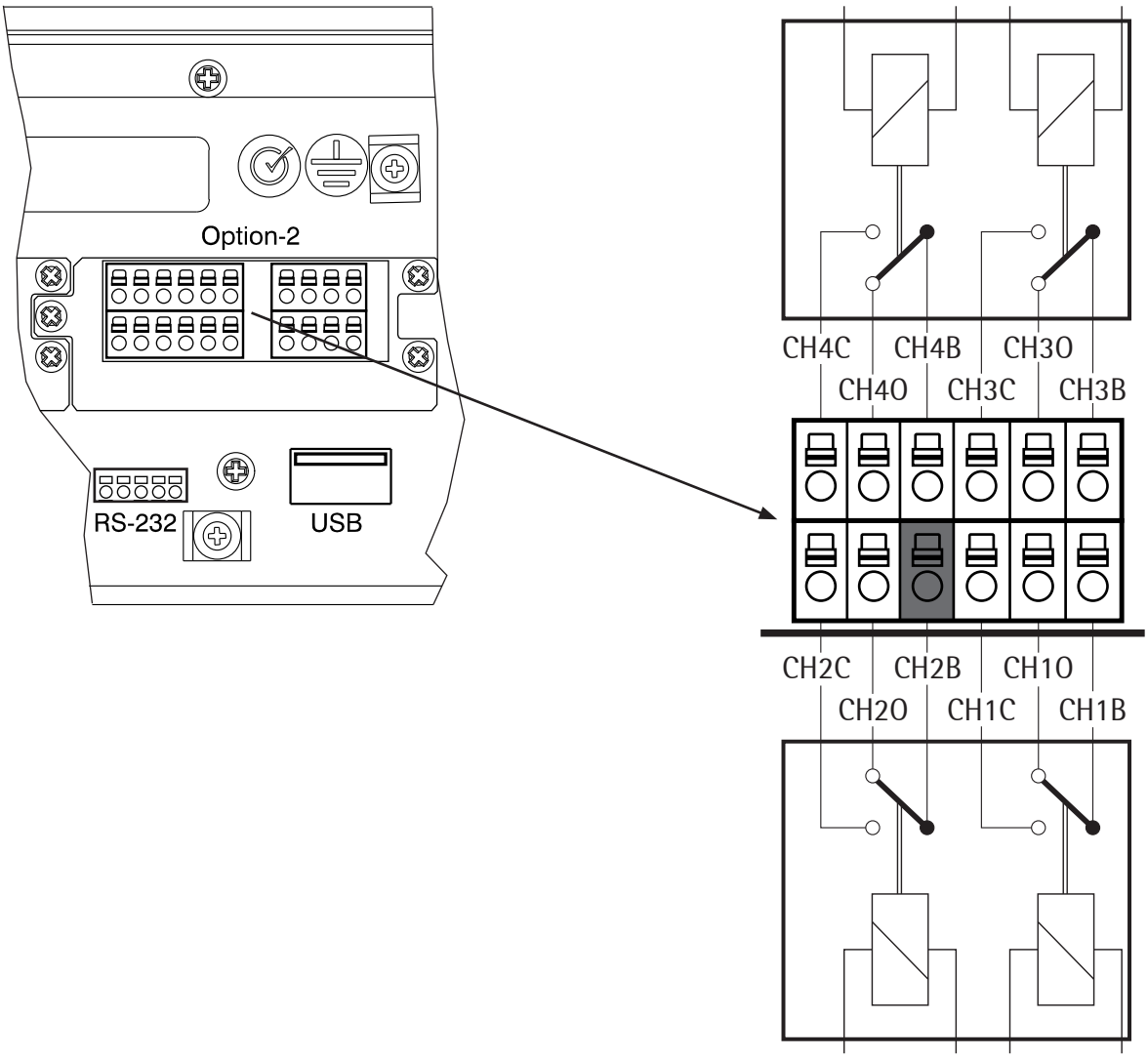


Coding of Option-1

- ▶ Terminal block: Insert the coding pin into the slot of the position marked in gray.
- ▶ Terminal: Remove (pinch off) the corresponding coding ridge.

Note	The terminal coding is described in Chapter 13.5.

Illustration:
terminal coding and internal circuit

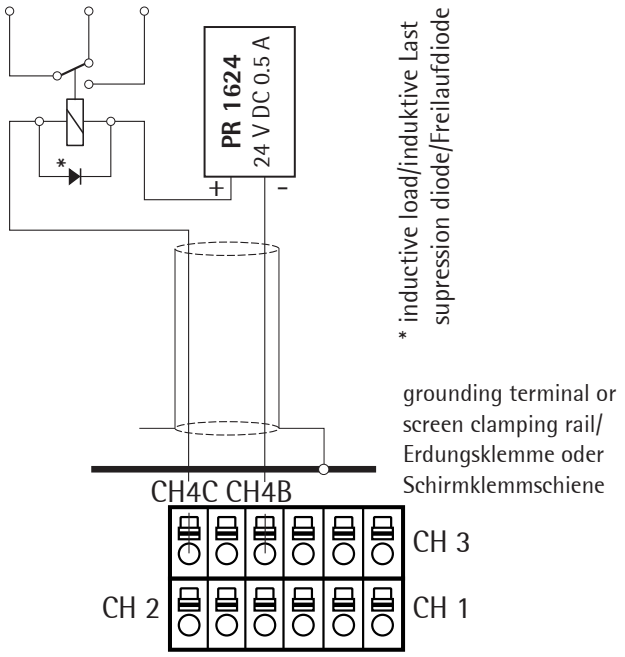


Coding of Option-2

- ▶ Terminal block: Insert the coding pin into the slot of the position marked in gray.
- ▶ Terminal: Remove (pinch off) the corresponding coding ridge.

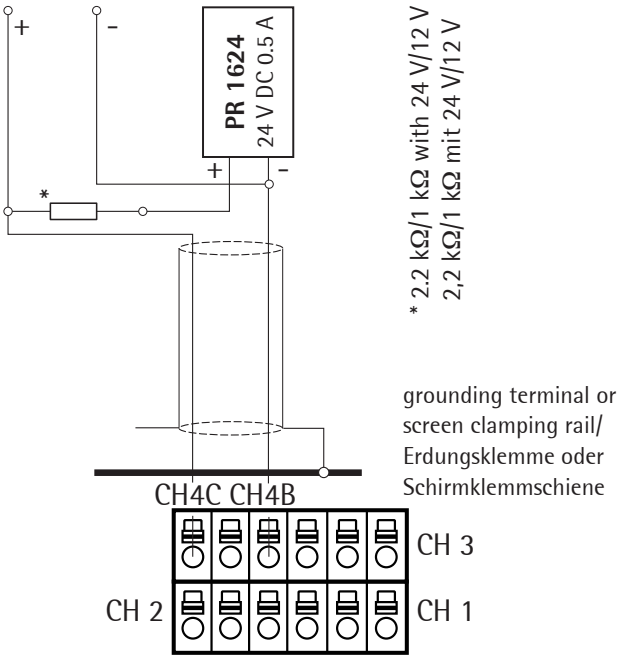
Note	The terminal coding is described in Chapter 13.5.

Connection example for PR 5500/12: Relay control (current output)



The relay switches when the output is active (true). To protect the output circuit, relays must be equipped with free-wheel diodes.

Connection example for PR 5500/12: Voltage output



When the output is active (true), the output voltage goes from 24 V/12 V to 0 V.
The load resistance must be 2.2 kΩ/1 kΩ.

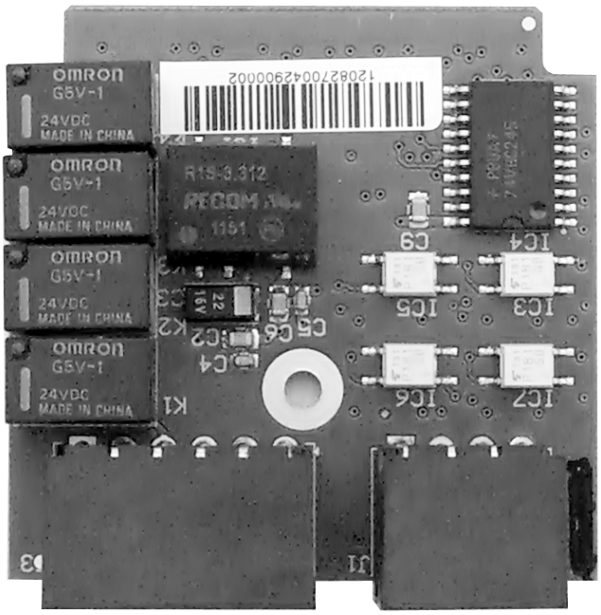
4.4.6 PR 5500/13 Digital Inputs and Outputs

The plug-in card has 4 active opto-decoupled inputs for process control.

The plug-in card also has 4 digital outputs with potential-free two-way contacts for process control.

The card is inserted in the Option 1/FB and/or Option 2 slot.

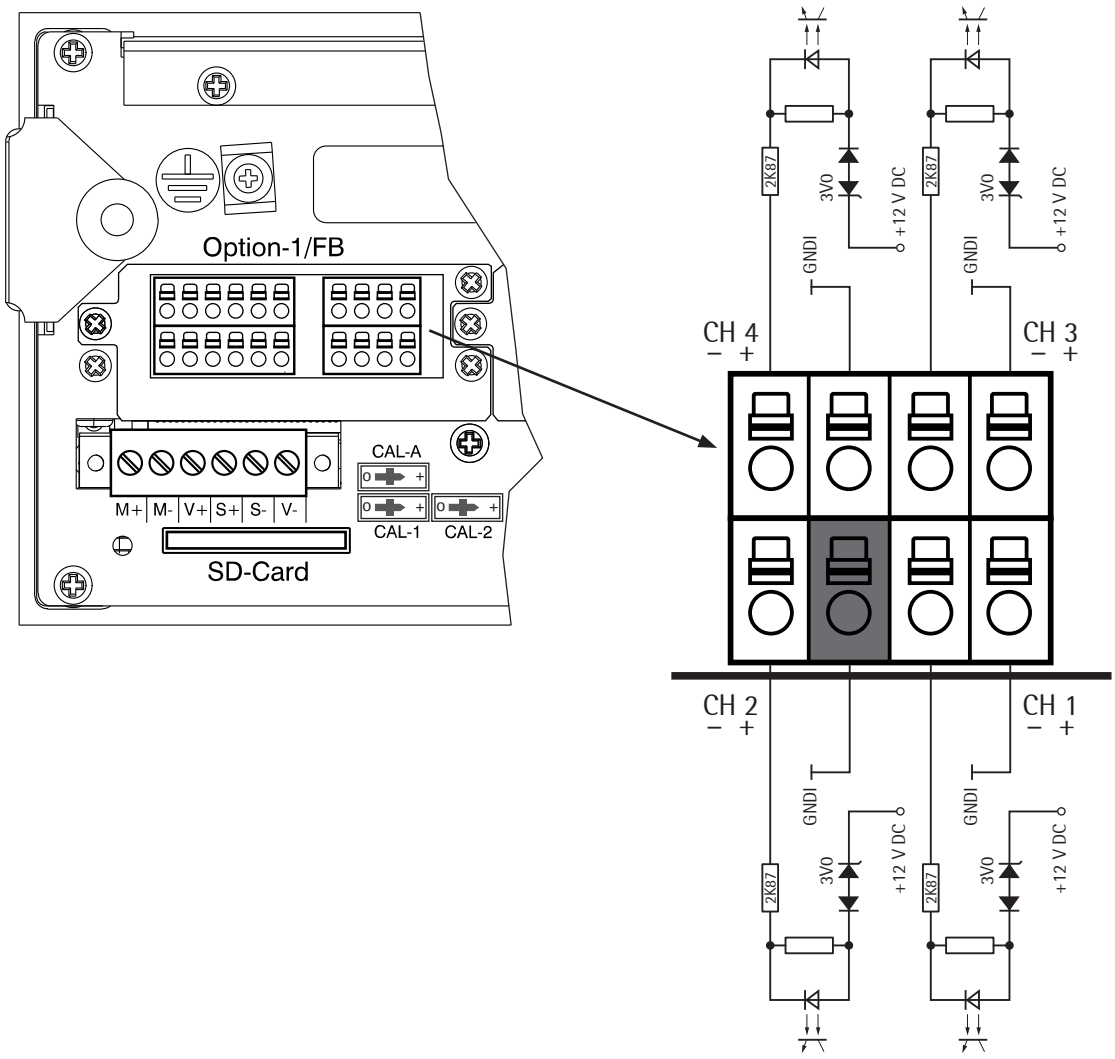
A max. of 2 PR 5500/13 plug-in cards can be installed!



Internal connection	Contact strip
Digital inputs/ outputs	4 (CH1, CH2, CH3, CH4)
Input	Can be switched via a potential-free contact
Input frequency	max. 200 Hz
Output	Two-way contact Max. switching voltage 31 V DC/24 V AC Max. switching current: 1 A
Switching frequency	max. 0.5 Hz
Potential isolation	Inputs: Jointly supplied via potential-free voltage Outputs: Free relay two-way contact
External connection	2x terminal, 6-pin 2x terminal, 4-pin Wire gauge max. 1.5 mm^2
Cables	Screened Connect the cable screen to the device.
Cable length	max. 50 m
Dimensions (LxWxH)	60x106x22 mm
Weight	70 g

4.4.6.1 Digital Inputs (PR 5500/13)

Illustration:
terminal coding and internal circuit

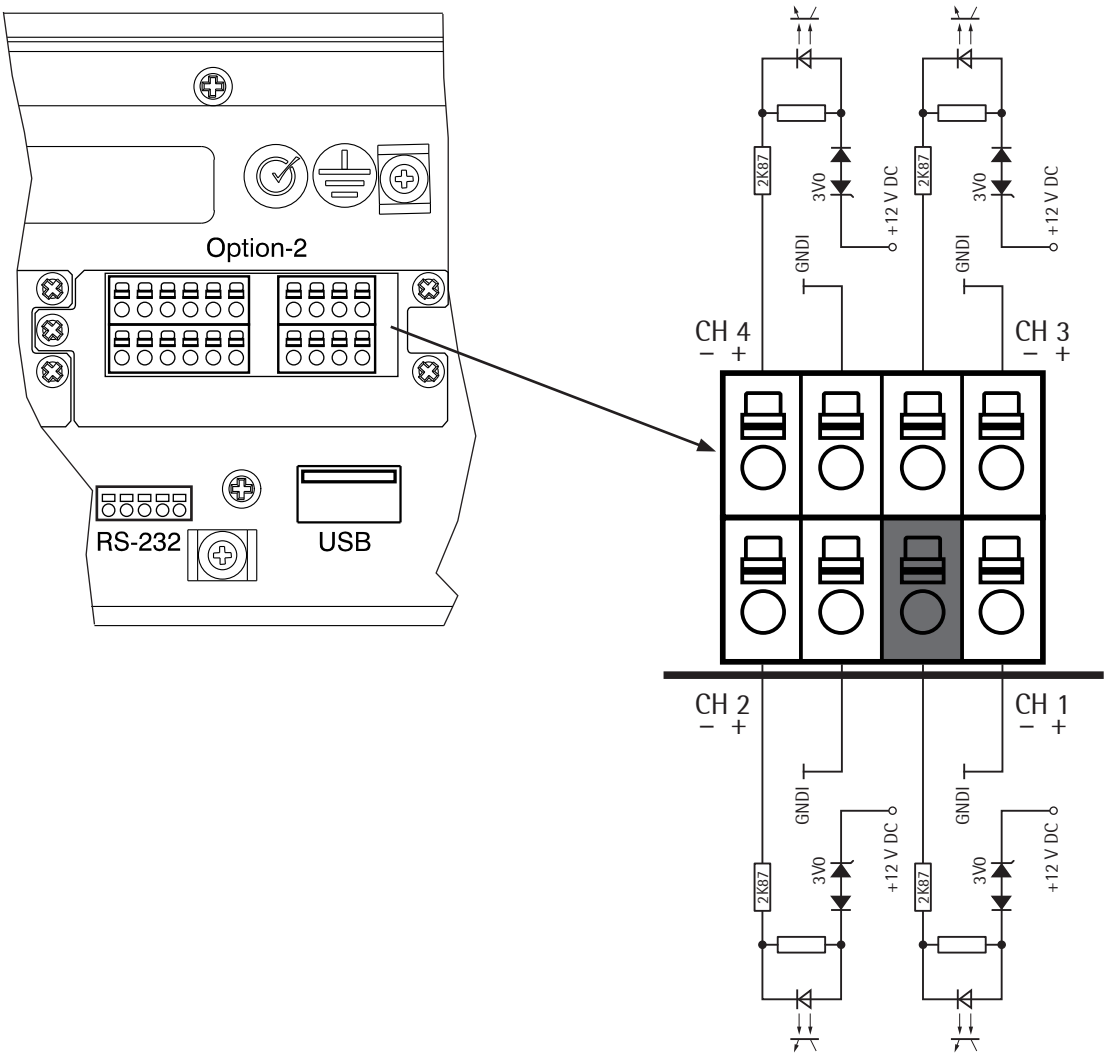


Coding of Option-1

- ▶ Terminal block: Insert the coding pin into the slot of the position marked in gray.
- ▶ Terminal: Remove (pinch off) the corresponding coding ridge.

Note	The terminal coding is described in Chapter 13.5.

Illustration:
terminal coding and internal circuit

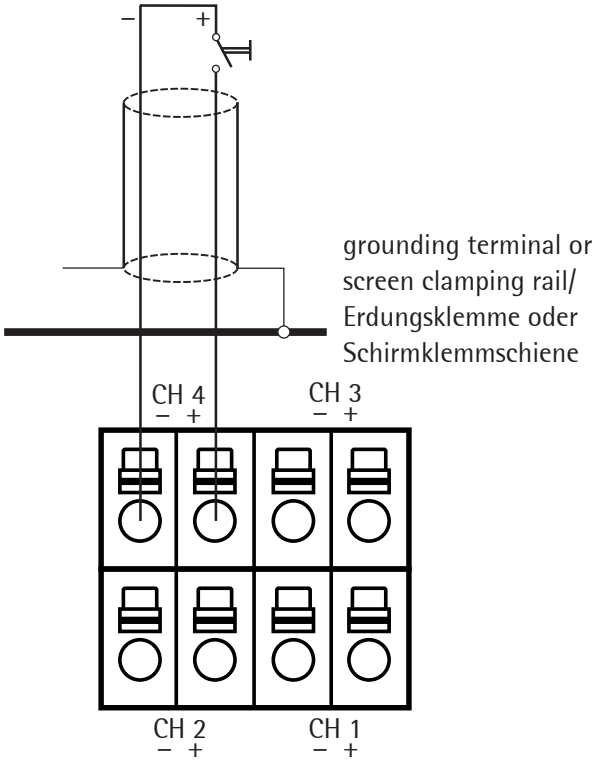


Coding of Option-2

- ▶ Terminal block: Insert the coding pin into the slot of the position marked in gray.
- ▶ Terminal: Remove (pinch off) the corresponding coding ridge.

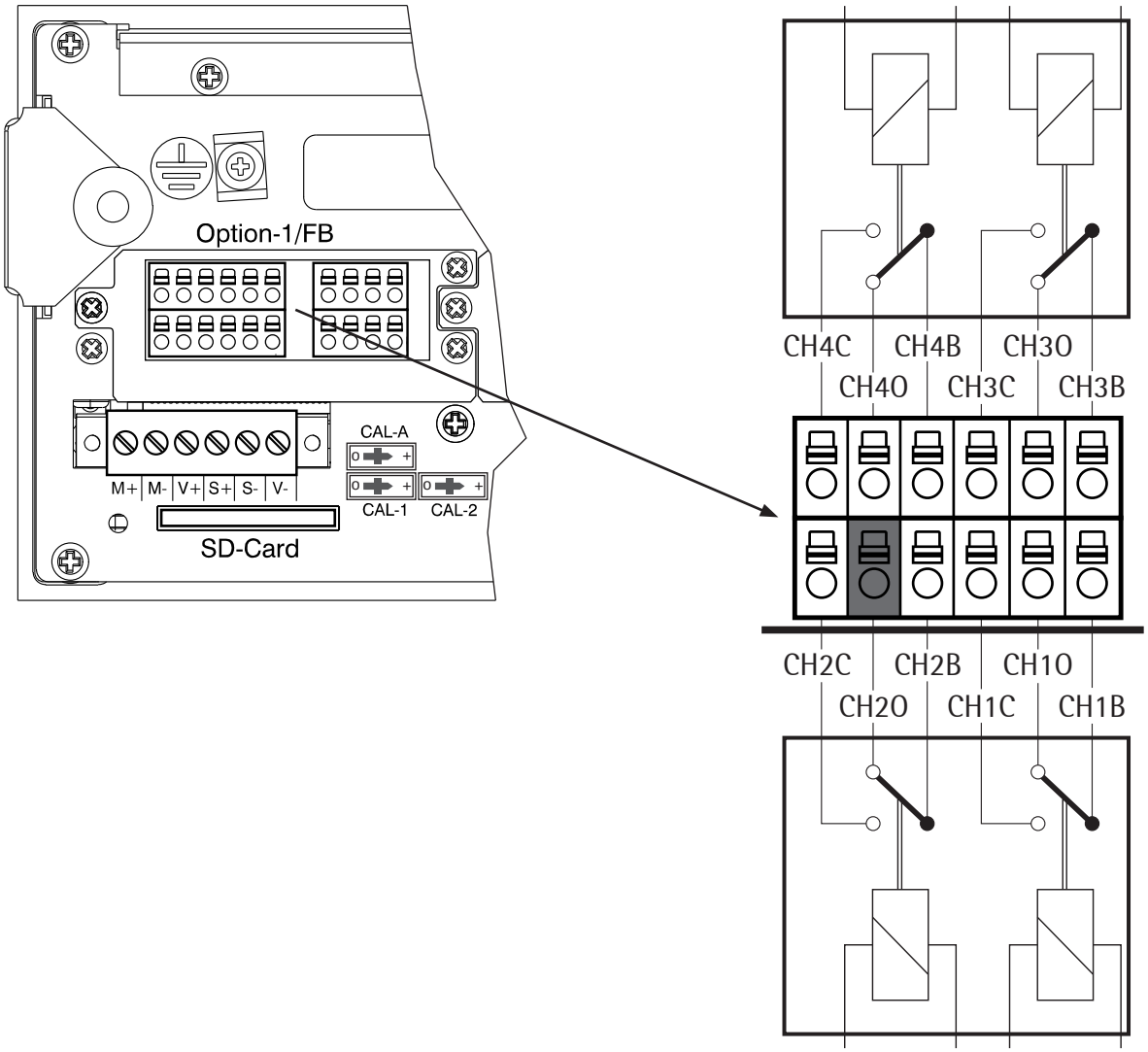
Note	The terminal coding is described in Chapter 13.5.

Connection example for PR 5500/13: Digital Inputs



4.4.6.2 Digital Outputs (PR 5500/13)

Illustration:
terminal coding and internal circuit

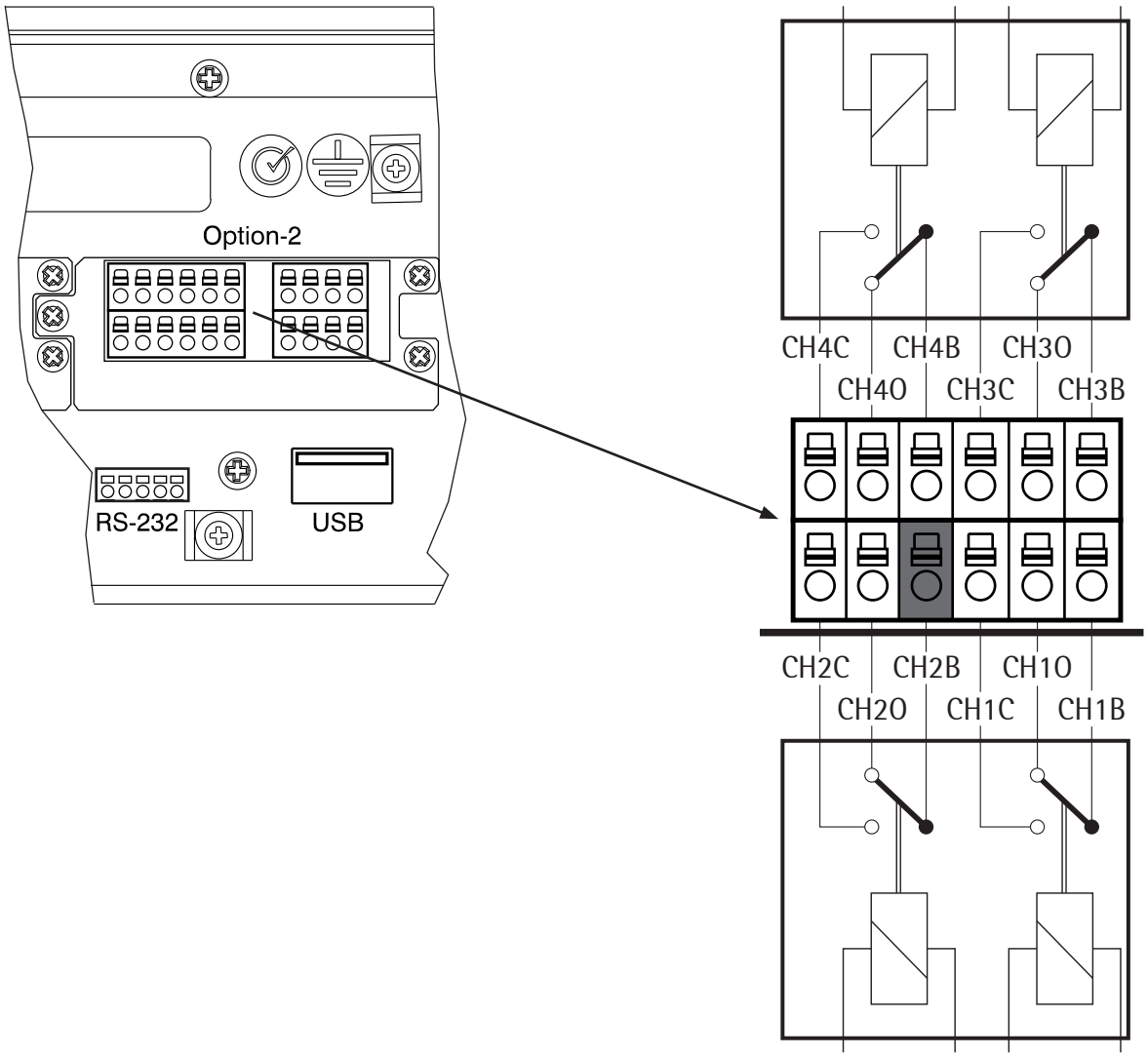


Coding of Option-1

- ▶ Terminal block: Insert the coding pin into the slot of the position marked in gray.
- ▶ Terminal: Remove (pinch off) the corresponding coding ridge.

Note	The terminal coding is described in Chapter 13.5.

Illustration:
terminal coding and internal circuit

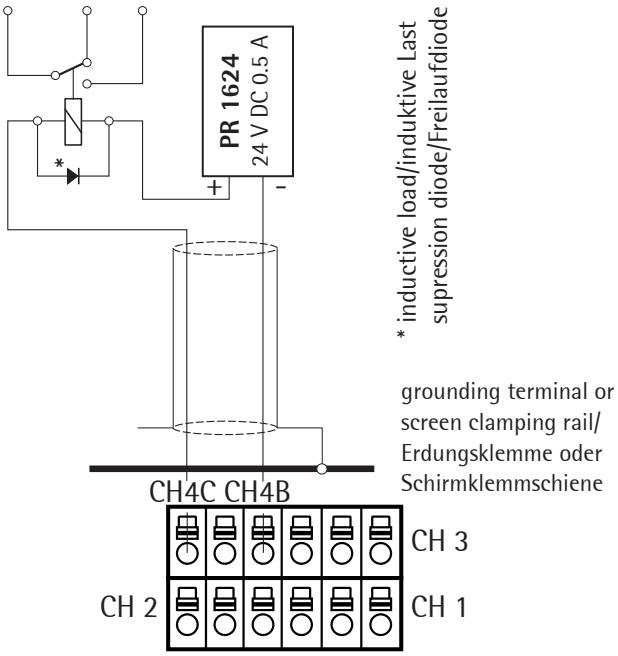


Coding of Option-2

- ▶ Terminal block: Insert the coding pin into the slot of the position marked in gray.
- ▶ Terminal: Remove (pinch off) the corresponding coding ridge.

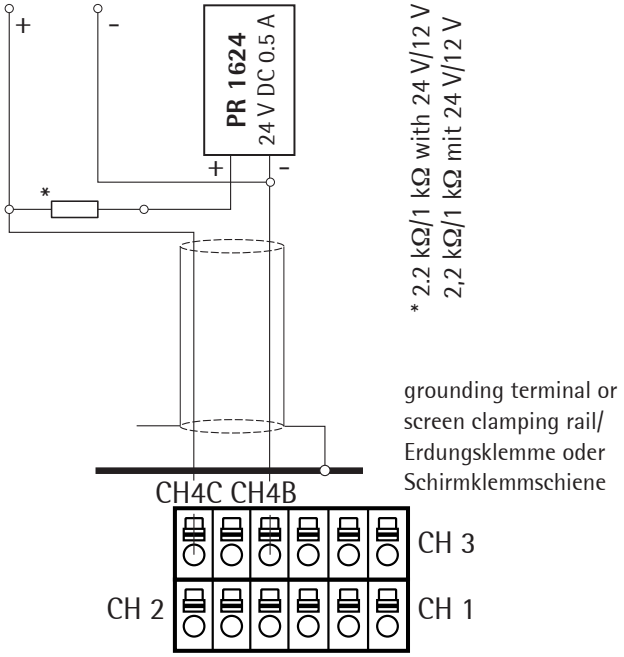
Note	The terminal coding is described in Chapter 13.5.

Connection example for PR 5500/13: Relay control (current output)



The relay switches when the output is active (true). To protect the output circuit, relays must be equipped with free-wheel diodes.

Connection example for PR 5500/13: Voltage output



When the output is active (true), the output voltage goes from 24 V/12 V to 0 V.
The load resistance must be 2.2 kΩ/1 kΩ.

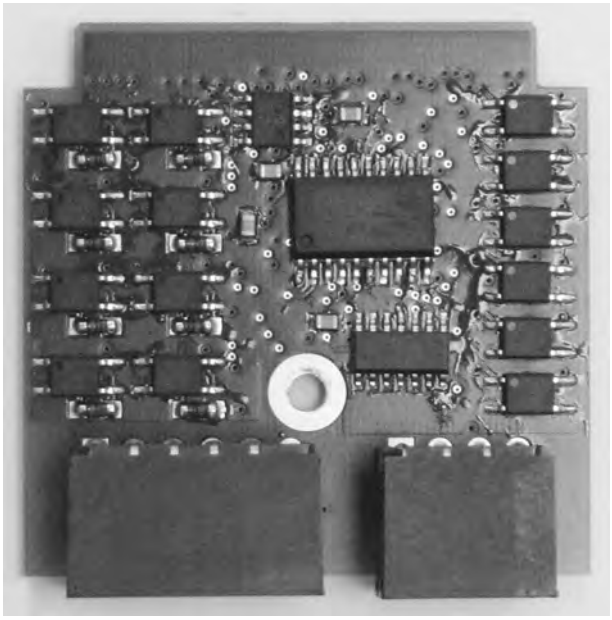
4.4.7 PR 5500/17 Digital Inputs and Outputs

The plug-in card has 6 passive opto-decoupled inputs and 8 digital outputs for process control.

GND (-) for all inputs and outputs together.

The card is inserted in the Option 1/FB and/or Option 2 slot.

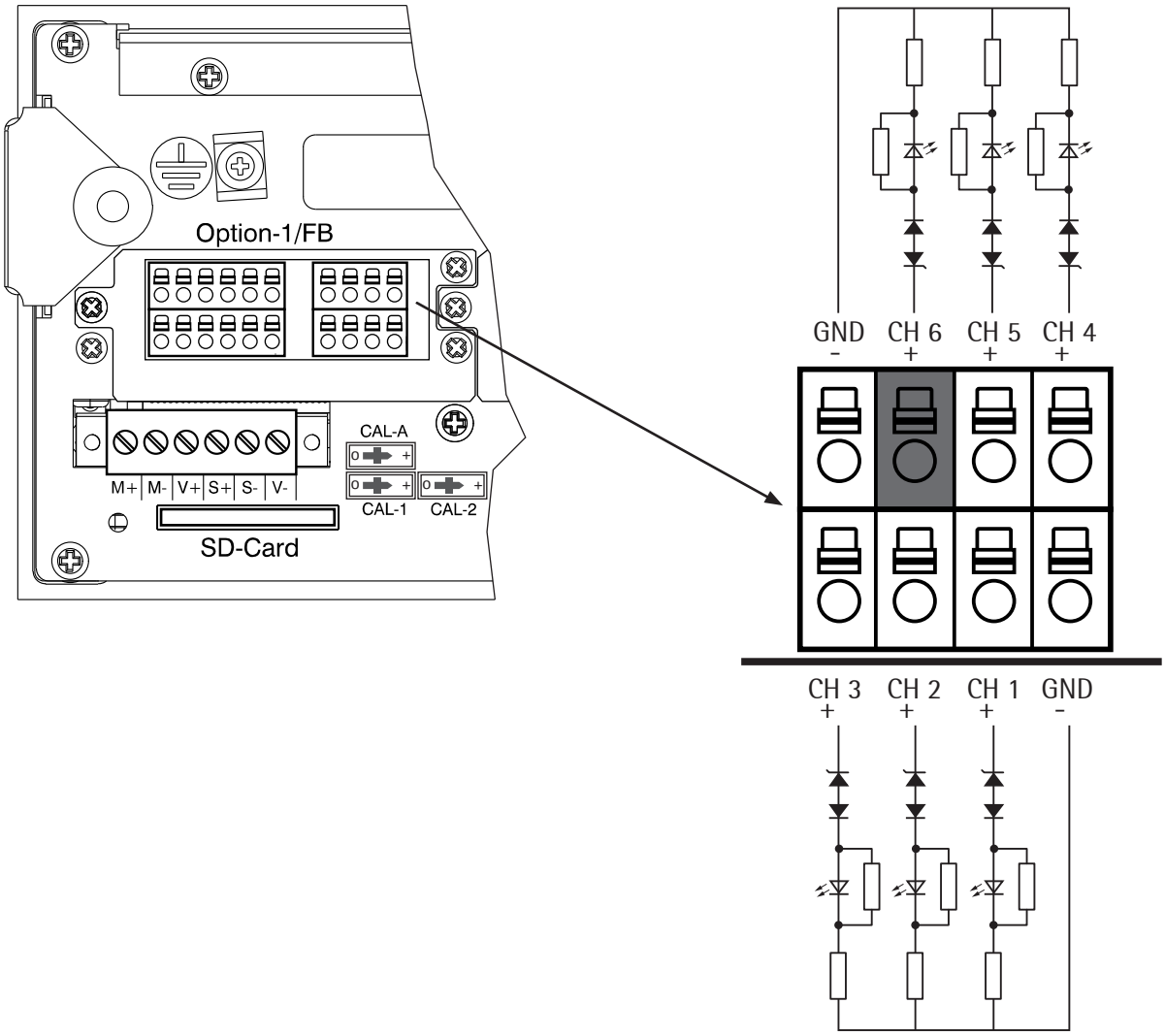
A max. of 2 PR 5500/17 plug-in cards can be installed!



Internal connection	Contact strip
Digital inputs	
Number	6 (CH1, CH2, CH3, CH4, CH5, CH6)
Voltage	Low: 0...5 V High: 10...28 V Passive: external supply required
Current	≤7 mA @ 24 V ≤3 mA @ 12 V
Digital outputs	
Number	8 (CH1, CH2, CH3, CH4, CH5, CH6, CH7, CH8)
Supply voltage	max. 24 V +10% external to plug
Voltage drop	I_Last * 55 Ω +1 V (Output, conducting)
Max. switching current	25 mA
Signals	GND (-) for all inputs and outputs together
Potential isolation	Yes, via optocoupler
External connection	2x terminal, 6-pin 2x terminal, 4-pin Wire gauge max. 1.5 mm^2
Cables	Screened Connect the cable screen to the device.
Cable length	max. 50 m
Dimensions (LxBxH)	52x52x19 mm
Weight	50 g

4.4.7.1 Digital Inputs (PR 5500/17)

Illustration:
terminal coding and internal circuit

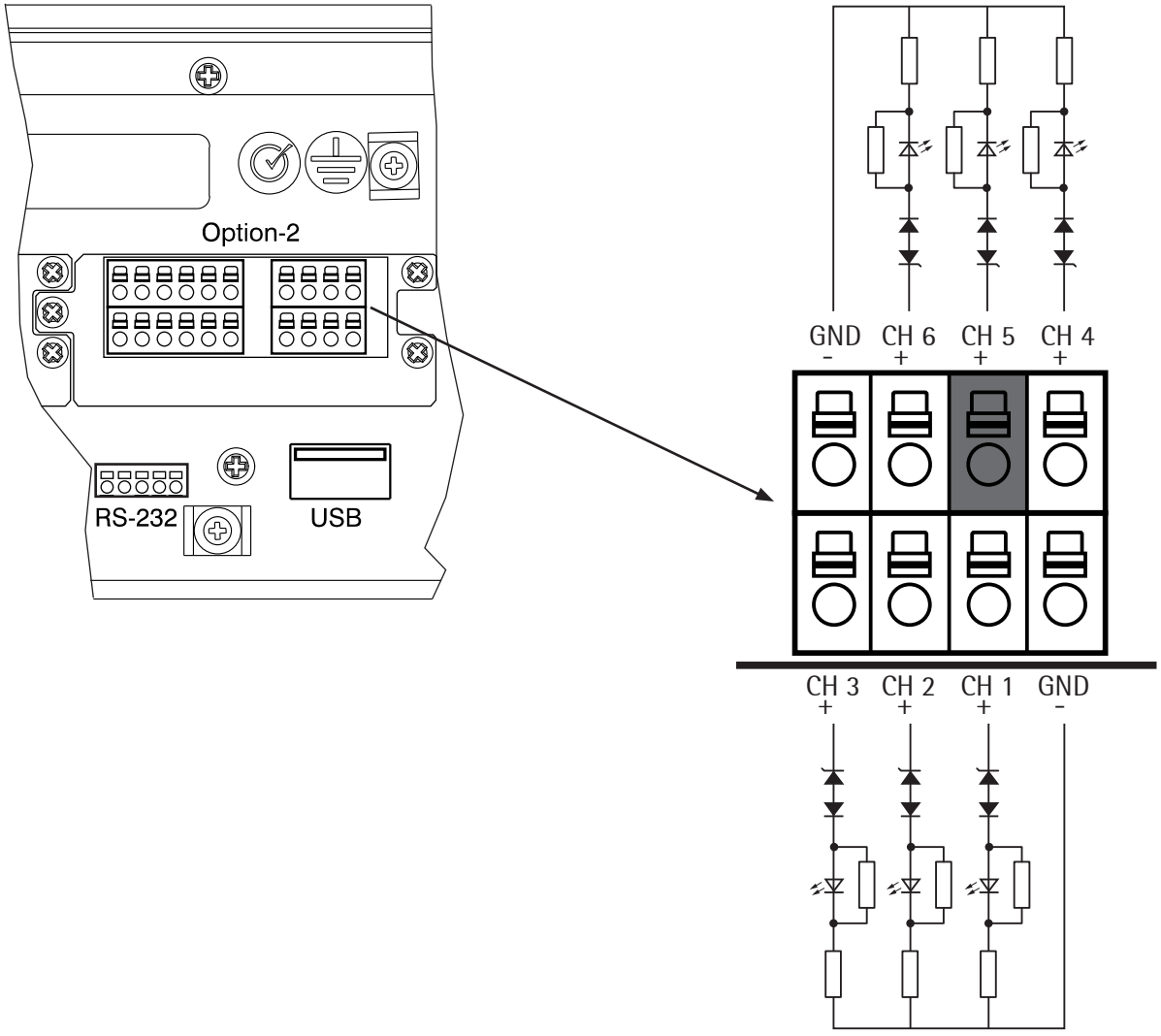


Coding of Option-1

- ▶ Terminal block: Insert the coding pin into the slot of the position marked in gray.
- ▶ Terminal: Remove (pinch off) the corresponding coding ridge.

Note	The terminal coding is described in Chapter 13.5.

Illustration:
terminal coding and internal circuit

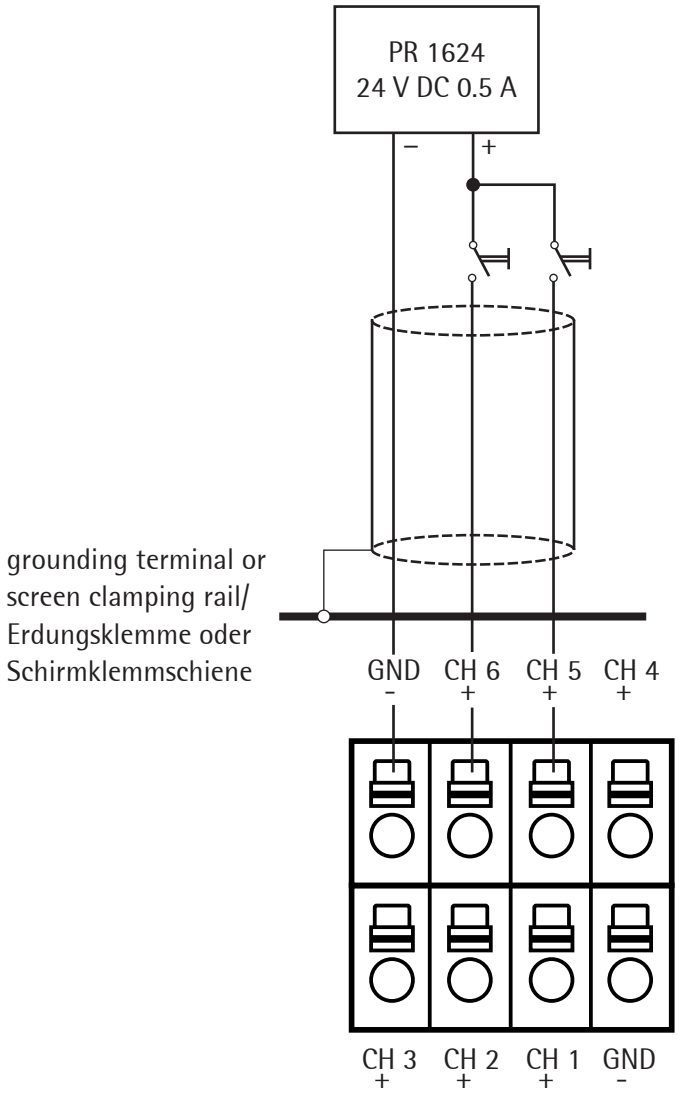


Coding of Option-2

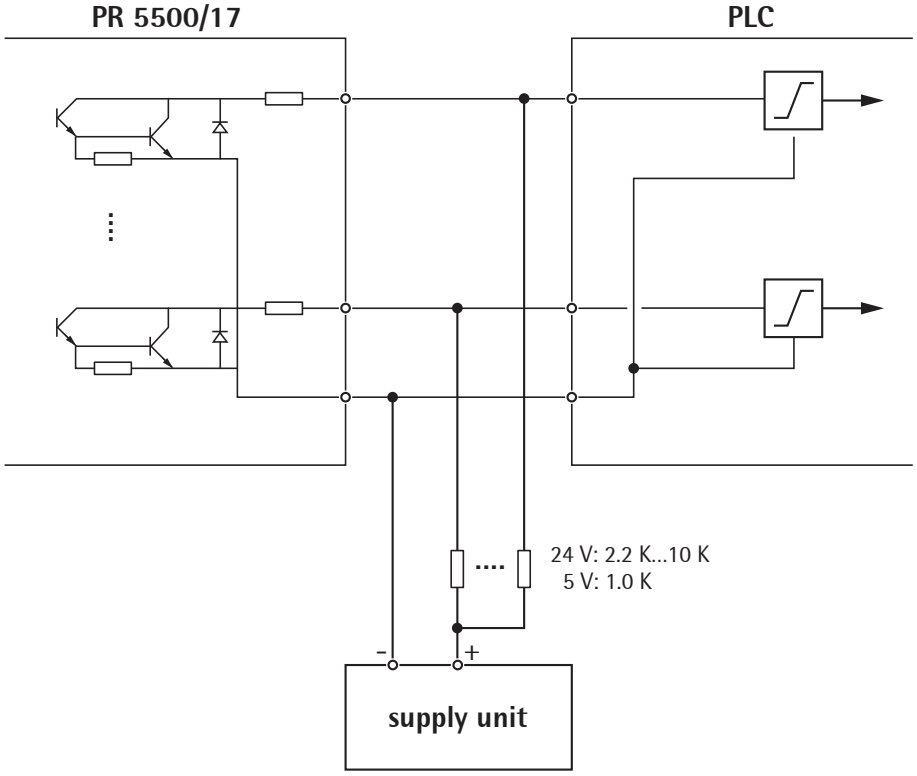
- ▶ Terminal block: Insert the coding pin into the slot of the position marked in gray.
- ▶ Terminal: Remove (pinch off) the corresponding coding ridge.

Note	The terminal coding is described in Chapter 13.5.

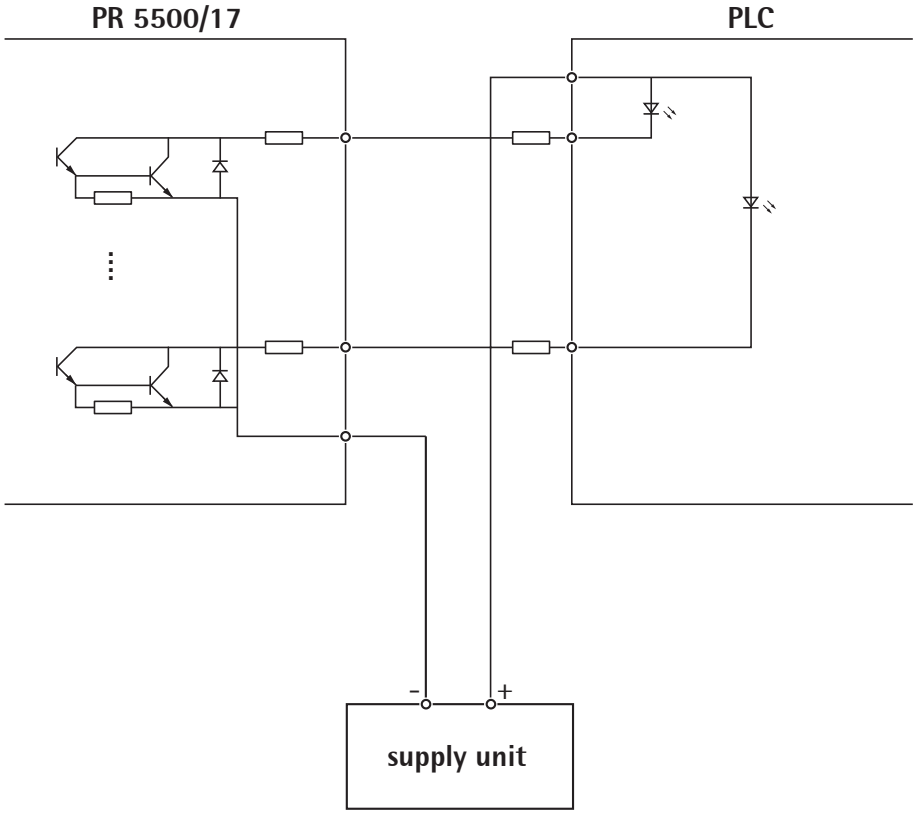
Connection example for PR 5500/17: Digital Inputs



Connection example for PR 5500/17: Digital inputs without potential isolation

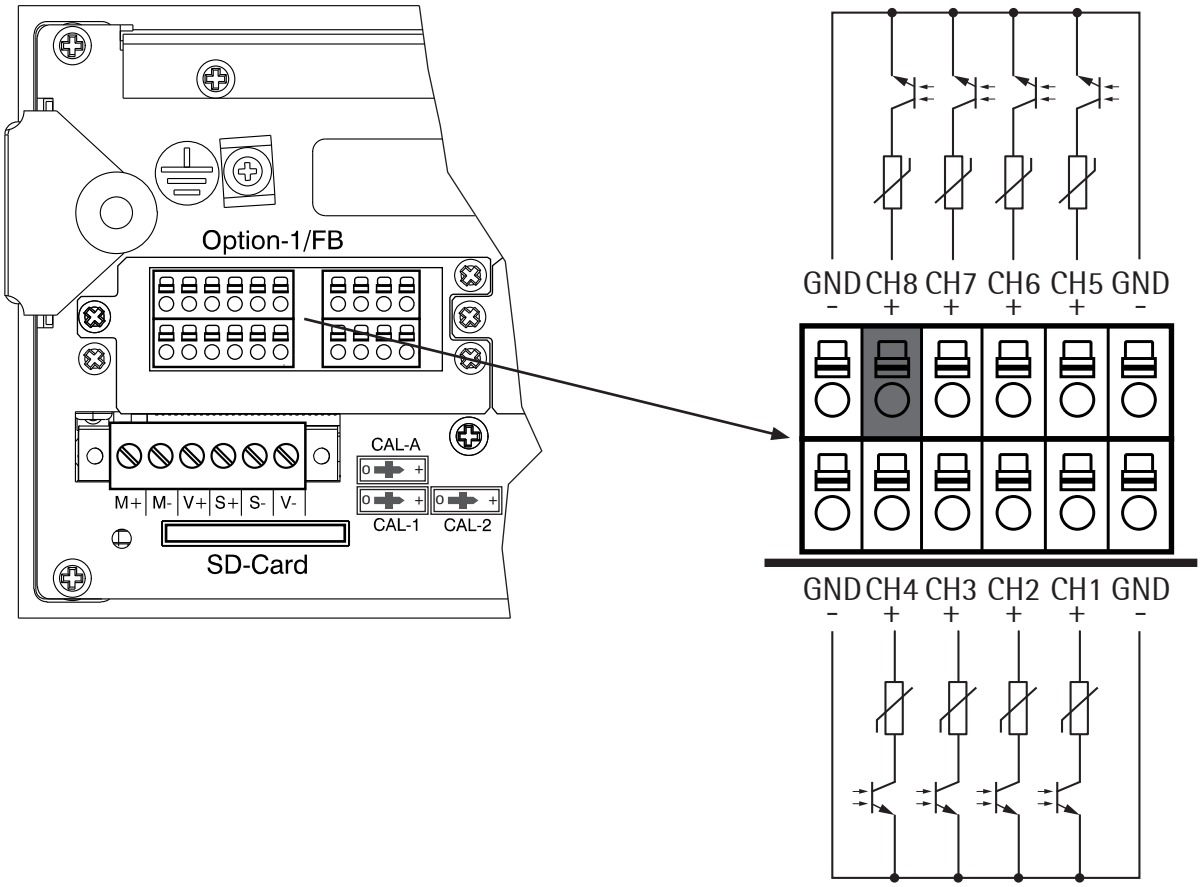


Connection example for PR 5500/17: Digital inputs with potential isolation



4.4.7.2 Digital Outputs (PR 5500/17)

Illustration:
terminal coding and internal circuit

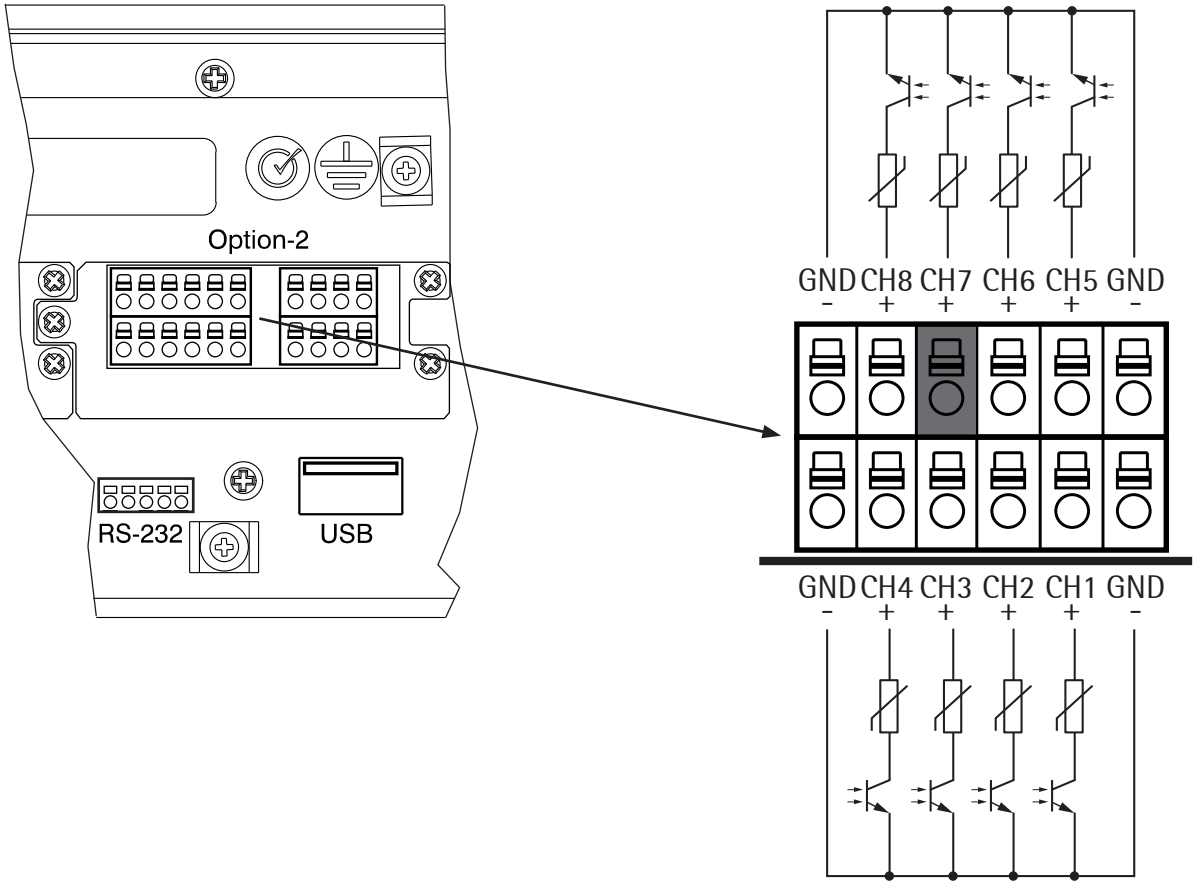


Coding of Option-1

- ▶ Terminal block: Insert the coding pin into the slot of the position marked in gray.
- ▶ Terminal: Remove (pinch off) the corresponding coding ridge.

Note	The terminal coding is described in Chapter 13.5.

Illustration:
terminal coding and internal circuit

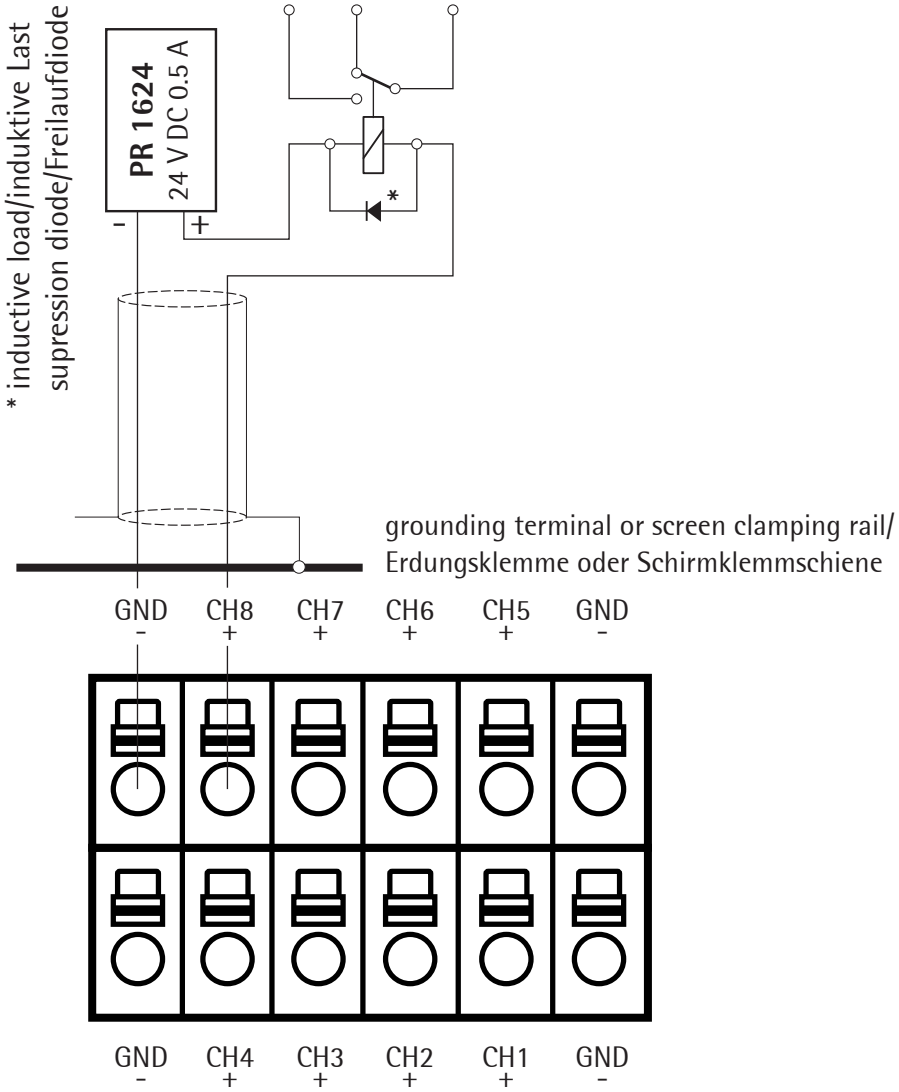


Coding of Option-2

- ▶ Terminal block: Insert the coding pin into the slot of the position marked in gray.
- ▶ Terminal: Remove (pinch off) the corresponding coding ridge.

Note	The terminal coding is described in Chapter 13.5.

Connection example for PR 5500/17: Relay control (current output)



The relay switches when the output is active (true). To protect the output circuit, relays must be equipped with free-wheel diodes.

4.4.8 PR 1721/61 ProfiBus-DP

4.4.8.1 Specifications

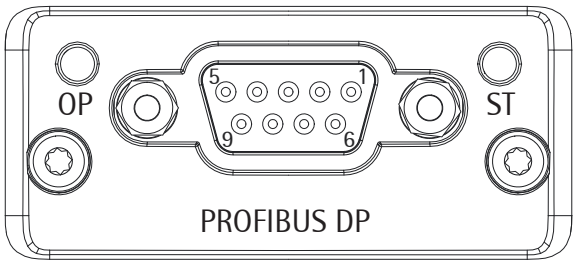
Communication protocols and the syntax comply with the ProfiBus-DP standard according to IEC 61158/ EN 50170, with transfer rates up to 12 Mbps.

The card is inserted in the Option 1/FB slot, see Chapter 13.6.

Internal connection	Pin strip, 50-pin
External connection	9-pin D-Sub socket (female) in module cover
Transmission rate	9.6 kbps to 12 Mbps, baud rate auto-detection
Connection mode	ProfiBus network, connections can be made/released without affecting other stations
Protocol	Profibus DP V0 slave
Configuration	GSD file 'SART_5500.gsd'
Cables	Special ProfiBus color: violet, screened twisted pair cable
Cable impedance	150 Ω
Cable length	The max. distance of 200 m can be extended at 1.5 Mbps by means of an additional repeater.
Bus termination	The bus termination in the last device is implemented via the integrated terminating resistor in the ProfiBus plug.
Potential isolation	Optocoupler in lines A and B (RS-485)
Dimensions (LxWxH)	55x50x22 mm
Weight	Approx. 33 g
Certificates	Profibus test center Comdec in Germany and PNO (Profibus User Organization). Industry-compatible CE, UL and cUL.

Note	The GSD file is stored on the CD supplied with the device (Fieldbus directory of the respective device). The current file is also available for download via the Internet: http://www.sartorius-intec.com/en/products/software-tools/ More -> Fieldbus-files

4.4.8.2 LEDs



Identification	Description
OP	Operating mode LED
ST	Status LED

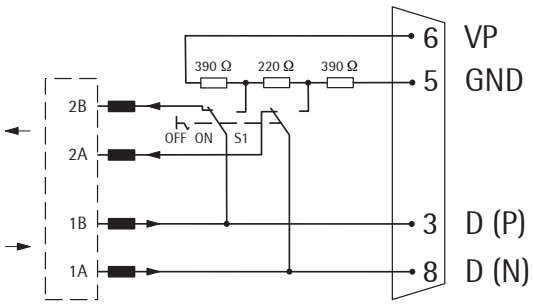
Operating mode (OP)

LED status	Description	Comments
Off	Module is offline	No power
Constant green	Module is online	Data exchange is possible
Flashing 1 Hz green	Module is online	Module is ready for data exchange
Flashing 1 Hz red	Parameter error	
Flashing 2 Hz red	Module configuration error	

Module status (ST)

LED status	Description	Comments
Off	Module is not initialized	- No power - Module is in the SETUP or NW_ INIT status
Constant green	Module is initialized	Normal operation
Constant red	Exception error	- Module is in the EXCEPTION status - The exception error monitoring system closes all open connections to the module.

4.4.8.3 Assignment of the 9-pin D-sub socket (female)



E. g.: SIMATIC NET PROFIBUS FAST CONNECT

Connection assignment EN 50170	Signal	Color	Description
Housing ----------	Screen		
1	n.c.		not connected
2	n.c.		not connected
3 ----------	B-line/D (P)	Green	Positive RxD/TxD according to RS-485 specification
4 if required	RTS		Request To Send (only when using a repeater)
5 ----------	GND Bus		Insulated GND to RS-485 side
6 ----------	VP Bus		Insulated +5 V to RS-485 side
7	n.c.		not connected
8 ----------	A-line/D (N)	Red	Negative RxD/TxD according to RS-485 specification
9	n.c.		not connected

You can only use plug connections with integrated terminating resistors.

The terminating resistor must be turned on in the last slave.

4.4.9 PR 1721/64 DeviceNet

4.4.9.1 Specifications

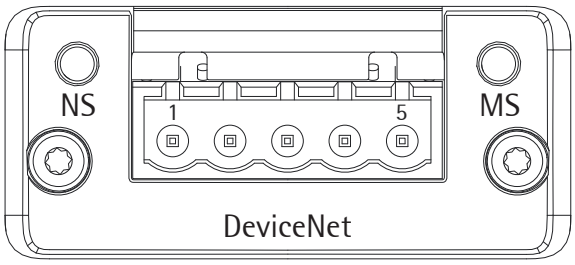
The fieldbus card contains all functionalities to make a complete DeviceNet slave with a CAN controller and transmission speeds up to 500 kbps.

The card is inserted in the Option-1/FB slot, see Chapter 13.6.

Internal connection	Pin strip, 50-pin
External connection	5-pin terminal block (plug-in) in the module cover
Transmission rate	125, 250 and 500 kbps
Protocol	DeviceNet Master Slave Polling procedure (polled IO) CRC error recognition according to IEC 62026 (EN 50325) Max. 64 station nodes Data width max. 512 byte input & output
Configuration	EDS file 'sag_5500.eds' MAC ID (1...62)
Cables	DeviceNet, color: petrol green 2x 2 screened twisted pair
Cable impedance	150 Ω
Bus termination	120 Ω at the cable ends
Bus load	33 mA
Potential isolation	Optocoupler and DC/DC converter
Dimensions (LxWxH)	55x50x22 mm
Weight	Approx. 33 g
Certificates/Conformity	Compatible with DeviceNet specification Vol. 1: 2.0, Vol 2: 2.0 ODVA Certificate according to conformity test software version A-12 Industry-compatible CE, UL & cUL.

Note	The EDS file is stored on the CD supplied with the device (Fieldbus directory of the respective device). The current file is also available for download via the Internet: http://www.sartorius-intec.com/en/products/software-tools/ More -> Fieldbus-files

4.4.9.2 LEDs



Identification	Description
NS	Network status LED
MS	Module status LED

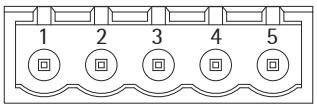
Network status (NS)

LED status	Description	Comments
Off	Module is offline	No power
Constant green	Module is online	There are one or more connections
Flashing 1 Hz green	Module is online	No connections
Constant red	Critical connection error	
Flashing 1 Hz red	Connection time exceeded	for one or more connections
Flashing red/green	Self-test running	

Module status (MS)

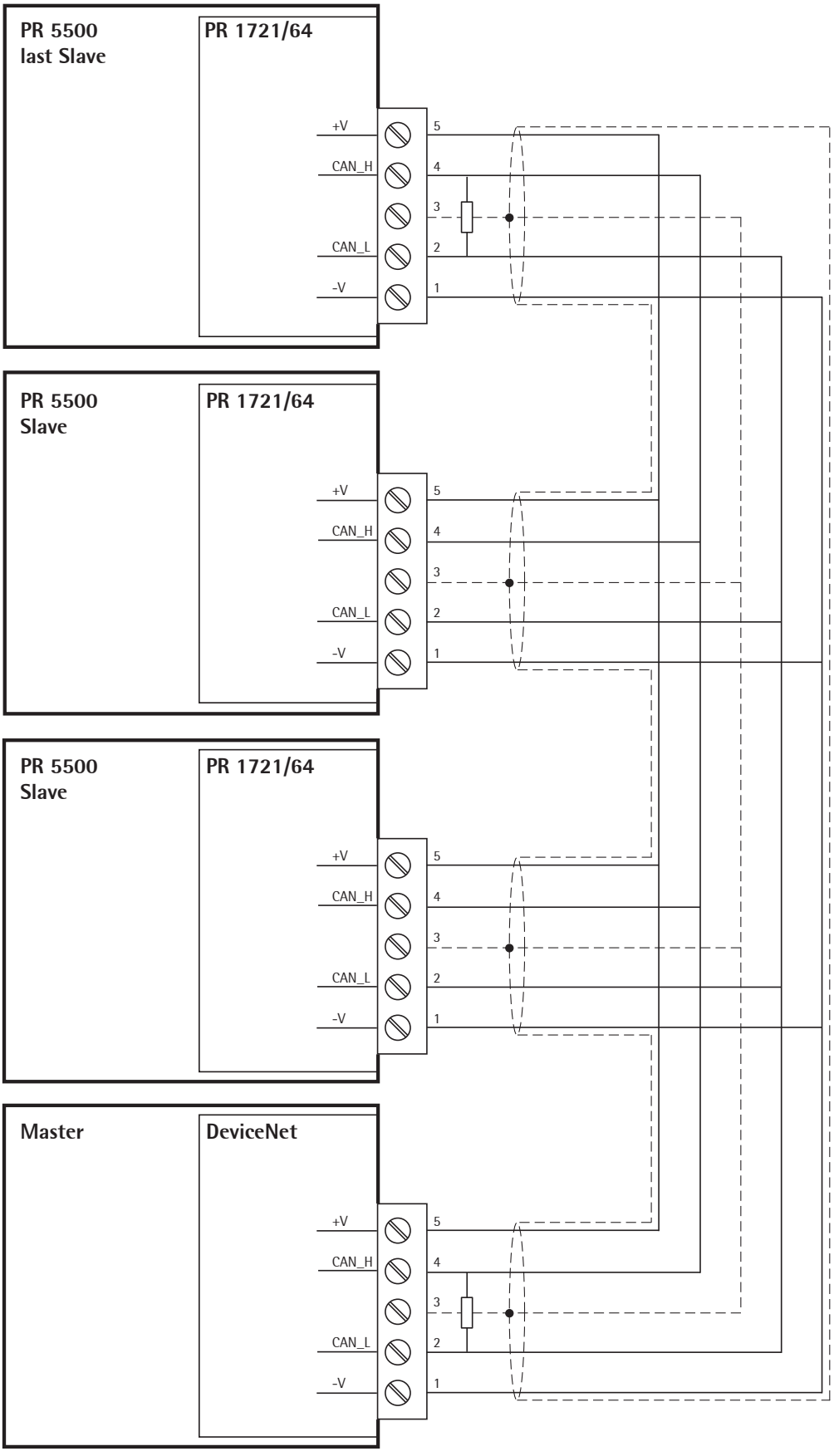
LED status	Description	Comments
Off	Module is not initialized	- No power - Module is in the SETUP or NW_INIT status
Constant green	Module is initialized	Normal operation
Flashing 1 Hz green	Missing or incomplete configuration	The device must be set up again.
Constant red	Exception error	- Module is in the EXCEPTION status - The exception error monitoring system closes all open connections to the module.
Flashing 1 Hz red	Error that can be corrected	
Flashing red/green	Self-test running	

4.4.9.3 5-Pole Terminal Block Allocation



	Signal	Color	Description
Cable sheath			Special DeviceNet cable (certified)
1 ----------	V –	Black	Negative power supply
2 ----------	CAN_L	Blue	CAN_L bus signal
3 ----------	S		Cable screen
4 ----------	CAN_H	White	CAN_H bus signal
5 ----------	V +	Red	Positive power supply

4.4.9.4 Connection Diagram for a Master with three Slaves



PR 5500/.. receives 33 mA from the DeviceNet bus supply.

4.4.10 PR 1721/65 CC-Link

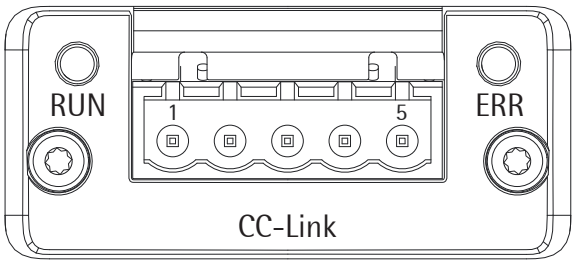
4.4.10.1 Specifications

The fieldbus card contains all functions to provide a complete CC link slave with transfer rates up to 10 Mbps. The card is inserted in the Option-1/FB slot, see Chapter 13.6.

Internal connection	Pin strip, 50-pin
External connection	5-pin terminal block (plug-in) in the module cover
Transmission rate	156; 625 kbps; 2.5; 5; 10 Mbps
Protocol	CRC error detection, 128 I/O bits and 16 (32 bits) words, max. 64 stations
Configuration	CSP file 'PR1721_1.csp'
Cables	2x 2 screened twisted pair
Cable length	100 m @ 10 Mbps, 1200 m @ 156 kbps
Bus termination	110 Ω at the cable ends
Bus load	100 mA
Potential isolation	Optocoupler and DC/DC converter
Dimensions (LxWxH)	55x50x22 mm
Weight	Approx. 33 g
Certificates/Conformity	CLPA Report BTP 03047, CC-Link Version 1.10.

Note	The CSP file is stored on the CD supplied with the device (Fieldbus directory of the respective device). The current file is also available for download via the Internet: http://www.sartorius-intec.com/en/products/software-tools/ More -> Fieldbus-files

4.4.10.2 LEDs



Pos.	Description
RUN	Process LED
ERR	Error LED

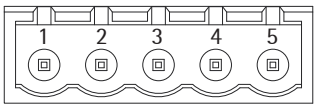
Operation (1)

LED status	Description	Comments
Off	Module is offline	- No network connection - No power
Constant green	Module is online	- There is a network connection - Normal operation
Constant red	Exception error	- Module is in the EXCEPTION status - The exception error monitoring system closes all open connections to the module.

Error (2)

LED status	Description	Comments
Off	No error	No power
Constant red	Exception error	- Module is in the EXCEPTION status - The exception error monitoring system closes all open connections to the module.
Flickering red	CRC error	
Flashing 1 Hz red	- Address error - Baud rate error	After any changes: - No allowed addresses - No allowed baud rates

4.4.10.3 5-Pole Terminal Block Allocation



	Signal	Description
1 ----------	DA	Communication RS-485 RxD/TxD (+)
2 ----------	DB	Communication RS-485 RxD/TxD (–)
3 ----------	GND	Digital ground
4 ----------	S	Cable screen
5 ----------	PE	Housing ground

4.4.11 PR 1721/66 ProfiNet I/O

4.4.11.1 Specifications

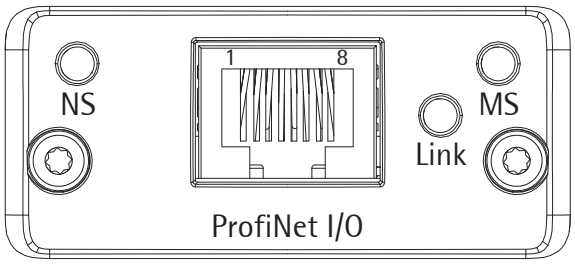
The fieldbus card is equipped with a standard RJ-45 socket for the network connection and contains a powerful UDP/IP connecting circuitry with transfer rates of 10 and 100 Mbps.

The card is inserted in the Option-1FB slot, see Chapter 13.6.

Internal connection	Pin strip, 50-pin
External connection	RJ-45 connection socket in the module cover
Transmission rate	10 Mbps and 100 Mbps Autodetection (10/100, HalfDX/FullDX)
Connection mode	Network
Protocol	ProfiNet I/O
Configuration	HTML file 'GSDML-xxx-Sartorius-PR5500-xxx.html'
Cables	Twisted pairs, screened e.g. patch cable CAT5 Autolink (straight or crossover)
Cable impedance	150 Ω
Cable length to HUB	Max. 115 m
Potential isolation	Yes
Dimensions (LxWxH)	55x50x22 mm
Weight	Approx. 33 g
Certificate	ProfiBus Nutzerorganisation e.V. for HMS Industrial Networks AB Certificate No: Z10006 Report: PN005-1, 12.02.2007.

Note	The IP address and the Subnet mask are set via the Fieldbus parameters (see also Chapter 5.19.6). The HTML file is stored on the CD supplied with the device (Fieldbus directory of the respective device). The current file is also available for download via the Internet: http://www.sartorius-intec.com/en/products/software-tools/ More -> Fieldbus-files

4.4.11.2 LEDs



Identification	Description
NS	Network status LED
MS	Module status LED
Link	Link/Activity LED

Network status (NS)

LED status	Description	Comments
Off	Module is offline	- No power - No connection to the I/O controller
Constant green	Module is online (RUN)	- There is a connection to the I/O controller - I/O Controller is operational (RUN status)
Flashing 1 Hz green	Module is online (STOP)	- There is a connection to the I/O controller - I/O Controller is not operational (STOP status)

Module status (MS)

Status	Description	Comments
Off	Module is not initialized	- No power - Module is in the SETUP or NW_INIT status
Constant green	Module is initialized	Normal operation
Flashing 1 Hz green	Error after test	Error occurred after test.
Flashing 2 Hz green		This is used for node identification in the network.
Constant red	Exception error	- Module is in the EXCEPTION status - The exception error monitoring system closes all open connections to the module.
Flashing 1 Hz red	Configuration error	Expected identification deviates from the available identification.
Flashing 2 Hz red	IP address error	IP address was not defined.
Flashing 3 Hz red	Device name error	Device name was not defined.
Flashing 4 Hz red	Internal error	Module has caused an unrecoverable internal error.

Link/Activity

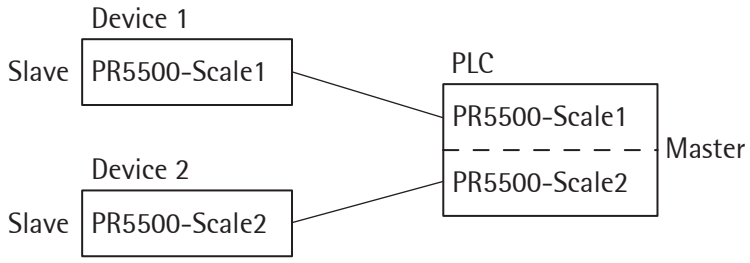
LED status	Description	Comments
Off	Module has no connection	- No connection - No communication
Constant green	Module has a connection	- There is an Ethernet connection - No communication
Flickering green	Activity	- There is an Ethernet connection - Communication is available

4.4.11.3 Fieldbus parameters

Slave/Master device names

Caution!	**A unique device name must be assigned from the master. This name is given highest priority when establishing the communication.** **When replacing devices/servicing, please note:** **Along with the IP address, the device name must correspond to the one of the replacement device. Explicit assignment out of the master is required.**

Example



4.4.12 PR 1721/57 EtherNet-IP

4.4.12.1 Specifications

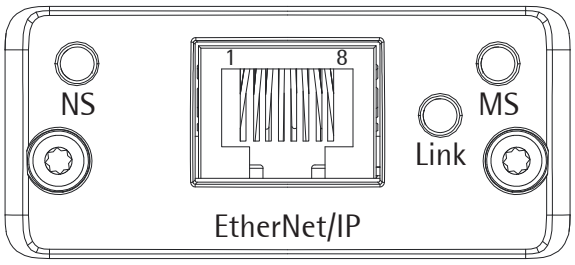
The fieldbus card is equipped with a standard RJ-45 socket for the Ethernet connection and contains a powerful TCP/IP and EtherNet IP connecting circuitry with transfer rates of 10 and 100 Mbps.

The card is inserted in the Option-1/FB slot, see Chapter 13.6.

Internal connection	Pin strip, 50-pin
External connection	RJ-45 connection socket in the module cover
Transmission rate	10 Mbps and 100 Mbps Autodetection (10/100, HalfDX/FullDX)
Connection mode	Network
Protocol	EtherNet IP
Configuration	EDS file 'sag_5500 ethernetip.eds'
Cables	Twisted pairs, screened e.g. patch cable CAT5 Autolink (straight or crossover)
Cable impedance	150 Ω
Cable length to HUB	Max. 115 m
Potential isolation	Yes
Dimensions (LxWxH)	55x50x22 mm
Weight	Approx. 33 g
Certificates	EtherNet IP Specification ODVA File No. 10286 Test Date: 06.09.2005 Vendor ID 90 See also: www.odva.org Tested according to: CE, UL & cUL

Note	The IP address and the Subnet mask are set via the Fieldbus parameters (see also Chapter 5.19.6). The EDS file is stored on the CD supplied with the device (Fieldbus directory of the respective device). The current file is also available for download via the Internet: http://www.sartorius-intec.com/en/products/software-tools/ More -> Fieldbus-files

4.4.12.2 LEDs



Identification	Description
NS	Network status LED
MS	Module status LED
Link	Link/Activity LED

Network status (NS)

LED status	Description	Comments
Off	Module is offline	- No power - No IP address
Constant green	Module is online	One or more connections exist (chip class 1 or 3)
Flashing 1 Hz green	Module is online	No connections
Constant red	Critical connection error	Duplicate IP address
Flashing 1 Hz red	Connection time exceeded	For one or more connections (chip class 1 or 3)

Module status (MS)

Status	Description	Comments
Off	Module is not initialized.	- No power - Module is in the SETUP or NW_INIT status.
Constant green	Module is initialized.	Normal operation
Flashing 1 Hz green	Error after test	Error occurred after test.
Flashing 2 Hz green		This is used for node identification in the network.
Constant red	Exception error	- Module is in the EXCEPTION status. - The exception error monitoring system closes all open connections to the module.
Flashing 1 Hz red	Configuration error	Expected identification deviates from the available identification.
Flashing 2 Hz red	IP address error	IP address was not defined.
Flashing 3 Hz red	Device name error	Device name was not defined.
Flashing 4 Hz red	Internal error	Module has caused an unrecoverable internal error.

Link/Activity

LED status	Description	Comments
Off	Module has no connection.	- No connection - No communication
Constant green	Module has a connection.	- There is an Ethernet connection. - No communication
Flickering green	Activity	- There is an Ethernet connection. - Communication is available.

5 Commissioning

5.1 Power Failure/Data Protection/Warm Start/Cold Start

5.1.1 General Information

The calibration data and parameters of the internal weighing electronics system are saved to the EAROM on the weighing electronics board. Additional write protection is also available for calibration data and parameters as well as application programs (see Chapter 5.1.5.1).

The event logger is saved to the SPI flash memory.

The flash PROM include

- BIOS
- firmware
- application program
- alibi memory
- XML configuration files (for user management, setup, calibration, and application data)

Backups are saved to the SD card (secure digital card) (see Chapter 4.3.4).

5.1.2 Power Failure

The entire content of the SD-RAM is stored to a Nand flash memory and remains there permanently when the power is interrupted or the device is disconnected from the power. When power is restored, all data are reloaded from the Nand flash memory to the SD-RAM and the device is restored to the operating status before the interruption. Dosing programs are stopped/started depending on user settings.

The SD card and the USB stick are both buffered by a battery.

If a HUB (splitter) is inserted into the USB slot and turned off, the USB stick is not buffered by a battery.

5.1.3 Warm Start

After a warm start all data remain unchanged, behaviour as after power failure, see Chapter 5.1.2.

5.1.4 Cold Start

5.1.4.1 General Information

There are several options executing a cold start:

- After power-on (see Chapter 5.1.4.2)
- With STOP+EXIT keys (see Chapter 5.1.4.3)
- With reset key (see Chapter 5.1.4.4)

5.1.4.2 Menu-driven Power Off

The menu-driven power off (see Chapter 6.1.9) does **not** save the entire content of the SD-RAM into a Nand flash memory. However during the cold start the last saved database is automatically loaded into the device.

5.1.4.3 With STOP+EXIT Keys

During the cold start with STOP+EXIT keys (see Chapter 5.19.3) the database will be emptied and current process steps are deleted. The device automatically searches for an existing database on the SD card and ask to load it.

Note	If ‚disabled' is selected under [System setup]-[Operating parameters]-[Coldstart with STOP+EXIT], the STOP key must be pressed while the power cord is being connected to execute a cold start.

5.1.4.4 With Reset Key

The device re-started (cold start) by a short-time (<1 sec.) actuating of the reset key (see Chapter 3.3.1).

- LED will flash once.
- No settings will be changed.
- The database will be emptied.
- Current process steps are deleted.
- Application must be restarted.
- The database must be restored.
- No network settings will be changed.

5.1.5 Overwrite Protection

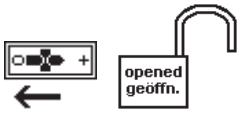
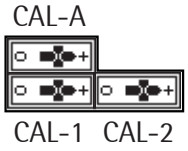
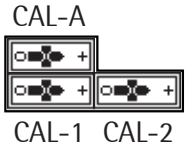
5.1.5.1 Via a CAL Switch

The device can have up to t CAL switches. CAL switches 1 and 2 are located on the main board.

CAL switch A is located on the weighing electronics board (see Chapter 4.4.4). These switches are accessible on the back device.

The exact function of individual switches is listed in the table below.

Note	In general, we recommend activating the overwrite protection features via the software after calibration to prevent accidental overwrite/data loss (see Chapter 5.1.5.2).

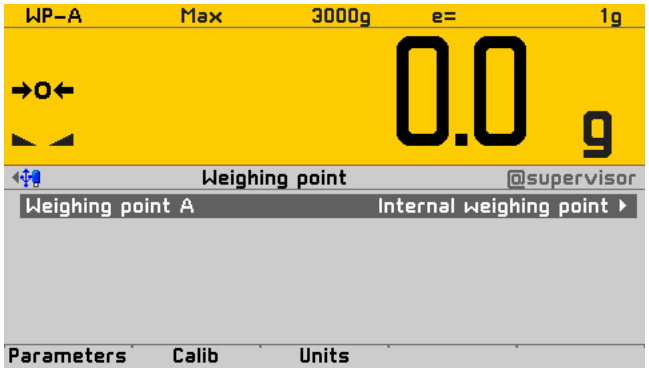
	Write protection active	No write protection
CAL switch A, 1 and 2		
back device		

CAL switch	Meaning of 'Write Protection Active'
A	Prevents the calibration data and parameters of weighing electronics A from being changed
1	The following changes are prevented: - Calibration data and parameters of changed weighing points - Alibi settings
2	The following is prevented: - Loading/flashing of firmware, BIOS, and application programs to the device, see also Chapter - Changing of license settings This CAL switch is sealed in legal for trade mode.

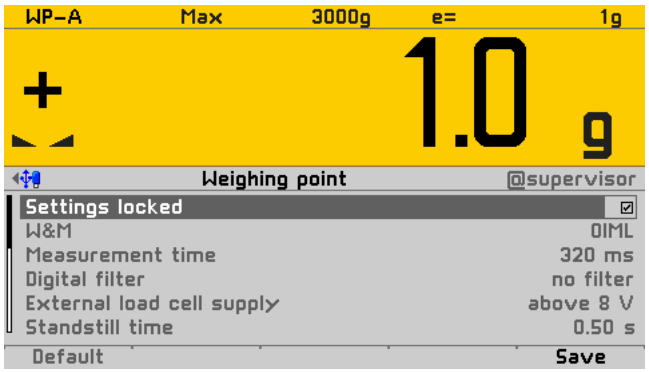
Note	Changing means: Input changes in the input fields as well as changes via the 'Restore' and 'Import' functions.

5.1.5.2 Via Software

Note	A unique check number is created every time a calibration or changed parameters are saved. This can be viewed under [System information]-[Show calibration check numbers] (see Chapter 5.20.7) and noted; if necessary.



The weighing point has a 'Settings locked' parameter in the [Parameters] menu item.



If this parameter is set for the weighing point,

- the calibration data and parameters of the weighing point are only viewed as if the corresponding CAL switch were closed.
- Only the 'Settings locked' parameter can be changed.
- Restoring/importing a weighing point is locked.

Note	If 'Settings locked' and 'W&M' were selected for at least one weighing point, this has the same effect as a closed CAL 1 and CAL 2 switch, see Chapter 5.1.5.1.

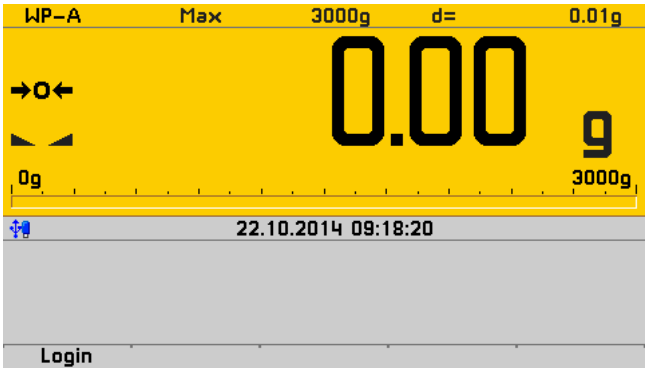
5.2 Switching on the Device

The device can be set up as follows:

- Via keys on the front of the device
- Via an external PC keyboard
- Via a notebook/PC using the VNC software (included on the CD)
- Via a notebook/PC using an internet browser

When the device is powered up, the following appears:

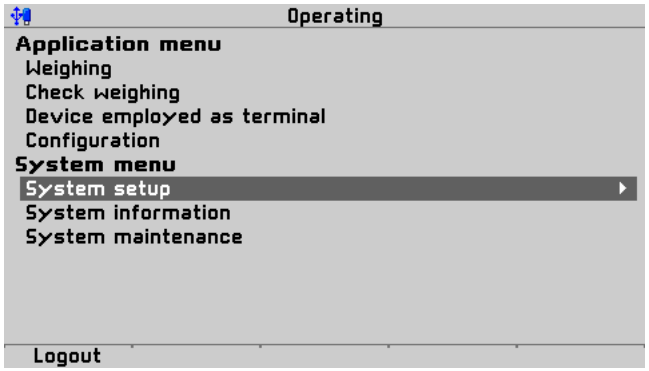
Checking... **Booting...** **Restore...**	The device runs up.
No signal	Error message: no load cells are connected (see also Chapter 11.1).
No values from scale	Error message: no communication with the xBPI scale (see also Chapter 11.2). Error message: no weight values are read from ADC (analog-digital converter) (see also Chapter 11.1).
Scale not ready	Error message: no load cells or no scale is connected (see also Chapter 11.3).



▷ The weight display appears.

▶ User login, see Chapter 5.9.4.1.

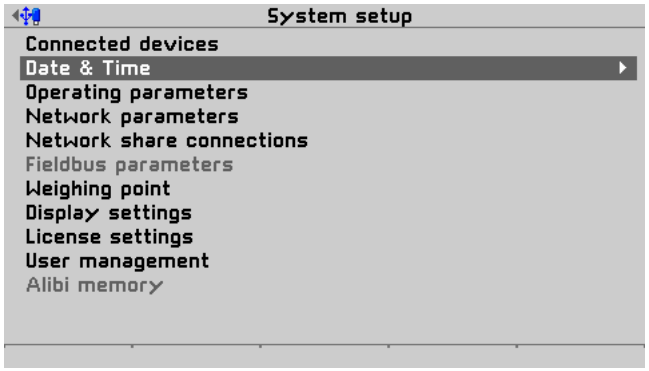
Note	Default: user management is **not** activated.



▷ The operating menu is displayed.

The application and system menus are selected here.

▶ Select and confirm [System setup] using the cursor.



▷ The setup menu is displayed.

▶ The date and time are set first, see Chapter 5.19.2.

5.3 Switching off the Device

See Chapter 6.1.9.

5.4 Warm-up Time

The device requires a warm-up time of 30 minutes before calibration.

5.5 Configuring and Calibrating via the Front Keys/PC Keyboard

The following options are possible:

- Via keys on the front of the device
- Via an external PC keyboard (USB connection)

Go to Chapter 5.7.

5.6 Configuring and Calibrating via a Notebook/PC

The following options are possible:

- Via VNC Viewer (on the enclosed CD-ROM), see Chapter 5.6.4.
- Via web browser (Microsoft Internet Explorer or Mozilla Firefox), see Chapter 5.6.5. Java (Sun) must be installed and activated for this option.

5.6.1 Connecting the Device to the Network and Determining the IP Address

The DHCP server is active in the network

An IP address is assigned to the device automatically.

The DHCP server is not active in the network

If the device is connected to a notebook/PC via a point-to-point connection, an IP address is assigned via the 'AutoIP' function. This can take up to two minutes.

IndicatorBrowser

The IP address can be determined using 'IndicatorBrowser' (included on the CD-ROM) and via the 'host name' of the device (see also Chapter 5.6.3). The host name is composed of the device name and the last three bytes of the MAC ID. A label with the complete MAC ID is located on the outside of the device.

MAC: 00:90:6C:6B:6A:5E sartorius
IP: _____._____._____._____

Default host name: PR5500-6B6A5E

UPnP view with Microsoft Windows XP

The IP address can also be determined using the 'Microsoft Internet Explorer' under 'Network' if the 'UPnP' view is turned on (default: off).

Procedure:

▶ Click 'Start' -> 'Control Panel' -> 'System'.

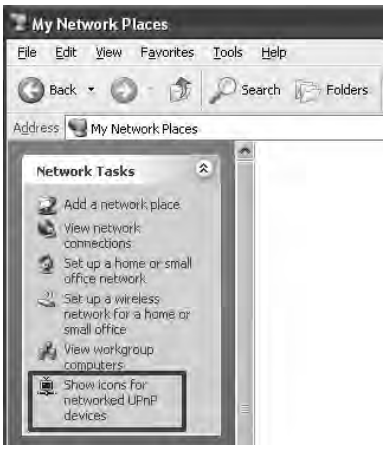
▷ The 'System Settings' window opens.

Note	'Service Pack 2' or higher must be installed.

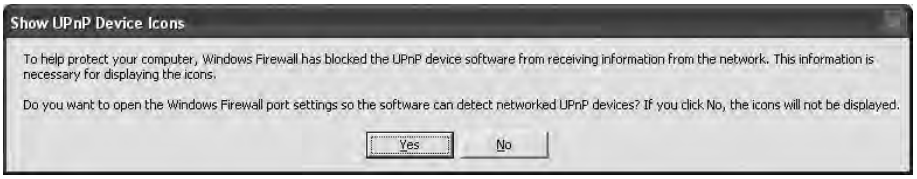
▶ Click 'OK'.

- ▶ Double-click the icon for the network environment on the Desktop.
- ▷ The 'Network Places' window opens.
- ▶ Click the menu item 'Tools' -> 'Folder Options...'

- ▷ The 'Folder Options' window opens.
- ▶ Click on 'Show common tasks in folders'.
- ▶ Click 'OK'.



- ▶ Click 'Show icons for network UPnP devices' in the 'Network Places' under 'Network tasks'.
- ▷ The 'Show UPnP device icons' window appears.



- ▶ Click 'Yes'.

▷ The icons for the devices are displayed.

▶ Click on the relevant icon using the right mouse button and select the 'Properties' menu item.

▶ Read the IP address.

UPnP View with Microsoft Windows 7

If the network was **not** configured as a 'public network', the device icons are shown automatically under 'Network'.

5.6.2 Activating the 'DHCP' Network

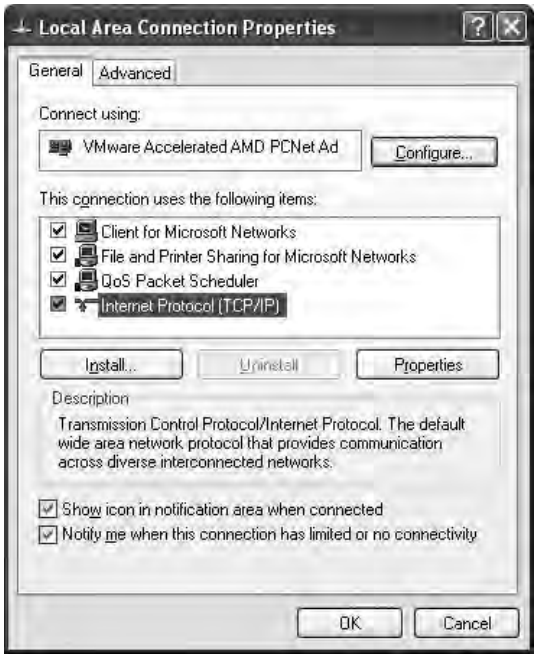
Requirement

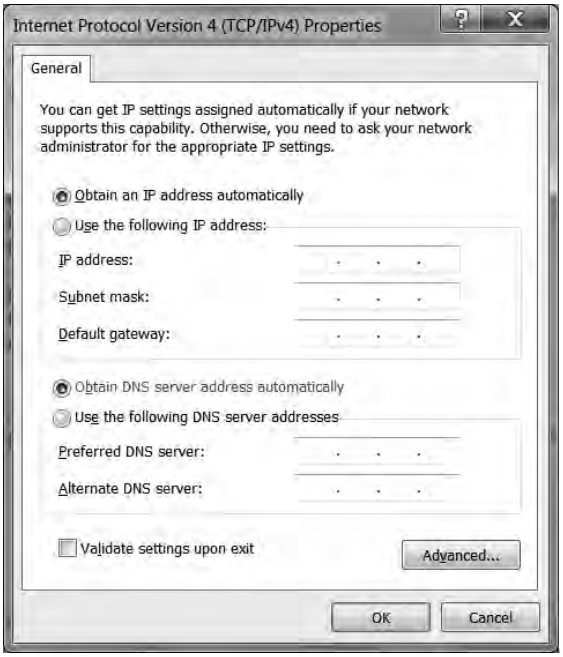
'Use DHCP' has been selected under [System setup]-[Network parameters].

This ensures that a valid address for device network identification can be assigned to the device; see Chapter 5.19.4.

Note	The last three bytes of the MAC ID are displayed in default host name. A label with the complete MAC ID is located on the outside of the device. A device with DHCP 'on' (default factory setting) and connected to an IT network (company network) with a DHCP server does not require any further action, but there will be a delay of 2–3 minutes. A network connection is then established automatically (device <-> workstation/PC).

Notebooks/PCs connected temporarily must have the following network adaptor properties (DHCP/DNS automatic):



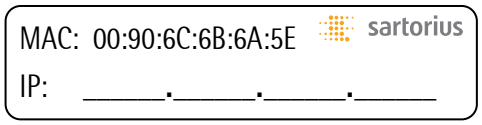


For setup, the first network contact is possible only by determining the IP address/subnet mask automatically under 'Obtain an IP address automatically' (default factory setting) or 'Use the following IP address'.

5.6.2.1 MAC ID

The MAC ID or (6-digit) hardware address, e.g., 00:90:6C:6B:6A:5E, is a unique number for network adaptor identification.

A label with the complete MAC ID is located on the outside of the device.



The last three bytes ensure that the initialized host name (in this case: PR5500-6B6A5E) is always unique.

5.6.2.2 DHCP

Normally, DHCP servers are only used in IT-supported company networks and not on local (directly) connected notebooks/PCs.

Nevertheless, 'DHCP' must be activated on the PC. 'DHCP' devices detect each other after a cyclical automatic 'DHCP' server search is run with a timeout (approx. two to three minutes) because they use an 'auto-IP' address within a range of 169.254.0.1 to 169.254.255.254.

Note	When the IT/DHCP network cable is temporarily connected between the notebook/PC and a device, the DHCP server is lost and the notebook/PC returns to the auto-IP address within approx. two minutes. Reason: At every network cable connecting the DHCP server/client relationship is checked newly.

Example

If the search time is exceeded (because there is 'no server found'), the PR 5500 is assigned an IP address automatically (e.g., 169.254.0.123). The same applies to the notebook or PC (e.g., 169.254.0.54).
These IP addresses are different on both sides:

- the same in terms of the first two octets of the IP address (e.g., network ID 169.254.)
- different in terms of the last two octets of the IP address (e.g., host ID 0.123.)

5.6.2.3 Host name (device name)

The host name must always be unique.

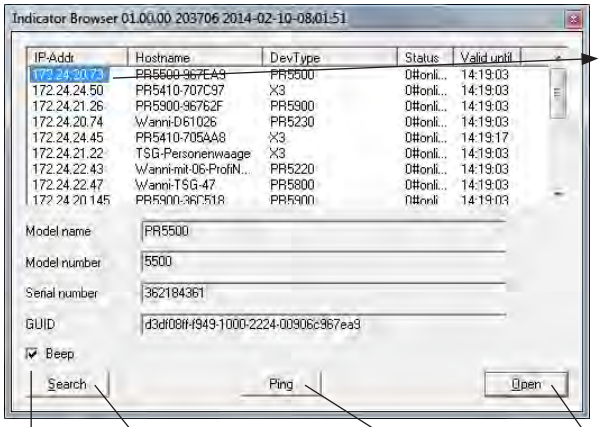
If names are user-defined (host name is editable)

- the same host name must not exist twice within the network ID.
  For example: correct assignment would be host name device 1: PR5500 scale1; device 2: PR5500 scale2
  The 'default' (PR5500-6B6A5E) is always correct, whereby the last three bytes of the MAC ID are unique.
- This is limited to 2–24 characters.
  Permitted are
  - letters A–Z, a–z
  - numbers 0–9, but these must not constitute the first or last character
  - hyphens ('-'), but these must not constitute the first or last character

5.6.3 Searching for Devices in the Network using 'IndicatorBrowser'

The address can be determined using the 'IndicatorBrowser' program (on the enclosed CD-ROM).

Install and start the 'IndicatorBrowser'.



The 'IndicatorBrowser' searches within the current network ID, e.g., 169.254. and 172.24., on all available network adaptors in the notebook/PC (several possible/ recommended, e.g., LAN global/LAN local).

Result:

List of all connected devices with status:

search??? – online - byebye – lost???

Click the button to open the default web browser, e.g., Microsoft Internet Explorer, directly using the marked IP address.

Click the button to re-start the network search.

You must wait 2–3 minutes.

Click the button to localize the associated device. Short-term visual feedback from the device:

Display background flashes.

Acoustic signal for each device that was detected as "online.

If the browser window remains empty after the minimum wait time, or if the expected device is not listed, the network ID of the local notebook/PC must be checked and changed, if necessary.

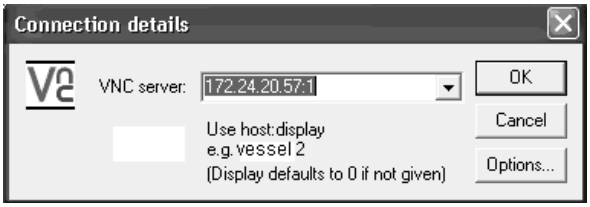
Note	Only certain Sartorius Intec devices are supported by the 'IndicatorBrowser'.

5.6.4 Operation using the VNC Client Program

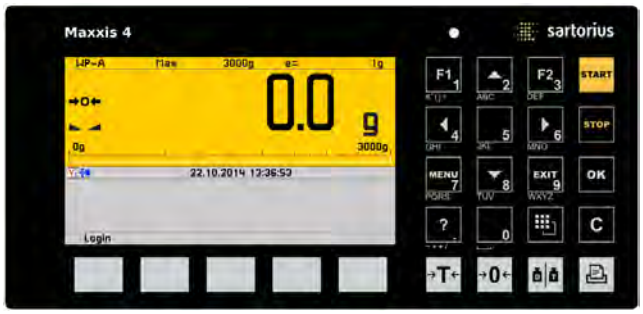
VNC (on the enclosed CD) stands for "Virtual Network Computing" and is a program for the remote operation of computers.

The program distinguishes between the VNC server and VNC client (viewer). The server program is part of the device software.The client program (viewer) must be run on the notebook/PC in order to operate the device.

Note	The VNC version provided on CD must be used. More recent VNC versions (freeware) from the internet are not supported by the device.



For direct operation using the VNC program, the IP address (extended by :1) must be specified when you run the program,
e.g., 172.24.20.57:1.



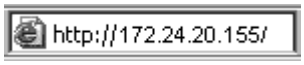
VNC access can be limited to specific notebooks/PCs in the network; see Chapter 5.19.4.

The VNC user interface appears.

5.6.5 Operation via a Web Browser

Note	Instead of the VNC viewer, a web browser, e.g., Microsoft Internet Explorer, Mozilla Firefox, can be used directly.
	The disadvantage is that an additional Java installation is required.
	In addition to VNC, this includes:
	- Easy configuration printout.
	- Easy display of
	  - database tables
	  - Alibi memory content
	  - manuals
	  - event logs
	  - log files
	  - error logs
	- Easy download of language files.

▶ Enter and confirm the [IP address] for the internet browser.

Example: 

▷ The menu appears on the screen. The device name entered under [host name] appears under the header in brackets.

Configuration

• [Remote Configuration (VNC)]	For device operation using the VNC program without additional installation of VNC client.
• [Remote Configuration (VNC) Pop-up Window]	‚Java' installation is necessary, see page 122.
• [Configuration Printout]	Can be used for printing the configuration data as a text file, see Chapter 13.1.

View

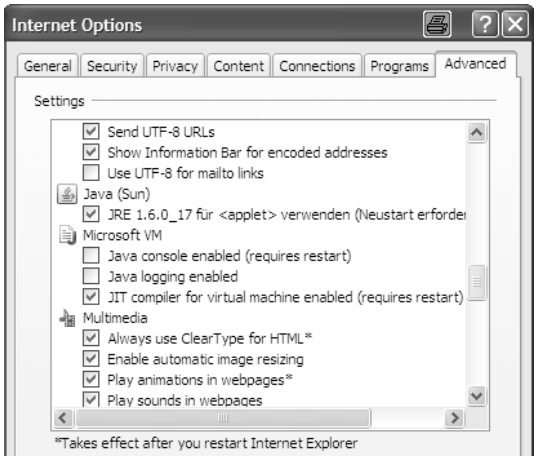
• [Weighing Points]	Displays the weighing points in a table, see Chapter 6.1.13.1.
• [Weighing Points Pop-up Window]	‚Java' installation is necessary, see page 122.
• [Browse Database]	Browse the application-specific database, see Chapter 6.1.13.2.
• [Browse alibi memory]	Browse the alibi memory, see Chapter 6.1.13.3.
• [Manuals]	PDF files are saved to the SD card (SD cards supplied with device by Sartorius Intec only), see Chapter 6.1.13.4.

Service level

• [Browse eventlog]	Browse event log, see Chapter 6.1.13.5.
• [Browse logfiles]	Browse, display, copy, print log files, see Chapter 6.1.13.6.
• [Show last fatal system error]	Browse, display, copy, print the error log, see Chapter 6.1.13.7.
• [Screenshot]	Saves a screenshot, see Chapter 6.1.13.8.
• [Export database]	Export the database as an XML file, see Chapter 6.1.13.9.
• [Export Alibi memory]	Export the alibi memory as an XML file, see Chapter 6.1.13.10.
• [Export service report]	Export the service report as an XML file, see Chapter 6.1.13.11.
• [Backup and restore setup data]	Create backup of the setup data and restore setup data, see Chapter 6.1.13.12.
• [Upload language files]	Uploads the language files to the device, see Chapter 6.1.13.13.

Example: Microsoft Internet Explorer in Windows XP

With Internet Explorer, first check that the required Java (Sun) applet is installed and activated.



- Start Internet Explorer.
- Click [Tools] – [Internet Options...]
- Click on the [Advanced] tab.
- [Java (Sun)]: Check whether entries are provided.
- If so, check ☑ [IRE 1.6.xxx ...] (not activated by default).
- If no entries are provided, download the 'Java (Sun) applet' as freeware from the internet and install it.

Note	In earlier Windows installations, Java was provided as standard, but not activated.

Example: Microsoft Internet Explorer in Windows 7

With Internet Explorer, check if the required Java (Sun) applet is installed. If it is not installed, the link for a Java download is suggested automatically.

5.6.6 Resetting Network

Note	Pressing the reset key during a long time (>5 sec.) triggers a cold start. - The settings will not be changed. - The database will be emptied. - Current process steps are deleted. - Application must be restarted. - The database must be restored.

Pressing the reset switch during a long time (>5 sec.) resets the network settings to default/factory settings.

That means:

- LED will be switched on a second time.
- ‚DHCP' is activated.

- Web server is enabled.
- VNC access is enabled.
- ‚Host name' is initialized e.g. PR5500-6B6A5E (device type-MAC-ID).

  Example of MAC-ID: 00-90-6C-**6B-6A-5E**

  This ensures that a valid address for identification of the instrument in the network can be assigned to the device, see Chapter 5.19.4.

Note	The last 3 bytes of the MAC ID are displayed. A label with the complete MAC ID is fitted to the outside of the device. A device set to DHCP ☑ (default/factory setting) and connected to an IT network (company network) with a DHCP server does not require further actions except for a **2...3-minute waiting time**. Subsequently, a network connection is established automatically (device <-> workstation/PC).

5.7 Help Function

The help function can be accessed from any parameter window using the **?** key. A window appears in which you can scroll up and down through the content using the cursor keys (↑, ↓, ▲, ▼). The window can be closed using the ESC/EXIT key.

Note	The help text is given in English as a default if the corresponding language is unavailable.

5.8 Selecting the Operating Language

Factory settings: system language = operating language (display language)

The operating language can be changed as follows:

- In the System menu [System setup]-[Operating parameters]-[Operating language], select the desired language using the cursor keys, confirm the selection and press the [Save] soft key, see also Chapter 5.19.3.
- In the System menu [System setup]-[User management]-[Create/Copy/Change user]-[Operating language] select with the cursor keys, confirm the selection, and save via the [Save] soft key, see also Chapter 5.9.2.1.
- You can also assign the F1 or F2 function keys with the [Change language] function, see Chapter 5.19.3. The operating language can be changed from any menu.

When user management is active,

- only the language assigned to the logged-in user will be displayed after the operating language is changed in the system menu.
- the changed operating language is displayed after the user logs in.

5.9 User Management

5.9.1 General Information

By means of the user management, the access to various menu levels of the instrument can be limited, if the necessity arises. This includes e.g. system set-up, system maintenance, access via the website and the various levels of the application (application-specific).

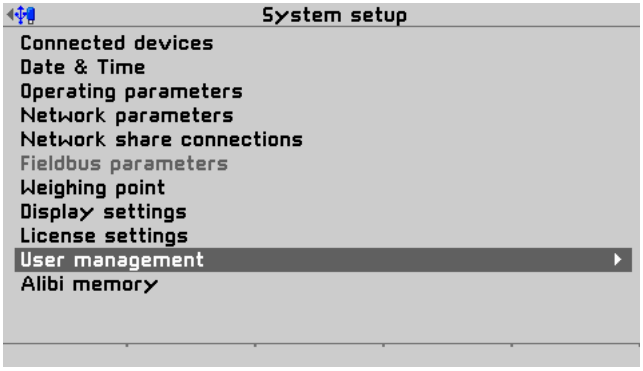
Note	The user management can be activated optionally. However, it is not required for normal operation.

During system installation and set-up, we recommend leaving the user management de-activated. This facilitates the access to the various menus and to the website.

Always activate the user management, if

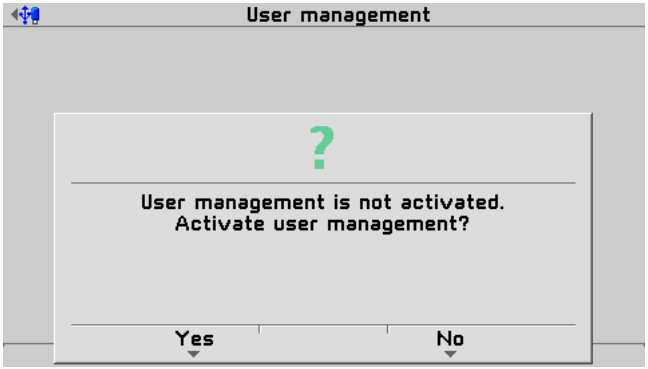
- several persons work with the unit or have access to it.
- the target is to prevent unauthorized persons from making changes to the unit or from influencing the processes controlled by the unit.

5.9.2 Activating User Management



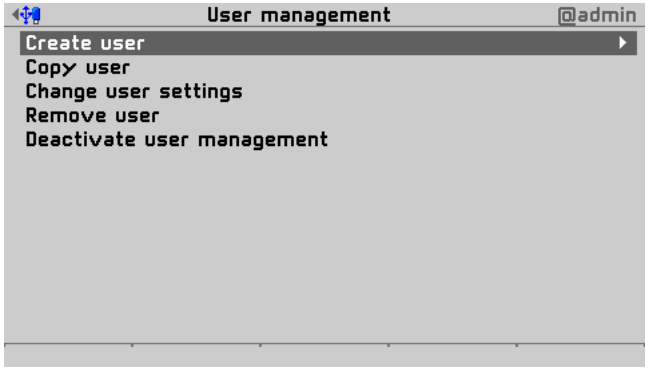
User management is **not** activated by default.

▶ Select and confirm the [System setup]-[User management] menu item.



▷ A prompt window appears.

▶ Press the corresponding soft key.



The users 'admin' and 'default' are created automatically and cannot be deleted.

The administrator is always created with all rights authorized. These cannot be restricted.

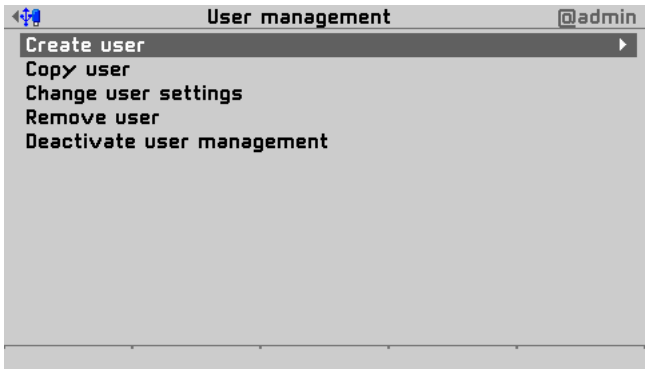
The 'default' user has restricted rights.

If the 'admin' user (administrator) is logged in, this user can

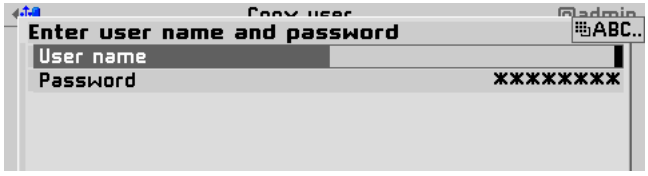
- create new users
- copy users
- change user settings
- remove users
- deactivate user management.

The administrator can create new users with all rights.

5.9.2.1 Creating new Users



▶ Navigate to [System setup]-[User management] and confirm the [Create user] menu item.

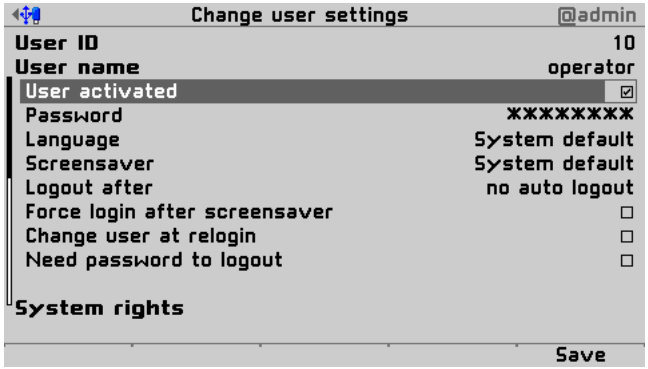


▷ An input window appears.

Note	Special characters are not allowed! Default: user name: ‚admin' password: admin

▶ Enter the user name using the keyboard and confirm.

▶ Enter a password (access code) using the keyboard and confirm.



▷ The user settings window appears.

▷ The user name is displayed with an automatically generated user ID.

▶ Select the corresponding lines with the cursor and confirm.

[User activated]

▶ Check the appropriate box ☑.

An activated user can now log in.

▷ A deactivated user cannot log in. The following error message is displayed.

[Password]

The password can be changed here if desired.

[Language]

▶ Select the desired operating language and confirm.

[Screensaver]

Selection:
[no screensaver], after 1 minute, after 5 minutes, after 10 minutes, after 30 minutes, system default

[Logout after]

Selection:
<no auto logout>, after 1 minute, after 5 minutes, after 10 minutes, after 30 minutes

[Force login after screensaver]

▶ Check the box ☑ when the screensaver is activated.

Once the screensaver is switched on, operation is only possible once a password has been entered.

[Change user at relogin]

▶ Check the box ☑.

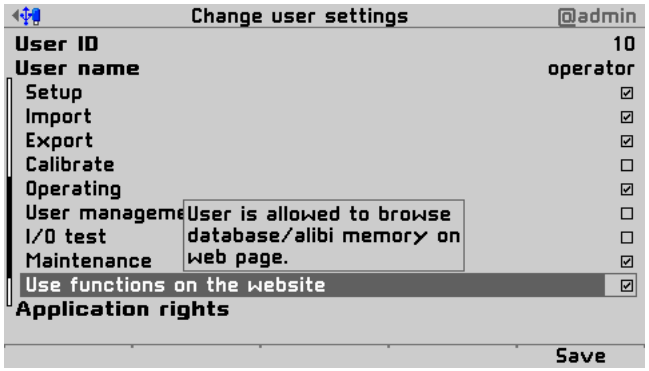
Once the screensaver is switched on, operation is also possible when a different password has been entered.

[Need password to logout]

▶ Check the box ☑.

A password is required in order to log out.

Note	The administrator can always log in or out even when another user has locked the device with a password.



System rights:

[Setup]

▶ Check the box ☑.

User is permitted to change settings in the system setup.

[Import]

▶ Check the box ☑.

User is permitted to import data from the USB/SD memory to the device.

[Export]

▶ Check the box ☑.

User is permitted to export data from the device to the USB/SD memory.

[Calibrate]

▶ Check the box ☑.

User is permitted to calibrate weighing points.

[Operating]

▶ Check the box ☑.

User is permitted to use the indicator keys.

[User management]

▶ Check the box ☑.

User is permitted to create, change, and remove other users.

[I/O test]

▶ Check the box ☑.

User is permitted to start, stop, and test the inputs and outputs.

[Maintenance]

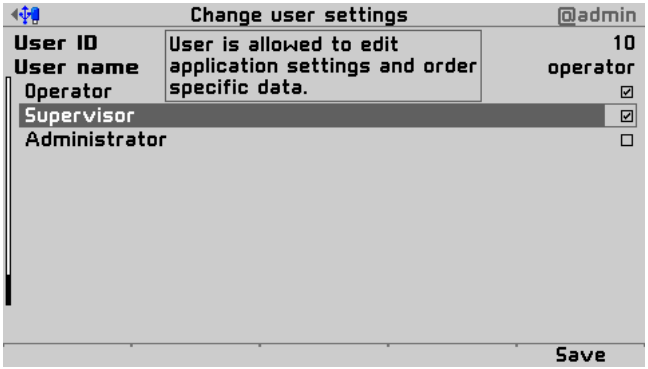
▶ Check the box ☑.

User is permitted to use the system maintenance functions, including software updates.

[Use functions on the website]

▶ Check the box ☑.

User is permitted to use functions on the website.



Sample application rights:

Note	See corresponding application manual.

[Operator]

▶ Check the box ☑.

User is permitted to start weighing and change order-specific data.

[Supervisor]

▶ Check the box ☑.

User is permitted to change application settings and order-specific data.

[Administrator]

▶ Check the box ☑.

User is permitted to change firmware/application settings and order-specific data.

[Simulation]

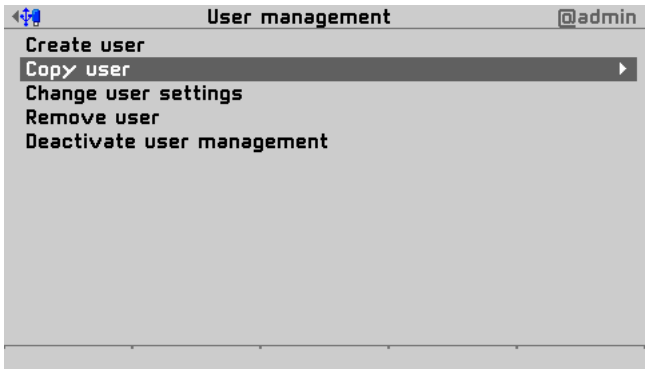
▶ Check the box ☑.

User is permitted to simulate tipping error correction.

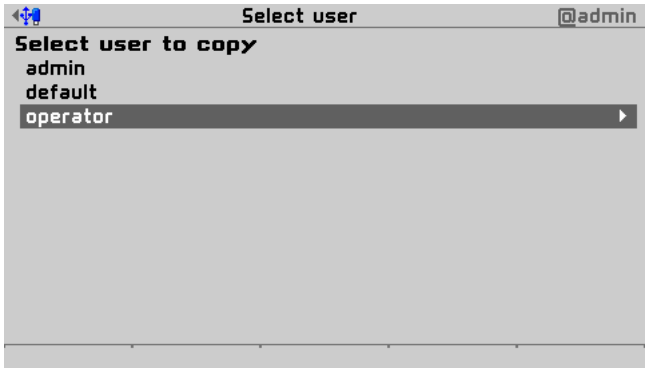
▶ Press the [Save] soft key to save the settings.

5.9.2.2 Copying Users

This function is used among other things to create more than one user at a time with the same rights.



▶ Navigate to [System setup]-[User management] and confirm the [Copy user] menu item.



▷ A selection window appears.

▶ Select and confirm the appropriate user.

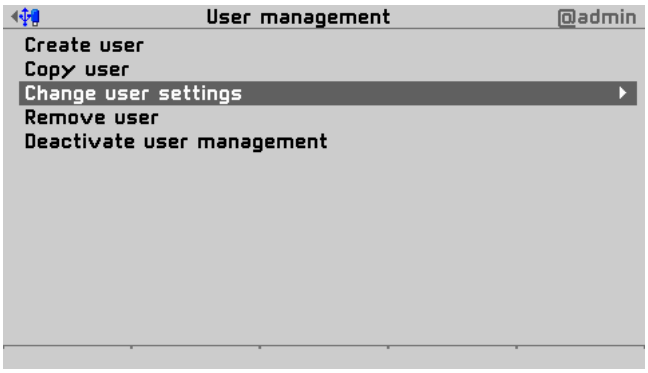
▷ An input window appears.

▶ Enter and confirm the user name and password, see Chapter 5.9.2.1.

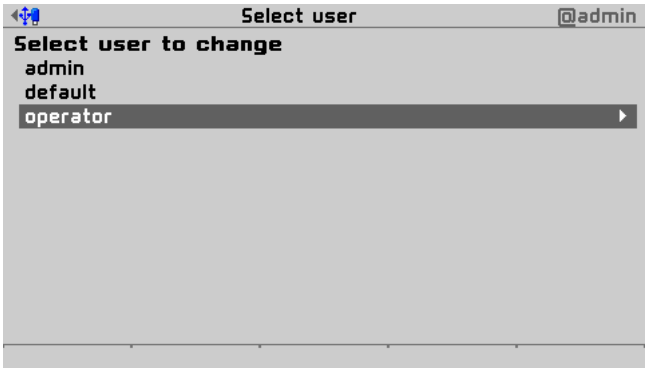
▶ Change the user settings if necessary, see Chapter 5.9.2.3.

5.9.2.3 Changing User Settings

This function is used to change user settings.

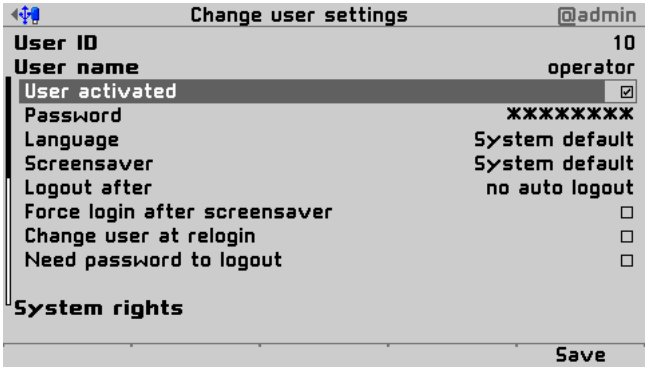


▶ Navigate to [System setup]-[User management] and confirm the [Change user settings] menu item.

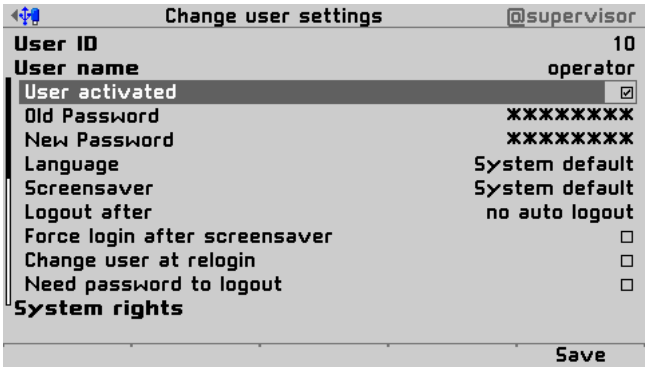


▷ A selection window appears.

▶ Select and confirm the appropriate user.



▷ If the changes are made by the user "admin", only one entry is required for changing passwords.

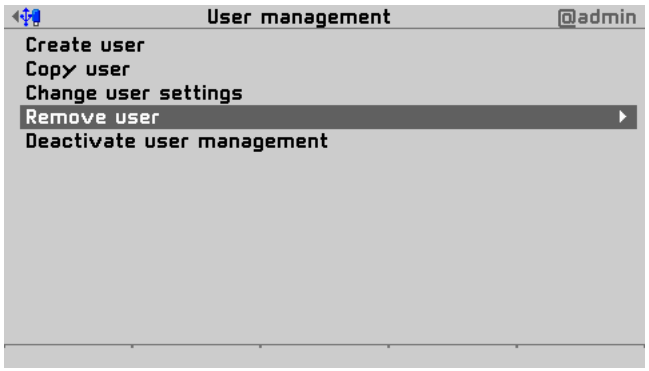


▷ If the changes are made by another user, two entries are required for changing passwords.

▶ Change the corresponding parameters.

▶ Press the [Save] soft key to save the changes.

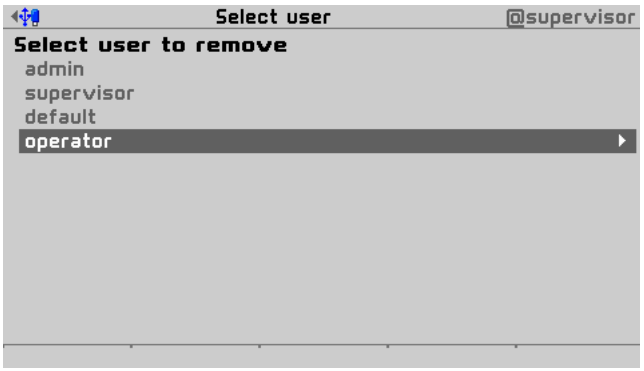
5.9.2.4 Removing Users



This function can be used to remove one or more users from the user management.

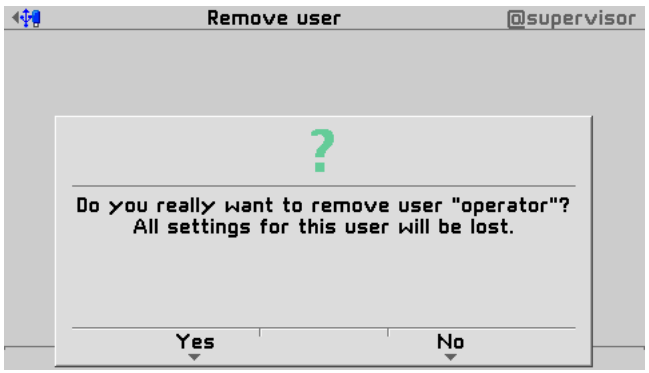
The users "admin" and "default" cannot be deleted.

▶ Navigate to [System setup]-[User management] and confirm the [Remove user] menu item.



▷ A selection window appears.

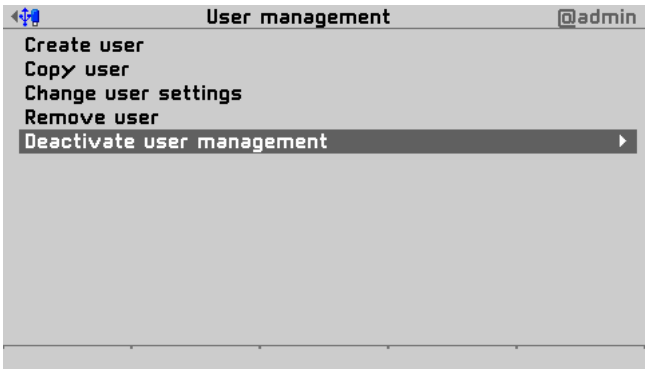
▶ Select and confirm the appropriate user.



▷ A prompt window appears.

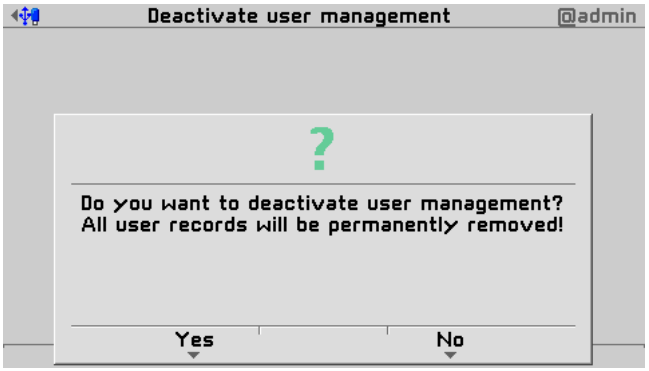
▶ Press the corresponding soft key.

5.9.3 Deactivating User Management



User management can be deactivated again only by the user "admin".

▶ Navigate to [System setup]-[User management] and confirm the [Deactivate user management] menu item.

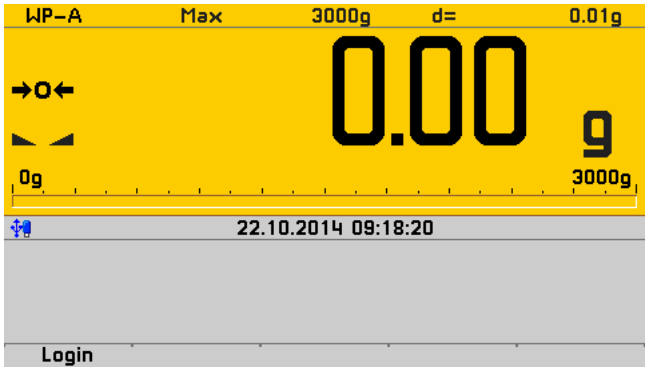


▷ A prompt window appears.

▶ Press the corresponding soft key.

5.9.4 User Login/Logout

5.9.4.1 User Login



An authorized user must log in to start the application or enter parameters.

▶ Press the [Login] soft key to log in as a specific user.

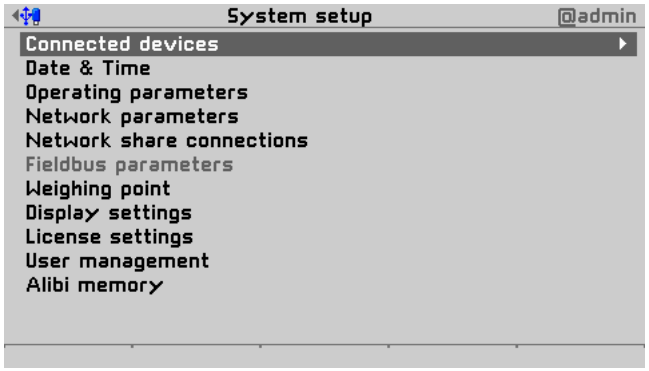
Note	If the user "default" is active, a password must be entered. The empty entry window only needs to be confirmed to log in.

▷ A login window appears.

▶ Enter and confirm the user name.

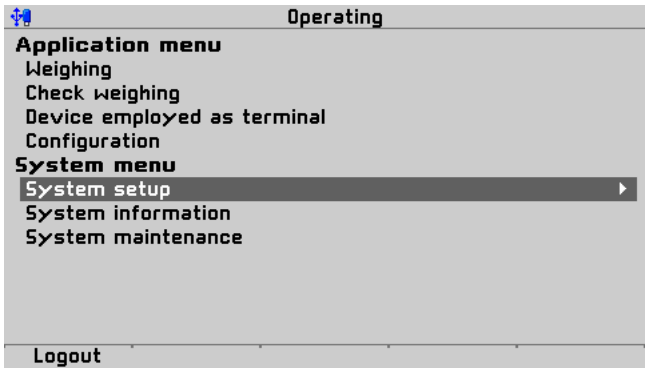
▶ Enter and confirm the password (access code).

Note	Default: user name: "admin" password: "admin"



▷ The user who is currently logged in is shown in the top right-hand corner of the display.

5.9.4.2 User Logout



▶ Press the MENU key to switch to the operating menu.

▶ Press the [Logout] soft key to log out the user who is currently logged in. If a password is required to log out the user (option activated in the user settings), the entry window appears accordingly.

5.10 System Menu

5.10.1 System Setup: Connected Devices

- System setup
  - Connected devices
    - General devices:
    - Remote display
      - Interface: <not assigned>, Built-in RS-232, Option-1/FB or Option-2 RS-485-A, Option-1/FB or Option-2 RS-485-B
      - ...: varies according to interface
      - Default: Settings are reset to factory settings.
      - Save: The settings are saved.
    - ModBus-RTU master
      - Interface: <not assigned>, Built-in RS-232, Option-1/FB or Option-2 RS-485-A, Option-1/FB or Option-2 RS-485-B
      - ...: varies according to interface
      - Default: Settings are reset to factory settings.
      - Save: The settings are saved.
    - PC via EW-Com
      - Interface: <not assigned>, Built-in RS-232, Option-1/FB or Option-2 RS-485-A, Option-1/FB or Option-2 RS-485-B
      - Protocol: EW-Com V1, EW-Com V2, EW-Com V3
      - ...: varies according to interface
      - Default: Settings are reset to factory settings.
      - Save: The settings are saved.
    - Printer
      - Interface: <not assigned>, Built-in RS-232, Option-1/FB or Option-2 RS-485-A, Option-1/FB or Option-2 RS-485-B, Network printer, Network share connection, USB printer, USB folder
      - ...: varies according to interface
      - Default: Settings are reset to factory settings.
      - Test printout: The printer configuration is printed out.
      - Save: The settings are saved.
    - Add. application devices:
    - Ticket printer
      - ...

Note	Application-specific devices are listed under "Add. application devices," see corresponding manual.

5.10.2 System setup: Date & Time

System setup

- Date & Time
  - Time zone — Berlin, Germany...
  - Local date — Current date
  - Local time — Current time
  - Clock source — Local hardware clock, Remote NTP (Network Time Protocol)
  - Remote NTP server — IP address; only displayed when "Remote NTP" is selected as the clock source.
  - Last update — Last updated time on the remote NTP server; only displayed when "Remote NTP" is selected as the clock source.
  - online — Status; only displayed when "Remote NTP" is selected as the clock source.
  - Format
    - Date format:
    - Date of order — mmddyyyy, ddmmyyyy, yyyymmdd, yyyyddmm
    - Date separator — Slash "/", Hyphen "-", Period ".", Space, Japanese 年月日, None
    - Month — 2 digits, 3 characters
    - Year — 2 digits, 4 digits
    - Date/Time separator — Hyphen "-", Space, None
    - Time format:
    - Clock type — 12 h, 24 h
    - Time separator — Hyphen "-", Japanese 時分秒, Colon ":", None
    - Default — The format settings are reset to factory settings.
    - Save — The format settings are saved.
  - Save — The settings are saved.

5.10.3 System setup: Operating parameters

System setup

— Operating parameters

Operation:

— Display language	<(en) English>, (de) Deutsch, et al. User management activated: This setting is only applied once the user has logged off.
— External keyboard layout	<english QWERTY>, german QWERTZ, french AZERTY, italian QWERTY, spanish QWERTY, Russian QWERTY/йцукен
— Input method	<by language>, Hepburn (transfer japanese syllabary ‚Hiragana' to latin script), Pinyin (phonetic notation on the basis of roman alphabet)
— Screensaver	[no screensaver], after 1 minute, after 5 minutes, after 10 minutes, after 30 minutes
— Keyclick sound	no key click, <short key click>, medium key click, long key click
— Coldstart with STOP+EXIT	disabled, immediately, for 3 seconds

Programming:

— Software download	<disabled>, enabled
— Label/Language download	<disabled>, enabled

Operational keys:

— Keys require logged in user	Check the box ☑, if keys have to be disabled for a logged out user.
— Tare key	disabled, <set tare & reset tare>, set tare & set tare again
— Set zero key	disabled, <only when not tared>, reset tare on zero set
— F1 key — F2 key	no function, Change language, Change user, Lock device, Toggle weight unit, Set tare, Reset tare, set tare & reset tare, set tare & zero set, Analog test, Show 10-fold resolution, application-specific options are available

— Keyboard test	Keyboard test, Enter text and click OK .
— Default	Settings are reset to factory settings.
— Save	The settings are saved.

5.10.4 System setup: Network parameters

System setup

— Network parameters

— HW address	xx:xx:xx:xx:xx:xx, displayed only
— Device name (hostname):	e.g.: Hopper 01, Entry: 2-24 alphanumerical characters
— use DHCP	Check the box ☑, if the IP address is to be automatically assigned to a network.
— IP address	nnn.nnn.nnn.nnn; current values are displayed when DHCP has been selected.
— Subnet mask	nnn.nnn.nnn.nnn; current values are displayed when DHCP has been selected.
— Default gateway	nnn.nnn.nnn.nnn; current values are displayed when DHCP has been selected.
Remote access:	
— Webserver enabled	Check the box ☑, if the functions are to be shared via web server.
— VNC-Zugang enabled	Check the box ☑, if the functions are to be shared via VNC.
— VNC client	nnn.nnn.nnn.nnn; enter the corresponding number.
— VNC password	********* (max. 8 characters); protect the device from unauthorized access.
— Default	Settings are reset to factory settings.
— Save	The settings are saved.

5.10.5 System setup: Network share connections

System setup	
— Network share connections	
Configure Network share connections	Connected network share are displayed.
— Add	Add a new network share connection.
— Connection name	Unique name in the device, Entry: max. 16 alphanumerical characters
— Server	Server name (max. 64 characters, valid Hostname acc. to RFC 952) or IP address can be entered.
— Share name on server	Unique name on server, Entry: max. 64 characters (Must match the share name.)
— Folder path	Path to folder relative to share. Folder must exist. Entry: max. 128 characters Not allowed are: ‚/' (slash) or , ' (space) at beginning or end, ‚.' (dot) at end and some specific combinations of ‚.', '/', and , ' (space).
— Domain	(Optional) Name of Windows domain, Entry: Max. 64 characters
— User name	(Optional) User name, Entry: Max. 64 alphanumerical characters
— Password	(Optional) Password, Entry: Max. 64 characters
— Test	Connects temporary to the share and tries to create a file in the specified folder.
— Save	The settings are saved.
— Change	Change a network share connection.
— Remove	Remove a network share connection.

5.10.6 System setup: Fieldbus parameters

System setup
- Fieldbus parameters
  - Fieldbus protocol: The name of the installed fieldbus card is displayed.
  - ... varies according to fieldbus card
  - Default Settings are reset to factory settings.
  - Save The settings are saved.

5.10.7 System setup: Weighing point – Weighing point A

System setup
- Weighing points
  - Weighing point A <not assigned>, Internal weighing point, xBPI scale, SBI scale, Pendeo Truck, Pendeo Process, PR-Net weighing point, Mettler-Scale, SMA scale

5.10.8 System setup: Weighing point: Weighing point A: Internal weighing point

System setup	
— Weighing point	
— Weighing point A	Internal weighing point
— Calib	Calibrate weighing electronics
— New	
— Reset SPAN and dead load	<Continue>, Cancel
— Max (Maximum capacity)	Upper limit of weighing range 0.000010...<3000>...9999998 <kg>, t, lb, g, mg, oz
— Scale interval (1 d)	Selection <1>, 2, 5, 10, 20, 50 displayed according to the decimal places at Max and the weight unit
— Dead load at	by load, by mV/V, Save
— Max at	by load, by mV/V, by date, Linear, Save
— calibrated with mV/V	displayed only
— Sensitivity	displayed only
— Save	The calibration is saved.
— Modify	For small modifications only, such as resetting the dead load. Otherwise selected "New."
— Max (Maximum capacity)	Upper limit of weighing range 0.000010...<3000>...9999998 <kg>, t, lb, g, mg, oz
— Scale interval (1 d)	Selection <1>, 2, 5, 10, 20, 50 displayed according to the decimal places at Max and the weight unit
— Dead load at	by load, by mV/V, Save
— Max at	by load, by mV/V, by date, Linear, Save
— calibrated with mV/V	displayed only
— Sensitivity	displayed only
— Save	The calibration is saved.

– Units	1, 2, 3; additional weight units for display
– Units 1...3	kg, t, lb, g, mg, oz
– Display accuracy	<same>, 1 level lower, 2 level lower, 3 level lower, 3 level higher, 2 level higher, 1 level higher
– Default	Settings are reset to factory settings.
– Save	The settings are saved.
– Parameter	Parameter settings
– Settings locked	When selected settings are displayed only. No changes possible (as when CAL switch is closed).
– W&M	<none>, [OIML] (not possible when range mode "multi-interval" is selected or Max has been set with more than three decimal places), NSC, NTEP
– Measurement time	5 ms, 10 ms, 20 ms, 40 ms, 80 ms, <160 ms>, 320 ms, 640 ms, 960 ms, 1280 ms, 1600 ms, [≤1 s]
– Digital filter	<off>, Bessel, aperiodic, Butterworth, Tschebyscheff The digital filter can only be switched on if a measurement time is set to ≤160 ms; see Section „[Digital filter]“ on page 176.
– Cutoff frequency	The cutoff frequency for the low pass filter can be set from 0.01 to 40.00 Hz; only when the digital filter is selected. The Hz range depends on the measurement time; see Section „[Cutoff frequency]“ on page 175.
– External load cell supply	≤8 V, >8 V
– Standstill time	0.00 s...<0.50 s>...2.00 s (The range depends on the measurement time.)
– Standstill range	0.00 d...1.00 d...10.00 d (The range depends on the measurement time.)
– Tare timeout	0.0 s...<2.5 s>...25.0 s; timeout when there is no standstill
– Zeroset range	0.00 d...<50.00 d>...10000.00 d [<4% and <20% of Max], timeout duration when there is no standstill
– Zerotrack	<yes>, no; when "yes" is selected values for the next three parameters must be entered.
– Zerotrack range	0.01 d...0.25 d...10000.00 d (only if "Zerotrack" is set to "yes")
– Zerotrack step	0.01 d...0.25 d...10.00 d (only if "Zerotrack" is set to "yes")
– Zerotrack time	0.1 s...1.0 s...25.0 s [<0.5 e/s] (only if "Zerotrack" is set to "yes")
– Overload	0 d...9 d...9999999 d [≤9 e]
– Minimum weight	0 d...20 d...9999999 d [20 e for class III]
– Range mode	<single range>, multiple range, multi-interval See also Chapters 5.11.16.2 and 5.11.16.3.
– Range limit 1	0...max. weight, transition from small to medium scale interval; only when multiple range or multi-interval has been selected.
– Range limit 2	0...max. weight, transition from medium to large scale interval; only when multiple range or multi-interval has been selected.
– Default	Settings are reset to factory settings.
– Save	The settings are saved.

5.10.9 System setup: Weighing point: Weighing point A: xBPI scale

System setup	
— Weighing point	
— Weighing point A	xBPI scale
— Parameters	see Chapter 5.12.3
— Calib	Calibrate weighing point
Preload/dead load:	
— Set	Accept, error reset, cancel
— Delete	Accept, error reset, cancel
SPAN:	
— Adjust with user weight	Calibrate with user-defined weight.
— Adjust with automatic weight	Calibrate with automatic weight detection
— Adjust with default weight	Calibrate with default weight
— Adjust with internal weight	Calibrate with internal weight
Linearity:	
— Default linearisation	Accept, error reset, cancel
— User linearisation	Accept, error reset, cancel
— Units	
— Number of units	1 weight unit, 2 weight units, 3 weight units
— Units 1-3	Gram g, Kilogram kg, Carat ct, Pound lb, Unze oz, Troy unze ozt, Tael Hongkong tlh, Tael Singapur tls, Tael Taiwan tlt, Grain GN, Pennyweight dwt, Milligram mg, Parts/pound /lb, Tael china tlc, Momme mom, Karat k, Tola tol, Baht bat, Mesghal m, Tonne t
— Display accuracy	<basic accuracy>,-1 at load cycle, 1 level lower, 2 level lower, 3 level lower, 3 level higher, 2 level higher, 1 level higher
— Setup	Once the scale is connected, all important data is loaded from the scale on the device.
— Configuration	See xBPI parameter tables on page 187.

5.10.10 System setup: Weighing point: Weighing point A: SBI scale

System setup	
— Weighing point	
— Weighing point A	SBI scale
— Param	Parameter settings
— Settings locked	When selected settings are displayed only. No changes possible (as when CAL switch is closed).
— W&M	<none>, [OIML], NSC, NTEP
— Max (Maximum capacity)	0.000001 mg...<1000 kg>...9999999 t
— Scale interval	<1>, 2, 5, 10, 20, 50
— Minimum weight	0 d...9999999 d
— Update time	0.1 s...<0.3 s>...2.0 s
— Default	Settings are reset to factory settings.
— Save	The settings are saved.

5.10.11 System setup: Weighing point: Weighing point A: Pendeo Truck

System setup	
— Weighing point	
— Weighing point A	Pendeo Truck
— Parameters	Parameter settings
— Settings locked	When selected settings are displayed only. No changes possible (as when CAL switch is closed).
— W&M	<none>, [OIML] (not possible when range mode "multi-interval" is selected or Max has been set with more than three decimal places), NSC, NTEP
— Ambient conditions	very stable condition, Stable condition, Unstable condition, Very unstable condition
— Detect a defect load cell	Select ☑ if max. simulation of a faulty load cell should be automatic.
— Unbalanced check deviation	The plausibility check is activated when the average deviation is >0%. Setting range: 0–100%
— Standstill time	0.00 s…<0.50 s>…2.00 s (The range depends on the measurement time.)
— Standstill range	0.00 d…1.00 d…10.00 d (The range depends on the measurement time.)
— Tare timeout	0.0 s…<2.5 s>…25.0 s; timeout when there is no standstill
— Zeroset range	0.00 d…<50.00 d>…10000.00 d [<4% and <20% of Max], timeout duration when there is no standstill
— Zerotrack	<yes>, no; when "yes" is selected values for the next three parameters must be entered.
— Zerotrack range	0.01 d…0.25 d…10000.00 d (only if "Zerotrack" is set to "yes")
— Zerotrack step	0.01 d…0.25 d…10.00 d (only if "Zerotrack" is set to "yes")
— Zerotrack time	0.1 s…1.0 s…25.0 s [<0,5 e/s] (only if "Zerotrack" is set to "yes")
— Overload	0 d…<9 d>…9999999 d [≤9 e]
— Minimum weight	0 d…<20 d>…9999999 d [20 e for class III]
— Range mode	<single range>, multiple range, multi-interval See also Chapters 5.11.16.2 and 5.11.16.3.
— Range limit 1	0…max. weight, transition from small to medium scale interval; only when multiple range or multi-interval has been selected.
— Range limit 2	0…max. weight, transition from medium to large scale interval; only when multiple range or multi-interval has been selected.
— Default	Settings are reset to factory settings. If "Settings locked" is selected, the [Default] soft key is not active.
— Save	The settings are saved.

- Calib
  - Setup Pendeo:
    - Quick install with search load cells and set dead load
      - Search for a new network and reset the load cell data to the factory settings.
      - Enter local gravity.
      - Set dead load with load.
    - Search for connected load cells
      - Search for a new network and reset the load cell data to the factory settings.
    - View and assign load cells
      - Info — View selected load cell data.
      - Assign — Assign load cells.
      - by name — Change the display from „by ID" (LC 1...n + serial number) to „by name" of load cells; only possible if a load cell name has been assigned.
      - by ID — Change the display from „by name" to „by ID" of load cells.
      - Accept — Accept the load cell assignment; only possible if load cell assignment is active.
      - Save — The settings are saved.
    - Calibrate the scale
      - New — Carry out a new calibration.
        - Local gravity — <9.81379 m/s²> (Hamburg)
        - Number of platforms — Only appears if the number of load cells is ≥8.
        - Max (Max. capacity) — Upper limit of weighing range 0.000010...<3000>...9999998 <kg>, t, lb, g, mg, oz
        - Scale interval (1 d) — Selection <1>, 2, 5, 10, 20, 50 displayed according to the decimal places at Max and the weight unit
        - Dead load — by load, by value
        - Calibration weight — user weight
        - Corner correction — Platform 1, platform 2 (Only appears if the number of load cells is ≥8.)
        - Save — Save calibration.

— Calib	
— Calibrate the scale	
— Modify	Modify calibration.
— Local gravity	<9.81379 m/s²> (Hamburg)
— Max (Max. capacity)	Upper limit of weighing range 0.000010...<3000>...9999998 <kg>, t, lb, g, mg, oz
— Scale interval (1 d)	Selection <1>, 2, 5, 10, 20, 50 displayed according to the decimal places at Max and the weight unit
— Dead load	by load, by value
— Calibration weight	user weight
— Corner correction	Platform 1, platform 2 (Only appears if the number of load cells is ≥8.)
— Save	Save calibration.
— Assign load cell name	Give each load cell a name.
— Load cell 1-n	e.g.: PR 6224-xx
— Default	Settings are reset to factory settings.
— Save	The settings are saved.
— Service function for LCs	Deactivate/activate load cell.
— Load cell 1-n	Select the faulty load cell and reset ☑ to ☐. Select the new (replaced) load cell and select ☑.
— Accept	After deactivation the simulation for the deactivated load cell starts. Once the replaced load cell has been activated the search process starts.
— Units	1, 2, 3; additional weight units for display
— Units 1-3	kg, t, lb, g, mg, oz
— Display accuracy	<basic accuracy>, 1 level lower, 2 level lower, 3 level lower, 3 level higher, 2 level higher, 1 level higher
— Default	Settings are reset to factory settings.
— Save	The settings are saved.

5.10.12 System setup: Weighing point: Weighing point A: Pendeo Process

System setup	
— Weighing point	
— Weighing point A	Pendeo Process
— Parameters	Parameter settings
— Settings locked	When selected settings are displayed only. No changes possible (as when CAL switch is closed).
— W&M	<none>, [OIML] (not possible when range mode "multi-interval" is selected or Max has been set with more than three decimal places), NSC, NTEP
— Ambient conditions	very stable condition, Stable condition, Unstable condition, Very unstable condition
— Detect a defect load cell	Select ☑ if max. simulation of a faulty load cell should be automatic.
— Unbalanced check deviation	The plausibility check is activated when the average deviation is >0%. Setting range: 0–100%
— Standstill time	0.00 s…<0.50 s>…2.00 s (The range depends on the measurement time.)
— Standstill range	0.00 d…1.00 d…10.00 d (The range depends on the measurement time.)
— Tare timeout	0.0 s…<2.5 s>…25.0 s; timeout when there is no standstill
— Zeroset range	0.00 d…<50.00 d>…10000.00 d [<4% and <20% of Max], timeout duration when there is no standstill
— Zerotrack	<yes>, no; when "yes" is selected values for the next three parameters must be entered.
— Zerotrack range	0.01 d…0.25 d…10000.00 d (only if "Zerotrack" is set to "yes")
— Zerotrack step	0.01 d…0.25 d…10.00 d (only if "Zerotrack" is set to "yes")
— Zerotrack time	0.1 s…1.0 s…25.0 s [<0,5 e/s] (only if "Zerotrack" is set to "yes")
— Overload	0 d…<9 d>…9999999 d [≤9 e]
— Minimum weight	0 d…<20 d>…9999999 d [20 e for class III]
— Range mode	<single range>, multiple range, multi-interval See also Chapters 5.11.16.2 and 5.11.16.3.
— Range limit 1	0…max. weight, transition from small to medium scale interval; only when multiple range or multi-interval has been selected.
— Range limit 2	0…max. weight, transition from medium to large scale interval; only when multiple range or multi-interval has been selected.
— Default	Settings are reset to factory settings. If "Settings locked" is selected, the [Default] soft key is not active.
— Save	The settings are saved.

- Calib

  Setup Pendeo:

  - Quick install with search load cells and set dead load
    - Search for a new network and reset the load cell data to the factory settings.
    - Enter local gravity.
    - Set dead load with load.
  - Search for connected load cells
    - Search for a new network and reset the load cell data to the factory settings.

  - View and assign load cells
    - Info — View selected load cell data.
    - Assign — Assign load cells.
    - by name — Change the display from „by ID" (LC 1...n + serial number) to „by name" of load cells; only possible if a load cell name has been assigned.
    - by ID — Change the display from „by name" to „by ID" of load cells.
    - Accept — Accept the load cell assignment; only possible if load cell assignment is active.
    - Save — The settings are saved.
  - Calibrate the scale
    - New — Carry out a new calibration.
      - Local gravity — <9.81379 m/s²> (Hamburg)
      - Number of vessel feet — Enter number.
      - Max (Max. capacity) — Upper limit of weighing range 0.000010...<3000>...9999998 <kg>, t, lb, g, mg, oz
      - Scale interval (1 d) — Selection <1>, 2, 5, 10, 20, 50 displayed according to the decimal places at Max and the weight unit
      - Dead load — by load, by value
      - Calibration weight — user weight
      - Corner correction
      - Save — Save calibration.

– Calib	
– Calibrate the scale	
– Modify	Modify calibration.
– Local gravity	<9.81379 m/s²> (Hamburg)
– Max (Max. capacity)	Upper limit of weighing range 0.000010...<3000>...9999998 <kg>, t, lb, g, mg, oz
– Scale interval (1 d)	Selection <1>, 2, 5, 10, 20, 50 displayed according to the decimal places at Max and the weight unit
– Dead load	by load, by value
– Calibration weight	user weight
– Corner correction	
– Save	Save calibration.
– Assign load cell name	Give each load cell a name.
– Load cell 1-n	e.g.: PR 6224-xx
– Default	Settings are reset to factory settings.
– Save	The settings are saved.
– Service function for LCs	Deactivate/activate load cell.
– Load cell 1-n	Select the faulty load cell and reset ☑ to ☐. Select the new (replaced) load cell and select ☑.
– Accept	After deactivation the simulation for the deactivated load cell starts. Once the replaced load cell has been activated the search process starts.
– Units	1, 2, 3; additional weight units for display
– Units 1-3	kg, t, lb, g, mg, oz
– Display accuracy	<basic accuracy>, 1 level lower, 2 level lower, 3 level lower, 3 level higher, 2 level higher, 1 level higher
– Default	Settings are reset to factory settings.
– Save	The settings are saved.

5.10.13 System setup: Weighing point: Weighing point A: PR-Net Weighing Point

System setup	
— Weighing point	
— Weighing point A	PR-Net weighing point
— Parameters	Parameter settings
— Settings locked	When selected settings are displayed only. No changes possible (as when CAL switch is closed).
— W&M	<none>, [OIML], NSC, NTEP
— Serial number	<0>...999999999
— Network address	Numeric input: IP address (nnn.nnn.nnn.nnn) or Alphanumeric input: Device name (host name)
— Default	Settings are reset to factory settings.
— Save	The settings are saved.

5.10.14 System setup: Weighing point: Weighing point A: Mettler-Scale

System setup	
— Weighing point	
— Weighing point A	Mettler-Scale
— Param	Parameter settings
— Settings locked	When selected settings are displayed only. No changes possible (as when CAL switch is closed).
— W&M	<none>, [OIML], NSC, NTEP
— Max (Maximum capacity)	0.000001 mg...<1000 kg>...9999999 t
— Scale interval	<1>, 2, 5, 10, 20, 50
— Weight per	0.000001 mg...<1 kg>...9999999 t
— Minimum weight	0 d...9999999 d
— Update time	0.1 s...<0.3 s>...2.0 s
— Default	Settings are reset to factory settings.
— Save	The settings are saved.

5.10.15 System setup: Weighing point: Weighing point A: SMA scale

System setup	
— Weighing point	
— Weighing point A	SMA scale
— Parameters	Parameter settings
— Settings locked	When selected settings are displayed only. No changes possible (as when CAL switch is closed).
— W&M	<none>, [OIML], NSC, NTEP
— Max (Maximum capacity)	0.000001 mg...<1000 kg>...9999999 t
— Scale interval	<1>, 2, 5, 10, 20, 50
— Minimum weight	0 d...9999999 d
— Update time	0.1 s...<0.3 s>...2.0 s
— Default	Settings are reset to factory settings.
— Save	The settings are saved.

5.10.16 System setup: Display settings

System setup	
— Display settings	
— Color set	daylight, night shade
— Luminance	0...100 % <80 %>
— Default	Settings are reset to factory settings.
— Save	The settings are saved.

5.10.17 System setup: License settings

System setup	
— License settings	
Board number:	displayed
— ...	Function and application licenses can be added, activated, and deleted.
— Default	Settings are reset to factory settings.
— Demo mode	Operation is possible without a license for a limited time or with limited functionality.
— Save	The settings are saved.

5.10.18 System setup: User management

System setup	
— User management	
— Create user	Users "admin" and "default" have already been created.
— User name	Entry only allows alphanumerical characters.
— Password	Entry only allows alphanumerical characters.
— Select user settings	Selection via checkboxes.
— Save	The settings are saved.
— Copy user	The settings for the selected user are copied.
— User name	Entry only allows alphanumerical characters.
— Password	Entry only allows alphanumerical characters.
— Select user settings	Selection via checkboxes.
— Save	The settings are saved.
— Change user settings	The settings for the selected user are changed.
— Save	The settings are saved.
— Remove user	Users "admin" and "default" cannot be deleted. A prompt window appears.
— Deactivate user management	Any users created are deleted. A prompt window appears.

5.11 Calibrating the Internal Weighing Point

5.11.1 General Information

With applications for use in legal metrology, the legal requirements and the conditions given on the test/ approval certificate must be taken into account when selecting the settings.

There are two ways to save the calibration data:

- Via a CAL switch
- Via software

During calibration, the instrument must be set to gross weight display (reset tare, if necessary).

5.11.1.1 CAL Switch

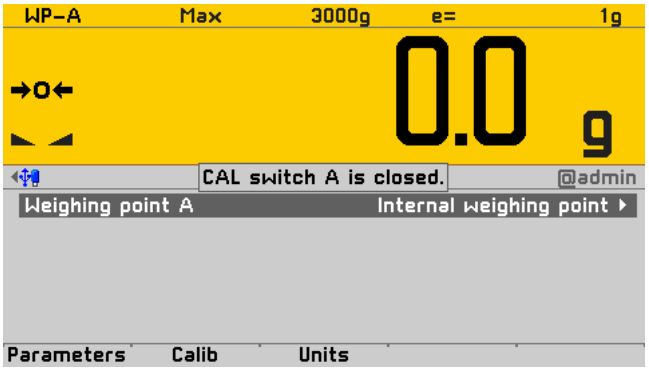
The calibration data can be protected with CAL switch A and the weighing electronics with CAL switch 1 (see Chapter 5.1.5.1).

5.11.1.2 Software

A unique check number is created every time a calibration or changed parameters are saved. This can be viewed under [System information]-[Show calibration check numbers] (see Chapter 5.20.7) and noted.

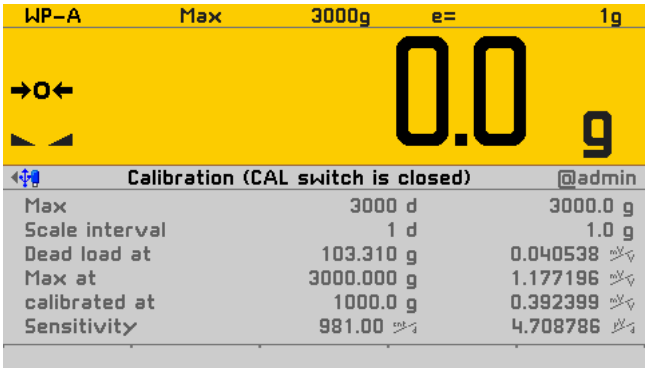
5.11.2 Showing the Calibration Data

5.11.2.1 Overwrite Protection via a CAL Switch



If the CAL switch is closed, a tool tip appears.

The data under [Parameters], [Calib], [Units] is displayed only.



▶ E.g., press the [Calib] soft key.

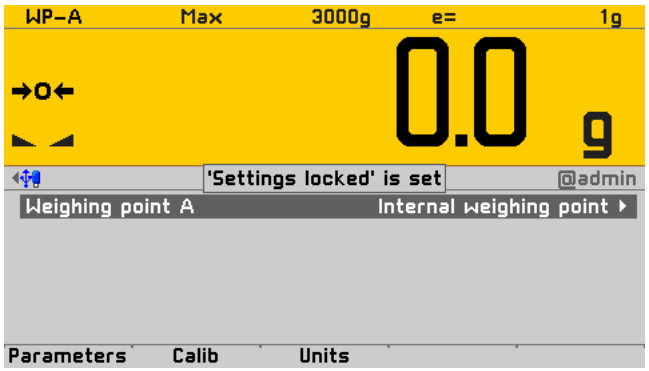
▷ The calibration data is displayed:

- Scale interval and maximum capacity (Max)
- Scale interval(s)
- Dead load in weight and mV/V
- Weight and mV/V for maximum capacity
- Test load* and corresponding mV/V
- Number of internal counts and voltage per scale interval

The calibration data and parameters (press [Parameters]) are displayed in the format entered/determined during calibration.

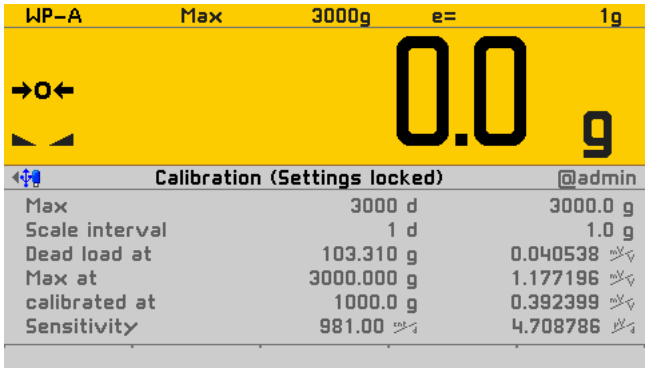
* After input with mV/V, the maximum capacity and the mV/V value entered are displayed.

5.11.2.2 Overwrite Protection via Software



If 'Settings locked' is active, a tool tip appears accordingly.

The data under [Parameters], [Calib], [Units] is displayed only.



▶ E.g., press the [Calib] soft key.

▷ The calibration data is displayed.

5.11.3 Increased Resolution (10-fold)

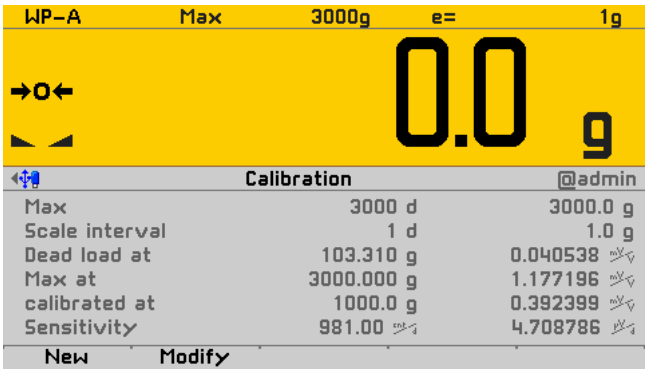
In the [Weighing points] menu, the weight is displayed with increased resolution (10-fold) for five seconds after a weighing point is selected, using the following keys:

- Key
- Function key F1 or F2 (when function has been assigned previously in the [Operating parameters] menu)

If the parameter "W&M" is selected for the weighing point, the weight value is marked as an invalid weight with the symbol ⚠. Switch to normal resolution after 2-3 seconds.

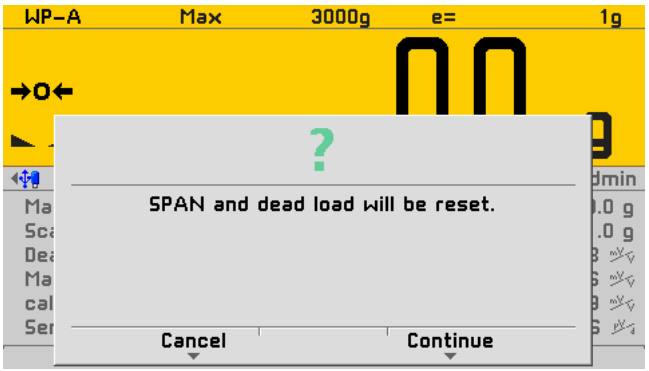
5.11.4 Selecting the Calibration Mode

Note	The menu item 'Modify' is only used for small changes (e.g., changing the dead load/preload, changing the mV/V values for dead load/preload and/or Max, changing the scale interval). Otherwise selected 'New'.



Go to [System setup]-[Weighing point]-[Weighing point A]-[Calib] and use the soft keys to choose between [New] and [Modify].

5.11.4.1 New Calibration



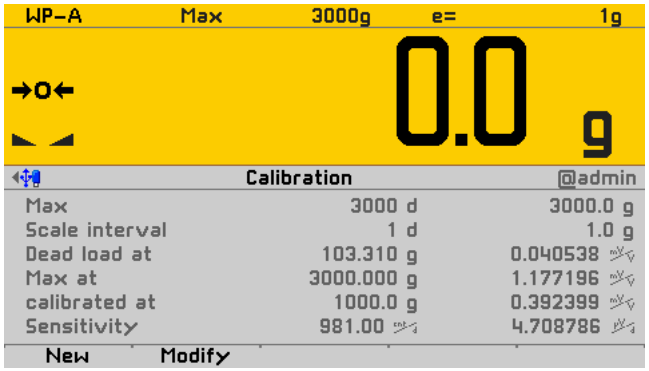
- ▶ Select and confirm [System setup]-[Weighing point]-[Weighing point A]-[Calib].
- ▶ Press the [New] soft key.

  When you press [New] , the default settings are restored and then calibration is started.
- ▷ You are prompted to confirm.
- ▶ Press [Continue] for the default settings or [Cancel] to cancel the selection.

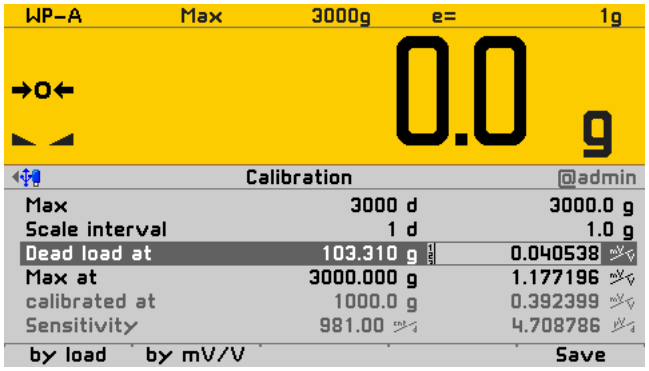
5.11.4.2 Modifying a Calibration

Example

Resetting the Dead Load



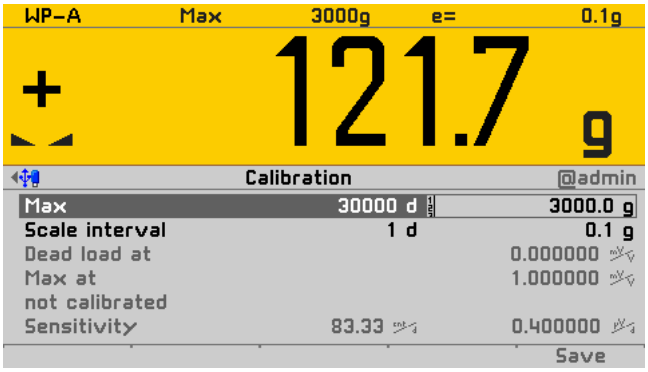
- ▶ Select and confirm [System setup]-[Weighing point]-[Weighing point A]-[Calib].
- ▶ Press the [Modify] soft key.



- ▶ Select the menu item [Dead load at].
- ▶ Either press the [by mV/V] soft key to enter the value again or clear the scale/hopper and press the [by load] soft key to reset the dead load.
- ▶ Press the [Save] soft key to save the calibration.
- ▷ The reference value is calculated for the electronics test.

5.11.5 Determining the Maximum Capacity [Max]

The maximum capacity (Max) determines the maximum weight without dead load of the weight to be measured and the displayed number of digits behind the decimal point. Normally, Max is less than the load cell capacity (nominal capacity x number of load cells).



Permissible values for the maximum capacity are:

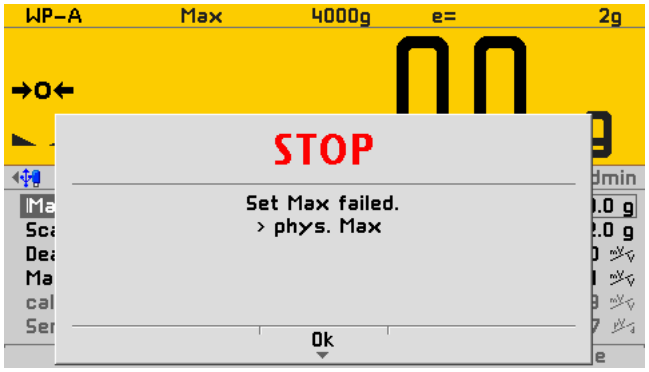
Max weight value from 0.00010 to 999999 in t, kg, g, mg, lb or oz.

Max weight value must be an integer multiple of the scale interval (1 d). It may have up to 6 digits and is entered as a numeric value with or without a decimal point.

- ▶ Enter the maximum capacity with decimal places (in this example: 3000.0).
- ▶ Double click key to select the weight unit.
- ▶ Confirm the entries.
- ▷ The confirmation is displayed with "setting Max...".
- ▶ Press the [Save] soft key to save the calibration.
- ▷ The reference value is calculated for the electronics test.

Note	If linearization is active (see Chapter 5.11.12): After selection of the line "Max at" the following tip is displayed: "cannot be changed here while linearization is active" Only deletion of linearization points deactivates linearization!

Possible Error Messages



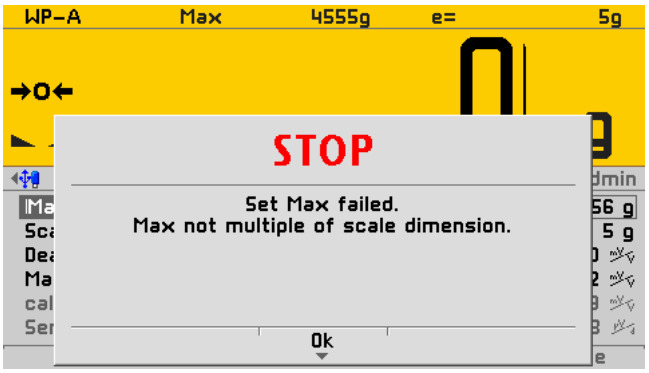
The maximum capacity of the scale can be increased retrospectively.

This message appears when the measurement signal for the given maximum capacity would exceed the permissible input voltage.

The maximum capacity of the scale can be increased retrospectively. When the capacity is reduced, however, a message appears when the new maximum capacity falls below the calibration weight ('calibrated at').

This message appears if the selected resolution is too low, e.g., 5 kg.

This message appears when the selected resolution is so high that less than 0.8 internal counts per scale interval (d) are available.



This message appears if the maximum capacity [Max] of the scale range (weighing range) is not an integer multiple of the scale interval (1 d).

Weight units do not match, e.g., subsequent change of [Max] from kg to mg.

This message appears if the selected resolution is so high that less than 0.8 µV/e are available when "OIML/ NSC" has been selected.

After [OK] is pressed, the input value for the maximum capacity [Max] is canceled.

5.11.6 Determining the Scale Interval [Scale interval]

The scale interval (d) is the difference between two successive display values.

With a scale used in legal metrology, this value is called the "verification scale interval," which corresponds to the scale interval: d = e.

Example

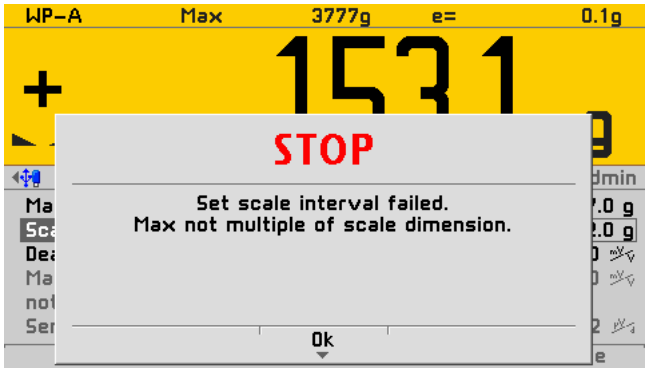
Max = 6000 kg

Scale interval (1 d) = 2 kg

Calculation for scale interval for Max (automatic):

d = Max / Scale interval (1 d)
d = 6000 kg / 2 kg
d = 3000

Vorgehensweise



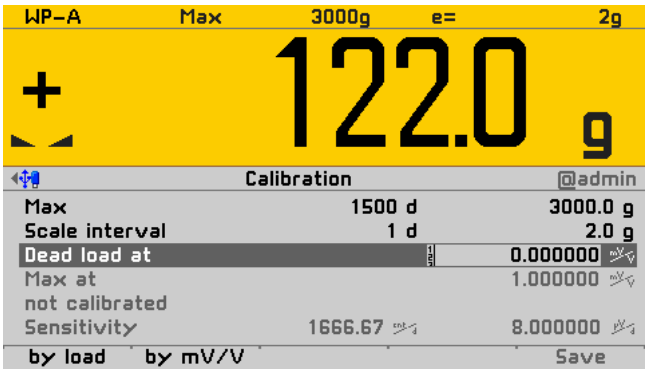
The weight unit is taken from [Max]. The number of digits behind the decimal point is also automatically determined when [Max] is entered.

- ▶ Select the scale interval (1 d).
- ▷ The scale interval (d) is then calculated, based on the Max weight value.
- ▶ Confirm the entries.
- ▷ The confirmation is displayed with "setting scale interval...".

This message appears if the maximum capacity [Max] of the scale range is not an integer multiple of the scale interval.

5.11.7 Determining the Dead Load [Dead load at]

Note	If a liniarization was executed (see Chapter 5.11.12): After selection of the line "Dead load at" the following tip is displayed: "cannot be changed here while linearisation is active" Only deletion of linearization points deactivates linearization!



To use the empty scale/hopper as dead load (normal case):

- ▶ Clear the scale/hopper.
- ▶ Press the [by load] soft key.
- ▶ Confirm the entries.
- ▷ The confirmation is displayed with "setting dead load..."

If the mV/V value of the dead load was calculated, or if it is known from the previous calibration, the value can be overwritten by pressing [by mV/V].

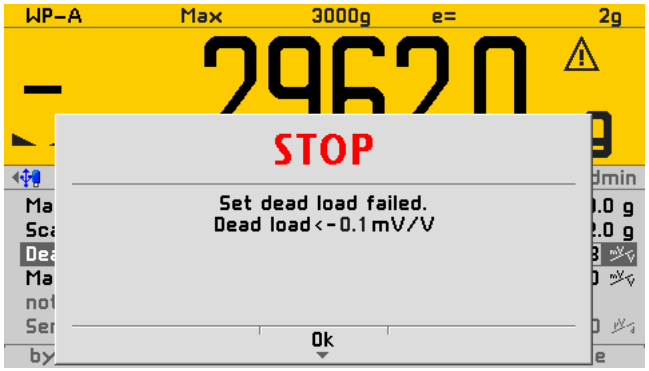
Possible Error Messages

The dead load entered in mV/V plus maximum capacity in mV/V is higher than 3 mV/V (= 36 mV).

This message appears when the scale is not stable.

Remedy

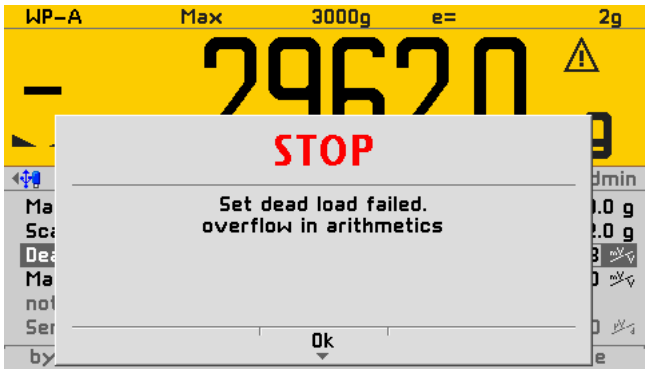
- ▶ Check the mechanical function of the scale.
- ▶ Adapt the filter setting; reduce the resolution.
- ▶ Adapt the stability conditions.



This message appears if the measurement signal is negative (load cells connected with wrong polarity or defective) when determining the dead load with [by load].

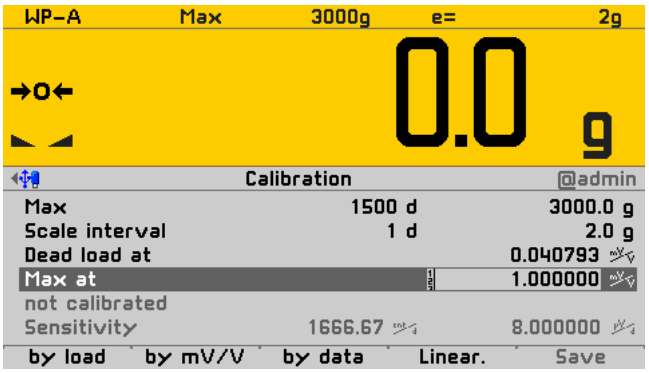
Cause

Load cell connected with wrong polarity, or defective, or mechanical problem of the scale.



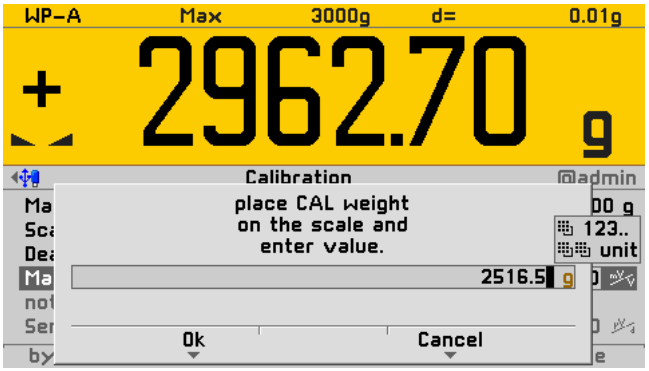
This message appears if the dead load entered in mV/V is higher than 5 mV/V.

5.11.8 Calibrating with Weight [Max at]



To calibrate the scale with weights:

▶ Press the [by load] soft key.

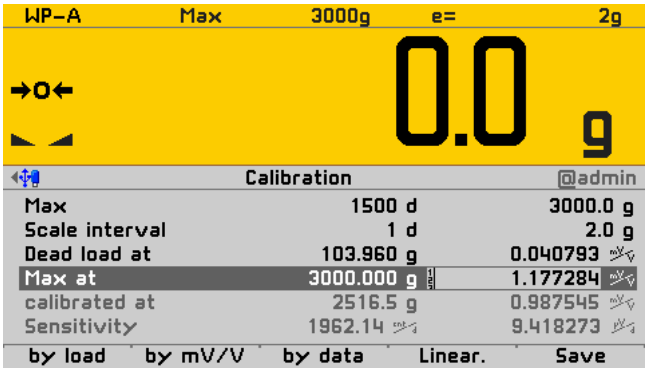


▶ Place the calibration weight on the scale.

▶ Enter the weight of the calibration weight.

▶ Confirm the entries.

The weight unit for the calibration weight (double click ▪ to change) may differ from the unit in the device; conversion is automatic.

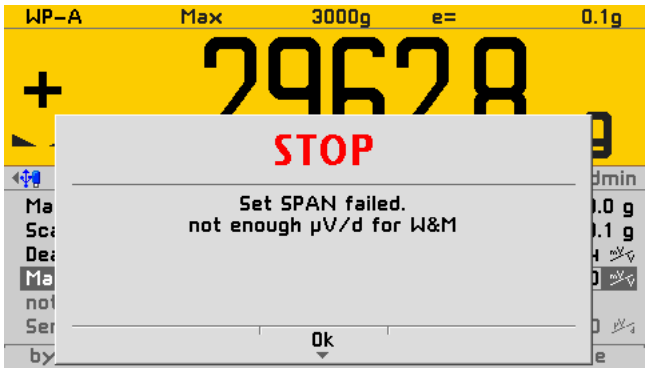


Afterward, the following message is displayed:

"setting SPAN by load..."

The weight value of the calibration weight, weight unit, and measuring signal in mV/V corresponding to this value are displayed in the [calibrated at] line.

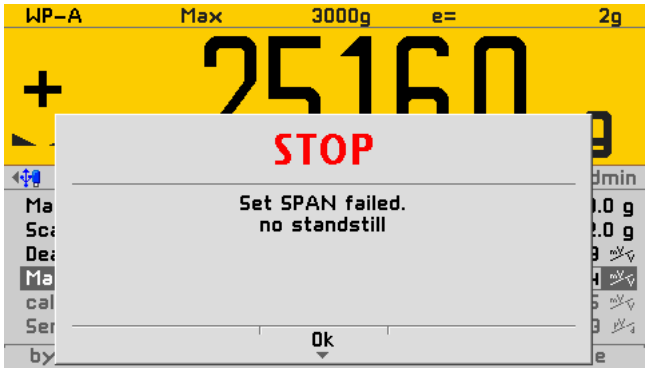
Possible Error Messages



This message appears when the scale interval is too small, if ‚W&M' has been selected.

Remedy:

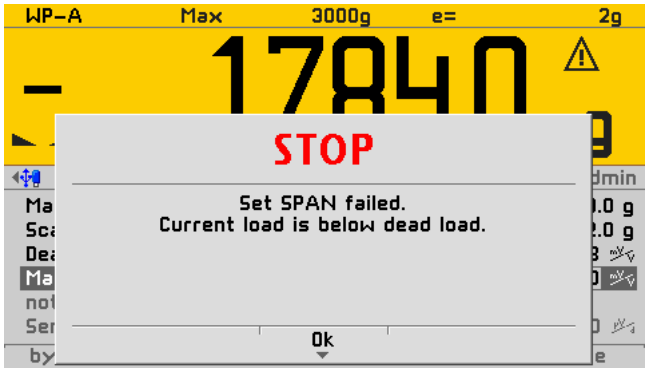
- ▶ Enter larger scale interval.



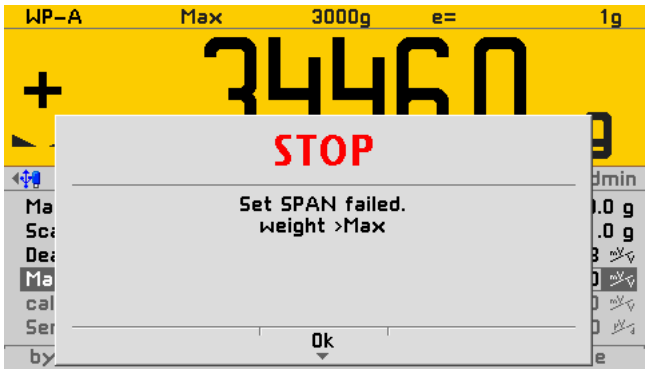
This message appears when the scale is not stable.

Remedy:

- ▶ Check the mechanical function of the scale.
- ▶ Adapt the filter setting; reduce the resolution.
- ▶ Adapt the stability conditions.



This message appears if the load has been removed from the scale rather than added.



This message appears when an attempt is made to calibrate the scale with a weight heavier than the Max.

5.11.9 Calibrating with mV/V [Max at]

The scale can be calibrated without weights. During input of the load cell mV/V value, the acceleration of gravity at the place of installation can be taken into account. The STAR load cell data is based on the acceleration of gravity in Hamburg, Germany: 9.81379 m/s².

5.11.9.1 SPAN

SPAN indicates the equivalent input voltage in mV/V related to the maximum capacity (Max) of the scale.

It is calculated as follows:

$$\text{SPAN [mV/V]} = \frac{\text{maximum capacity x load cell sensitivity } C_n^* \text{ [mV/V]}}{\text{load cell capacity (nominal load } E_{max} \text{ x number of load cells)}}$$

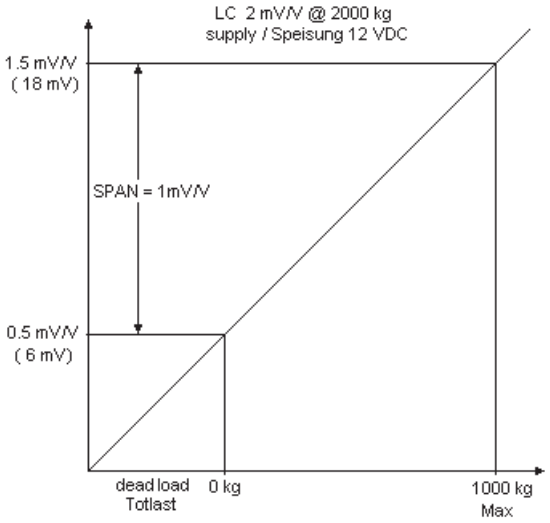
* Load cell sensitivity C_n = rated output C_n (see technical data of the load cell)

5.11.9.2 Dead Load

The input voltage in mV/V equivalent to the dead load can be calculated by using the dead load rather than the maximum capacity in the formula specified above.

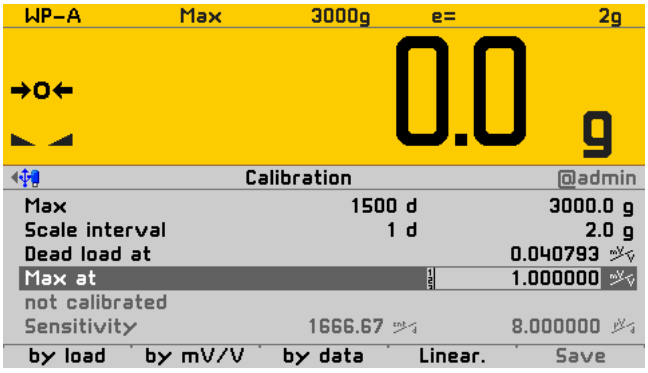
Normally, calculation of the dead load (scale without load/empty hopper) is not necessary.

Subsequent dead load correction (as described in Chapter 5.11.11) can be used for later re-determination of the dead load, when the scale/hopper is empty.



Example

- 1 load cell with rated output C_n = 2 mV/V
- at nominal load of 2,000 kg
- Maximum capacity 1,000 kg
- Dead load 500 kg
- Load cell supply voltage 12 V DC

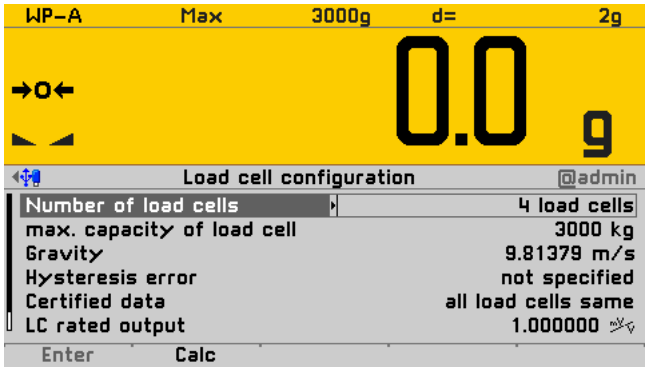


- ▶ Press the [by mV/V] soft key to enter the value for Max and to correct the dead load if necessary (see Chapter 5.11.11).
- ▶ Confirm the entries.

5.11.10 Calibrating the Scale with Load Cell Data (Smart Calibration) [by data]

If the scale is not used in legal metrology, calibration without weights can be performed. The easiest method is the one using load cell data without calculation.

Procedure



- ▶ Press the [by data] soft key. Select the 'Number of load cells' line.
- ▷ A selection window appears.
- ▶ Select the appropriate option.
- ▶ Take the next values from the technical data of the load cells (see below).
- ▶ Press the [Calc] soft key to start the calculation.
- ▶ Confirm the calculation to save the calculated mV/V value to the calibration data.

[Number of load cells]

Number of load cells connected in parallel (1, 2...<4>...9, 10)

[max. capacity of load cell]

Max. capacity E_{max} of a load cell (not the overall nominal weight of the scale!)

[Gravity]

Acceleration of gravity at the place of installation; default is the value for Hamburg, Germany: 9.81379 m/s².

[Hysteresis error]

If [not specified] is switched to [specified], values for [Correction A] and [Correction B] must be entered. This data must be taken from the load cell certificate.

[Certified data], [LC rated output], [LC output impedance]

When [all load cells same] is set, only one value each must be entered for [LC rated output] and the output impedance [LC output impedance].

For [each load cell specific] press the [Enter] soft key to enter individual data for each load cell.

5.11.11 Subsequent Dead Load Correction

If the hopper/platform weight changes by an amount that is higher than the zero-setting range; e.g., due to dead load reduction, dead load increase, or mechanical changes, the functions for automatic zero tracking and manual zero setting no longer work.

The range currently used by zerotrack or zeroset is displayed in the menu
[System information]-[Show HW options]-[WP A]-[Monitor].

Press the key to switch on increased resolution (10-fold) for the weight value.

If the full zero-setting range is already being utilized, you can still correct the dead load (overwrite protection must be deactivated, see Chapter 5.1.5) without affecting other calibration data/parameters.

Calibration is then accessed via [Calib]-[Modify] and the dead load is specified with 'Dead load at' [by load] (see Chapter 5.11.7).

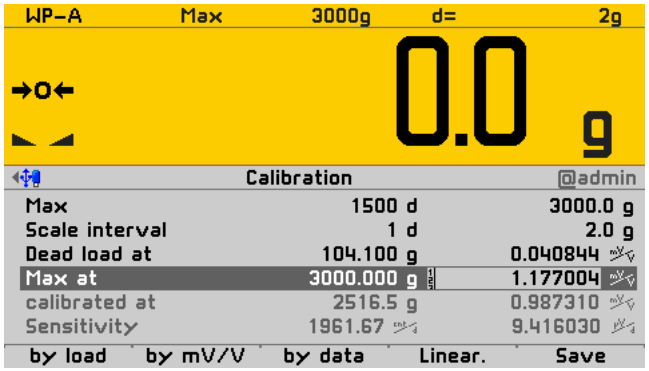
Note	If a linearization was executed (see Chapter 5.11.12) the dead load can not be subsequently corrected! After selection of the line "Dead load at" the following tip is displayed: "cannot be changed here while linearization is active" Only deletion of linearization points deactivates linearization!

5.11.12 Linearity

The measurement range for a straight can be optimized by setting the linearization points.

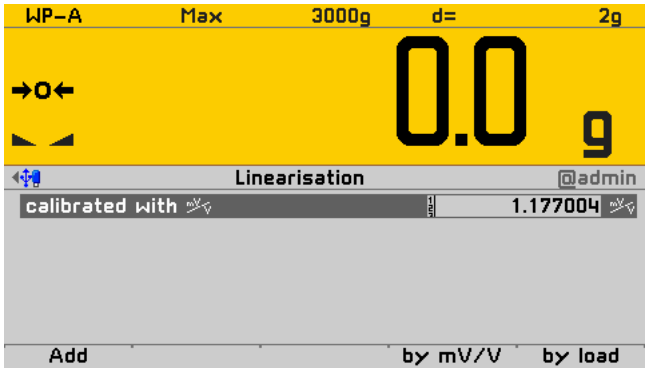
Requirement

Max and dead load calibration was executed.



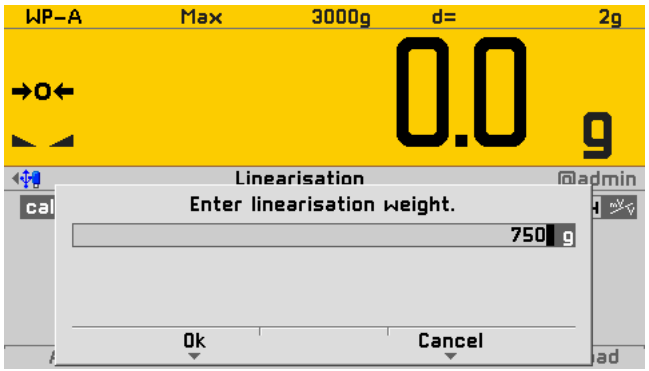
Procedure

▶ Go to the [Calib]-[New]/[Modify] menu, select the 'Max at' line and press the [Linear] soft key.



▷ The linearization menu is displayed.

▶ Press the [Add] soft key to set a linearization point.

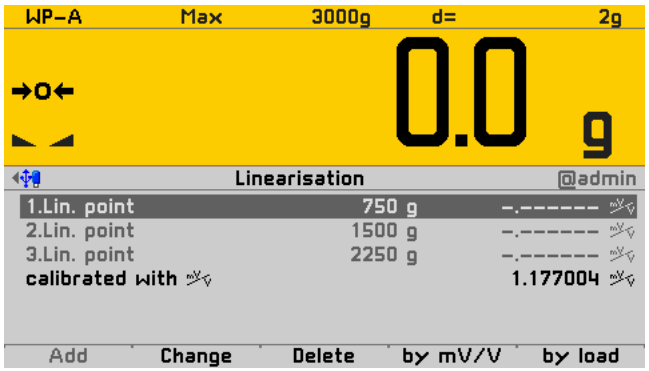


▷ The following input window appears.

▶ Enter the desired value using the keyboard.

▶ Press the [OK] soft key.

▶ Repeat these steps to set up to three linearization points in succession.

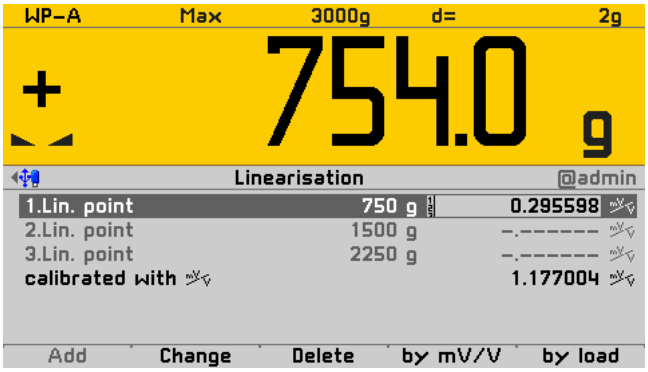


▷ The window shows the set linearization points.

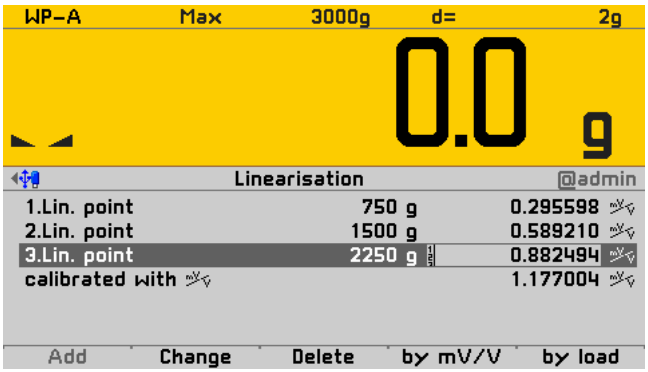
After pressing [mV/V], the value can be entered directly.

After pressing [Change] the selected linearization point can be changed.

After pressing [Delete] the selected linearization point can be deleted.

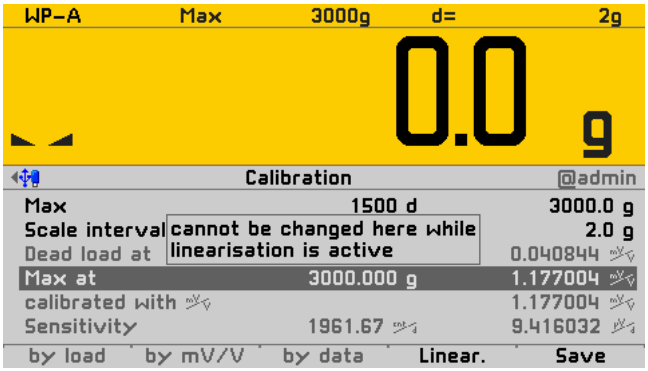


▶ Select a linearization point, place the corresponding weight on the scale, and press the [by load] soft key.



▷ The value corresponding to the weight is automatically entered in mV/V.

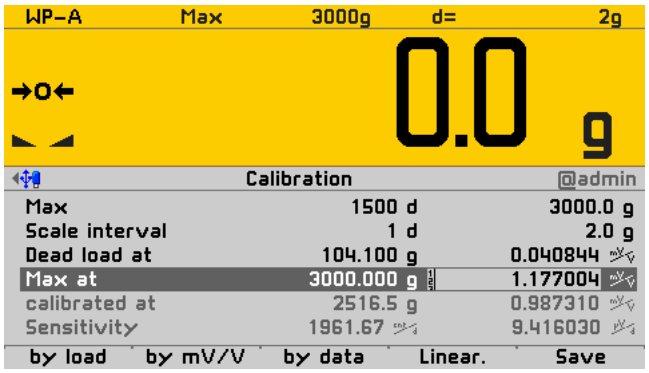
▶ Repeat these steps to automatically enter the corresponding values for the weights of all set linearization points in mV/V.



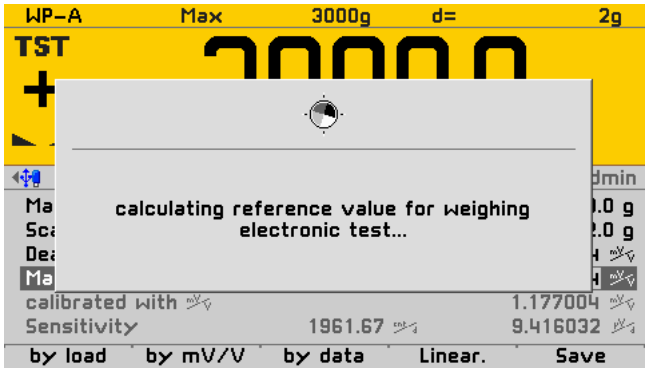
▶ Press the EXIT key to switch to the previous window.

▷ A message appears, indicating that the value for Max cannot be changed as long as linearization is active.

5.11.13 Saving the Calibration



▶ Press the [Save] soft key.



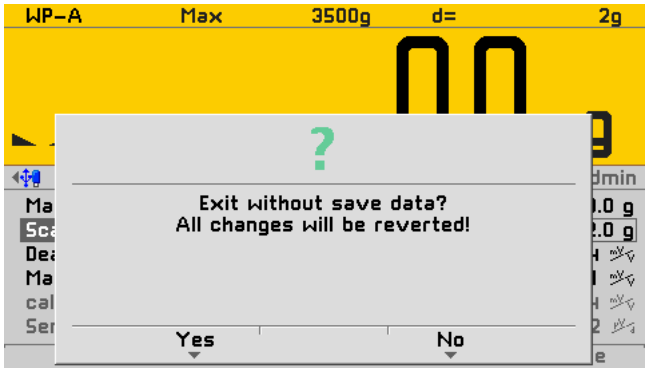
▷ This window appears for a short time.
The maximum capacity (Max) is displayed with the ID 'TST' and without a weight unit.

▷ The confirmation is displayed as follows:
'saving calibration...'

▶ After exiting calibration, go to the menu [Param] and set the parameter 'Settings locked' to activate overwrite protection via the software (see Chapter 5.1.5.2).

Note	A unique check number is created every time a calibration or changed parameters are saved.

5.11.14 Canceling Calibration



▶ Press the EXIT key to finish calibration.

▷ You are prompted to confirm.

▶ Press the [Yes] soft key to exit calibration without saving.

▷ Calibration is finished without saving with the following display:
'undoing calibration...'

5.11.15 Display Units

The device is calibrated with a selected weight unit. Up to two more units can also be displayed.

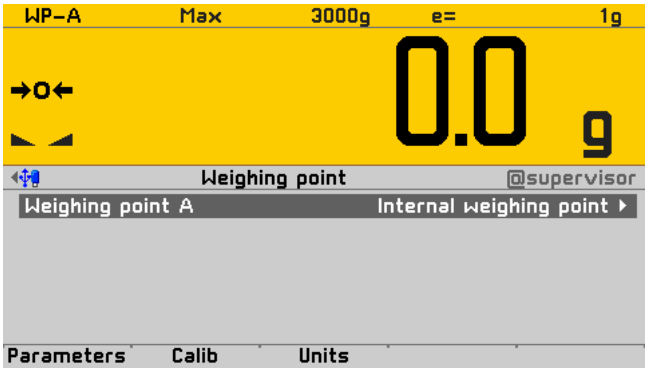
The weight display is switched using the function keys (F1 or F2). This must be assigned beforehand, see Chapter 5.19.3.

When three units are displayed, they are shown in the following sequence: from 1 to 2, 3, 1, 2, and so on.

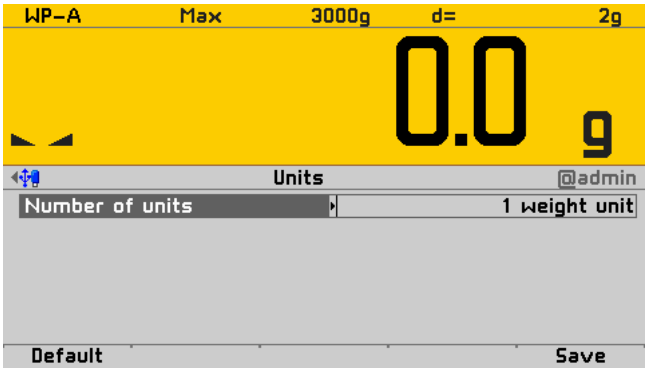
If unit 2 or 3 is displayed, the symbol ⚠ is also shown on devices used for legal metrology, when the non-legal weights are displayed.

In the following example, a second unit is set in [oz]. The display accuracy is set to [raw]. This means that the scale interval in weight roughly corresponds to the calibrated scale interval.

The third unit [lb] has a display accuracy that is one level higher, meaning that the scale interval is roughly one level smaller than the calibrated scale interval. The values for Max and Min for the additional units are (roughly) calculated taking the associated scale intervals into account.

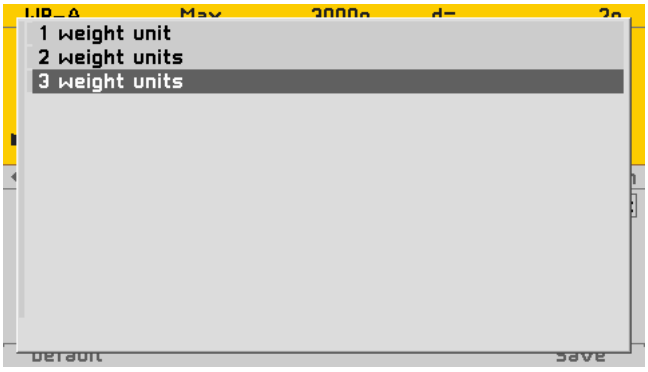


▶ Go to the menu [System setup]-[Weighing point]-[Weighing point A] and press the [Units] soft key to select additional units and the associated display accuracy.

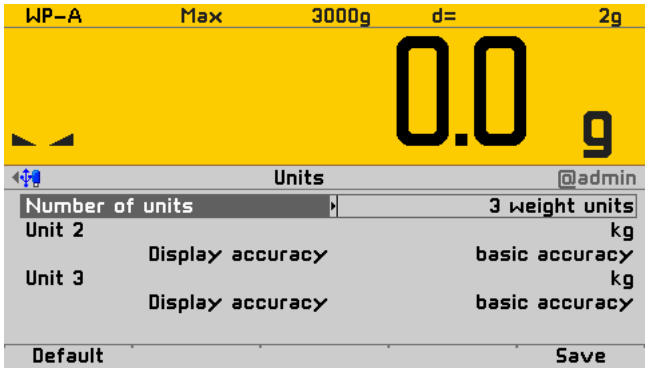


▷ The following window appears.

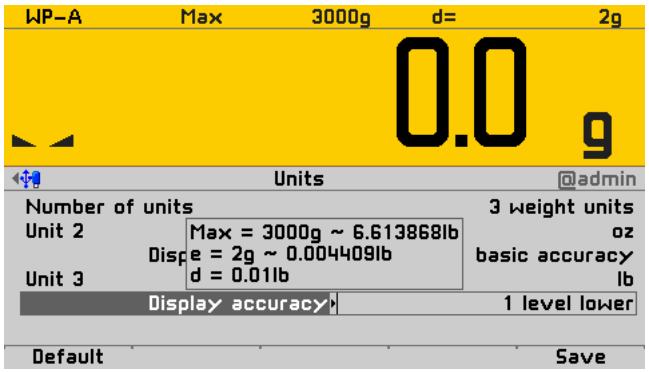
▶ Confirm the selection.



▶ Select and confirm the line '3 weight units'.



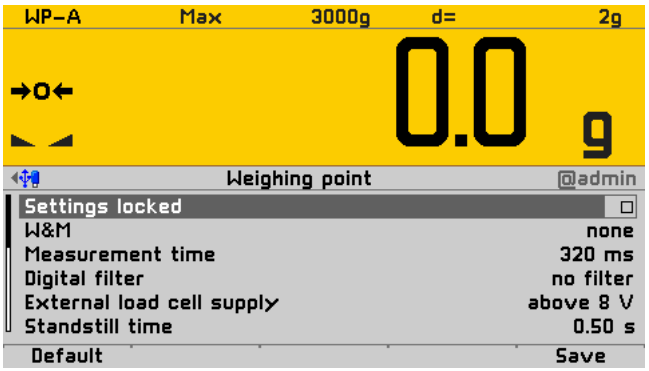
▷ The following window appears.



▶ Select the desired units and their display resolution.

▶ Press the [Save] soft key to save the settings.

5.11.16 Parameter Input



Access the menu as follows: [System setup]-[Weighing point]-[Weighing point A]-[Parameters].

[Settings locked]

The weighing point settings and assignment can only be viewed as if the corresponding CAL switch were closed; see Chapter 5.1.5.2.

[W&M]

Setting for operation in legal metrology. Select [none], OIML, NTEP (for USA) or NSC (for Australia); see Chapter 5.11.16.1.

[Measurement time]

The duration of a measurement can be selected. Possible values include: 5 ms, 10 ms, 20 ms, 40 ms , 80 ms, 160 ms, 320 ms, 640 ms, 960 ms, 1280 ms, 1600 ms.

[Cutoff frequency]

The smaller the cutoff frequency, the slower the measurement and the more stable the measurement result.

The cutoff frequency for the low pass filter can be selected. The permitted range is 0.01...40.00 Hz.
The available options depend on the measurement time.

The line 'Cutoff frequency' only appears if the digital filter is switched on.

[External load cell supply]

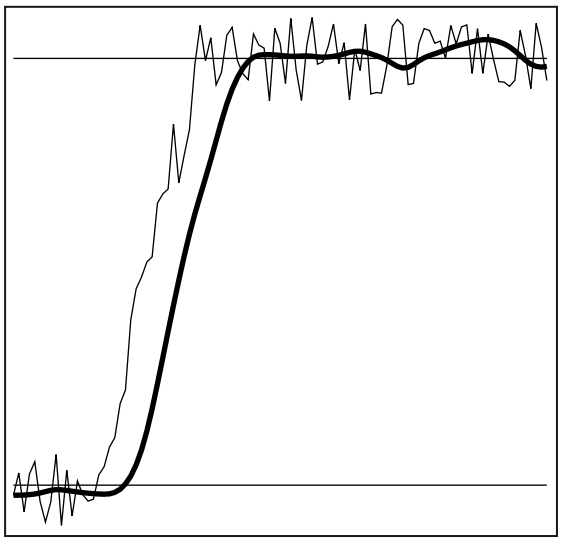
The external supply voltage is selected.

Possible values: less than or equal to 8 V, higher than 8 V.

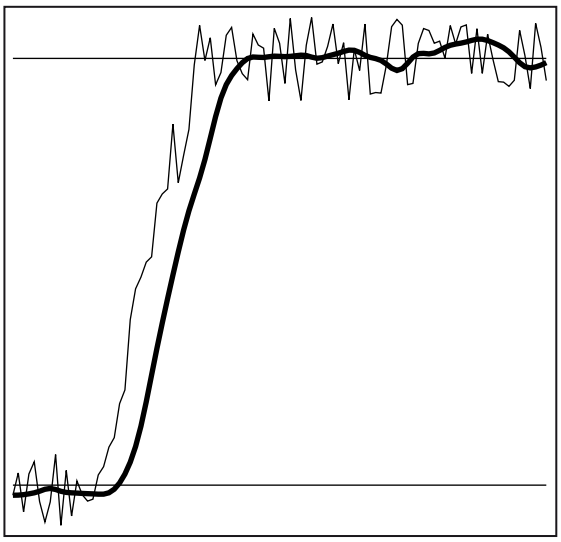
[Digital filter]

The following includes examples of interference signals for the different filter types:

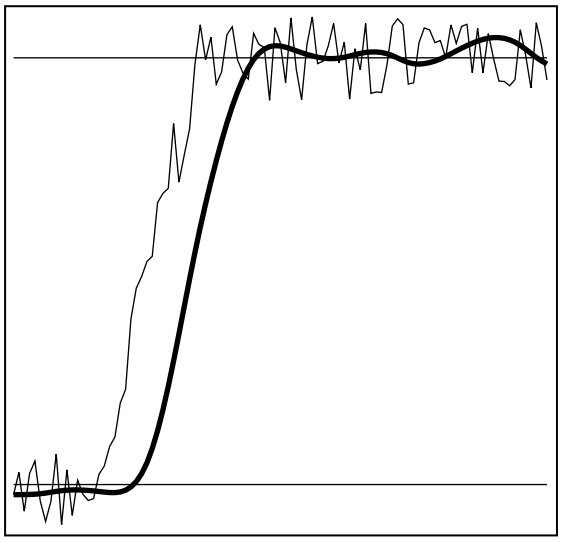
Bessel filter



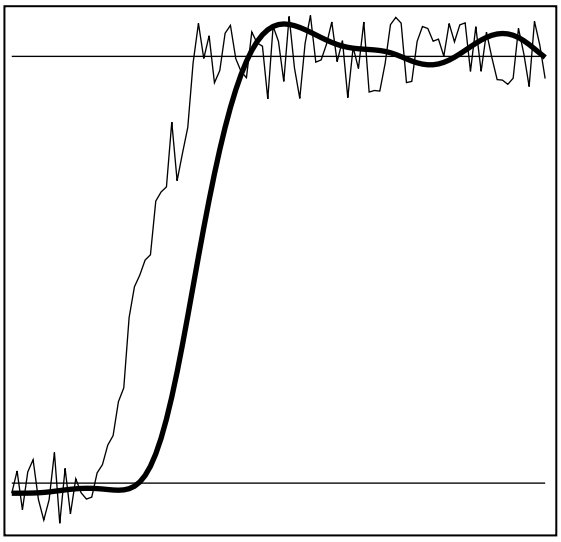
Aperiodic filter



Butterworth filter



Tschebyscheff filter



A digital filter can be switched on only with the measurement time set to ≤160 ms.

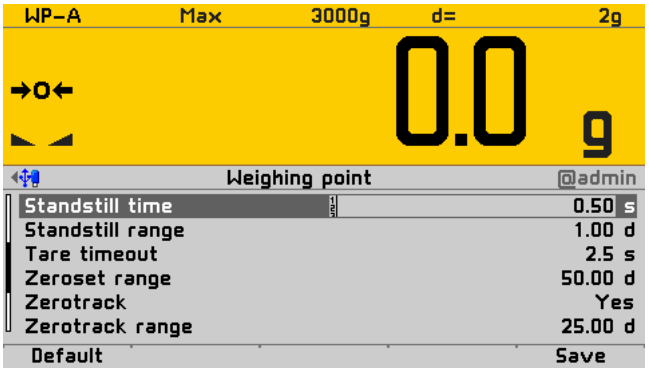
The following filter types can be selected: no filter, Bessel, aperiodic, Butterworth, Tschebyscheff.

If no particularly frequent fluctuations are expected in ongoing operation, the following settings are recommended:

[Measurement time]: ≤160 ms

[Digital filter]: aperiodic

[Cutoff frequency]: 2.00 Hz



[Standstill time]

The parameters [Standstill time] and [Standstill range] can be used to define the stability of the scale (stable balance).

The [Standstill time] parameter is entered in seconds. The permitted range is 0.00...2 s.

The time can be entered from 0.00 to 2.00 seconds, but makes up at least one measurement time.

[Standstill range]

As long as the weight fluctuations remain within this range, the device is determined to be stable.

The [Standstill range] parameter is entered in "d." The permitted range is 0.01...10.00 d.

[Tare timeout]

Timeout for a tare/zeroset command that cannot be executed (e.g., due to mechanical instability of the scale, incorrect filter setting, resolution too high, standstill condition too strict).

This parameter is given in seconds. The permitted range is 0.0...<2.5>...25 s.

At 0.0 s taring is only carried out when the scale is already stable.

[Zeroset range]

Determine a ±range around the zero point determined by the dead load during calibration; within this range

- the displayed gross weight can be set to zero by pressing the zero-setting key (or by a corresponding external command), and
- automatic zero tracking is active.

Setting range: 0.00...10000.00 d

[Zerotrack]

The zero display is automatically maintained within set limits.

Possible values: no/yes

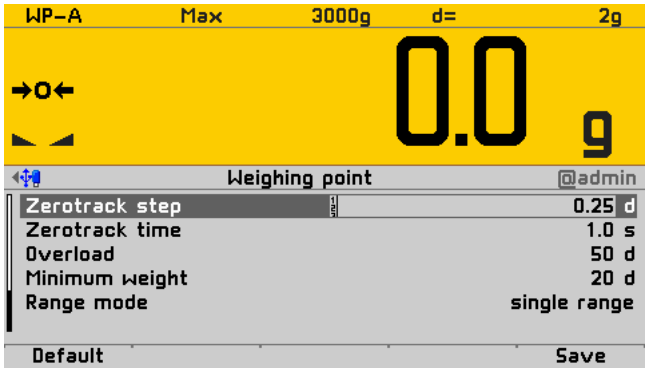
When "No" is selected, the next three parameters are not shown.

When "Yes" is selected values for the next three parameters must be entered.

[Zerotrack range]

Range within which the automatic zerotrack is balanced.

Setting range: 0.25...10000.00 d



[Zerotrack step]

If a weight change exceeds the adjusted value, automatic tracking does not function any more.

Setting range for automatic tracking increments: 0.25... 10 d

[Zerotrack time]

Time interval for automatic zero tracking.

Setting range: 0.1...25 s

[Overload]

Weighing range above the maximum capacity (Max) without error message.

Setting range: 0...9999999 d.

[Minimum weight]

Minimum weight at which a print command can be triggered.

Setting range: 0...9999999 d.

[Range mode]

Possible values: single range, multiple range, multi-interval.

For scale range selection, see Chapter 5.11.16.2.

[Default]

Settings are reset to factory settings.

[Save]

The settings are saved.

5.11.16.1 Operation in Legal Metrology

Note	The following settings are available; but the Maxxis 4 is **not** legal for trade!

Go to [System setup]-[Weighing point]-[Weighing point A]-[Parameters]-[W&M] and choose between: [none] and the legal metrology modes [OIML], [NTEP], or [NSC].

	[none]	[OIML]	[NTEP]	[NSC]
Gross weight display	**B**	**B**	**G**	**G**
Recommended min. measurement signals	0.2 mV/V @ 30,000 d	0.2 mV/V @ 3,000 e	0.2 mV/V @ 3,000 e	0.2 mV/V @ 3,000 e
	0.4 mV/V @ 60,000 d	0.4 mV/V @ 6,000 e	0.4 mV/V @ 6,000 e	0.4 mV/V @ 6,000 e

If operation for legal metrology is switched on, the parameter settings (zero tracking etc.) must be selected accordingly. The device does not carry out a check of this.

A unique check number is created every time a calibration or changed parameters are saved. This can be viewed under [System information]-[Show calibration check numbers] (see Chapter 5.20.7) and noted. See also Chapter 5.11.1.

5.11.16.2 Multiple Range Scale (Class III or single range scale Class I and II with variable interval)

The multiple range scale is a scale with two or more weighing ranges with different maximum capacities and scale intervals. There is only one load receptor, with each range covering zero to its maximum capacity.

With [Range mode] = [Multiple range], the scale has up to three ranges with different resolution.

The weight display header includes the current range (R1, R2, and R3), Max, Min, and d (or e with instruments used in legal metrology) (Example: multiple range scale in range 2):

WP A	R2	Max	2000 kg	d=	
		Min	40 kg	e=	2 kg

The switch points [Range limit 1] and [Range limit 2] are the range limits. As soon as the gross weight exceeds range 1, the next highest range with the next highest interval becomes valid (1->2->5->10->20->50). When reducing the weight, the interval of the previous range is kept. When the gross weight is ≤0.25 d of range 1 and the scale is stable and not tared, the scale returns to range 1 with the corresponding interval.

Note	During calibration, the multiple range function is always switched off.

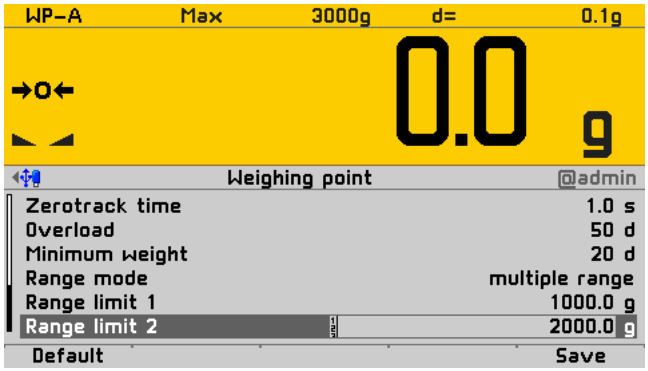
Example

Range mode: Multiple range

Range 1: 0...1000 g (when calibrating set scale interval: 0.1 g)

Range 2: 0...2000 g (next highest scale interval: 0.2 g)

Range 3: 0...3000 g (next highest scale interval: 0.5 g)



- ▶ Go to [System setup]-[Weighing point]-[Weighing point A]-[Parameters]-[W&M] and choose 'Range mode'.
- ▶ Select and confirm 'multiple range'.
- ▶ Set the switch point from range 1 to 2: enter '1000.0 g' for range limit 1.
- ▶ Set the switch point from range 2 to 3: enter '2000.0 g' for range limit 2.
- ▶ Save the settings.

5.11.16.3 Multi-interval Scale (Class III or single range scale Class I and II with variable interval)

The multi-interval scale is a scale with a weighing range that is divided into intervals. Each interval range has a different scale interval, where the weighing range is automatically switched depending on the load on the scale and also when the load is placed on/removed from the scale.

When [Range mode] = [Multi-interval], the scale has up to three ranges with different resolution.

The weight display header includes the current interval range (R1, R2, or R3), Max, Min, and d (or e with instruments used in legal metrology) (Example: multi-interval scale in range 2):

WP-A	R2	Max	2000 kg	d=	
		Min	40 kg	e=	2 kg

The parameters [Range limit 1] and [Range limit 2] are the interval ranges. As soon as the gross weight exceeds range 1, the next highest range with the next highest interval becomes valid (1->2->5->10->20->50).

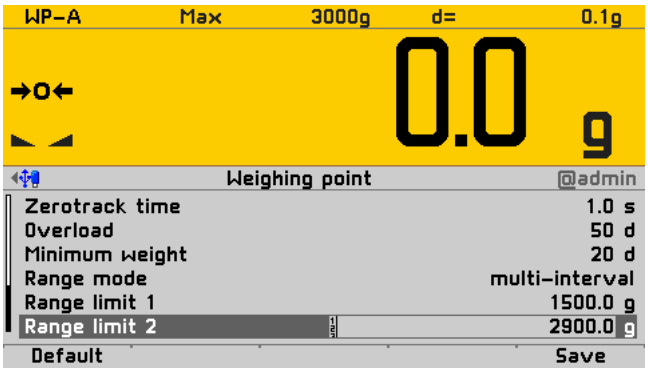
Note	During calibration, the multi-interval function is always switched off.

Example

Range mode: Multi-interval

Interval range 1: 0...1500 g (when calibrating set scale interval: 0.1 g)

Interval range 2: 1500...2900 g (next highest scale interval: 0.2 g)



- ▶ Go to [System setup]-[Weighing point]-[Weighing point A]-[Parameters]-[W&M] and choose 'Range mode'.
- ▶ Select and confirm 'multi-interval'.
- ▶ Set interval range 1: enter '1500.0 g' for range limit 1.
- ▶ Set interval range 2: enter '2900.0 g' for range limit 2.
- ▶ Save the settings.

5.12 Configuring a xBPI Scale

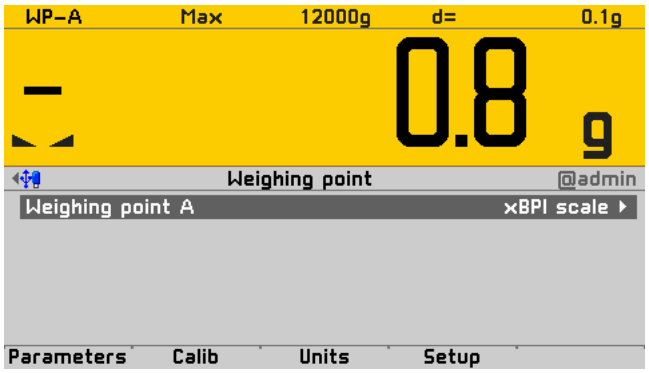
5.12.1 General Information

The PR 5500 can communicate with scales (e.g., Combics1) or weighing modules via the xBPI protocol. The scale can be connected via serial interface (PR 5500/04; see Chapter 4.4.1). Communication is serial.

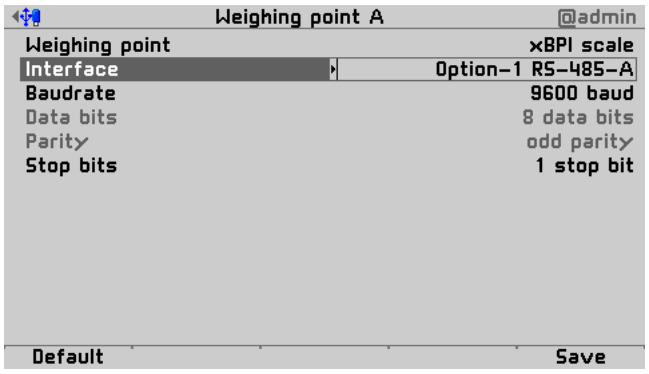
Note	It's possible to use the internal weighing point or an IS platform without external power supply.

The determination and transmission of weight depends strongly on the scale/weighing module. Weight values up to seven digits plus preceding +/- sign can be displayed. The maximum capacity (Max) must be set in the scale or already set for a platform and cannot be changed via the xBPI protocol.

5.12.2 xBPI Parameter Input for Serial Interface

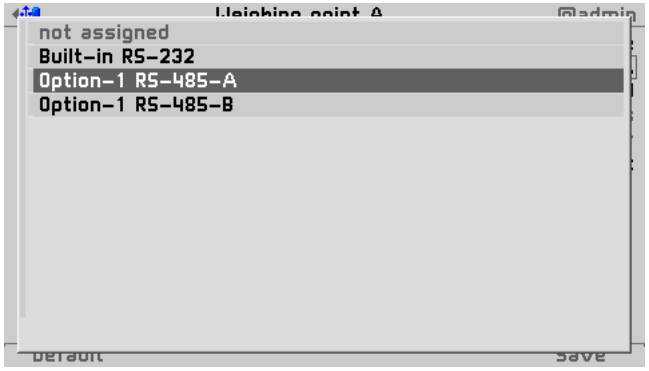


▶ Go to [System setup]-[Weighing points] [Weighing point A], select and confirm 'xBPI scale'.



▷ The following window appears.

▶ Select and confirm the line 'Interface'.



▷ The following window appears.

▶ Select and confirm the desired interface.

▷ The previous window appears.

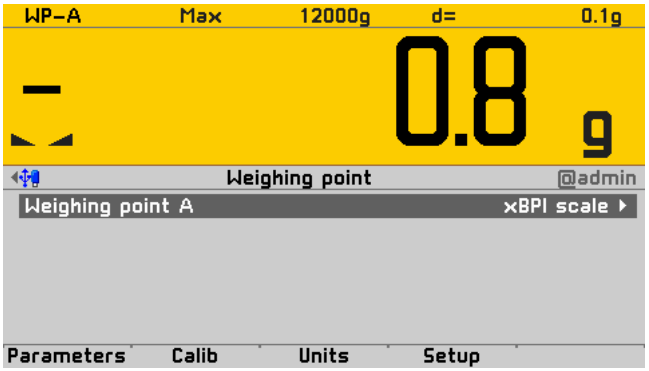
▶ If necessary, change the parameters. Only the 'Baudrate' and 'Stop bits' can be set for an xBPI scale.

▶ Press the [Save] soft key to save the changes.

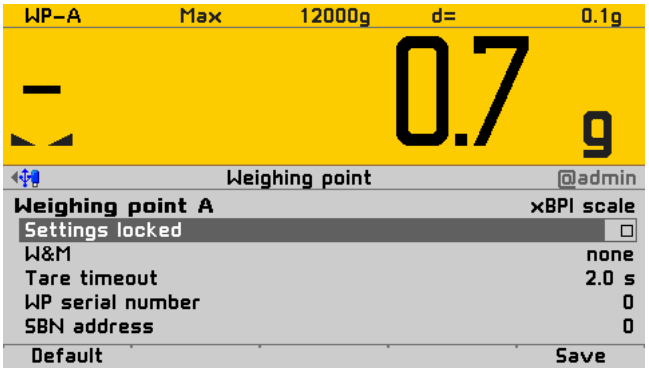
5.12.3 xBPI Parameter Input for Scale Function

The following parameters must be entered for this menu item:

- Timeout for tare function depending on the application
- SBN address for each xBPI scale, if bus operation is active
- Serial number of xBPI scale or weighing module, if used in legal metrology



▶ Press the [Paramet] soft key.



▷ The following window appears.

▶ Enter and confirm the following parameters.

[Settings locked]

The weighing point settings and assignment can only be viewed as if the corresponding CAL switch were closed; see Chapter 5.1.5.2.

[W&M]

Setting for operation in legal metrology. Select [none], OIML, NTEP (for USA) or NSC (for Australia); see Chapter 5.11.16.1.

[Tare timeout]

Timeout for a zeroset or tare command to be executed. If the xBPI scale has not executed the command in the specified time, the action will be aborted.

Setting range: 0...9.9 s

[WP Serial number]

Serial number of the connected xBPI scale/weighing module. With serial number 0, checking is omitted.

Setting range: 0...99999999

[SBN address]

When the address is not set to 0, bus operation is active. Possible addresses: 1 - 31, i.e., max. 31 xBPI scales can be operated on an RS-485 branch. The SBN Address is shown on the display.

Example: Address 31 at WP-A

WP-A.31	Max	2000 kg	d=	2 kg
	Min	40 kg		

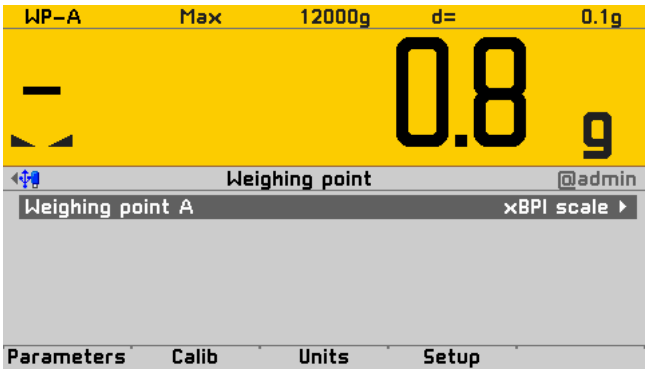
[Default]

Settings are reset to factory settings.

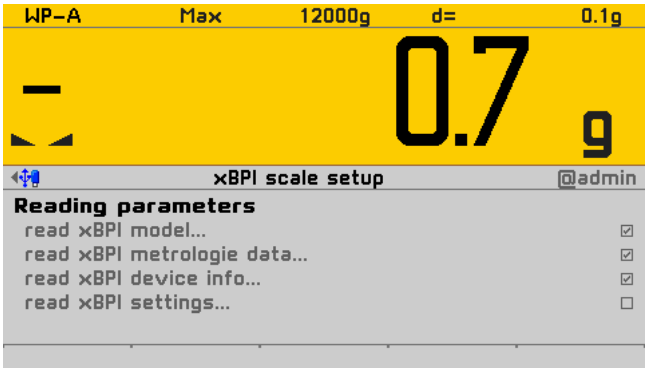
[Save]

The settings are saved.

5.12.4 Setting up an xBPI Platform



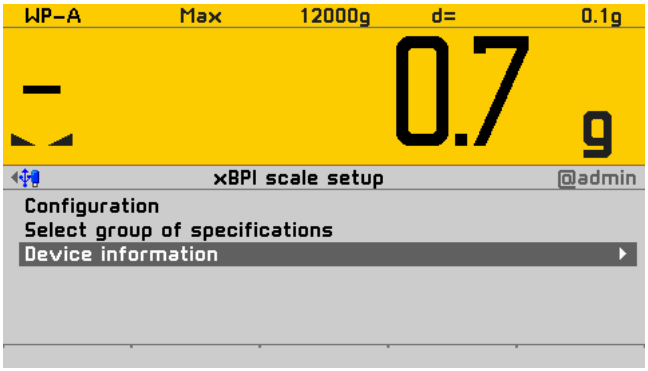
▶ Press the [Setup] soft key.



▷ The PR 5500 is reading the parameters from the xBPI scale.

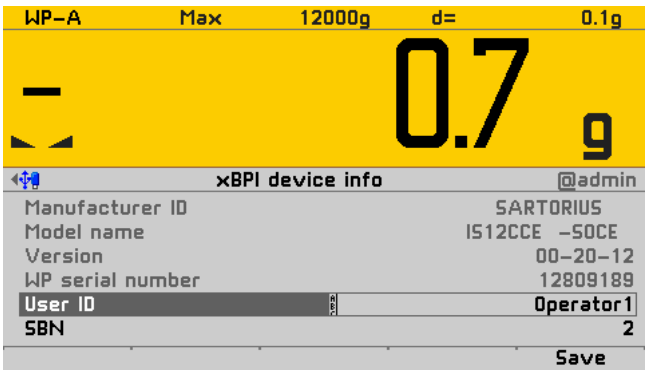
▷ Ticks indicate the progress.

▷ An error message appears if communication with the xBPI scale is not possible!



▷ The following window appears.

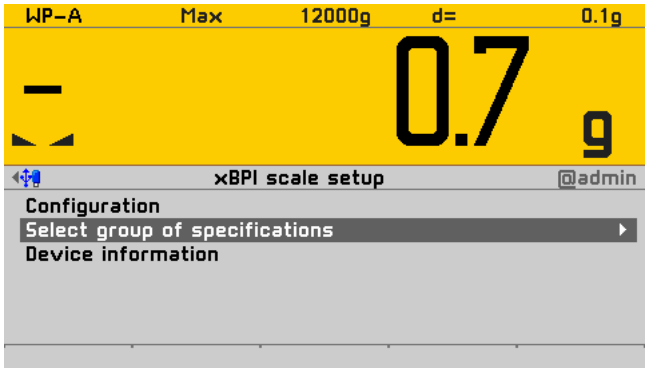
▶ Select and confirm [Device information] using the cursor.



▷ The following window appears.

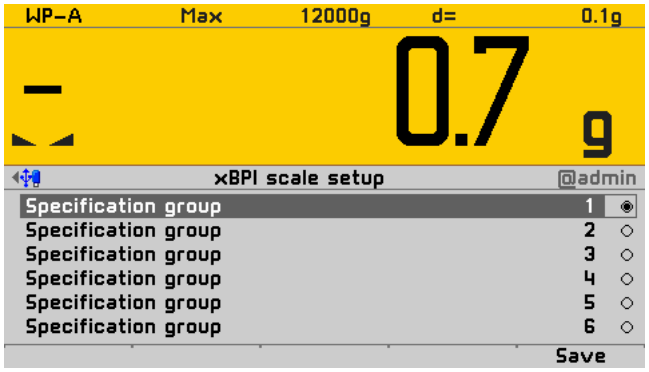
▶ Change the user ID and SBN (see Chapter 5.12.3) if necessary.

▶ Press the [Save] soft key to save the settings.



Note	The following is required for the subsequent specification group selection: ▶ Write down the model name of the scale. ▶ Write down the number of the corresponding specification block; this can be found in the operating instructions.

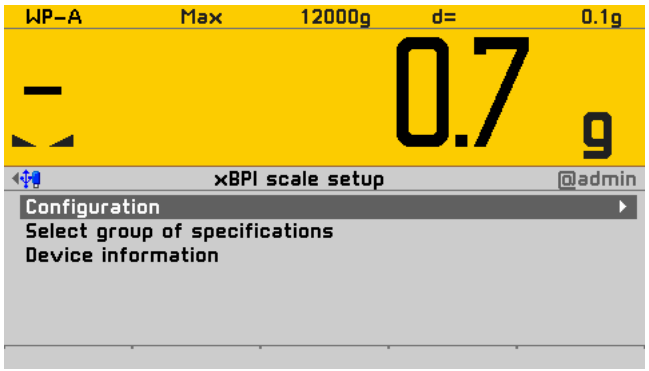
▶ Select and confirm [Select group of specifications] using the cursor.



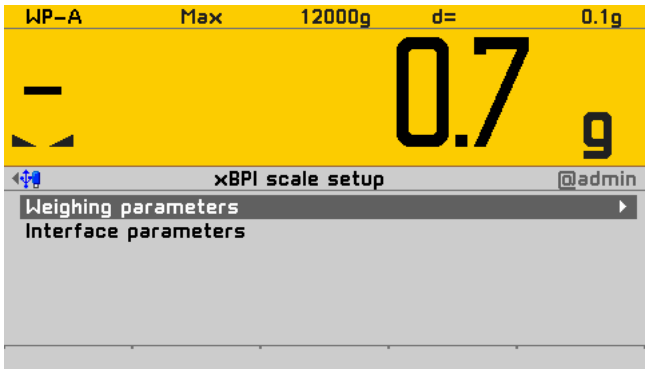
Several xBPI platforms have what is known as 'specification blocks' for selecting various modes of operation (single range, multiple range, etc.)

▶ Select and confirm the desired specification group.

▶ Press the [Save] soft key to save the settings.



▶ Select and confirm [Configuration] using the cursor.



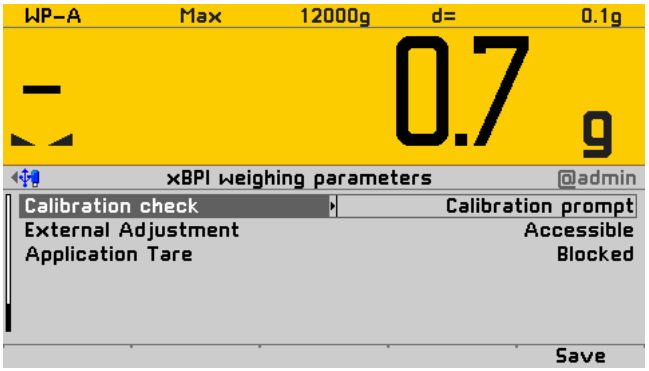
▶ Select and confirm [Weighing parameters] using the cursor.

The weighing parameters are listed as an overview in the following.

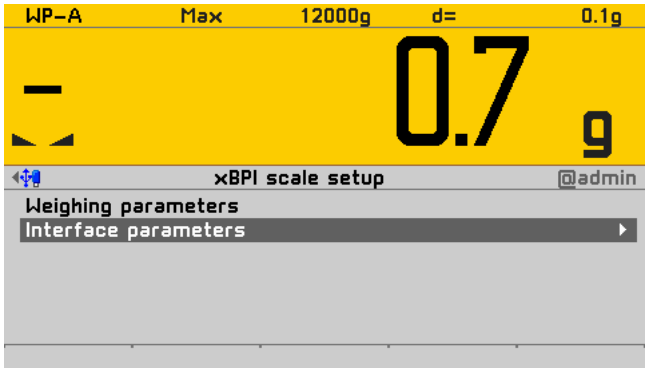
Note	Only from the connected scale supported parameters are displayed.

[Weighing parameters]

- Ambient conditions
  - very stable condition
  - Stable condition
  - Unstable condition
  - Very unstable condition
- Application/filter
  - Standard mode
  - manual filling
  - automatic dosing
  - Check weighing
- Standstill range
  - 0.25 digit
  - 0.5 digit
  - 1 digits
  - 2 digits
  - 4 digits
  - 8 digits
- Stability symbol delay
  - No delay
  - Short delay
  - Average delay
  - Long delay
- Tare parameters
  - At any time
  - Not until stable
- Auto zero function
  - On
  - Off
- Adjustment function
  - Ext.adj.w.fact.wt.
  - Ext.adj.w.user wt.
  - Ext.adj.w.pres.wt.
  - Internal adjust
  - Ext.lin.w.fact.wt.
  - Ext.lin.w.user wt.
  - Confirm preload/dead load
  - Delete preload/dead load
  - Adjust disabled
- Confirming adjustment
  - automatically
  - manual
- Zero range
  - 1 % of max. load
  - 2 % of max. load
  - 5 % of max. load
  - 10 % of max. load
- Power-on zero range
  - Factory settings
  - 2 % of max. load
  - 5 % of max. load
  - 10 % of max. load
  - 20 % of max. load
- Power-on tare/zero
  - Active
  - Inactive
  - Only for zeroing
- Measuring rate
  - Normal output
  - Fast output
- Calibration check
  - No calibration prompt
  - Calibration prompt
- External Adjustment
  - enabled
  - disabled
- Application Tare
  - enabled
  - disabled
- Maximum capacity
  - Reduced by pre-/dead load
  - Constant



▶ Press the [Save] soft key to save the settings.

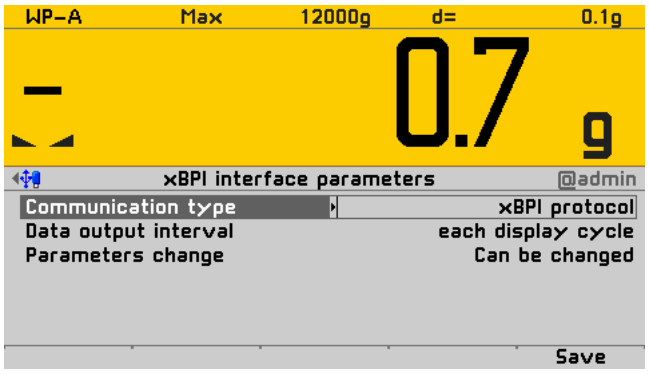


▶ Select and confirm [Interface parameters] using the cursor.

The interface parameters are listed as an overview in the following.

[Interface parameters]

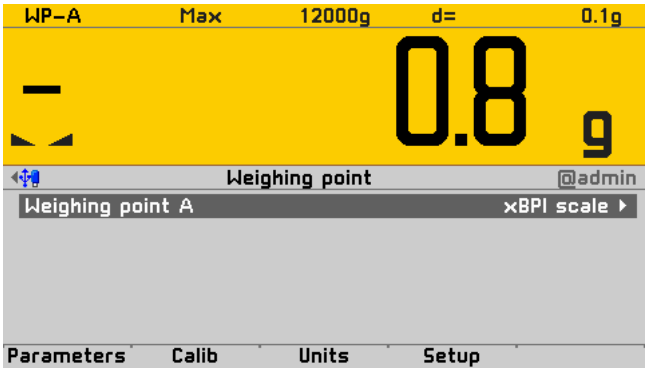
- Communication type
  - SBI protocol
    - Baudrate for SBI — 150, 300, 600, 1200, 2400, 4800, 9600, 19200 baud
    - Parity for SBI — Mark parity, space parity, odd parity, even parity
    - Stop bits — 1 stop bit, 2 stop bits
    - Handshake — Software handshake, CTS with 2 characters, CTS with 1 character
    - Print in weighing mode — On requ always, On requ when stab, On requ with store, auto, auto when stable
    - auto print — Start/stop by ESCP, not stoppable
    - Output format — without ID 16 bytes, with ID 22 bytes
    - Data output interval — each display cycle, 2, 5, 10, 20, 20, 50, 100 updates
    - Parameters change — possible, not possible
  - xBPI protocol
    - Data output interval — each display cycle, 2, 5, 10, 20, 20, 50, 100 updates
    - Parameters change — possible, not possible



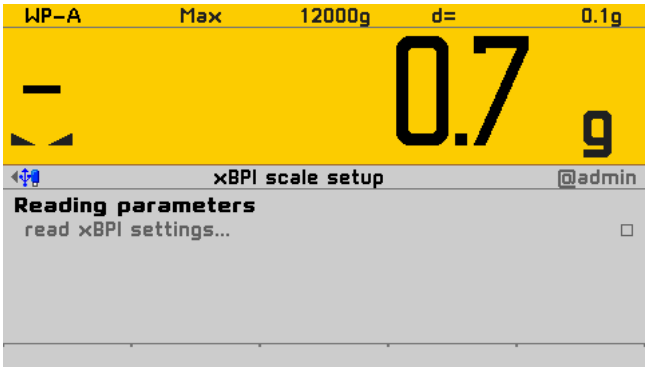
▶ Press the [Save] soft key to save the settings.

5.12.5 Setting the xBPI Dead Load

Note	Both terms 'dead load' and 'preload' are used by Sartorius.



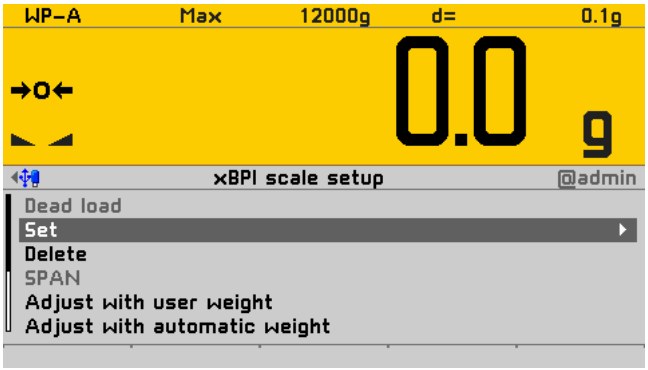
▶ Press the [Calib] soft key to calibrate the xBPI platform.



▷ The PR 5500 is reading the parameters from the xBPI scale.

▷ Ticks indicate the progress.

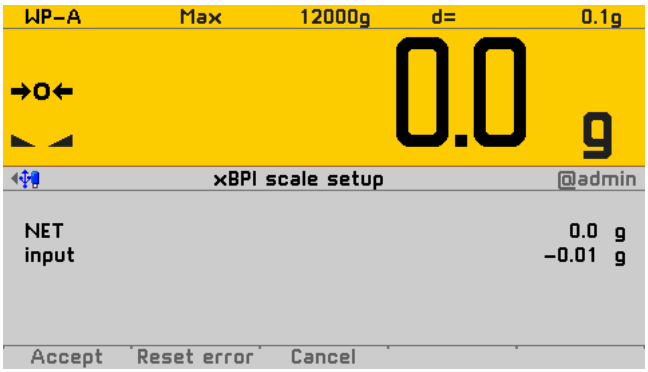
▷ An error message appears if communication with the xBPI scale is not possible!



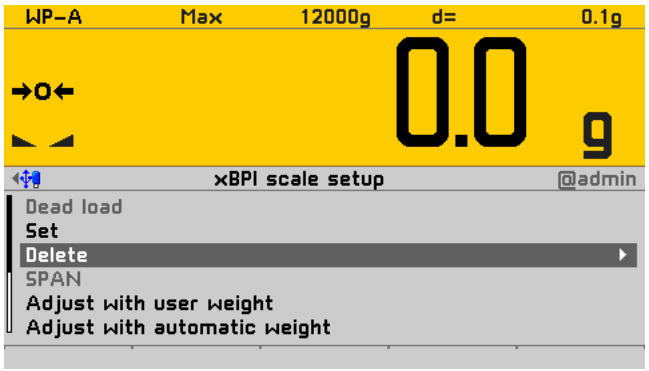
Setting the Dead Load

▶ Remove the weight from the scale.

▶ Select and confirm [Set] using the cursor.



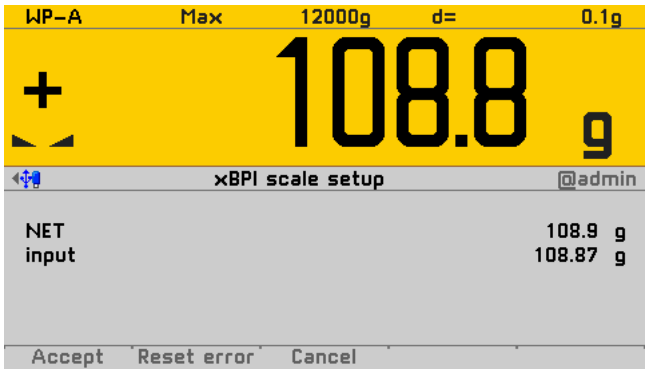
▷ After the command is sent, the gross weight display shows "0".



Deleting the Dead Load

▶ Remove the weight from the scale.

▶ Select and confirm [Delete] using the cursor.



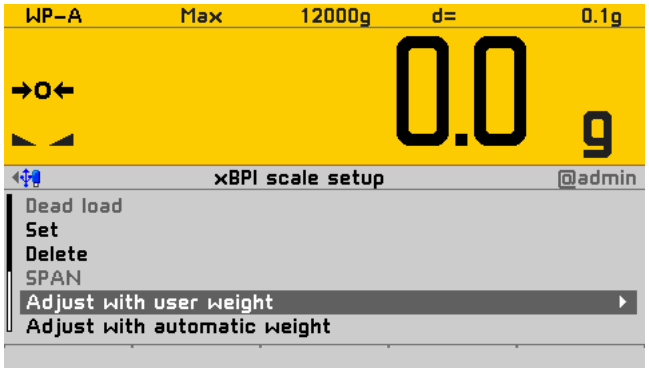
▷ The stored dead load is deleted. The current dead load is shown on the weight display.

5.12.6 xBPI Calibration with the User Weight

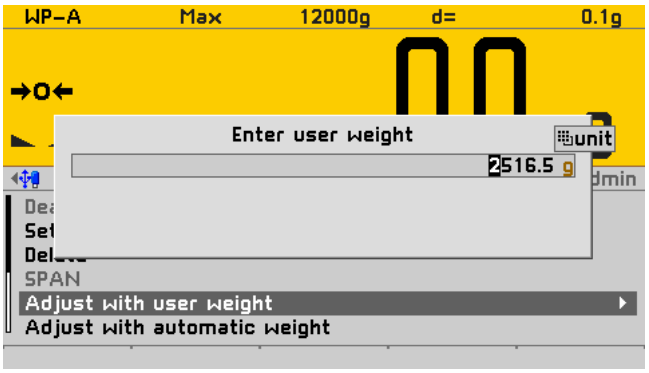
Requirements

- The xBPI protocol has been selected (see Chapter 5.12.2).
- The 'xBPI scale' weighing point has been selected.
- The platform has been set up (see Chapter 5.12.4).
- In menu [Weighing point A] 'manual' is set under [Configuration]-[Weighing parameters]-[Confirming adjustment] (see page 187).
- The communication between the device and platform is active.

Procedure

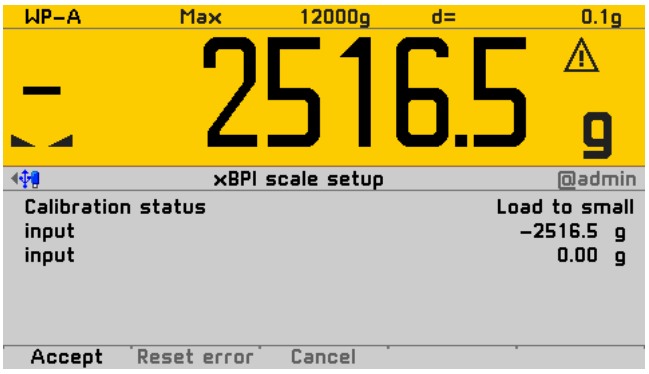


▶ Select and confirm [Adjust with user weight] using the cursor.



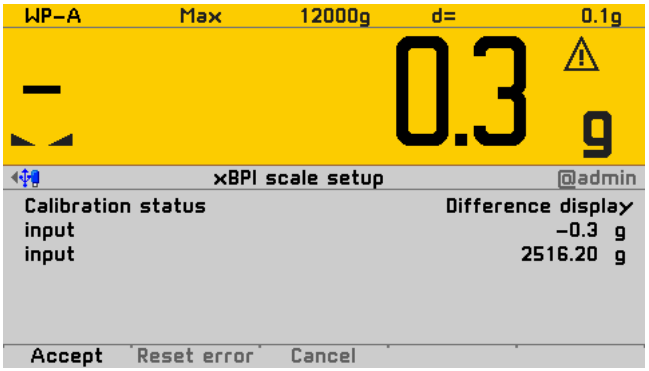
▷ An input window appears. The previously stored user weight is displayed.

▶ Change the weight value if necessary using the keyboard and confirm.



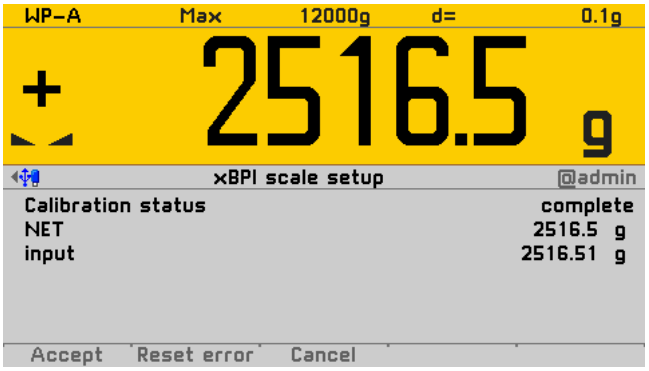
▷ The calibration process is carried out without a weight. The calibration status is displayed.

▶ Place the weight on the scale.



▷ The deviation is displayed in the last line with increased resolution (10-fold).

▶ Press the [Accept] soft key.



▷ The data are saved and the instrument generates a corresponding message.

▷ The weight is displayed in the last line with increased resolution (10-fold).

▶ Remove the weight.

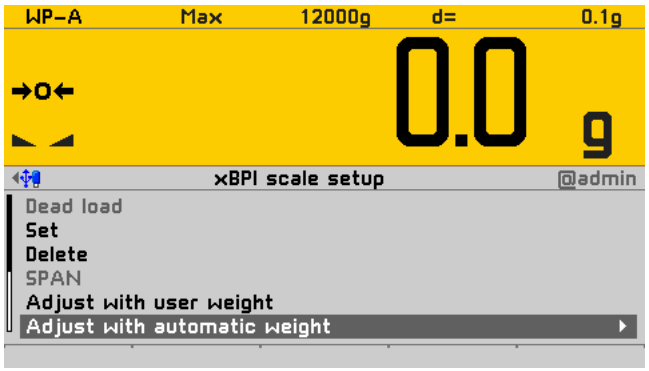
▶ Press the ESC/EXIT key to return to the previous window.

5.12.7 xBPI Calibration with Automatic Weight Detection

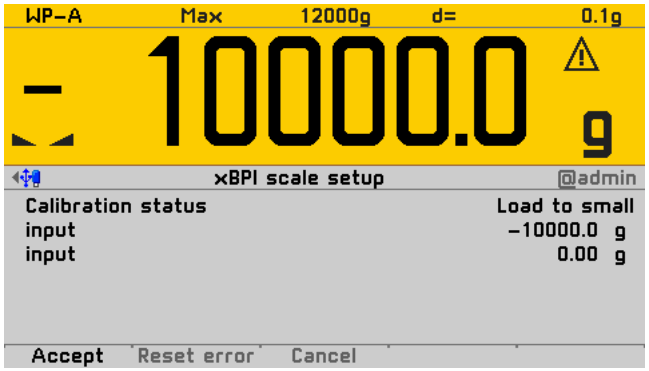
Requirements

- The xBPI protocol has been selected (see Chapter 5.12.2).
- The 'xBPI scale' weighing point has been selected.
- The platform has been set up (see Chapter 5.12.4).
- In menu [Weighing point A] 'manual' is set under [Configuration]-[Weighing parameters]-[Confirming adjustment] (see page 187).
- The communication between the device and platform is active.

Procedure

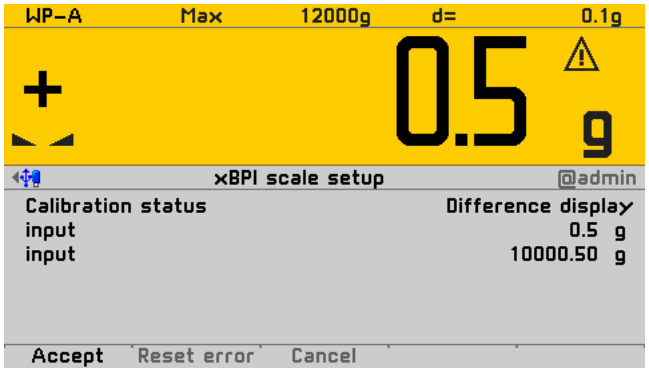


▶ Select and confirm [Adjust with automatic weight] using the cursor.



▷ The calibration process is carried out without a weight. The calibration status is displayed.

▷ The value is specified automatically.

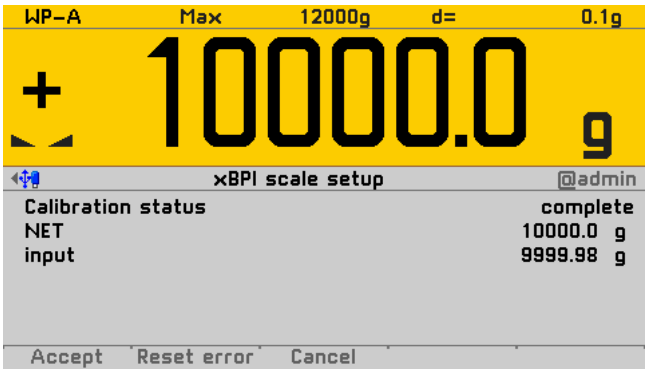


In this example, a weight of 10 kg is put onto the scale.

▷ The following window is displayed after applying the weight.

▷ The deviation is displayed in the last line with increased resolution (10-fold).

▶ Press the [Accept] soft key.



▷ The data are saved and the instrument generates a corresponding message.

▷ The weight is displayed in the last line with increased resolution (10-fold).

▶ Remove the weight.

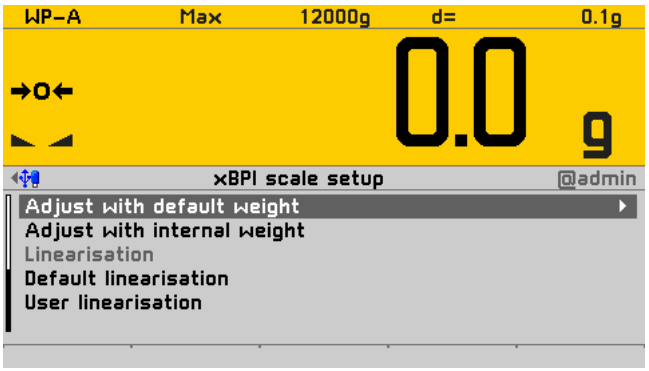
▶ Press the ESC/EXIT key to return to the previous window.

5.12.8 xBPI Calibration with Default Weight

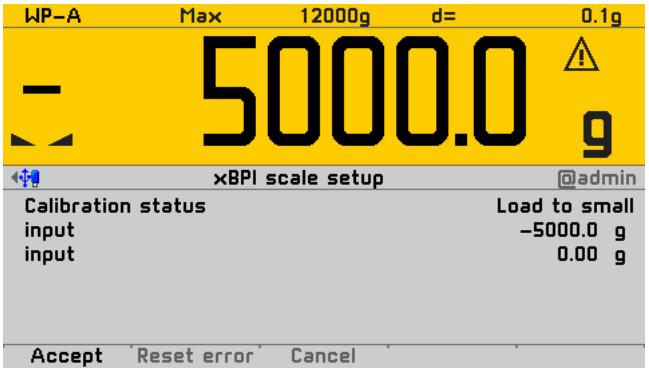
Requirements

- The xBPI protocol has been selected (see Chapter 5.12.2).
- The 'xBPI scale' weighing point has been selected.
- The platform has been set up (see Chapter 5.12.4).
- In menu [Weighing point A] 'manual' is set under [Configuration]-[Weighing parameters]-[Confirming adjustment] (see page 187).
- The communication between the device and platform is active.

Procedure

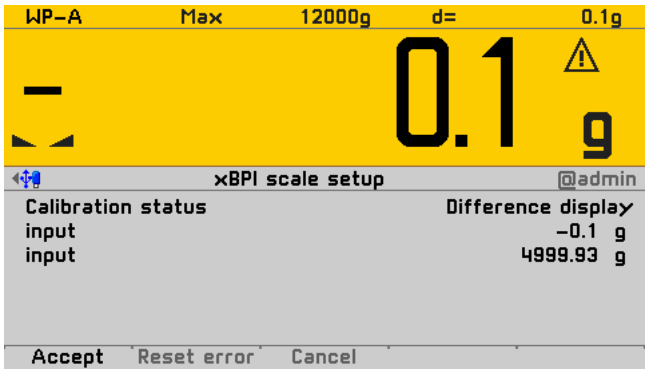


▶ Select and confirm [Adjust with default weight] using the cursor.



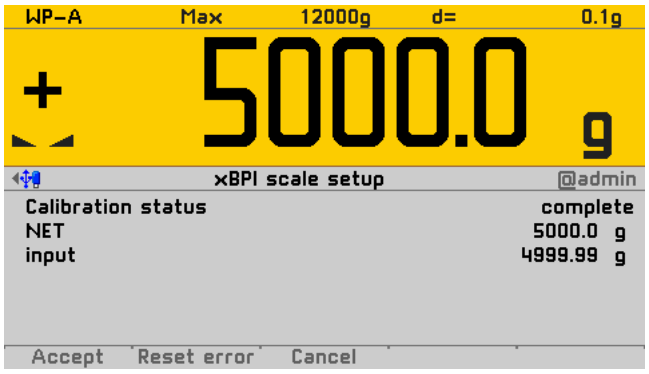
▷ The calibration process is carried out without a weight. The calibration status is displayed.

▶ Place the weight on the scale.



▷ The deviation is displayed in the last line with increased resolution (10-fold).

▶ Press the [Accept] soft key.



▷ The data are saved and the instrument generates a corresponding message.

▷ The weight is displayed in the last line with increased resolution (10-fold).

▶ Remove the weight.

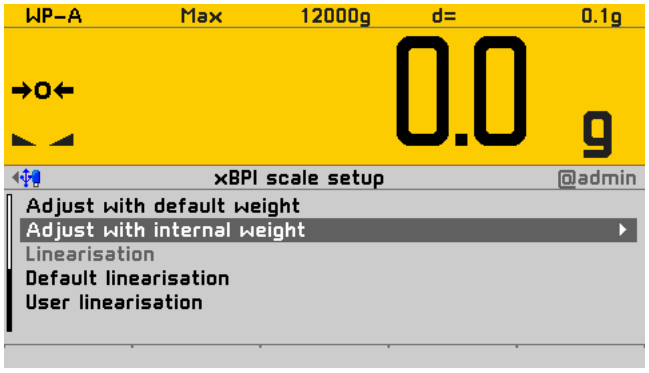
▶ Press the ESC/EXIT key to return to the previous window.

5.12.9 xBPI Calibration with Internal Weight

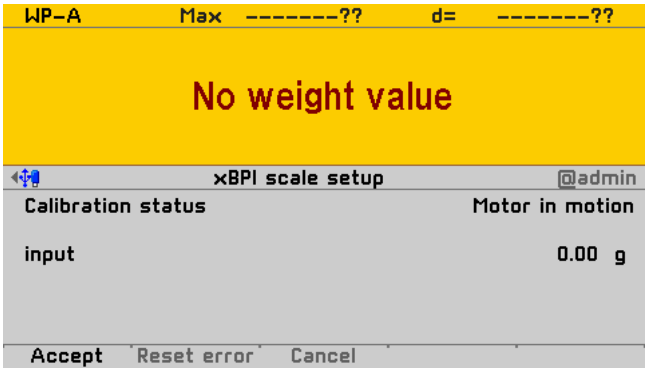
Requirements

- TThe xBPI protocol has been selected (see Chapter 5.12.2).
- The 'xBPI scale' weighing point has been selected.
- The platform has been set up (see Chapter 5.12.4).
- In menu [Weighing point A] 'manual' is set under [Configuration]-[Weighing parameters]-[Confirming adjustment] (see page 187).
- The communication between the device and platform is active.

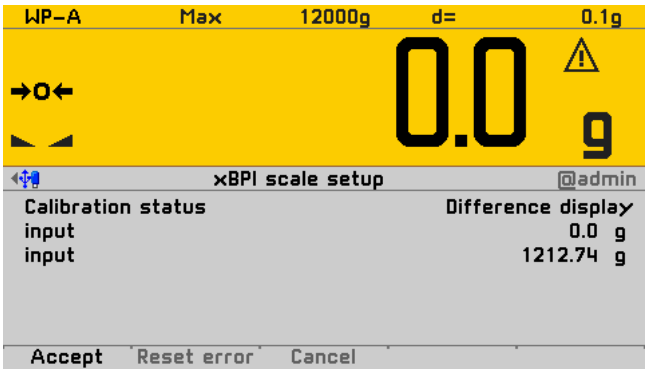
Procedure



▶ Select and confirm [Adjust with internal weight] using the cursor.

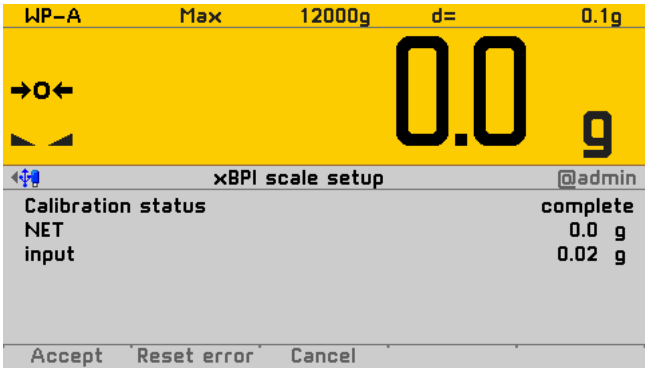


▷ The procedure is shown, e.g., with the following message:



▷ The deviation is displayed in the last line with increased resolution (10-fold).

▶ Press the [Accept] soft key.



▷ The data are saved and the instrument generates a corresponding message.

▷ The weight is displayed in the last line with increased resolution (10-fold).

▶ Press the ESC/EXIT key to return to the previous window.

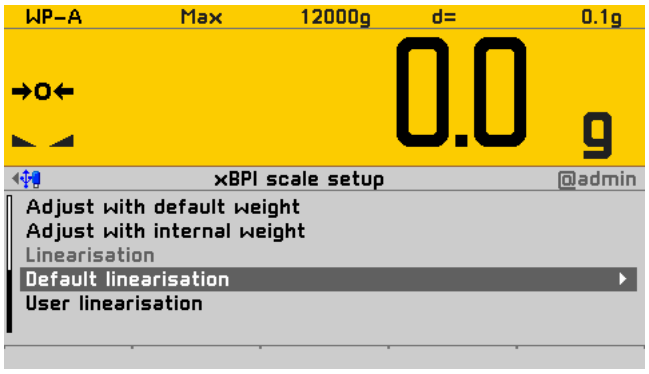
5.12.10 xBPI Linearization

The measurement range for a straight can be optimized by setting the linearization points. The following describes standard linearization.

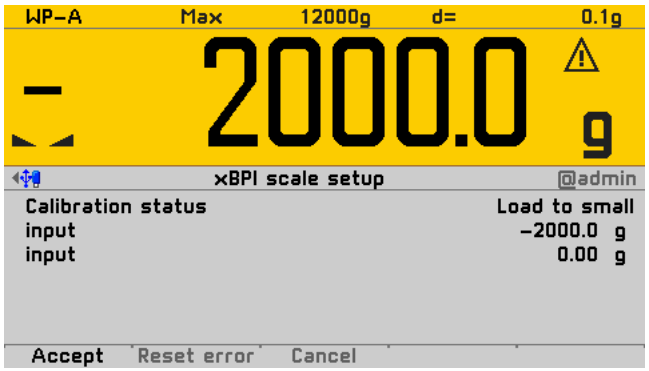
Requirements

- The xBPI protocol has been selected (see Chapter 5.12.2).
- The 'xBPI scale' weighing point has been selected.
- The platform has been set up (see Chapter 5.12.4).
- In menu [Weighing point A] 'manual' is set under [Configuration]-[Weighing parameters]-[Confirming adjustment] (see page 187).
- The communication between the device and platform is active.

Procedure

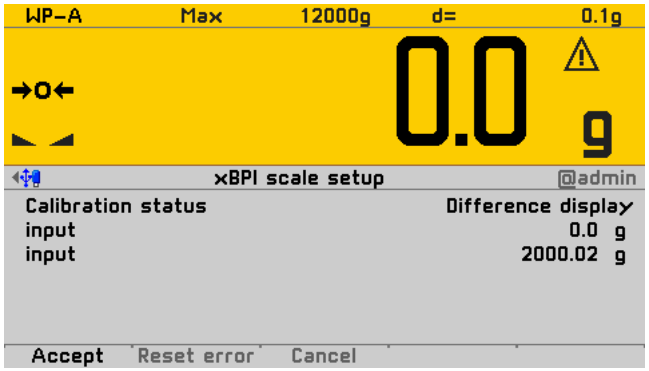


▶ Select and confirm [Default linearisation] using the cursor.



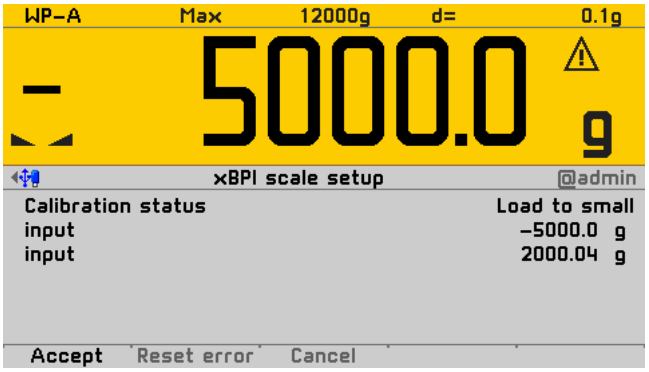
▷ The first linearization point to be calibrated is displayed.

▶ Place the corresponding weight (in this case, 2 kg) on the scale.



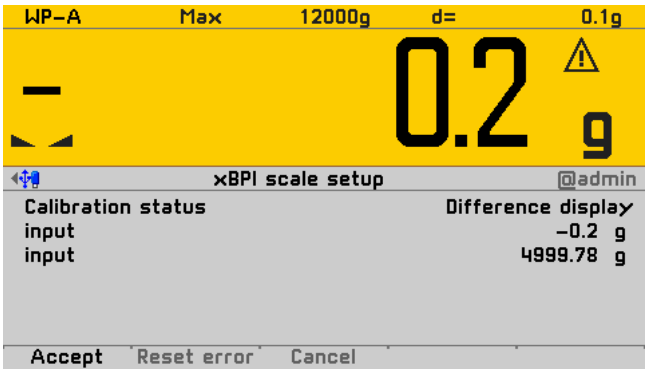
▷ The deviation is displayed in the last line with increased resolution (10-fold).

▶ Press the [Accept] soft key.



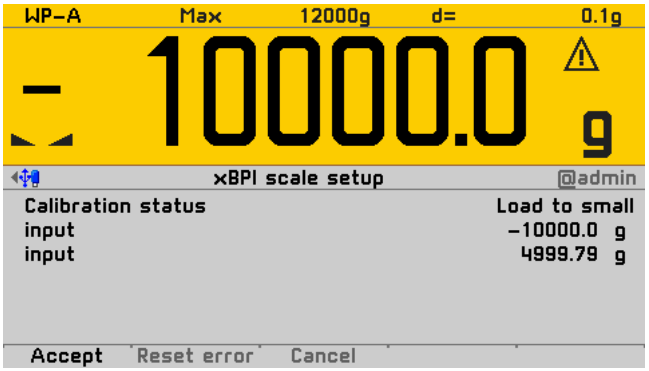
▷ The second linearization point to be calibrated is displayed.

▶ Place the corresponding weight (in this case, 5 kg) on the scale.



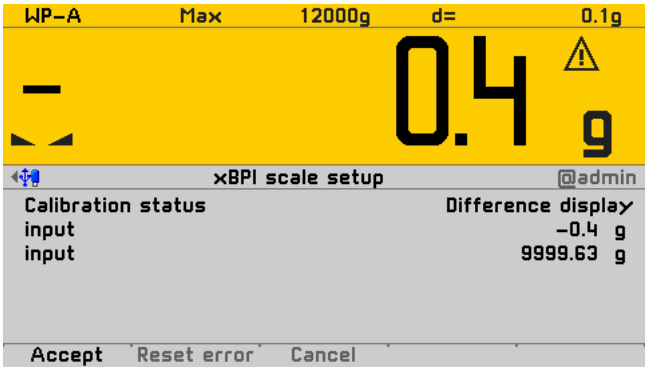
▷ The deviation is displayed in the last line with increased resolution (10-fold).

▶ Press the [Accept] soft key.



▷ The third linearization point to be calibrated is displayed.

▶ Place the corresponding weight (in this case, 10 kg) on the scale.



▷ The deviation is displayed in the last line with increased resolution (10-fold).

▶ Press the [Accept] soft key.

▷ The last linearization point to be calibrated is displayed.

▶ Das entsprechende Gewicht (hier 30 kg) auflegen.

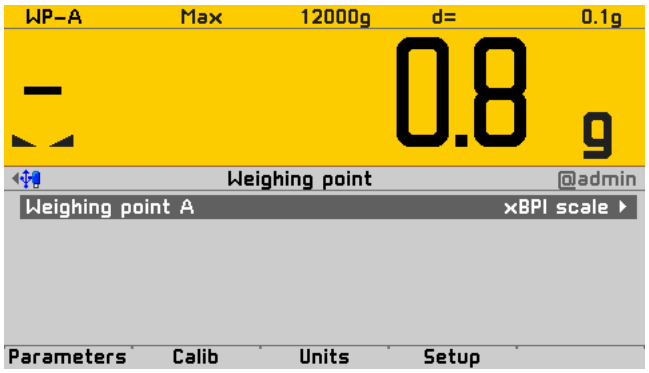
▷ Die Abweichung wird in der letzten Zeile mit 10-fach Auflösung dargestellt.

▶ Softkey [Annehmen] drücken.

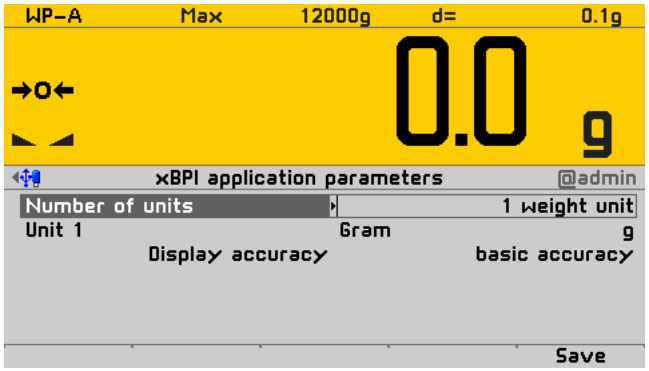
▶ Taste ESC/EXIT drücken, um zum vorherigen Fenster zurückzukehren.

5.12.11 xBPI Display Units

The device is calibrated with a selected weight unit.



▶ Go to the menu [System setup]-[Weighing point]-[Weighing point A] and press the [Units] soft key to select additional units and the associated display accuracy; see Chapter 5.10.16.



[Number of units]

see Chapter 5.10.16

[Unit]

see Chapter 5.10.16

[Display accuracy]

see Chapter 5.10.16

[Save]

The settings are saved.

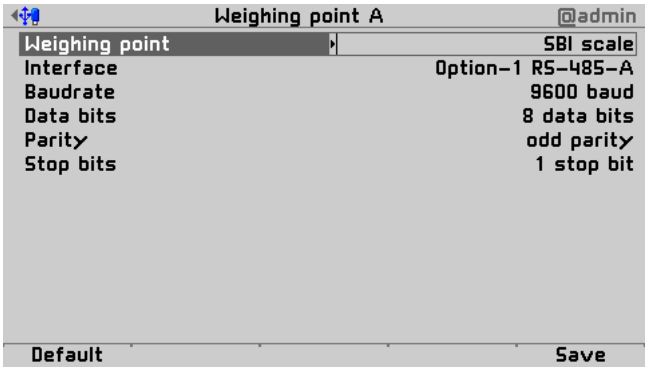
5.13 Setting the SBI Scale

5.13.1 General Information

The PR 5500 can communicate with scales (e.g., Combics1) or weighing modules via the SBI protocol. The scale can be connected via serial interface (PR 5500/04; see Chapter 4.4.1). Communication is serial. There are no variables or digital I/Os for external scales in the SPM of the PR 5500.

5.13.2 Parameter for Serial Interface

▶ Go to [System setup]-[Weighing points] [Weighing point A], select and confirm 'SBI scale'.



▷ A selection window appears.

Unavailable interfaces are grayed out.

▶ Select and confirm the individual settings.

[Interface]

serial interfaces

Selection:
not assigned, Built-in RS-232, Built-in RS-485, Option-x RS-485-A, Option-x RS-485-B

[Baudrate]

Modulation rate for data transmission.

Note	The selected value must match the value of the connected device (e.g. Combics1).

Selection:
300, 600, 1200, 2400, 4800, <9600>, 19200 baud

[Data bits]

Groups of data bits.

Selection:
7 data bits, <8 data bits>

[Parity]

Parity check for detecting errors during data transmission.

Selection:
no parity, odd parity, even parity

[Stop bits]

Units for transmission protocols.

Selection:
1 stop bit, <2 stop bits>

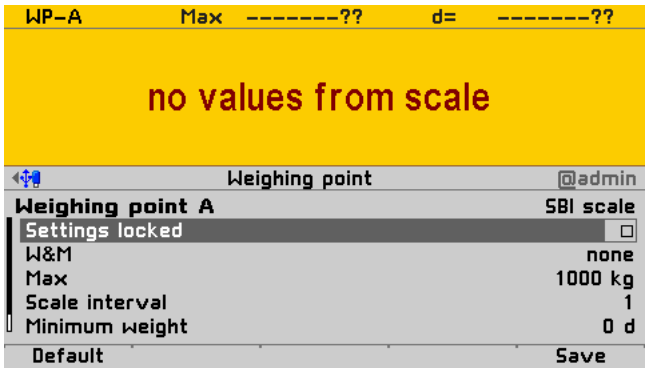
[Default]

Settings are reset to factory settings.

[Save]

The settings are saved.

5.13.3 Parametereingabe



Access the menu as follows: [System setup]-[Weighing points]-[Weighing point x]-[Param].

▶ Select and confirm the individual settings.

[Settings locked]

The weighing point settings and assignment can only be viewed as if the corresponding CAL switch were closed; see Chapter 5.1.5.2.

[W&M]

Setting for operation in legal metrology. Select [none], OIML, NTEP (for USA) or NSC (for Australia); see Chapter 5.11.16.1.

Maximum Capacity [Max]

See Chapter 5.11.5.

[Scale interval]

See Chapter 5.11.6.

[Minimum weight]

Minimum weight at which a print command can be triggered.

Setting range: 0...9999999 d. For use in legal metrology a value of at least 20 d must be set.

[Update time]

Timeframe in which a new weight value is displayed.

Setting range: 0.1...2.0 s.

[Default]

Settings are reset to factory settings.

[Save]

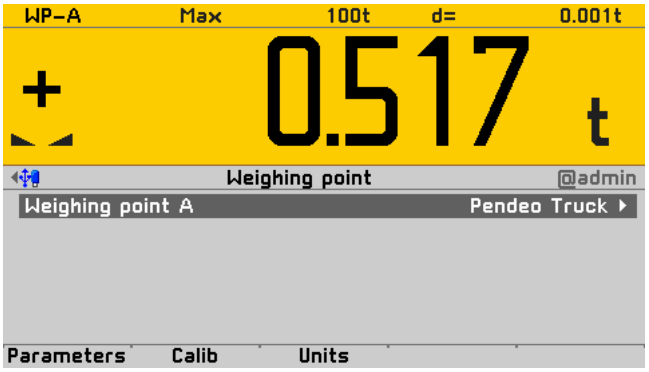
The settings are saved.

5.14 Calibrating Digital Weighbridge Load Cell ‚Pendeo® Truck'

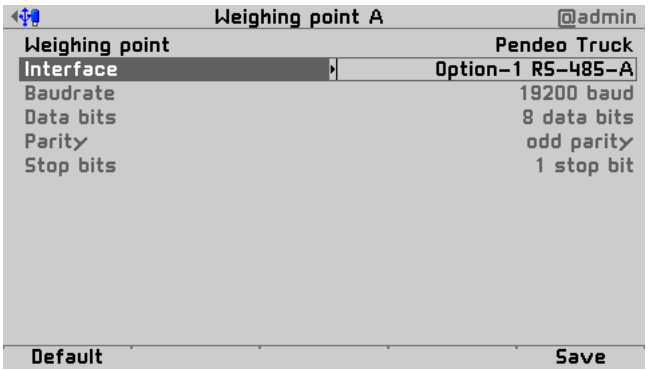
5.14.1 General Information

The digital load cells have been calibrated at the factory based on the acceleration of gravity at Hamburg, Germany: 9.81379 m/s². The calibration data in the load cells are invariable. The calibration data for the gravity acceleration at the place of installation can be adapted only in the instrument and protected against overwriting (see Chapter 5.1.5). With applications for use in legal metrology, the legal requirements and the conditions given on the test/approval certificate must be taken into account when selecting the settings.

5.14.2 Parameter Input for Serial Interface

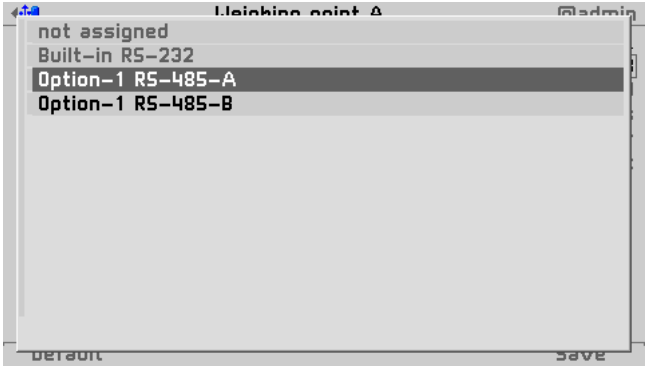


▶ Go to [System setup]-[Weighing points] [Weighing point A], select and confirm 'Pendeo Truck'.



▷ The following window appears.

▶ Select and confirm the line 'Interface'.



▷ The following window appears.

▶ Select and confirm the RS-485 interface (in this case: Option-1 RS-485-A).

▷ The previous window appears.

▶ Press the [Save] soft key to save the changes.

5.14.3 Calibration Sequence

During calibration, no data is changed in the digital load cells. The calibration data and parameters are saved in the instrument. The unique serial numbers of the connected load cells are monitored. The number of platforms greatly influences how calibration is carried out.

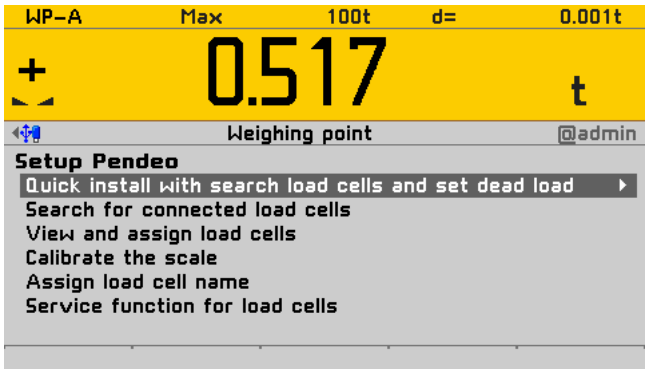
For the adjustment is the following order specified:

- Search for load cells and set dead load, see Chapter 5.14.4 or
- only search for load cells, see Chapter 5.14.5
- Assign load cells, see Chapter 5.14.6
- Calibrate 'New': Max with weight unit, scale interval, dead load, calibration weight, see Chapter 5.14.7
- Carry out a corner correction if necessary, see Chapter 5.14.10

Note	For further information about calibrating weighing points, see Chapter 5.11.

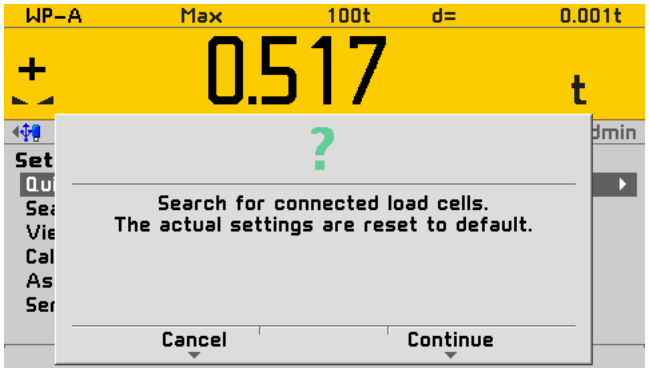
5.14.4 Search for load cells and set dead load

Access the menu as follows: [System setup]-[Weighing point]-[Weighing point A]-[Calib].



▶ Unload the scale.

▶ Select and confirm the first menu item.

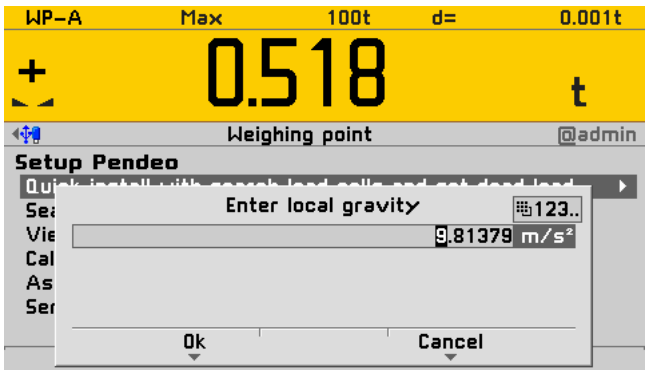


▷ A prompt window appears.

▶ Press the [Continue] soft key to start the search process.

Or

▶ Press the [Cancel] soft key to return to the Pendeo setup menu.

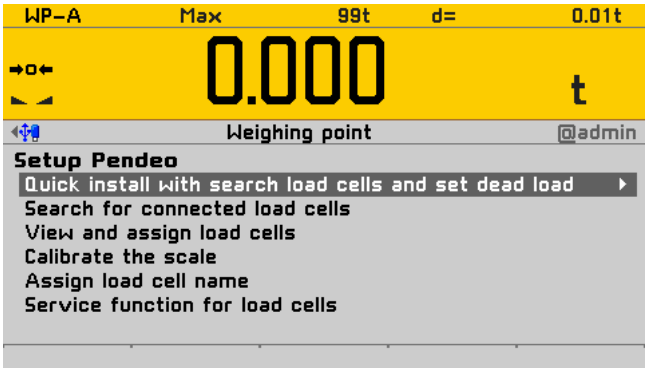


▷ An input window appears.

▶ Change the default value, if necessary and press the [Ok] soft key, um die Eingabe zu bestätigen.

▶ Press the [Cancel] soft key, if necessary to return to the Pendeo setup menu.

▷ Search process is started and dead load is set.

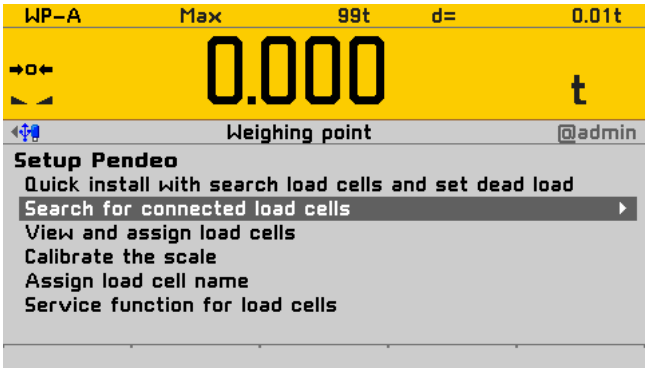


▷ After determining the Pendeo setup menu appears.

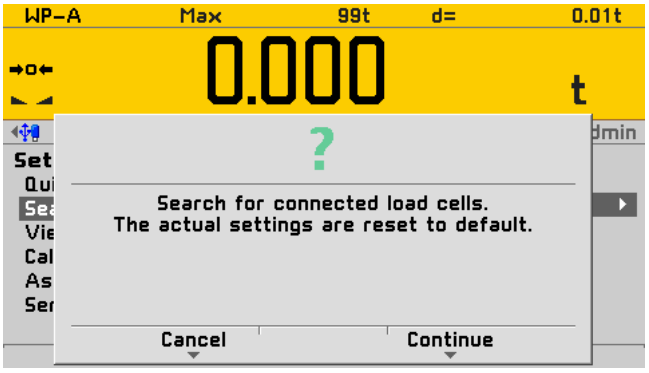
5.14.5 Search for Load Cells

The following example shows a platform with four load cells.

Access the Pendeo setup menu as follows: [System setup]-[Weighing point]-[Weighing point A]-[Calib].



▶ Select and confirm the menu item 'Search for connected load cells'.



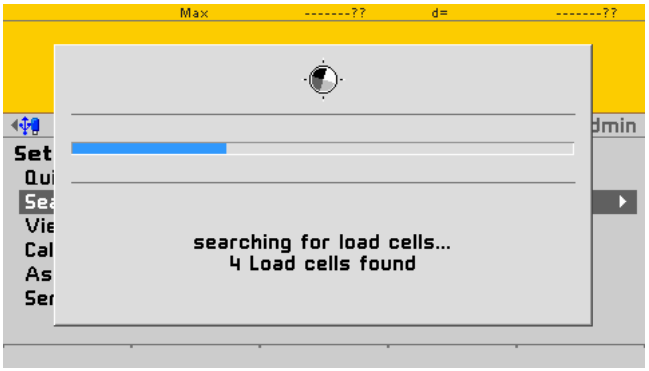
▷ A prompt window appears.

▶ Press the [Continue] soft key to start the search process.

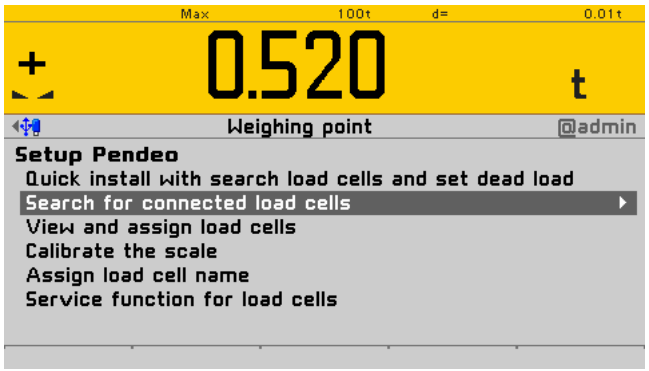
Or

▶ Press the [Cancel] soft key to return to the Pendeo setup menu.

▷ Search process is started.



▷ A progress window appears.



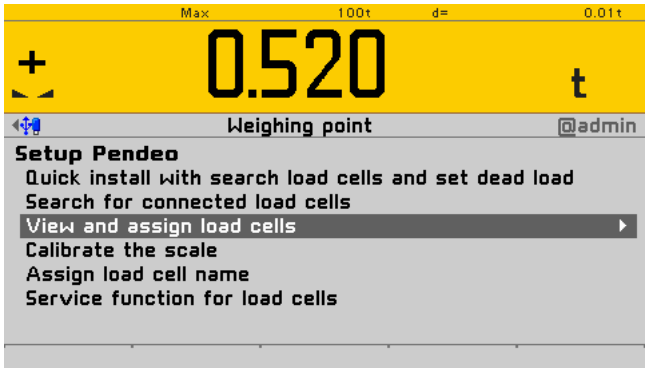
▷ After determining the Pendeo setup menu appears.

5.14.6 View and Assign Load Cells

The load cells (serial number) can be assigned to the place of installation in this menu. This is important for correcting the dead load (distribution to the individual load cells), for corner correction and in the event of load cell replacement.

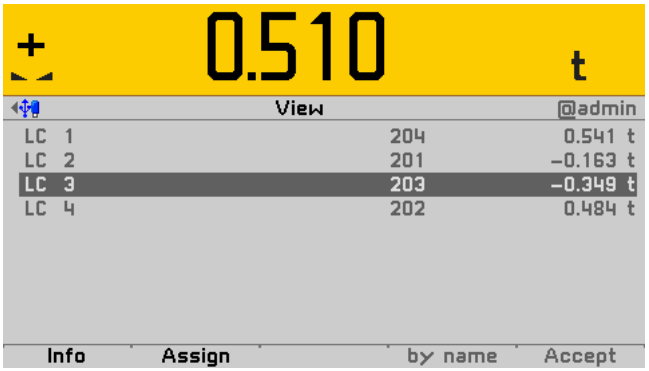
Note	The assignment from the installation should be documented in the case of load cells being replaced.

Access the Pendeo setup menu as follows: [System setup]-[Weighing point]-[Weighing point A]-[Calib]-[View].



▶ Select and confirm the menu item 'View and assign load cells'.

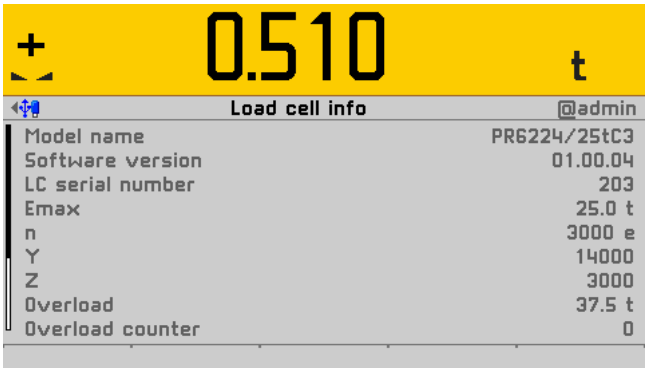
5.14.6.1 View Load Cells



▷ The load cells are displayed with their item number, serial number, and load.

▶ Select the desired line, if necessary and press the [Info] soft key, to display the load cell data.

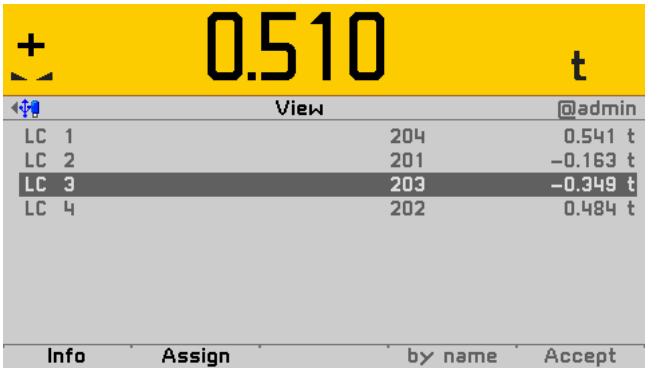
Note	If load cell names have been assigned (see Chapter 5.17.9), the view can be switched with the soft key [by name].



▷ The following window appears.

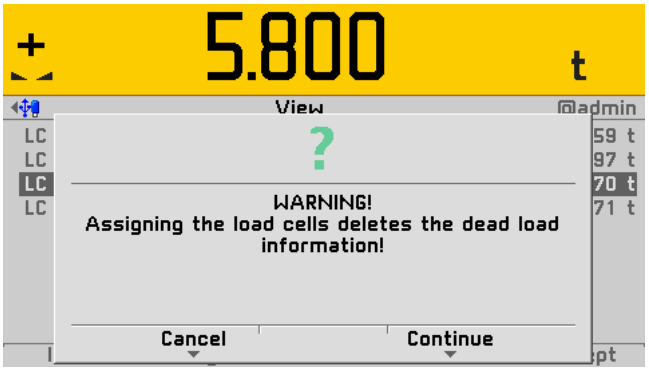
▶ Press the ESC/EXIT key to return to the previous window.

5.14.6.2 Assign Load Cells



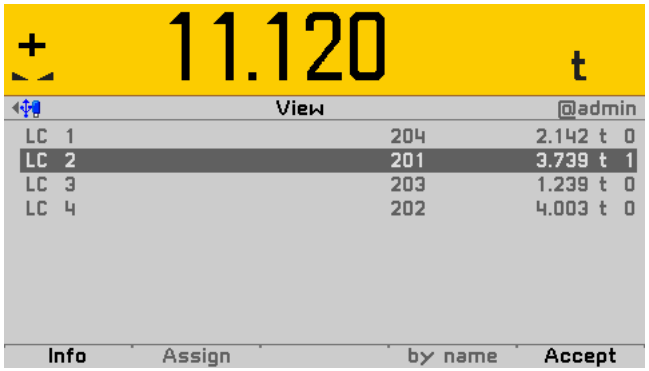
▶ Unload the scale.

▶ Press the [Assign] soft key.



▷ You are prompted to confirm.

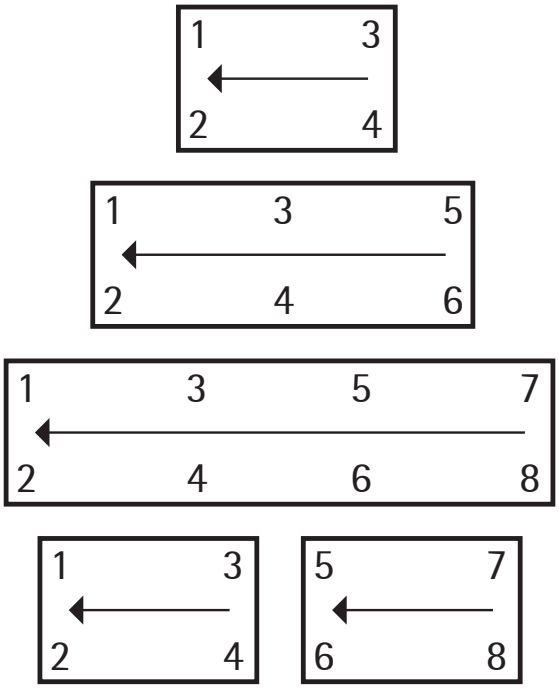
▶ Press the [Continue] soft key.

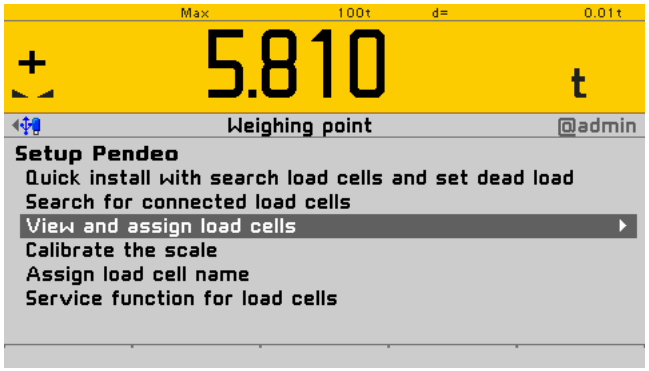


The load cells are assigned by placing minimum weights on the scale.

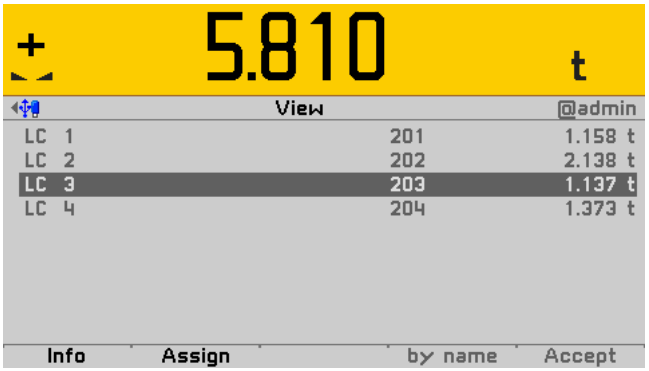
- ▶ Place the weight on the corner/load cell which will be assigned no. 1.
- ▷ As soon as the device detects the weight change, the corresponding line is selected.
- ▶ Press the [Accept] soft key.
- ▷ The future LC no. appears at the far right of the line.
- ▶ Remove the calibration weight.
- ▶ Repeat these steps for load cells 2–4.
- ▶ Press the [Save] soft key to save the new assignment.

An example of a possible assignment is shown on the left.





- ▷ The Pendeo setup menu appears.
- ▶ Select and confirm the menu item 'View and assign load cells'.



▷ The new assignment will be displayed.

▶ Check the corner load (dead load), see Chapter 5.14.10.1.

▶ Press the ESC/EXIT key to return to the previous window.

5.14.7 Calibrating Load Cells

Access the Pendeo setup menu as follows: [System setup]-[Weighing point]-[Weighing point A]-[Calib].

Example

Max. load cell capacity: E_{max} = 50 t

Number of load cells: 4

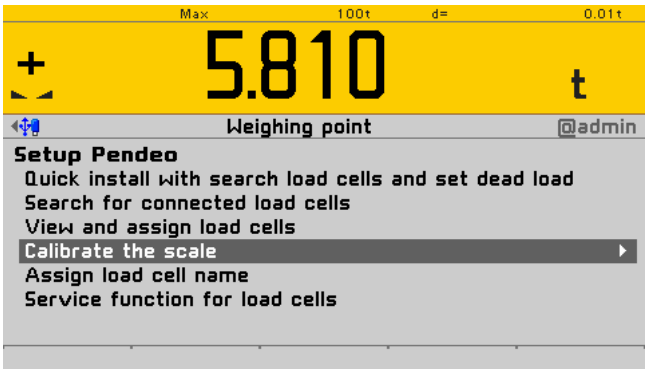
Max: 200.000 t

Scale interval: 0.020 t

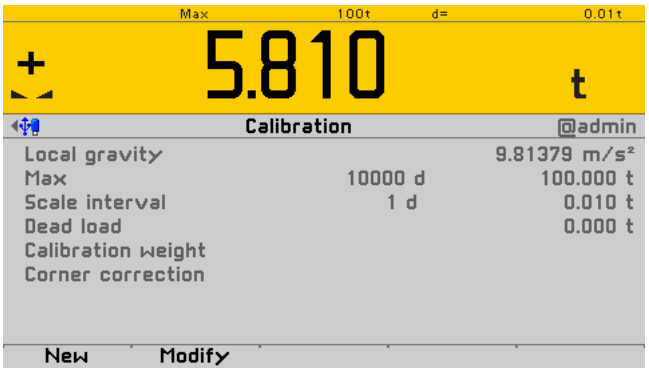
Dead load: empty weight

Calibration weight: 11.000 t

Procedure

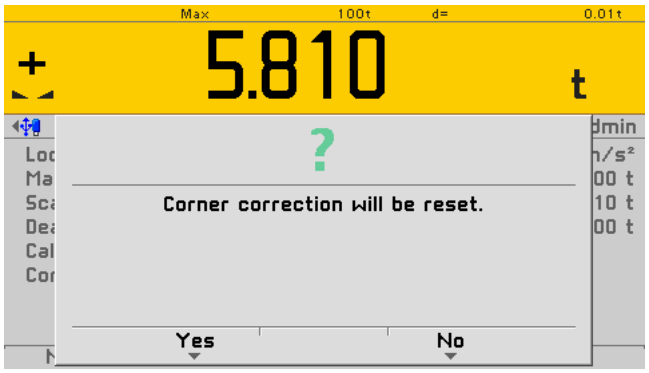


▶ Select and confirm the menu item 'Calibrate the scale'.



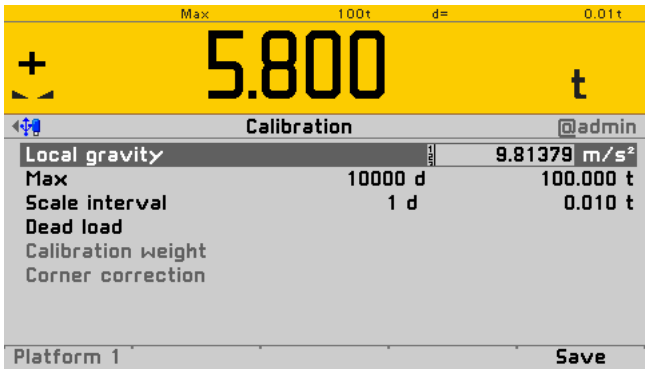
▶ Press the [New] soft key.

Note	The menu item 'Modify' is only used for small changes (e.g., changing the dead load/ preload). Otherwise selected 'New'.



▷ A prompt window appears.

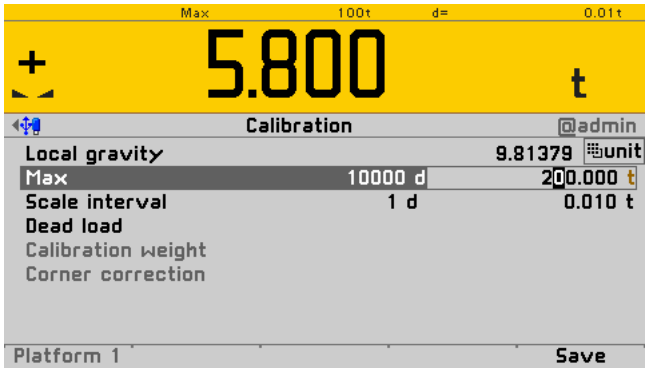
▶ Press the [Yes] soft key.



▶ Only min. 8 load cells: Select and confirm the line ‚Number of platforms'.

▶ Only min. 8 load cells: Select and confirm the number of platforms in the selection window.

▶ Select the line ‚Local gravity', change if necessary and confirm.



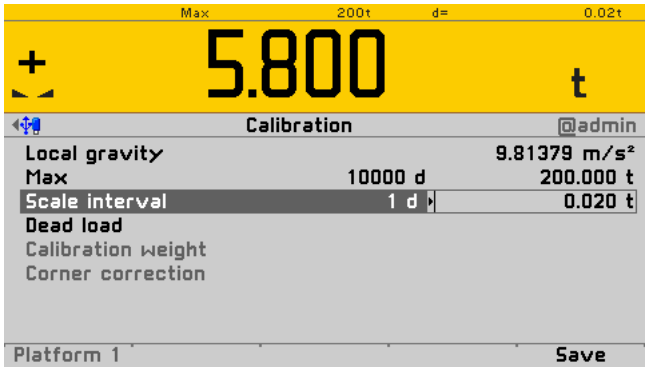
▶ Enter the maximum capacity with decimal places (in this example: 200.000 t).

▶ Double-click on the toggle key opens a small selection window.

▶ Select the unit with cursor keys ▲/▼ and confirm with OK key.

▶ Confirm the entries.

▷ The confirmation is displayed with 'setting Max...'.



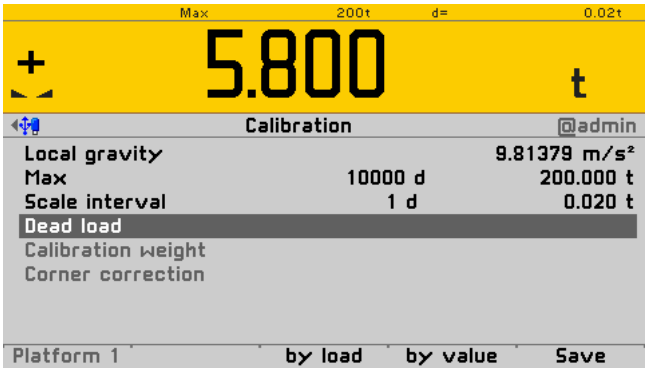
The weight unit is taken from [Max]. The number of digits behind the decimal point is also automatically determined when [Max] is entered.

▶ Select the scale interval (1 d).

▷ The scale interval (d) is then calculated, based on the Max weight value.

▶ Confirm the entries.

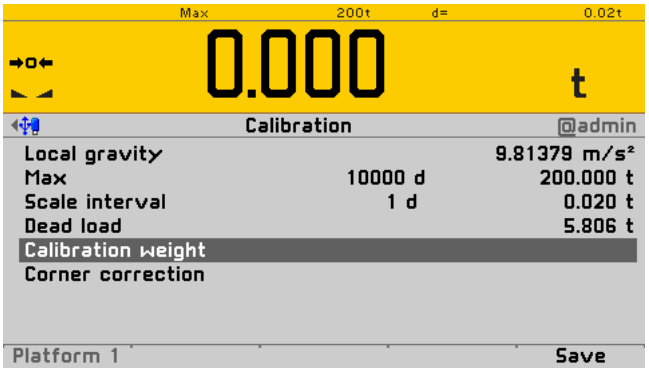
▷ The confirmation is displayed with 'setting scale interval...'.



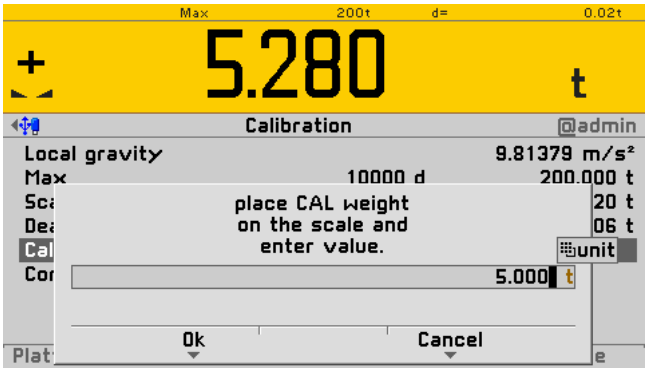
The empty scale (deck installed on a vehicle scale, no load) for dead load:

- ▶ Unload the scale, if necessary.
- ▶ Press the [by load] soft key.
- ▶ Confirm.
- ▷ The confirmation is displayed with 'setting dead load...'.

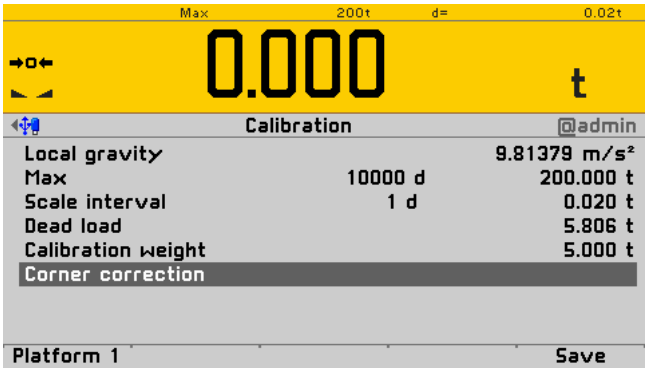
Note	If the dead load is known, the value can be overwritten by pressing [by value].



- ▶ Confirm the selection.



- ▷ An input window appears.
- ▶ Center the calibration weight on the scale and enter the weight value.
- ▶ Press the [OK] soft key.
- ▶ Remove the calibration weight.

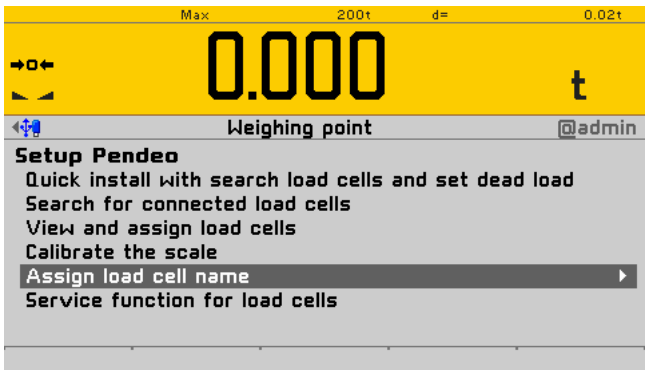


- ▷ The corner load (dead load set to zero) is displayed.
- ▶ Carry out a corner correction if necessary, see Chapter 5.14.10.
- ▶ Press the [Save] soft key to save the calibration.

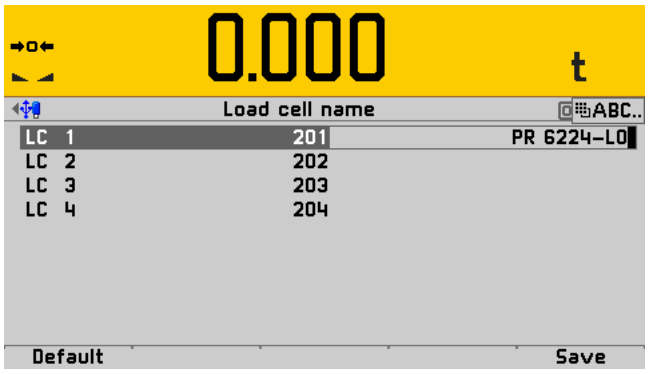
5.14.8 Assign Load Cell Name

In this menu the load cells can also be assigned names in addition to the LC no. and serial numbers.

Access the Pendeo setup menu as follows: [System setup]-[Weighing point]-[Weighing point A]-[Calib].



▶ Select and confirm the menu item 'Assign load cell name'.



▷ An input window appears.

▶ Select the line, enter the name using the keyboard and confirm.

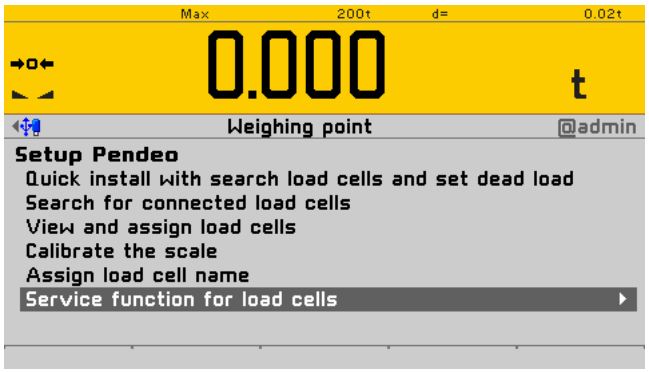
▶ Repeat these steps for load cells 2-4.

▶ Press the [Save] soft key to save the entries.

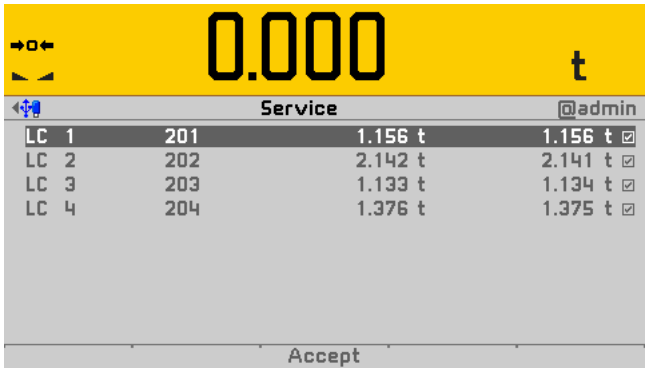
5.14.9 Service Function

In this menu faulty load cells can be deactivated and replaced load cells activated.

Access the Pendeo setup menu as follows: [System setup]-[Weighing point]-[Weighing point A]-[Calib].



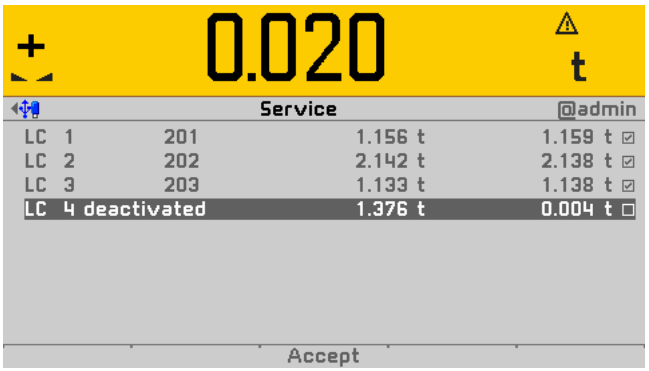
▶ Select and confirm the menu item 'Service function for defect load cells'.



▷ The service window appears.

The load cells are displayed with their item number, serial number, dead load and current load.

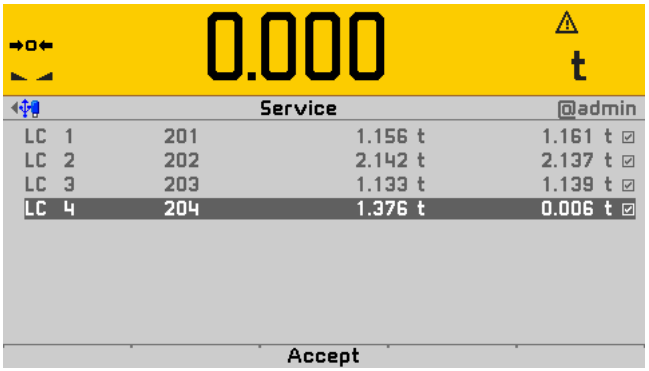
5.14.9.1 Deactivate Load Cell



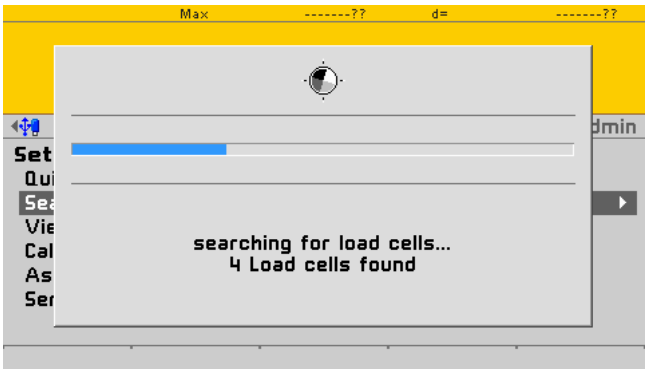
- ▶ Select and confirm the defect load cell to deactivate.
- ▶ Press the [Accept] soft key.
- ▷ The warning symbol replaces the weight unit. The simulation for the deactivated load cell is started.

Note	Trucks should only be allowed to move onto the center of the weighing platform, in order to distribute the weight evenly.

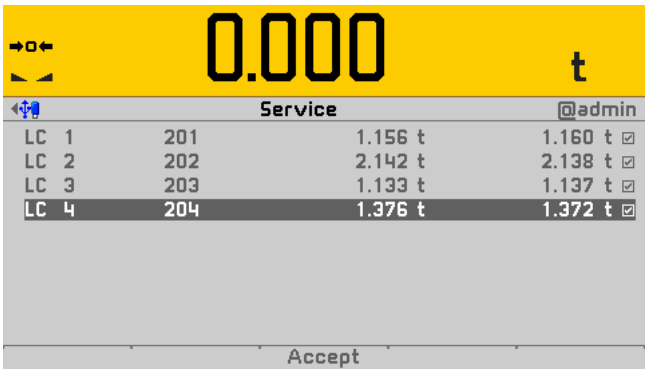
5.14.9.2 Activate Load Cell



- ▶ After inserting and connecting the new load cell, select the line of the deactivated load cell and confirm.
- ▶ Press the [Accept] soft key.



- ▷ A search process is started.



- ▷ Only then the new load cell is detected.

5.14.10 Corner Correction

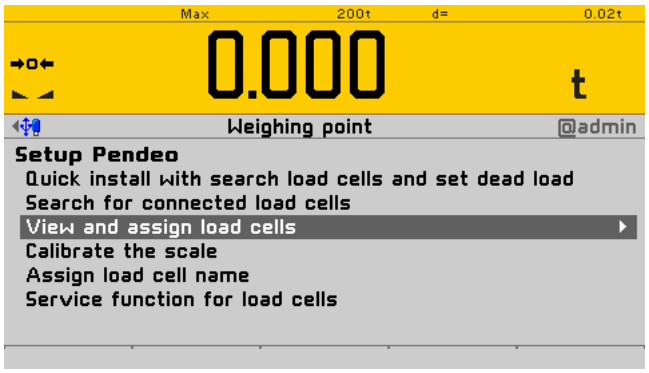
5.14.10.1 Checking Corner Load (Dead Load)

After assignment and calibration, the load cell positions have been defined clearly.

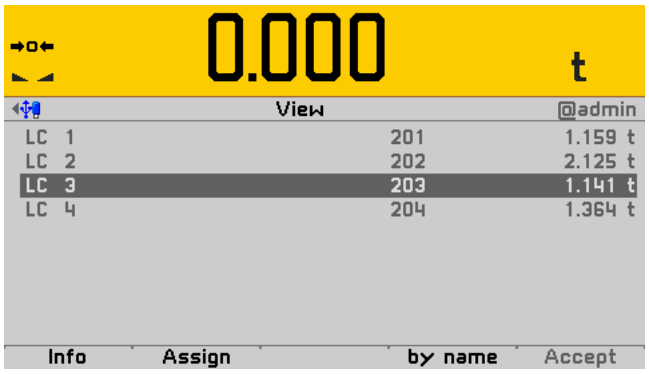
5.14.10.2 Mechanical Corner Correction

A mechanical corner correction must carry out if the load on the load cells is not evenly distributed, e.g when the platform wobbles. Now the individual dead load on the load cells can be corrected using shims. If two coupled platforms are connected, corner load checking or installation of shims for the platforms must be performed independently.

Access the Pendeo setup menu as follows: [System setup]-[Weighing point]-[Weighing point A]-[Calib].



▶ Select and confirm the menu item 'View and assign load cells'.



▷ The load cells are displayed with their item number, serial number, and load.

▶ In this example, the load on a load cell doesn't need to be increased by a shim.

▶ A fine correction can be conducted with a software corner correction, see Chapter 5.14.10.3.

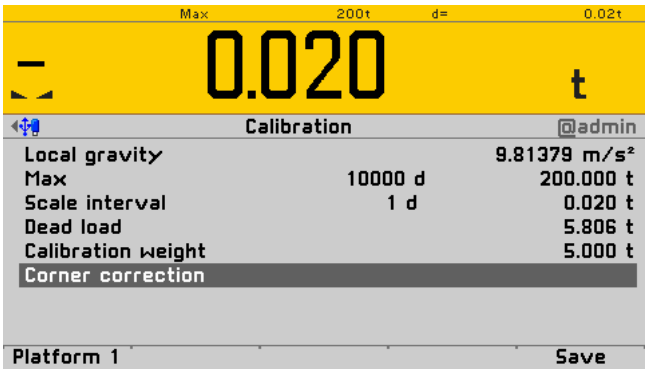
▶ Press the ESC/EXIT key to return to the previous window.

5.14.10.3 Software Corner Correction

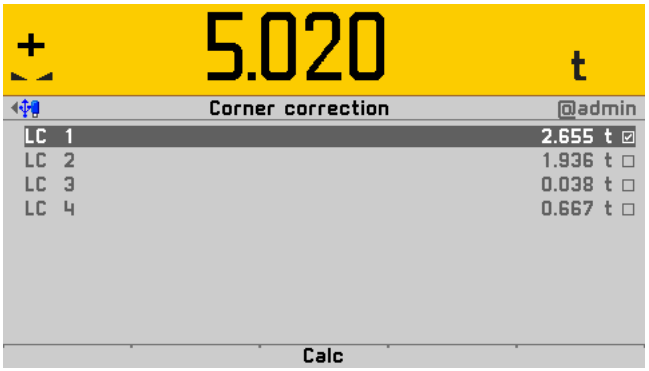
If the corners are loaded in succession, the same value should be displayed on the device at all times. An excessive deviation almost always means that the scale is tilted or indicates load cell force shunts.

If the signal deviations cannot be resolved by carefully leveling the scale, the software must be calibrated.

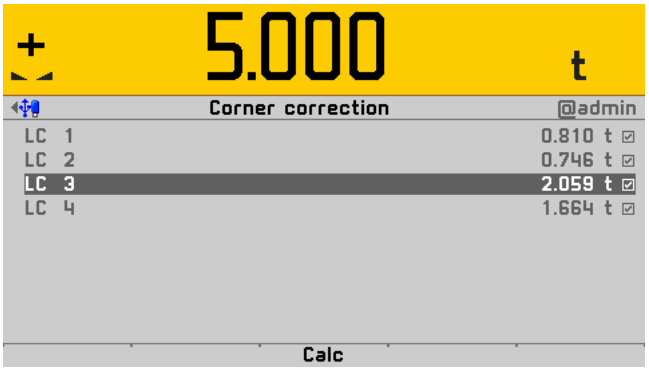
Access the menu as follows:
[System setup]-[Weighing point]-[Weighing point A]-[Calib]-[Calibrate the scale]-[Modify].



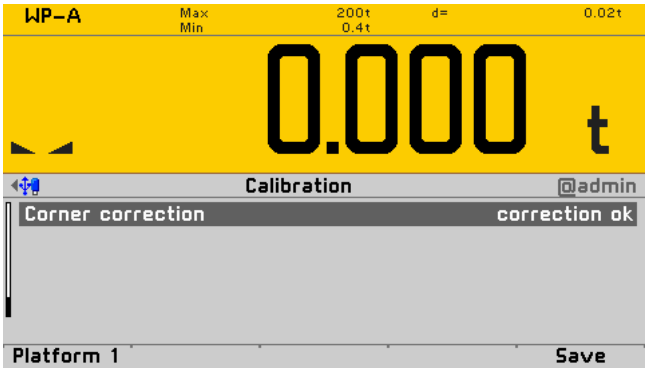
- ▶ Select 'Corner correction'.
- ▶ Press the [Platform 1] soft key.



- ▶ Set the calibration weight on a corner.
- ▶ The position (in this case, LC 1) is selected.
- ▶ Confirm the position.
- ▶ Remove the calibration weight.
- ▶ Repeat these steps for the remaining load cells in any desired order.

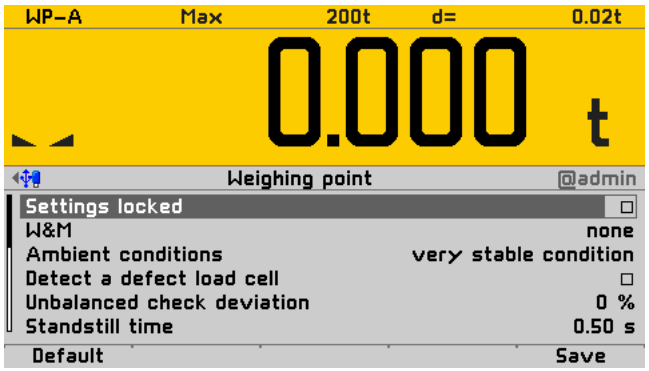


- ▶ If all load cells have been loaded one time, press the [Calc] soft key to carry out corner correction.



- ▷ The total weight remains unchanged. Only the effect of the individual load cells is corrected.
- ▷ When corner correction is completed, it is marked with 'correction ok'.
- ▶ Press the [Save] soft key to save the corner correction.

5.14.11 Parameter input



Access the menu as follows: [System setup]-[Weighing point]-[Weighing point A]-[Param].

[Settings locked]

The weighing point settings and assignment can only be viewed as if the corresponding CAL switch were closed; see Chapter 5.1.5.2.

[W&M]

Setting for operation in legal metrology. Select [none], OIML, NTEP (for USA) or NSC (for Australia); see Chapter 5.11.16.1.

[Ambient conditions]

This parameter is used to define the ambient conditions of the scale.

Possible values: very stable condition, Stable condition, Unstable condition, Very unstable condition

[Detect a defect load cell]

Select this parameter and confirm if max. simulation of a faulty load cell should be automatic. A warning symbol is displayed for the duration of the load cell simulation.

[Unbalanced check deviation]

The plausibility check is activated when the average deviation is >0%.

The average deviation of the individual load cells is calculated. The process is displayed using a symbol above the weight unit.

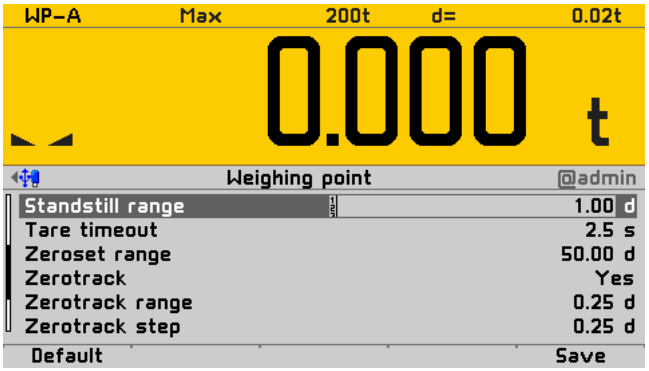
Setting range: 0–100%

[Standstill time]

The parameters [Standstill time] and [Standstill range] can be used to define the stability of the scale (stable balance).

The [Standstill time] parameter is entered in seconds. The permitted range is 0.00-2 s.

The time can be entered from 0.00 to 2.00 seconds, but makes up at least one measurement time.



[Standstill range]

As long as the weight fluctuations remain within this range, the device is determined to be stable.

The [Standstill range] parameter is entered in "d." The permitted range is 0.01-10.00 d.

[Tare timeout]

Timeout for a tare/zeroset command that cannot be executed (e.g., due to mechanical instability of the scale, incorrect filter setting, resolution too high, standstill condition too strict).

This parameter is given in seconds. The permitted range is 0.0-<2.5>-25 s.

At 0.0 s taring is only carried out when the scale is already stable.

[Zeroset range]

Determine a ±range around the zero point determined by the dead load during calibration; within this range

- the displayed gross weight can be set to zero by pressing the zero-setting key (or by a corresponding external command), and
- automatic zero tracking is active.

Setting range: 0.00-10000.00 d

[Zerotrack]

The zero display is automatically maintained within set limits.

Possible values: no/yes

When "No" is selected, the next three parameters are not shown.

When "Yes" is selected values for the next three parameters must be entered.

[Zerotrack range]

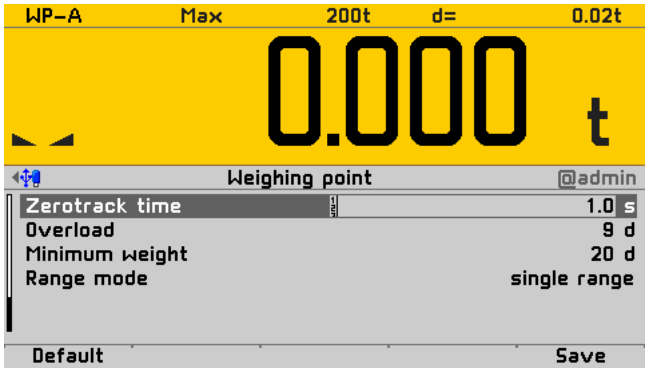
Range within which the automatic zerotrack is balanced.

Setting range: 0.25-10000.00 d

[Zerotrack step]

If a weight change exceeds the adjusted value, automatic tracking does not function any more.

Setting range for automatic tracking increments: 0.25... 10 d



[Zerotrack time]

Time interval for automatic zero tracking.

Setting range: 0.0-25 s

At 0.0 s the tracking is switched off.

[Overload]

Weighing range above the maximum capacity (Max) without error message.

Setting range: 0-9999999 d.

[Minimum weight]

Minimum weight at which a print command can be triggered.

Setting range: 0-9999999 d.

[Range mode]

Possible values: single range, multiple range, multi-interval.

For scale range selection, see Chapter 5.11.16.2.

[Default]

Settings are reset to factory settings.

[Save]

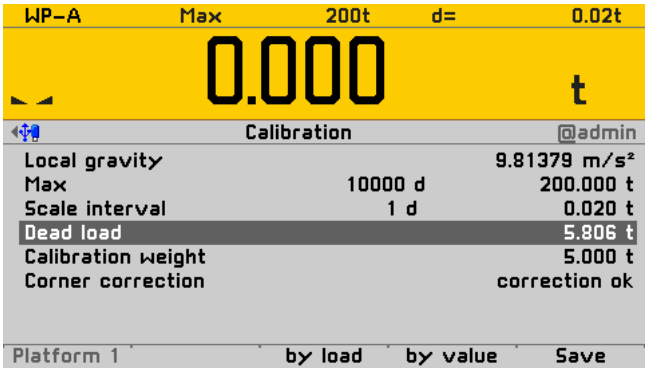
The settings are saved.

5.14.12 Subsequent Dead Load Correction

If the platform weight changes by an amount that is higher than the zero-setting range, e.g., due to dead load reduction, dead load increase, or mechanical changes, the functions for automatic zero tracking and manual zero setting no longer work.

If the entire zero-setting range is already utilized, you can still correct the dead load without affecting other calibration data/parameters.

Access the menu as follows:
[System setup]-[Weighing point]-[Weighing point A]-[Calib]-[Calibrate the scale]-[Modify].



The scale must be empty (deck installed on a vehicle scale, no load).

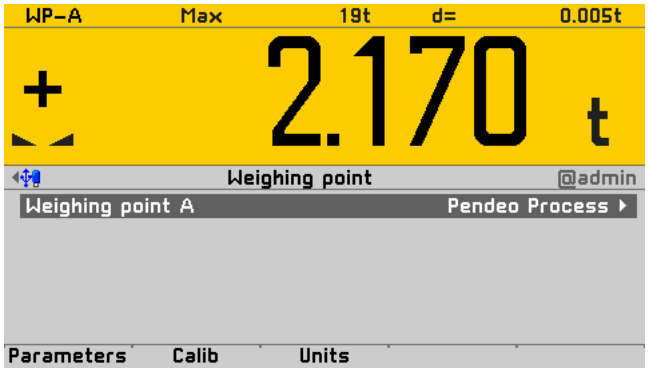
- ▶ Select 'Dead load'.
- ▶ Confirm the dead load (∑ corner load).
- ▶ Check the corner load, see Chapter 5.14.10.1.
- ▶ Carry out a corner correction if necessary, see Chapter 5.14.10.
- ▶ Press the [Save] soft key to save the current dead load.

5.15 Calibrating Digital Precision Compression Load Cell 'Pendeo® Process'

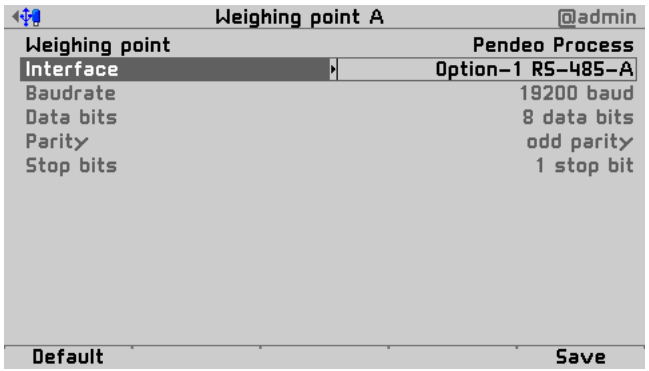
5.15.1 General Information

The digital load cells have been calibrated at the factory based on the acceleration of gravity at Hamburg, Germany: 9.81379 m/s². The calibration data in the load cells are invariable. The calibration data for the gravity acceleration at the place of installation can be adapted only in the instrument and protected against overwriting (see Chapter 5.1.5). With applications for use in legal metrology, the legal requirements and the conditions given on the test/approval certificate must be taken into account when selecting the settings.

5.15.2 Parameter Input for Serial Interface

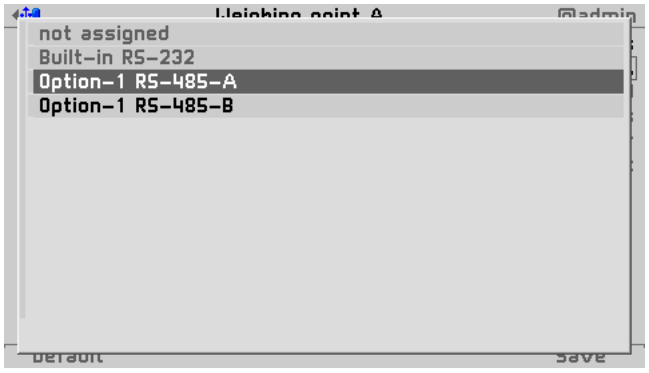


▶ Go to [System setup]-[Weighing point] [Weighing point A], select and confirm 'Pendeo Process'.



▷ The following window appears.

▶ Select and confirm the line 'Interface'.



▷ The following window appears.

▶ Select and confirm the RS-485 interface (in this case: Option-1 RS-485-A).

▷ The previous window appears.

▶ Press the [Save] soft key to save the changes.

5.15.3 Calibration Sequence

During calibration, no data is changed in the digital load cells. The calibration data and parameters are saved in the instrument. The unique serial numbers of the connected load cells are monitored.

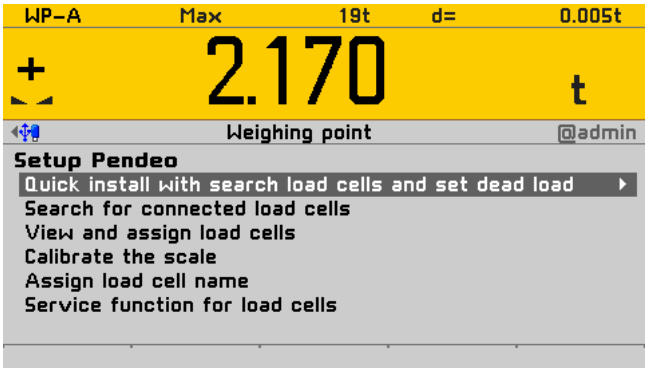
For the adjustment is the following order specified:

- Search for load cells and set dead load, see Chapter 5.15.4 or
- only search for load cells, see Chapter 5.15.5
- Assign load cells, see Chapter 5.15.6
- Calibrate 'New': Max with weight unit, scale interval, dead load, calibration weight, see Chapter 5.15.7

Note	For further information about calibrating weighing points, see Chapter 5.11.

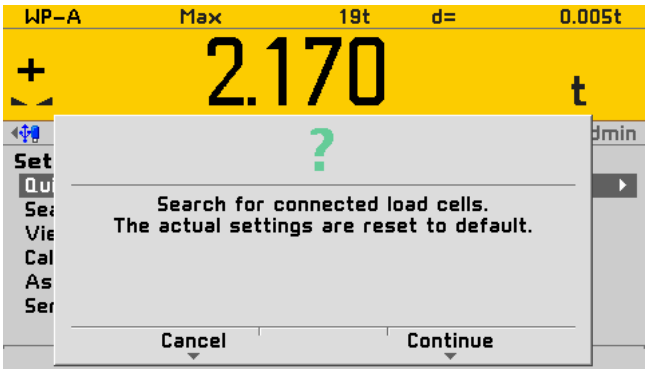
5.15.4 Search for load cells and set dead load

Access the menu as follows: [System setup]-[Weighing point] [Weighing point A]-[Calib].



▶ Unload the scale.

▶ Select and confirm the first menu item.

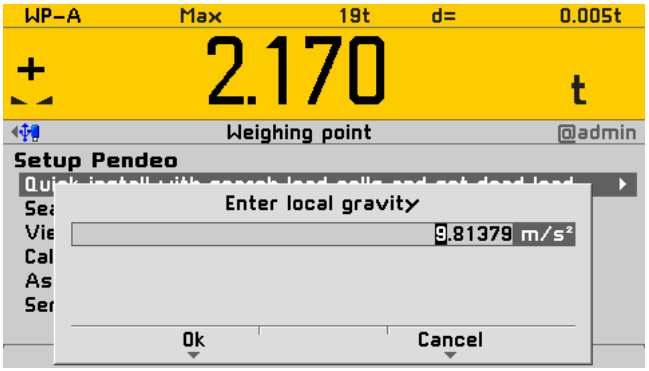


▷ A prompt window appears.

▶ Press the [Continue] soft key to start the search process.

Or

▶ Press the [Cancel] soft key to return to the Pendeo setup menu.

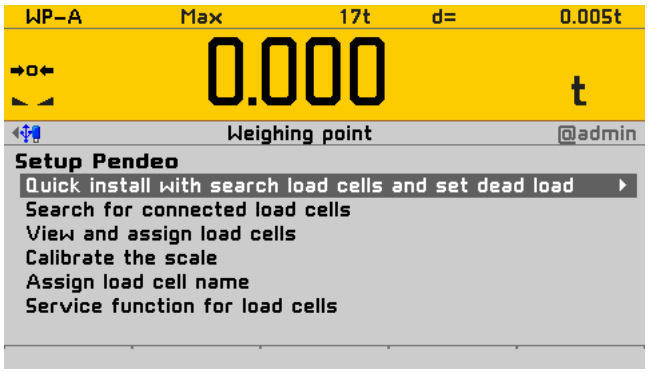


▷ An input window appears.

▶ Change the default value, if necessary and press the [Ok] soft key, um die Eingabe zu bestätigen.

▶ Press the [Cancel] soft key, if necessary to return to the Pendeo setup menu.

▷ Search process is started and dead load is set.

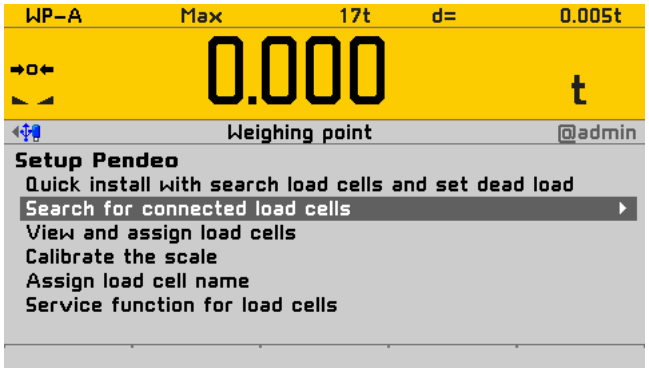


▷ After determining the Pendeo setup menu appears.

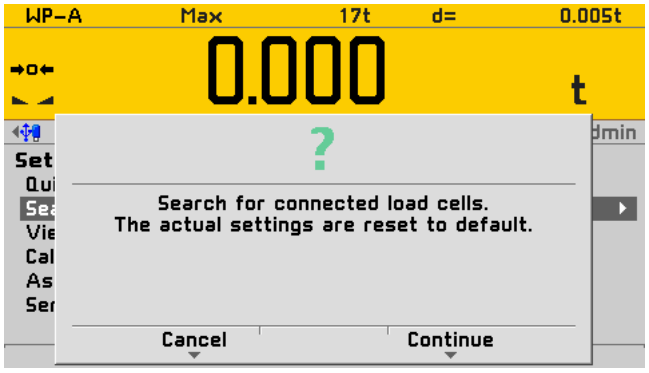
5.15.5 Search for Load Cells

The following example shows a vessel with four load cells and four vessel feet.

Access the Pendeo setup menu as follows: [System setup]-[Weighing point] [Weighing point A]-[Calib].



▶ Select and confirm the menu item 'Search for connected load cells'.



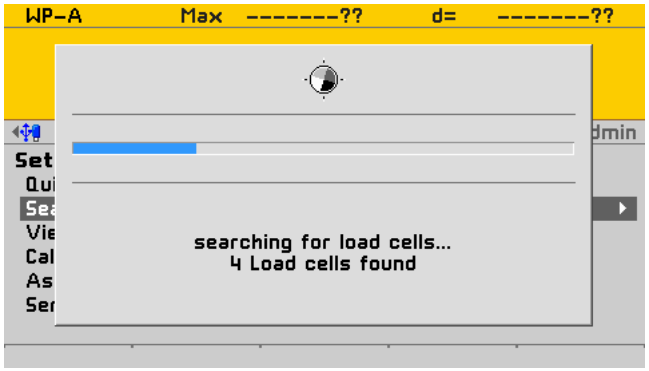
▷ A prompt window appears.

▶ Press the [Continue] soft key to start the search process.

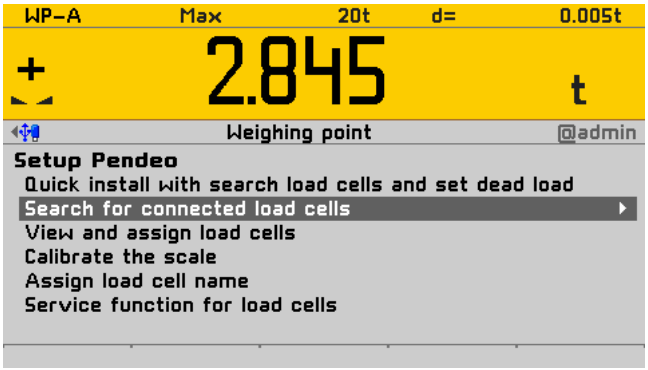
Or

▶ Press the [Cancel] soft key to return to the Pendeo setup menu.

▷ Search process is started.



▷ A progress window appears.



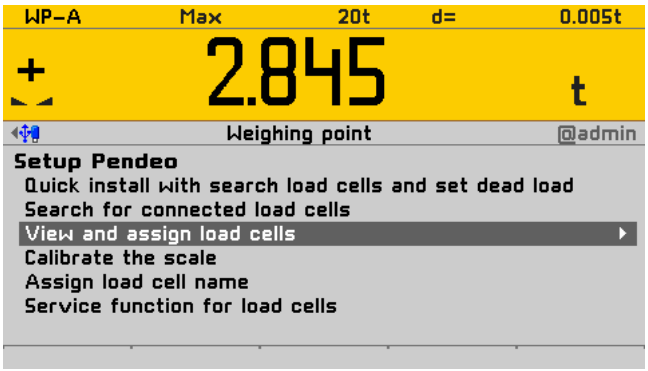
▷ After determining the Pendeo setup menu appears.

5.15.6 View and Assign Load Cells

The load cells (serial number) can be assigned to the place of installation in this menu. This is important for correcting the dead load (distribution to the individual load cells), for corner correction and in the event of load cell replacement.

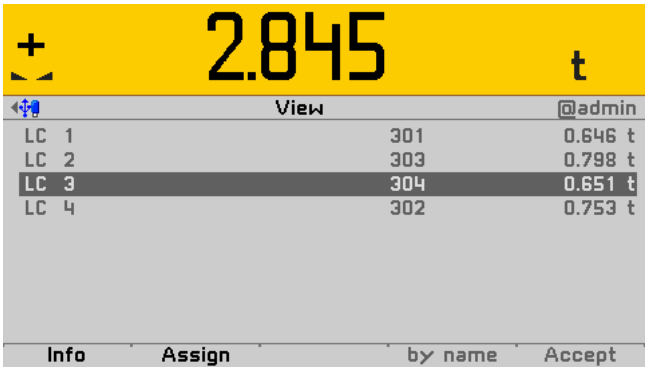
Note	The assignment from the installation should be documented in the case of load cells being replaced.

Access the Pendeo setup menu as follows: [System setup]-[Weighing point] [Weighing point A]-[Calib]-[View].



▶ Select and confirm the menu item 'View and assign load cells'.

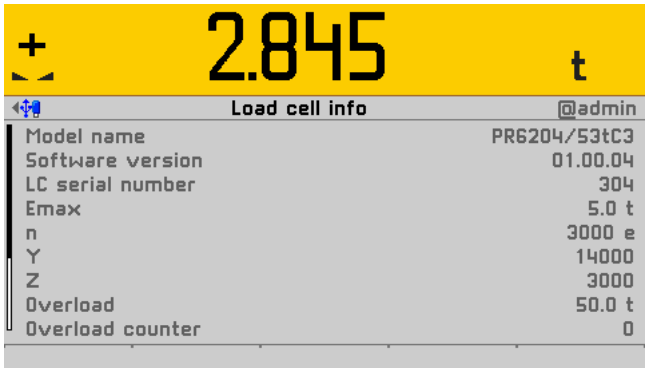
5.15.6.1 View Load Cells



▷ The load cells are displayed with their item number, serial number, and load.

▶ Select the desired line, if necessary and press the [Info] soft key, to display the load cell data.

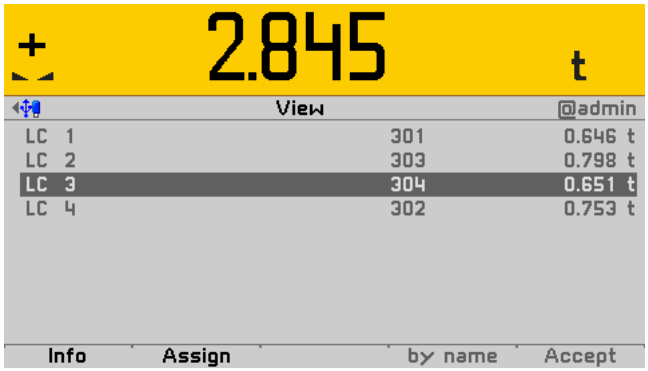
Note	If load cell names have been assigned (see Chapter 5.18.9), the view can be switched with the soft key [by name].



▷ The following window appears.

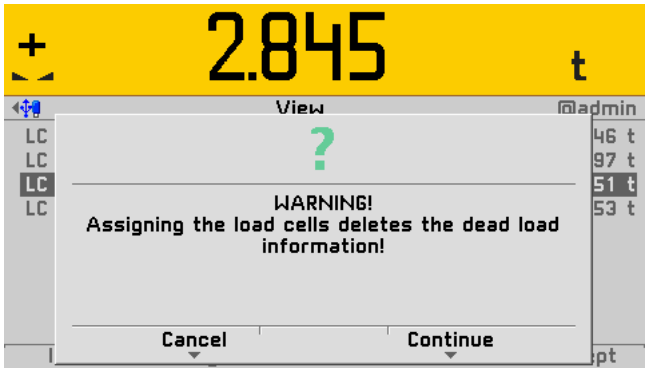
▶ Press the ESC/EXIT key to return to the previous window.

5.15.6.2 Assign Load Cells



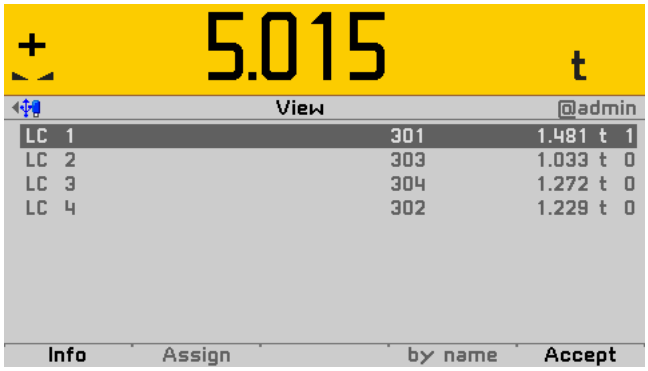
▶ Unload the scale.

▶ Press the [Assign] soft key.



▷ You are prompted to confirm.

▶ Press the [Continue] soft key.



The load cells are assigned by placing minimum weights on the scale.

▶ Place the weight on the corner/load cell which will be assigned no. 1.

▷ As soon as the device detects the weight change, the corresponding line is selected.

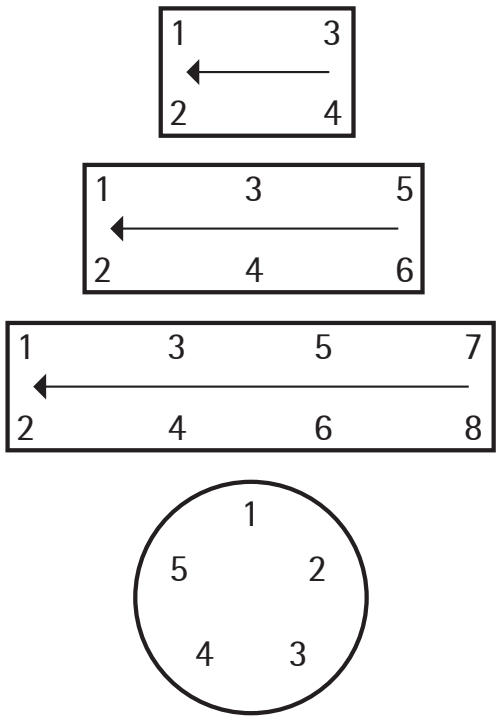
▶ Press the [Accept] soft key.

▷ The future LC no. appears at the far right of the line.

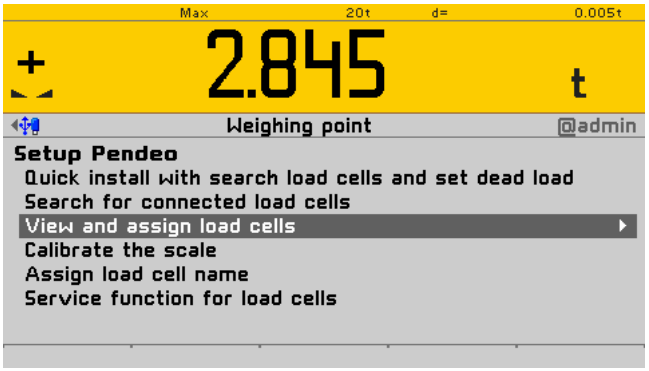
▶ Remove the calibration weight.

▶ Repeat these steps for load cells 2–4.

▶ Press the [Save] soft key to save the new assignment.

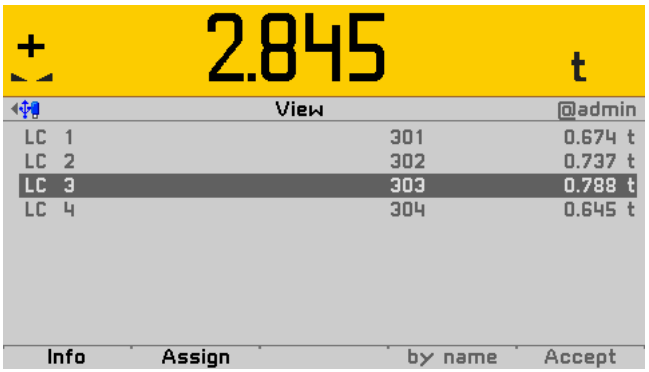


An example of a possible assignment is shown on the left.



▷ The Pendeo setup menu appears.

▶ Select and confirm the menu item 'View and assign load cells'.



▷ The new assignment will be displayed.

▶ Check the corner load (dead load), see Chapter 5.15.10.2.

▶ Press the ESC/EXIT key to return to the previous window.

5.15.7 Calibrating Load Cells

Access the Pendeo setup menu as follows: [System setup]-[Weighing point] [Weighing point A]-[Calib].

Example

Max. load cell capacity: E_{max} = 5 t

Number of load cells: 4

Number of vessel feet: 4

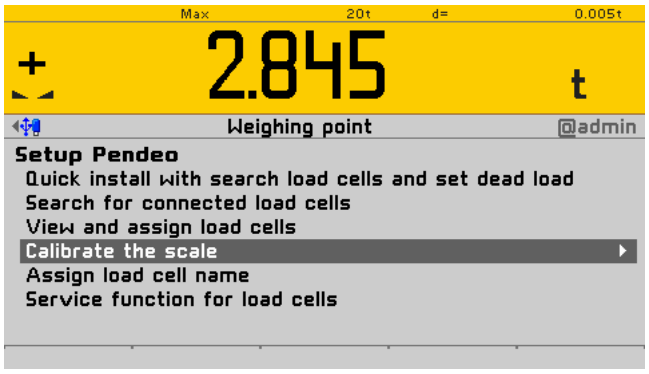
Max: 20.000 t

Scale interval: 0.020 t

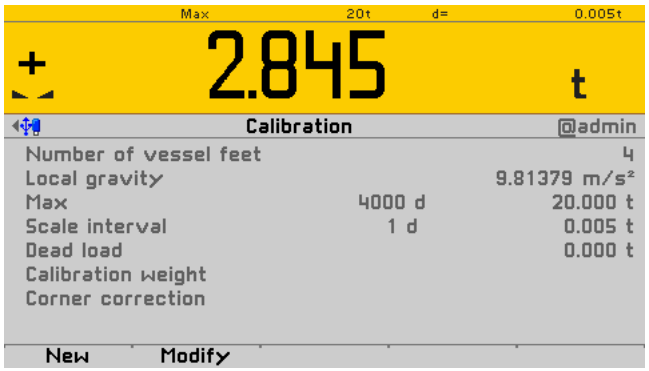
Dead load: empty weight

Calibration weight: 5.000 t

Procedure

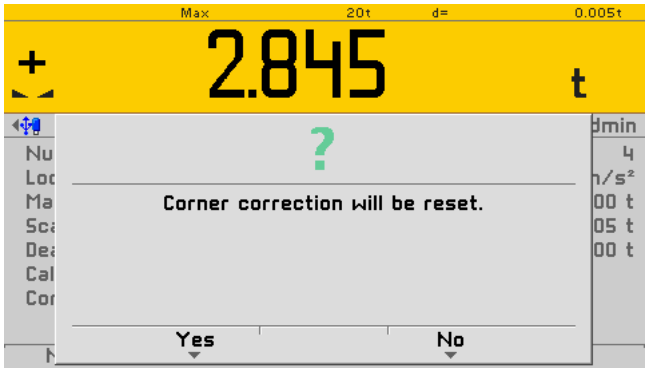


▶ Select and confirm the menu item 'Calibrate the scale'.



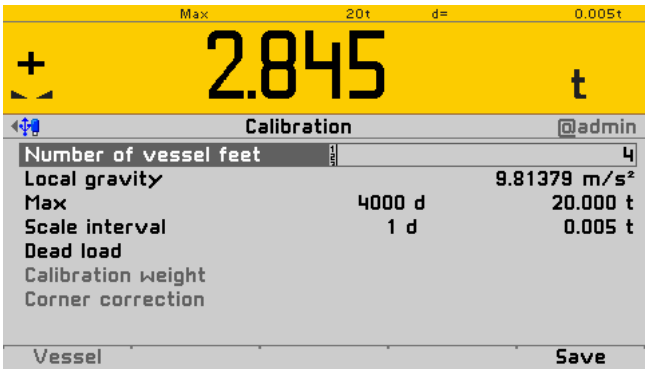
▶ Press the [New] soft key.

Note	The menu item 'Modify' is only used for small changes (e.g., changing the dead load/ preload). Otherwise selected 'New'.

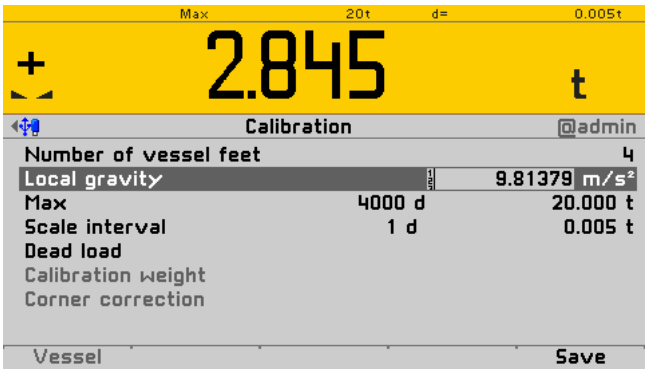


▷ A prompt window appears.

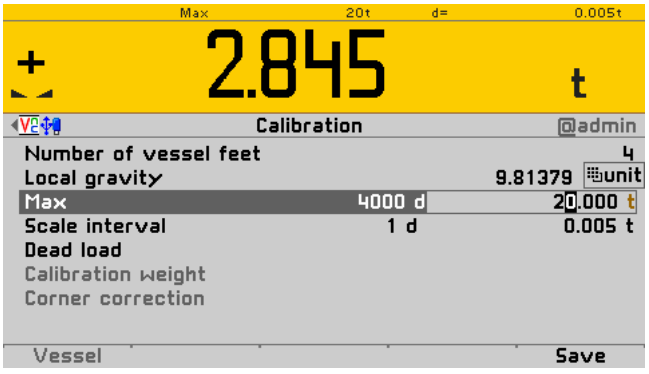
▶ Press the [Yes] soft key.



▶ Select the line ‚Number of vessel feet', change if necessary and confirm.



▶ Select the line ‚Local gravity', change if necessary and confirm.



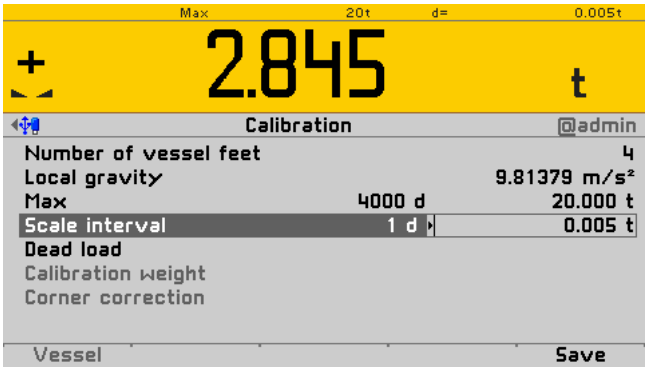
▶ Enter the maximum capacity with decimal places (in this example: 20.000 t).

▶ Double-click on the toggle key opens a small selection window.

▶ Select the unit with cursor keys ▲/▼ and confirm with OK key.

▶ Confirm the entries.

▷ The confirmation is displayed with 'setting Max...'.



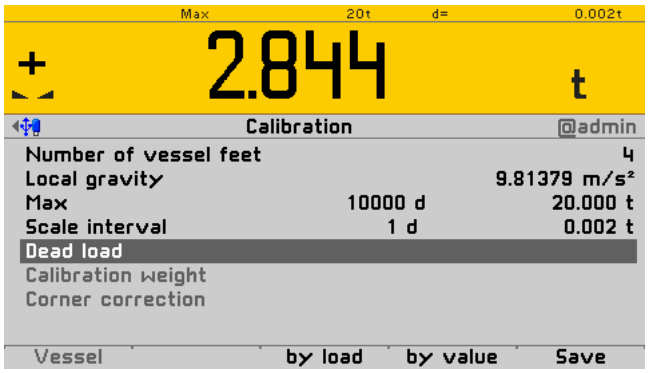
The weight unit is taken from [Max]. The number of digits behind the decimal point is also automatically determined when [Max] is entered.

▶ Select the scale interval (1 d).

▷ The scale interval (d) is then calculated, based on the Max weight value.

▶ Confirm the entries.

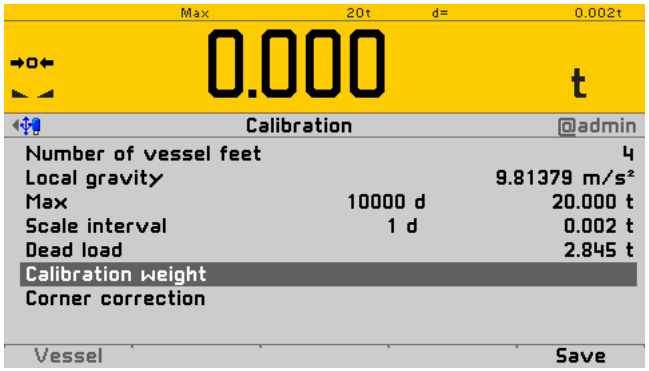
▷ The confirmation is displayed with 'setting scale interval...'.



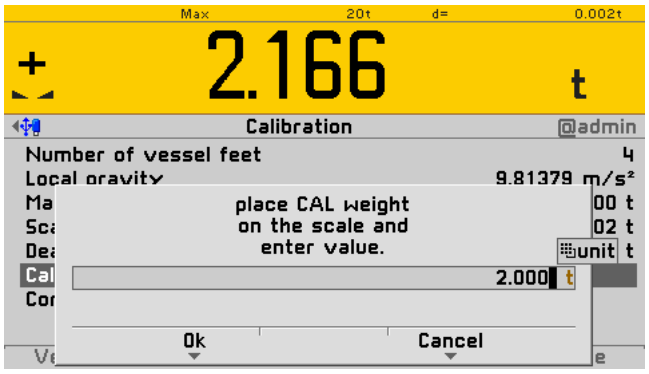
An empty vessel for dead load:

- ▶ Unload the scale.
- ▶ Press the [by load] soft key.
- ▶ Confirm.
- ▷ The confirmation is displayed with 'setting dead load...'.

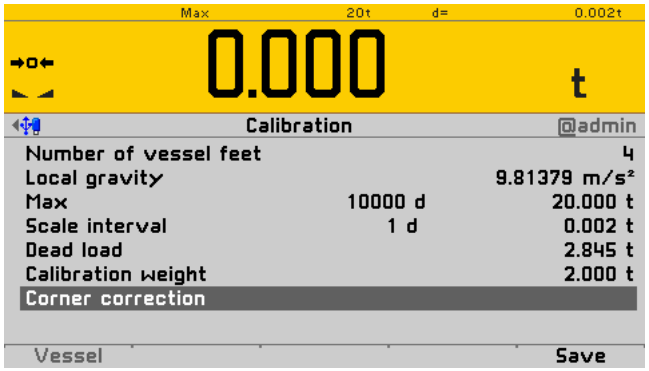
Note	If the dead load is known, the value can be overwritten by pressing [by value].



- ▶ Confirm the selection.



- ▷ An input window appears.
- ▶ Center the calibration weight on the scale and enter the weight value.
- ▶ Press the [OK] soft key.
- ▶ Remove the calibration weight.

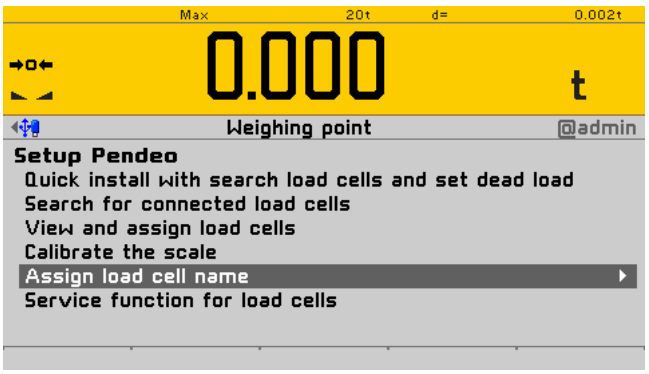


- ▷ The corner load (dead load set to zero) is displayed.
- ▶ Carry out a corner correction if necessary, see Chapter 5.15.10.
- ▶ Press the [Save] soft key to save the calibration.

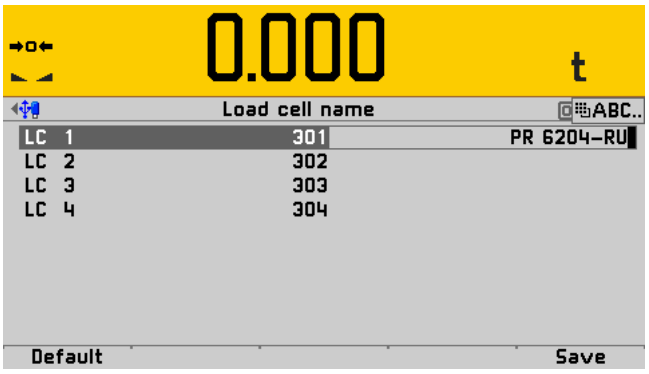
5.15.8 Assign Load Cell Name

In this menu the load cells can also be assigned names in addition to the LC no. and serial numbers.

Access the Pendeo setup menu as follows: [System setup]-[Weighing point] [Weighing point A]-[Calib].



▶ Select and confirm the menu item 'Assign load cell name'.



▷ An input window appears.

▶ Select the line, enter the name using the keyboard and confirm.

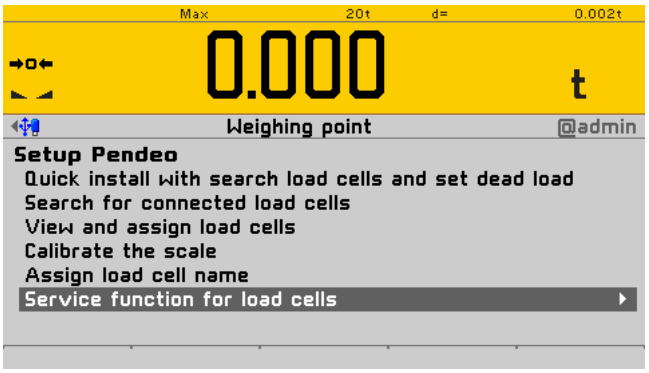
▶ Repeat these steps for load cells 2-4.

▶ Press the [Save] soft key to save the entries.

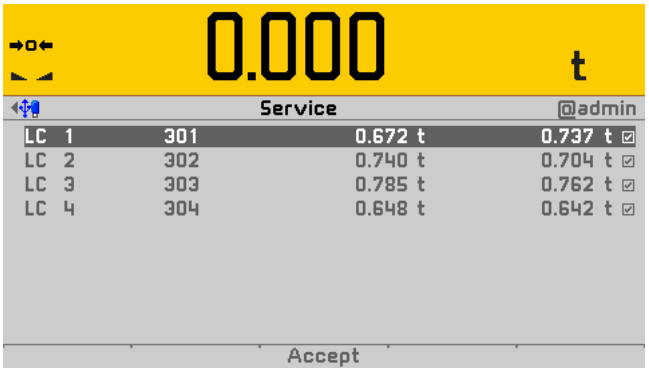
5.15.9 Service Function

In this menu faulty load cells can be deactivated and replaced load cells activated.

Access the Pendeo setup menu as follows: [System setup]-[Weighing point] [Weighing point A]-[Calib].



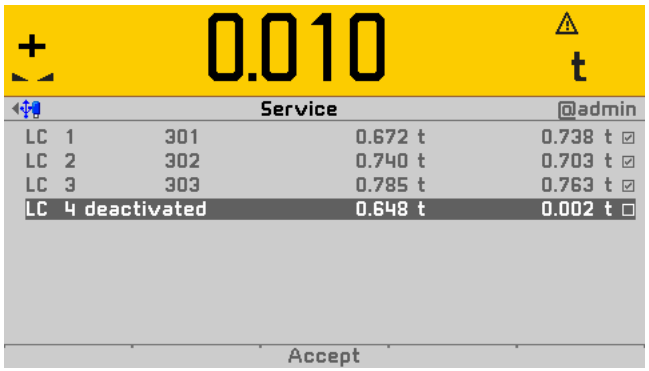
▶ Select and confirm the menu item 'Service function for defect load cells'.



▷ The service window appears.

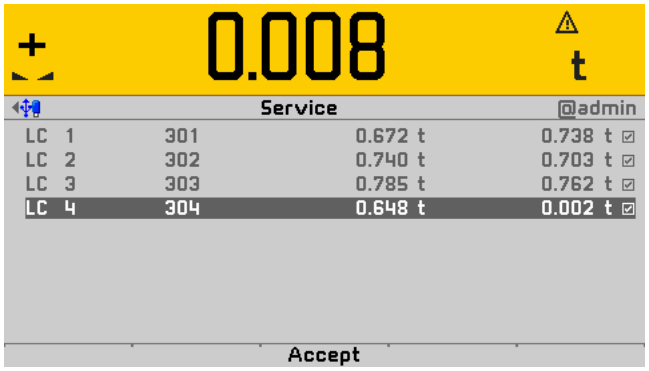
The load cells are displayed with their item number, serial number, dead load and current load.

5.15.9.1 Deactivate Load Cell

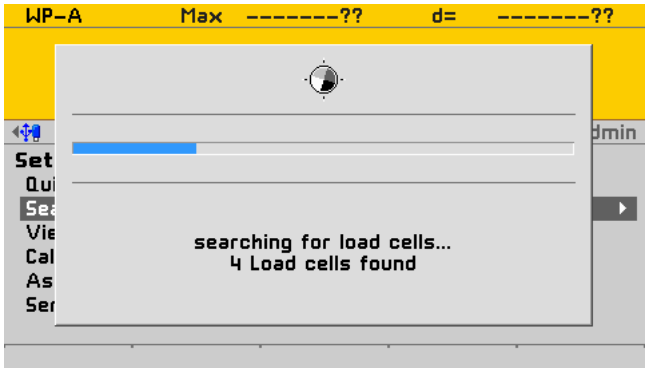


- ▶ Select and confirm the defect load cell to deactivate.
- ▶ Press the [Accept] soft key.
- ▷ The warning symbol replaces the weight unit. The simulation for the deactivated load cell is started.

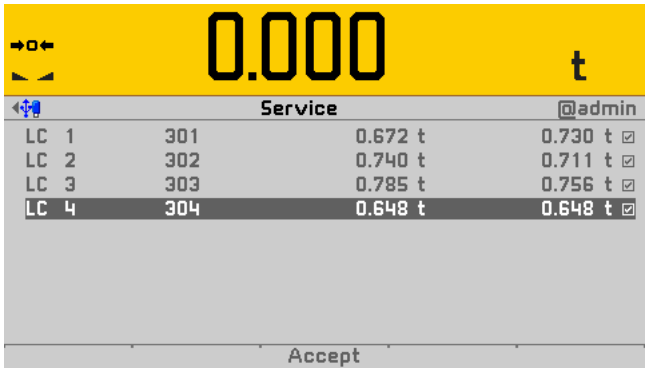
5.15.9.2 Activate Load Cell



- ▶ After inserting and connecting the new load cell, select the line of the deactivated load cell and confirm.
- ▶ Press the [Accept] soft key.



- ▷ A search process is started.



- ▷ Only then the new load cell is detected.

5.15.10 Corner Correction

5.15.10.1 General Information

An asymmetric scale construction doesn't need a corner correction.

But the corner correction may be necessary at a symmetric scale construction.

5.15.10.2 Checking Corner Load (Dead Load)

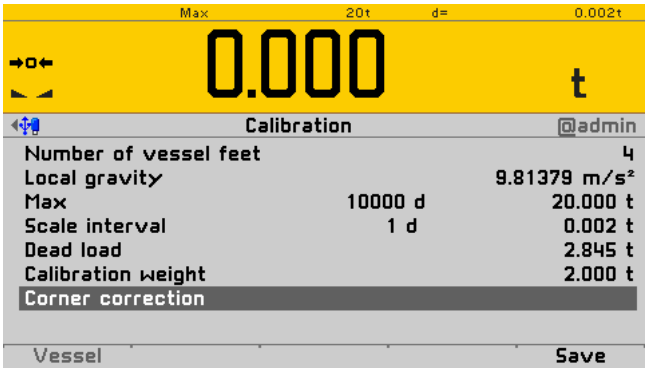
After assignment and calibration, the load cell positions have been defined clearly.

5.15.10.3 Software Corner Correction

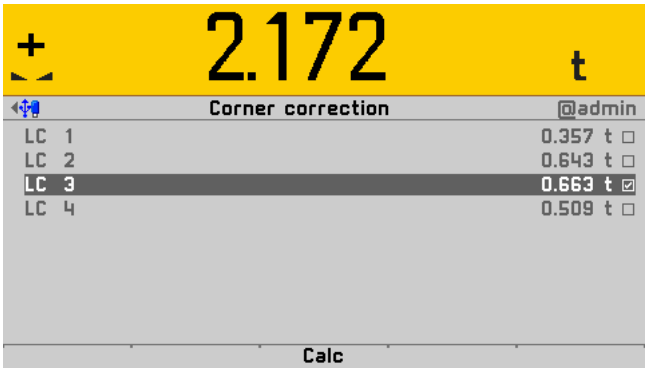
If the corners are loaded in succession, the same value should be displayed on the device at all times. An excessive deviation almost always means that the scale is tilted or indicates load cell force shunts.

If the signal deviations cannot be resolved by carefully leveling the scale, the software must be calibrated.

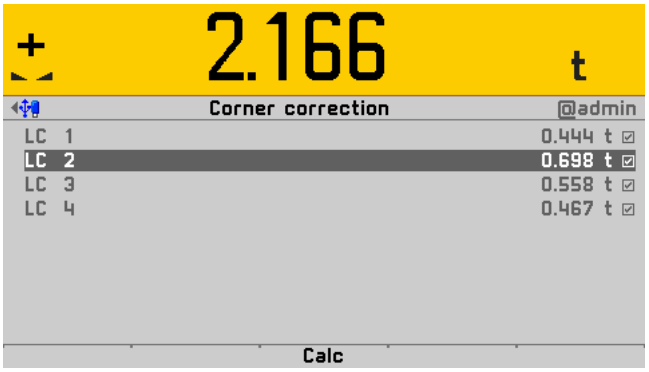
Access the menu as follows:
[System setup]-[Weighing point] [Weighing point A]-[Calib]-[Calibrate the scale]-[Modify].



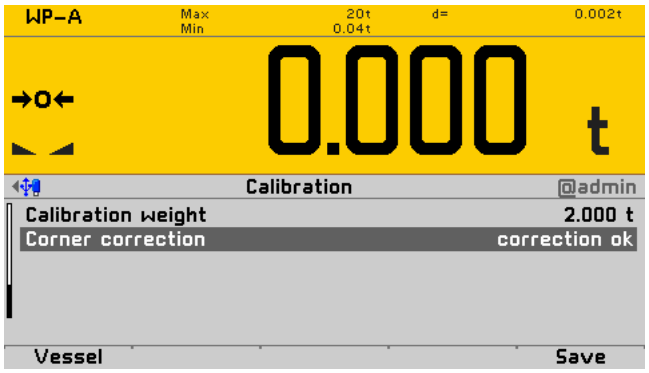
- ▶ Select 'Corner correction'.
- ▶ Press the [Vessel] soft key.



- ▶ Set the calibration weight on a corner.
- ▶ The position (in this case, LC 3) is selected.
- ▶ Confirm the position.
- ▶ Remove the calibration weight.
- ▶ Repeat these steps for load cells 2–4 in any desired order.



- ▶ If all load cells have been loaded one time, press the [Calc] soft key to carry out corner correction.

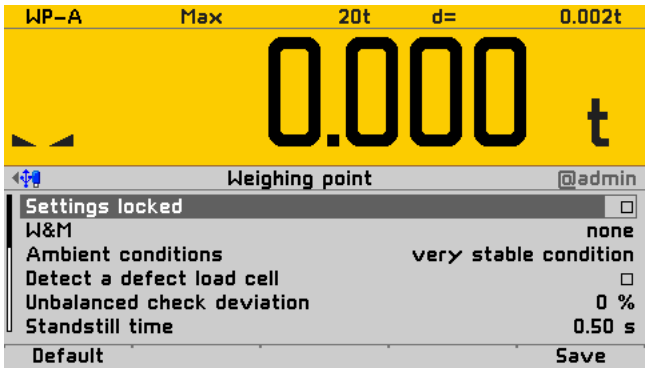


▷ The total weight remains unchanged. Only the effect of the individual load cells is corrected.

▷ When corner correction is completed, it is marked with 'correction ok'.

▶ Press the [Save] soft key to save the corner correction.

5.15.11 Parameter input



Access the menu as follows: [System setup]-[Weighing point] [Weighing point A]-[Param].

[Settings locked]

The weighing point settings and assignment can only be viewed as if the corresponding CAL switch were closed; see Chapter 5.1.5.2.

[W&M]

Setting for operation in legal metrology. Select [none], OIML, NTEP (for USA) or NSC (for Australia); see Chapter 5.11.16.1.

[Ambient conditions]

This parameter is used to define the ambient conditions of the scale.

Possible values: very stable condition, Stable condition, Unstable condition, Very unstable condition

[Detect a defect load cell]

Select this parameter and confirm if max. simulation of a faulty load cell should be automatic. A warning symbol is displayed for the duration of the load cell simulation.

[Unbalanced check deviation]

he plausibility check is activated when the average deviation is >0%.

The average deviation of the individual load cells is calculated. The process is displayed using a symbol above the weight unit.

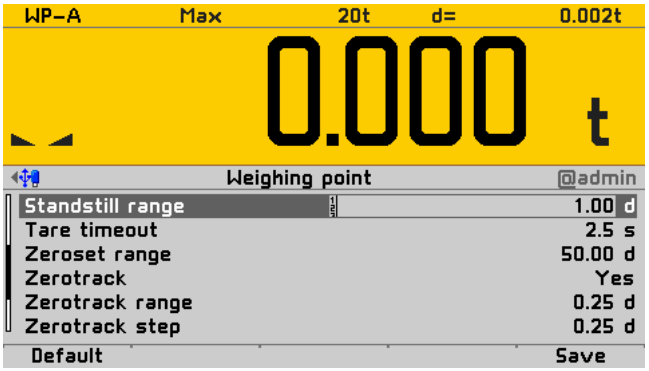
Setting range: 0–100%

[Standstill time]

The parameters [Standstill time] and [Standstill range] can be used to define the stability of the scale (stable balance).

The [Standstill time] parameter is entered in seconds. The permitted range is 0.00-2 s.

The time can be entered from 0.00 to 2.00 seconds, but makes up at least one measurement time.



[Standstill range]

As long as the weight fluctuations remain within this range, the device is determined to be stable.

The [Standstill range] parameter is entered in "d." The permitted range is 0.01-10.00 d.

[Tare timeout]

Timeout for a tare/zeroset command that cannot be executed (e.g., due to mechanical instability of the scale, incorrect filter setting, resolution too high, standstill condition too strict).

This parameter is given in seconds. The permitted range is 0.0-<2.5>-25 s.

At 0.0 s taring is only carried out when the scale is already stable.

[Zeroset range]

Determine a ±range around the zero point determined by the dead load during calibration; within this range

- the displayed gross weight can be set to zero by pressing the zero-setting key (or by a corresponding external command), and
- automatic zero tracking is active.

Setting range: 0.00-10000.00 d

[Zerotrack]

The zero display is automatically maintained within set limits.

Possible values: no/yes

When "No" is selected, the next three parameters are not shown.

When "Yes" is selected values for the next three parameters must be entered.

[Zerotrack range]

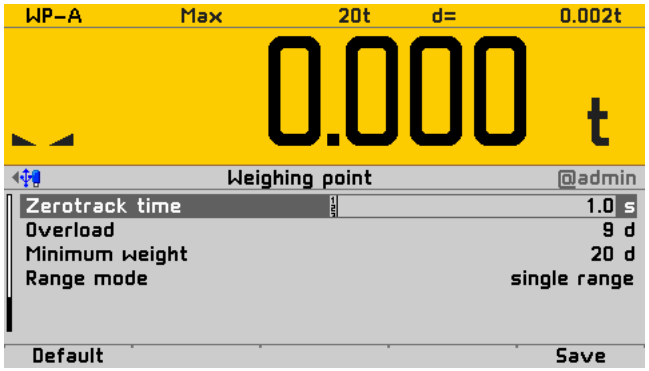
Range within which the automatic zerotrack is balanced.

Setting range: 0.25-10000.00 d

[Zerotrack step]

If a weight change exceeds the adjusted value, automatic tracking does not function any more.

Setting range for automatic tracking increments: 0.25-10 d



[Zerotrack time]

Time interval for automatic zero tracking.

Setting range: 0.0-25 s

At 0.0 s the tracking is switched off.

[Overload]

Weighing range above the maximum capacity (Max) without error message.

Setting range: 0-9999999 d.

[Minimum weight]

Minimum weight at which a print command can be triggered.

Setting range: 0-9999999 d.

[Range mode]

Possible values: single range, multiple range, multi-interval.

For scale range selection, see Chapter 5.11.16.2.

[Default]

Settings are reset to factory settings.

[Save]

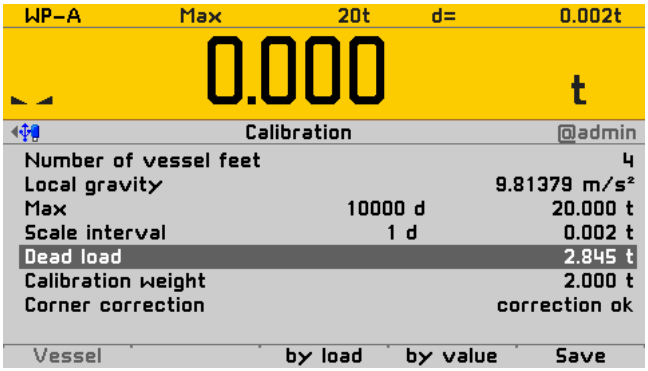
The settings are saved.

5.15.12 Subsequent Dead Load Correction

If the platform weight changes by an amount that is higher than the zero-setting range, e.g., due to dead load reduction, dead load increase, or mechanical changes, the functions for automatic zero tracking and manual zero setting no longer work.

If the entire zero-setting range is already utilized, you can still correct the dead load without affecting other calibration data/parameters.

Access the menu as follows:
[System setup]-[Weighing points]-[Weighing point x]-[Calib]-[Calibrate the scale]-[Modify].



The scale must be empty (empty vessel).

- ▶ Select 'Dead load'.
- ▶ Confirm the dead load.
- ▶ Check the corner load, see Chapter 5.15.10.2.
- ▶ Carry out a corner correction if necessary, see Chapter 5.15.10.
- ▶ Press the [Save] soft key to save the current dead load.

5.16 PR-Net Weiging Point

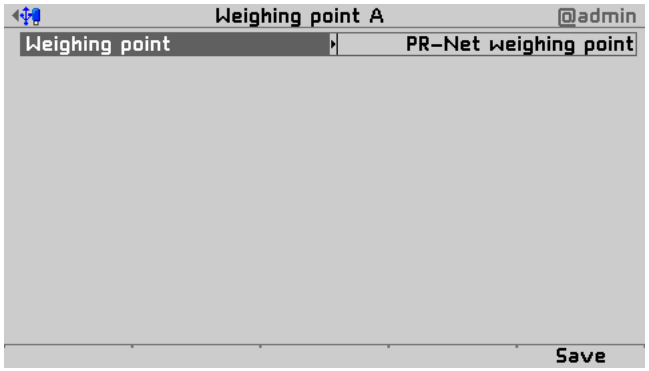
5.16.1 General Information

PR 5500 can communicate with the following indicators via the network protocol:

- PR 5220
- PR 5230
- PR 5410

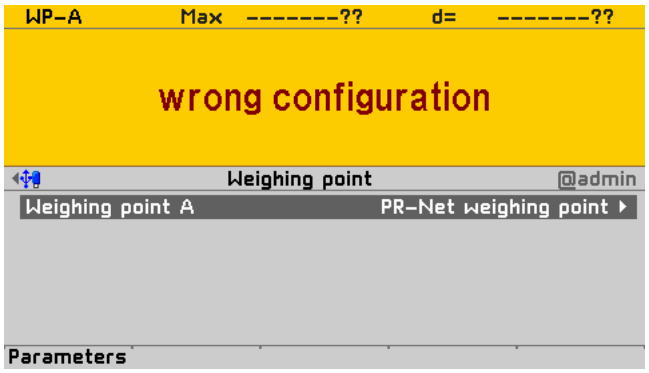
The determination and transmission of weight depends strongly on the indicators. Weight values up to seven digits plus preceding +/- sign can be displayed. Before the weighing electronics are assigned to the logical weighing point, the scale (e.g., PR 5230 + load cells) must be calibrated and configured accordingly. The calibration cannot be changed via the network protocol.

5.16.2 Parameter Input



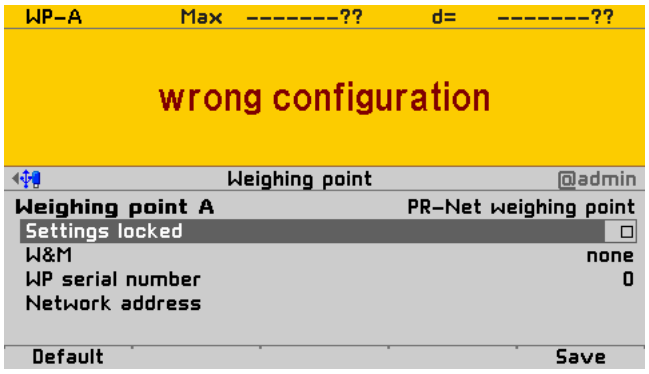
▶ Go to [System setup]-[Weighing point]-[Weighing point A], select and confirm 'PR-Net weighing point'.

▶ Press the [Save] soft key to save the selecti.



▷ The following window appears.

▶ Press the [Parameters] soft key.



▷ The following window appears.

▶ Enter and confirm the following parameters.

[Settings locked]

The weighing point settings and assignment can only be viewed as if the corresponding CAL switch were closed; see Chapter 5.1.5.2.

[W&M]

Setting for operation in legal metrology. Select [none], OIML, NTEP (for USA) or NSC (for Australia); see Chapter 5.11.16.1.

[WP Serial number]

Serial number of the connected device. With serial number 0, checking is omitted.

Setting range: 0...99999999

[Network address]

Input:

- IP address of the connected indicator or
- Device name (Host name) of the connected indicator

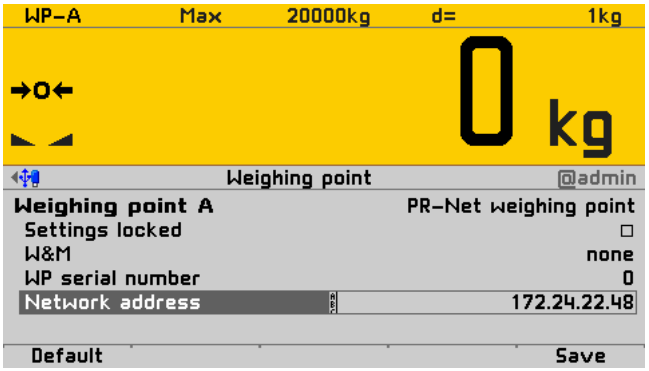
Note	The entry of a host name assumes that - a name server exists on the network, which recognizes the host names of the devices. - On the PR 5500, „use DHCP" is activated under [System setup]-[Network parameters] (otherwise the PR 5500 is not given the address of the name server).

[Default]

Settings are reset to factory settings.

[Save]

The settings are saved.



▷ After saving the weight value of the scale is displayed.

5.17 Mettler-Scale

5.17.1 General Information

PR 5500 can communicate with the Mettler-Scale via the MT-SICS protocol. The scale can be connected via serial interface. Communication is serial.

The determination and transmission of weight depends strongly on the scale. Weight values up to seven digits plus preceding +/- sign can be displayed. The maximum capacity (Max) is already set in the Mettler scale and cannot be changed via the MT-SICS protocol.

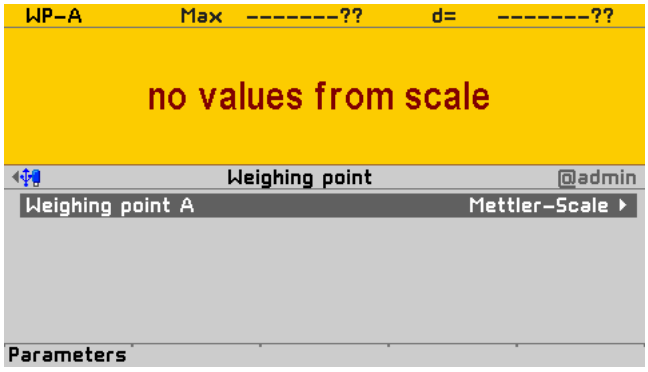
5.17.2 Parameter Input in Mettler-Scale Menu

Example: scale type XS6002SDR

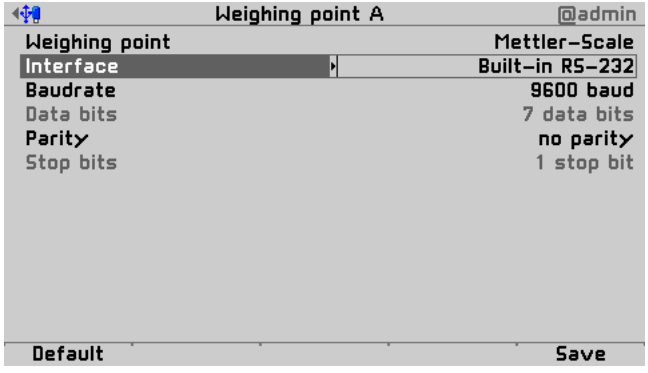
Select the menu item 'Peripherals' in system menu and make the following settings:

Printer	→	Off				
Host	→	RS232 built-in	→	Define	→	Baudrate → 9600
					→	Bit/Parity → 7/Odd
					→	Stop Bits → 1 Stop Bit
					→	Handshake → Xon/Xoff
					→	End of line → <CR> <LF>
					→	Char Set → IBM/DOS
					→	Continuous mode → Off
Secondary Display	→	Off				
Bar Code	→	Off				
Ext. Keyboard	→	Off				

5.17.3 Parameter Input for Serial Interface

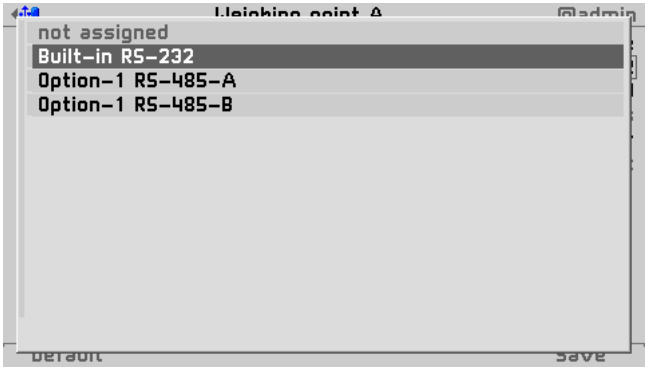


▶ Go to [System setup]-[Weighing point]-[Weighing point A], select and confirm 'Mettler-Scale').

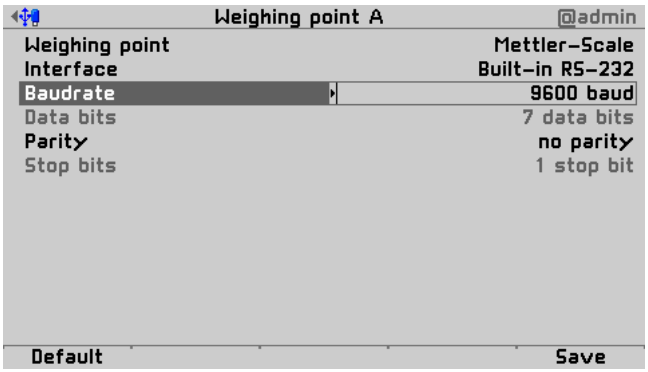


▶ The following window appears.

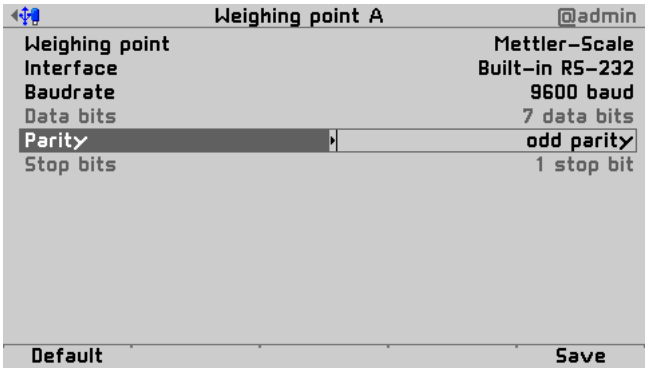
▶ Select and confirm the line 'Interface'.



▶ The following window appears.
▶ Select and confirm the desired interface.

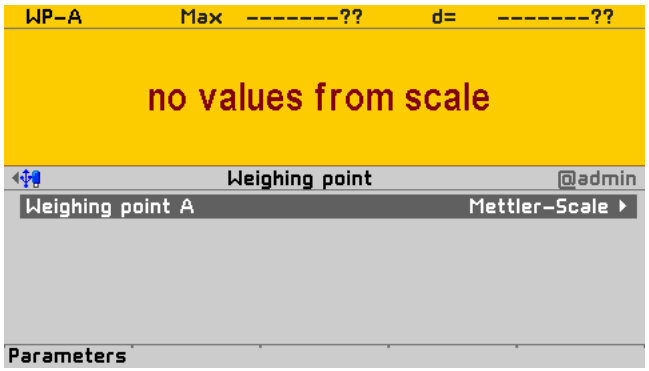


▷ The previous window appears.
▶ Select and confirm the line ‚Baudrate'.
▶ Select and confirm ‚9600 baud'.

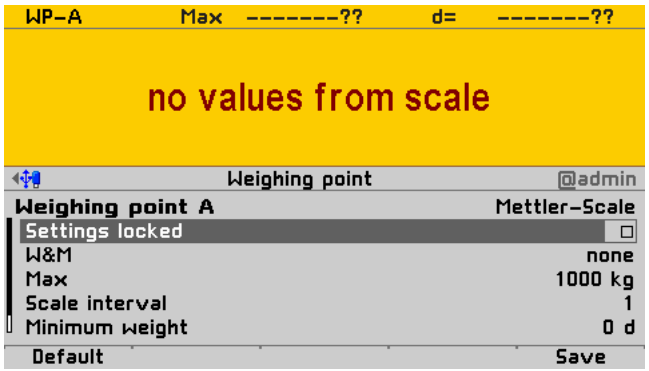


▶ Select and confirm the line ‚Parity'.
▶ Select and confirm ‚odd parity'.
▶ Press the [Save] soft key to save the settings.

5.17.4 Parameters Input for Scale Function



▶ Press the [Parameters] soft key.



▷ The following window appears.

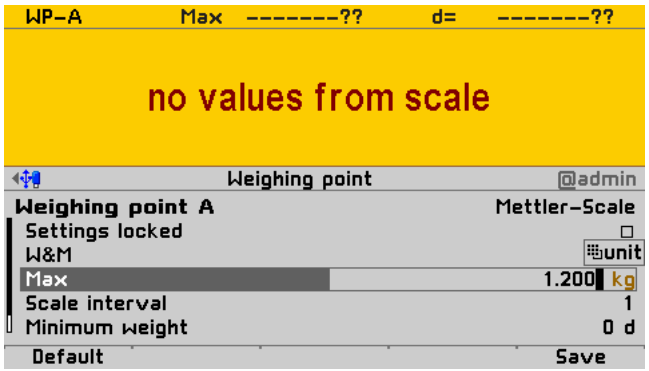
▶ Enter and confirm the following parameters.

[Settings locked]

The weighing point settings and assignment can only be viewed as if the corresponding CAL switch were closed; see Chapter 5.1.5.2.

[W&M]

Setting for operation in legal metrology. Select [none], OIML, NTEP (for USA) or NSC (for Australia); see Chapter 5.11.16.1.



[Max]

Enter the maximum capacity with decimal places and weight unit of the Mettler-Scale.

[Scale interval]

See Chapter 5.11.6.

[Minimum weight]

Minimum weight at which a print command can be triggered.

Setting range: 0-9999999 d.

[Update time]

Time frame in which a new weight value is displayed.

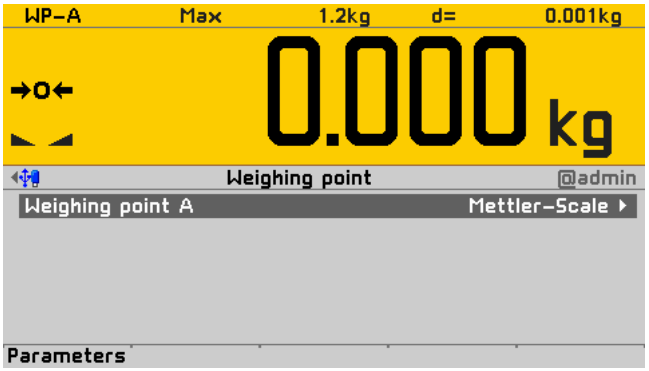
Setting range: 0.1...2.0 s.

[Default]

Settings are reset to factory settings.

[Save]

The settings are saved.



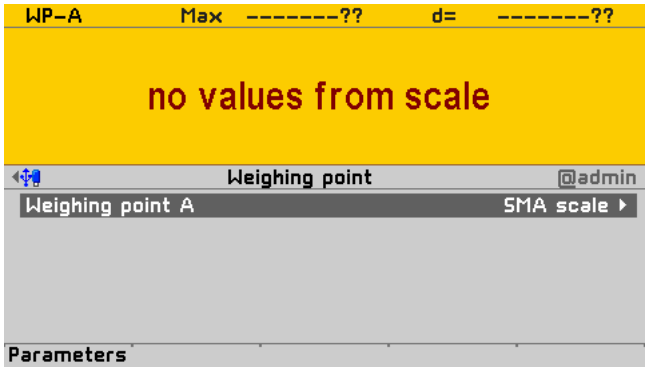
▷ The weight value of the scale is displayed.

5.18 Setting the SMA Scale

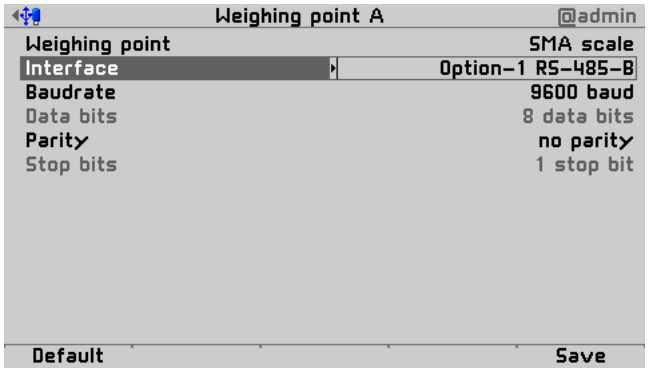
5.18.1 General Information

The PR 5500 can communicate with a scale via the SMA protocol. The device can be connected via serial interface (PR 5500/04; see Chapter 4.4.1). Communication is serial.

5.18.2 Parameter for Serial Interface



▶ Go to [System setup]-[Weighing point]-[Weighing point A], select and confirm 'SMA scale'.



▷ A selection window appears.

Unavailable parameters are grayed out.

▶ Select and confirm the individual settings.

[Interface]

serial interfaces

Selection:
not assigned, Built-in RS-232, Option-x RS-485-A, Option-x RS-485-B

[Baudrate]

Modulation rate for data transmission.

Note	The selected value must match the value of the connected device.

Selection:
300, 600, 1200, 2400, 4800, <9600>, 19200 baud

[Parity]

Parity check for detecting errors during data transmission.

Selection:
no parity, odd parity, even parity

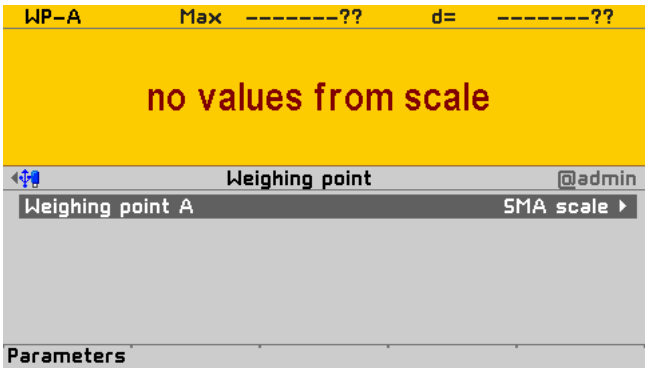
[Default]

Settings are reset to factory settings.

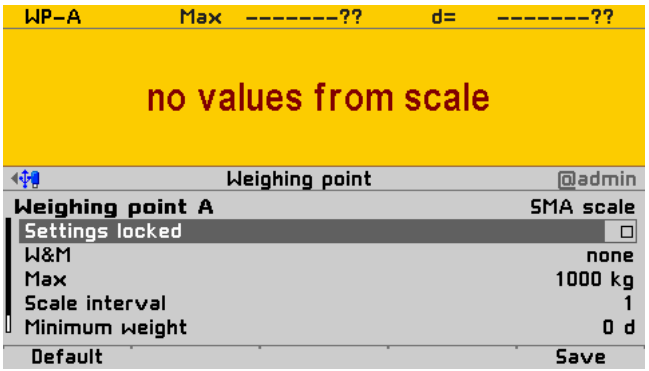
[Save]

The settings are saved.

5.18.3 Parametereingabe



▶ Press the [Parameters] soft key.



▶ Select and confirm the individual settings.

[Settings locked]

The weighing point settings and assignment can only be viewed as if the corresponding CAL switch were closed; see Chapter 5.1.5.2.

[W&M]

Setting for operation in legal metrology. Select [none], OIML, NTEP (for USA) or NSC (for Australia); see Chapter 5.11.16.1.

Maximum Capacity [Max]

See Chapter 5.11.5.

[Scale interval]

See Chapter 5.11.6.

[Minimum weight]

Minimum weight at which a print command can be triggered.

Setting range: 0...9999999 d. For use in legal metrology a value of at least 20 d must be set.

[Update time]

Timeframe in which a new weight value is displayed.

Setting range: 0.1...2.0 s.

[Default]

Settings are reset to factory settings.

[Save]

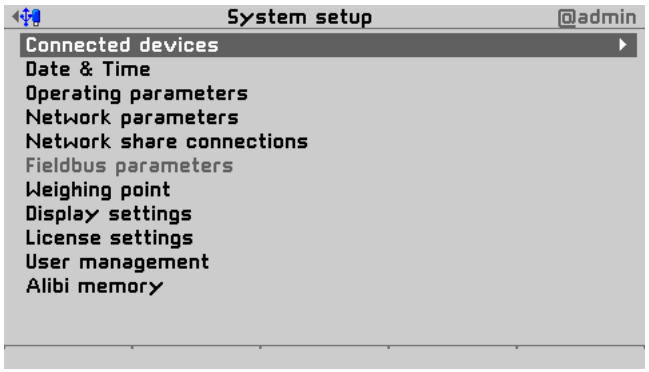
The settings are saved.

5.19 General Parameter Settings

The parameter settings which are not related to the weighing electronics are divided into several ranges (see Chapter 5.10).

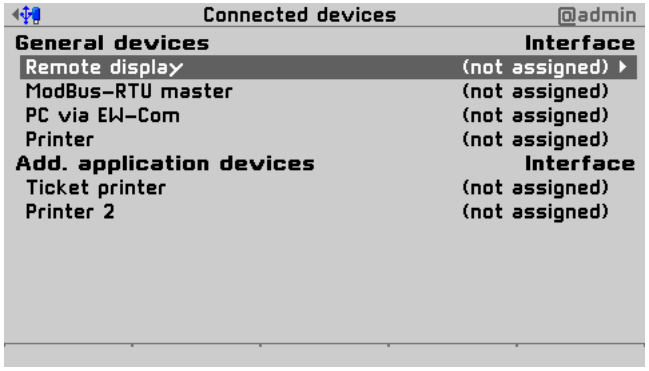
5.19.1 Equipment Settings

The connected devices are configured under this menu item.



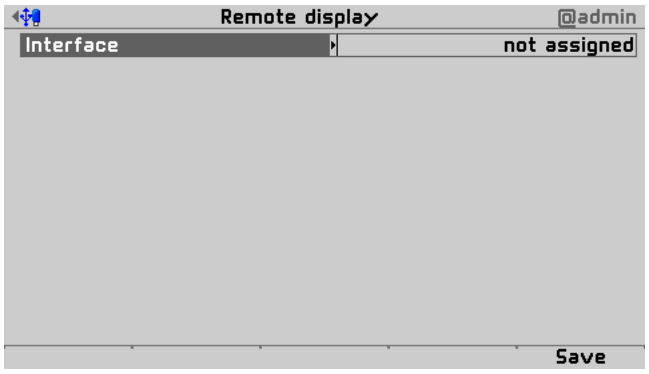
▶ Select and confirm [System setup] - [Connected devices] using the cursor.

5.19.1.1 Remote Display

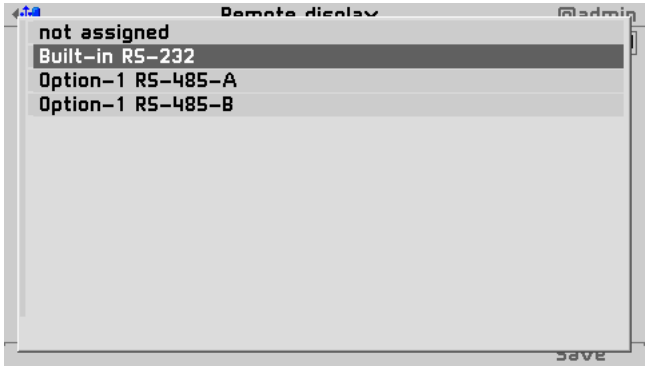


▷ A selection window appears.

▶ Select and confirm the connected device.



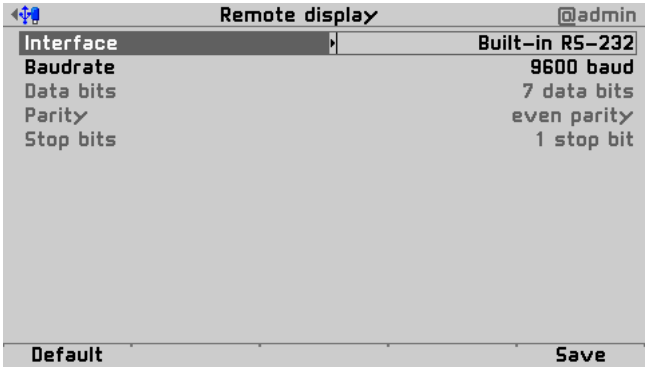
▶ Select and confirm the line 'Interface'.



▷ A selection window appears.

Unavailable interfaces are grayed out.

▶ Select and confirm the desired interface.



▷ A selection window appears.

▶ Select and set the desired parameters.

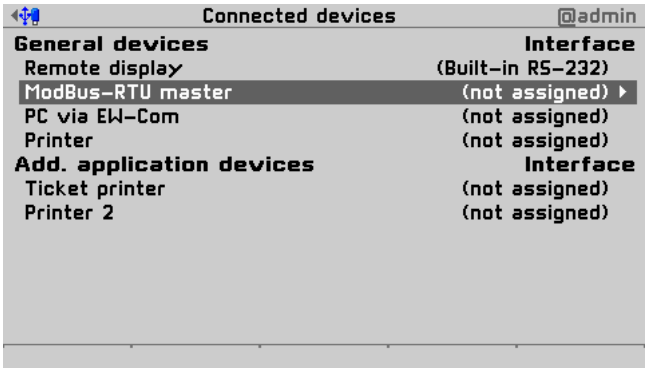
In this case, only the modulation rate for data transmission (baud rate) can be set.

Note	The selected value must match the value of the connected device.

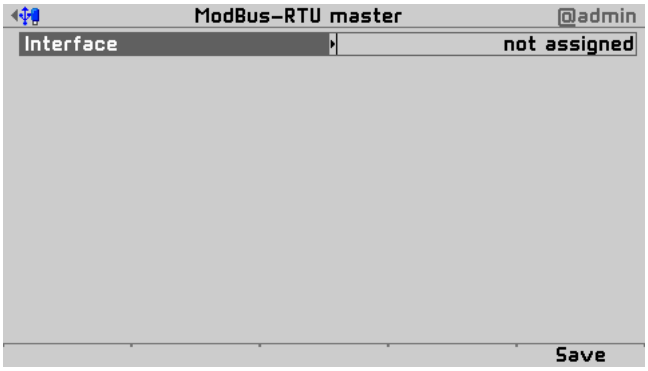
Selection:
300, 600, 1200, 2400, 4800, 9600, 19200 baud

▶ Press the [Save] soft key to save the settings.

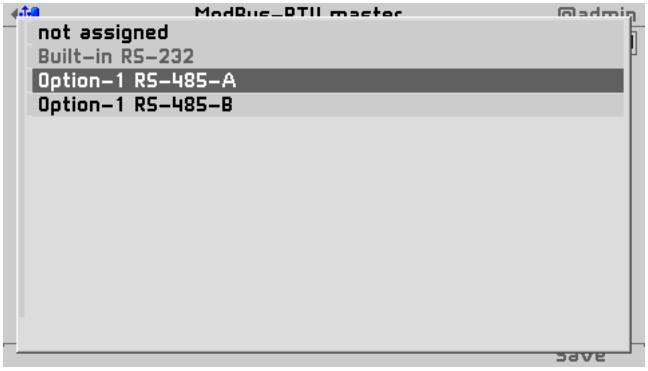
5.19.1.2 ModBus-RTU Master



▶ Select and confirm the connected device.



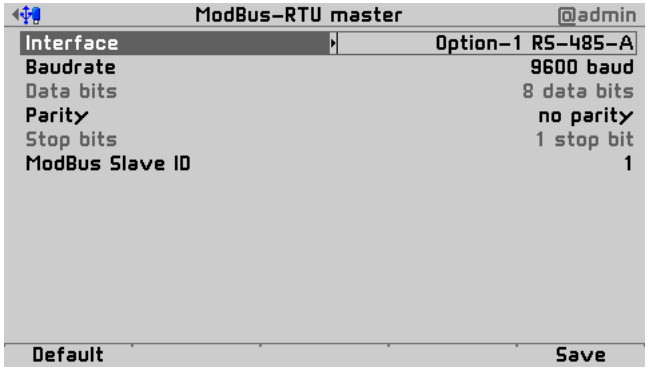
▶ Select and confirm the line 'Interface'.



▷ A selection window appears.

Unavailable interfaces are grayed out.

▶ Select and confirm the desired interface.



▷ A selection window appears.

Unavailable parameters are grayed out.

▶ Select and confirm the individual settings.

[**Baudrate**]

Modulation rate for data transmission.

Note	The selected value must match the value of the connected device.

Selection:
300, 600, 1200, 2400, 4800, <9600>, 19200, 38400, 57600, 115200 baud

[**Parity**]

Parity check for detecting errors during data transmission.

Selection:
no parity, odd parity, even parity

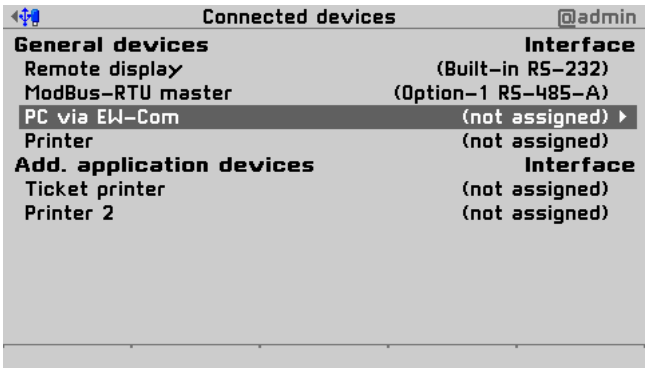
[Modbus Slave ID]

Input:
an address from 1...255 using the keyboard

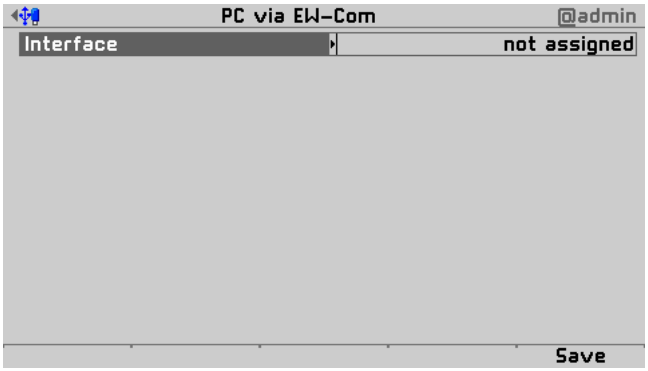
▶ Press the [Save] soft key to save the settings.

Note	The ModBus protocol is described in Chapter 7.

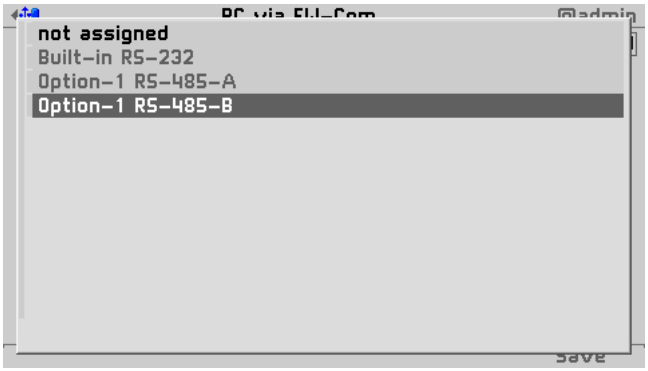
5.19.1.3 PC via EW-Com



▶ Select and confirm the connected device.

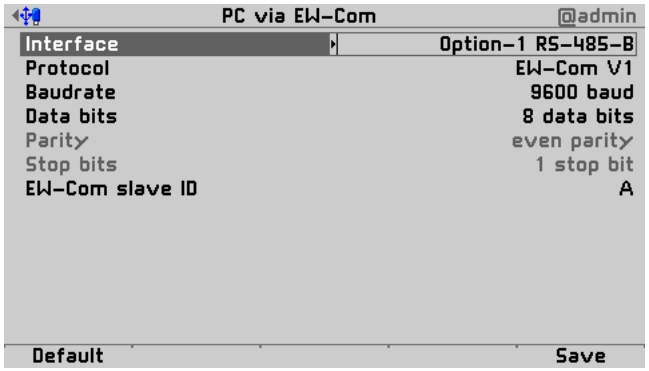


▶ Select and confirm the line 'Interface'.



▷ A selection window appears.
Unavailable interfaces are grayed out.

▶ Select and confirm the desired interface.



▷ A selection window appears.
Unavailable parameters are grayed out.

▶ Select and confirm the individual settings.

[Protocol]

Transmission protocol

Selection:
EW-Com V1, EW-Com V2, EW-Com V3

V1 = for old communication programs

V2 = for recipe controller

V3 = for OPC

[Baudrate]

Modulation rate for data transmission.

Note	The selected value must match the value of the connected device.

Selection:
300, 600, 1200, 2400, 4800, <9600>, 19200, 38400, 57600, 115200 baud

[Data bits]

Groups of data bits.

Selection:
7 data bits, <8 data bits>

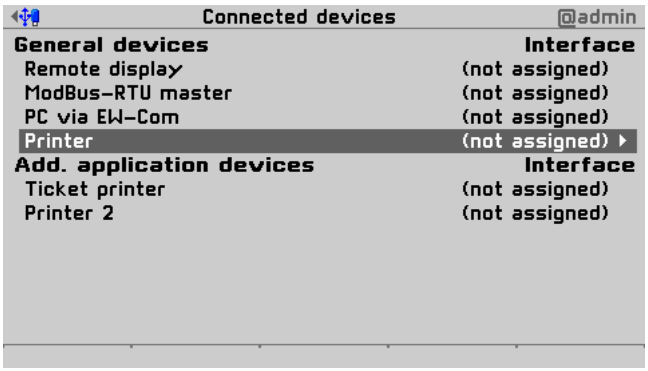
[EW-Com Slave ID]

Input:
an address from A...Z using the keyboard

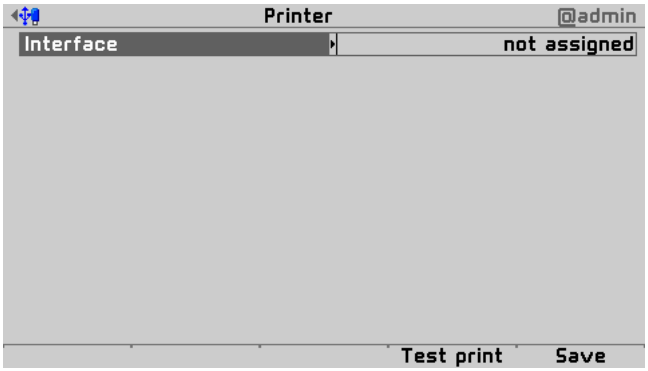
▶ Press the [Save] soft key to save the settings.

Note	The PR 1612 command sets for the EW-Com protocol are described in Chapter 8.

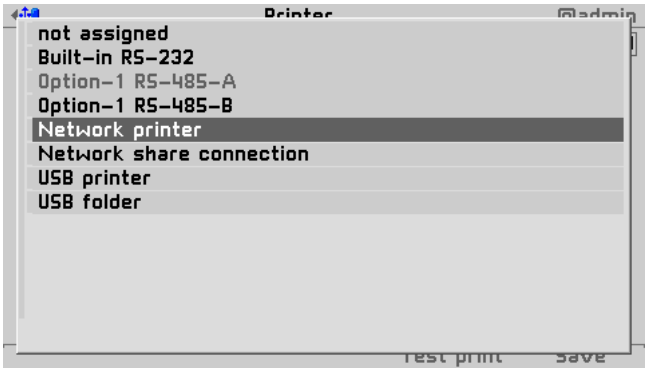
5.19.1.4 Printer



▶ Select and confirm the line.



▶ Select and confirm the line 'Interface'.



▷ A selection window appears. The following interfaces are available:

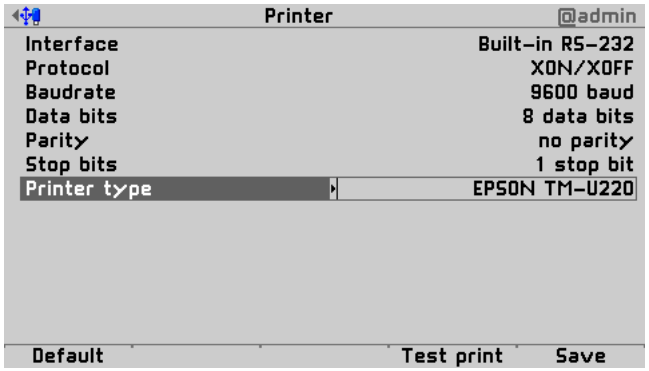
- Serial printer
- Network printer
- Network share connection
- USB printer
- USB folder

Unavailable interfaces are grayed out.

▶ Select and confirm the desired interface.

Note	The here defined printer is also selected for the application configuration printout.

Serial printer



▷ A selection window appears.
Unavailable parameters are grayed out.

▶ Select and confirm the individual settings.

[Protocol]
Transmission protocol
Selection:
no protocol, XON/XOFF, RTS/CTS

[Baudrate]
Modulation rate for data transmission.

Note	The selected value must match the value of the connected device.

Selection:
300, 600, 1200, 2400, 4800, <9600>, 19200, 38400, 57600, 115200 baud

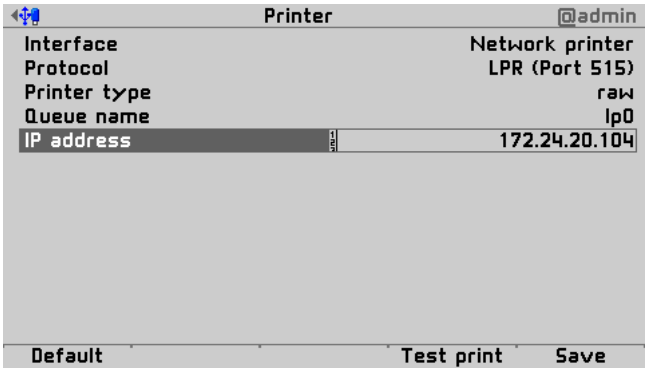
[Data bits]
Groups of data bits.
Selection:
7 data bits, <8 data bits>

[Stop bits]
Units for transmission protocols.
Selection:
1 stop bit, <2 stop bits>

[Printer type]
The selection depends on the printer:
raw, CR/LF translation, EPSON TM-U220, EPSON LQ 300k, Generic PCL5 (Unicode), Generic PCL5 (Codepage), Generic ESC/P2

▶ Press the [Test print] soft key.
▷ A test page (see Chapter 13.2) is printed.
▶ Check the printer settings and change if necessary.
▶ Press the [Save] soft key to save the settings.

Network printer



▷ A selection window appears.

▶ Select and confirm the individual settings.

[Protocol]

Transmission protocol

Selection:
Speak with the responsible system administrator:
LPR (Port 515) or RAW (Port 9100)

[Printer type]

The selection depends on the printer:
raw, CR/LF translation, EPSON TM-U220, EPSON LQ 300k, Generic PCL5 (Unicode), Generic PCL5 (Codepage), Generic ESC/P2

[**Queue name**]

Queue can be selected only if under [Protocol] ‚LPR (port 515)' has been selected.

Selection:
Speak with the responsible system administrator.

[**IP address**]

Selection:
Speak with the responsible system administrator.

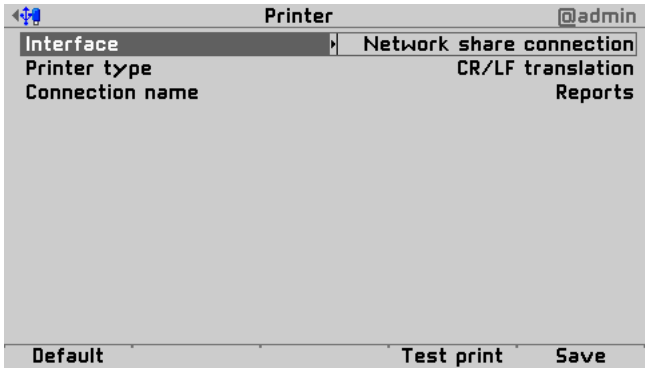
▶ Press the [Test print] soft key.

▷ A test page (see Chapter 13.2) is printed.

▶ Check the printer settings and change if necessary.

▶ Press the [Save] soft key to save the settings.

Network share connection



▷ A selection window appears.

▶ Select and confirm the individual settings.

[Printer type]

The selection depends on the print file processing: raw, CR/LF translation, EPSON TM-U220, EPSON LQ 300k, Generic PCL5 (Unicode), Generic PCL5 (Codepage), Generic ESC/P2

[Connection name]

Print file storage location. Minimum one network share connection must exist, see Chapter 5.19.5.

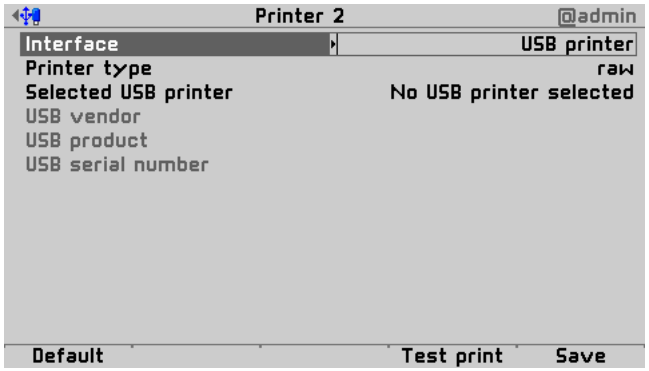
▶ Press the [Test print] soft key.

▷ A test file is created in the selected connection.

▶ Check the settings and change if necessary.

▶ Press the [Save] soft key to save the settings.

USB printer



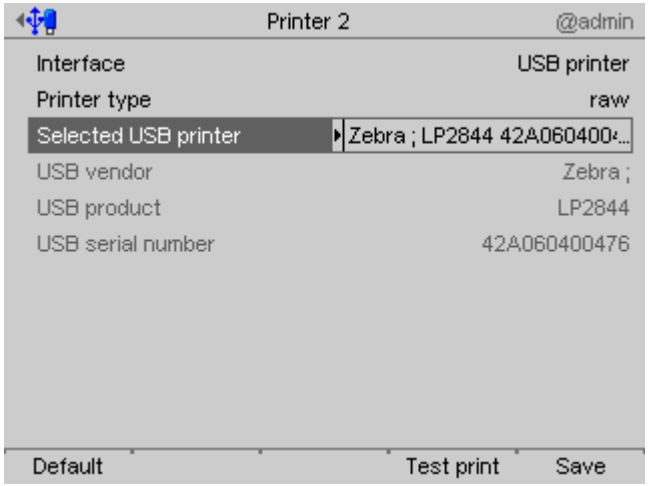
▷ A selection window appears.

Unavailable parameters are grayed out.

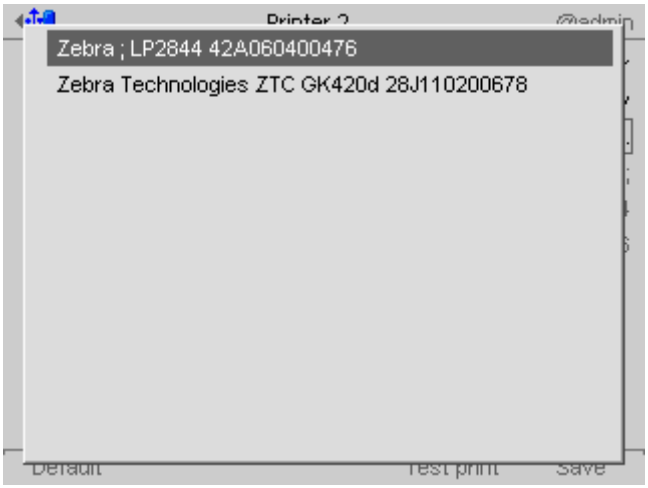
▶ Select and confirm the individual settings.

[Printer type]

The selection depends on the printer: raw, CR/LF translation, EPSON TM-U220, EPSON LQ 300k, Generic PCL5 (Unicode), Generic PCL5 (Codepage), Generic ESC/P2

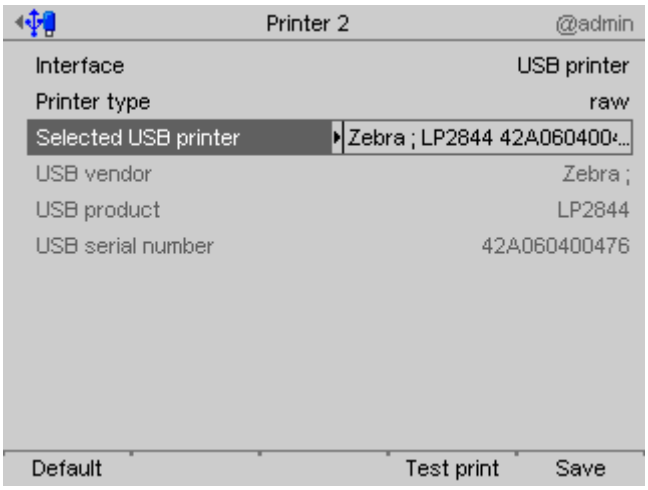


▶ Select and confirm line 'Selected USB printer'.



▷ A selection window appears. The connected printers (here: 2) can be selected.

▶ Select and confirm the desired printer.



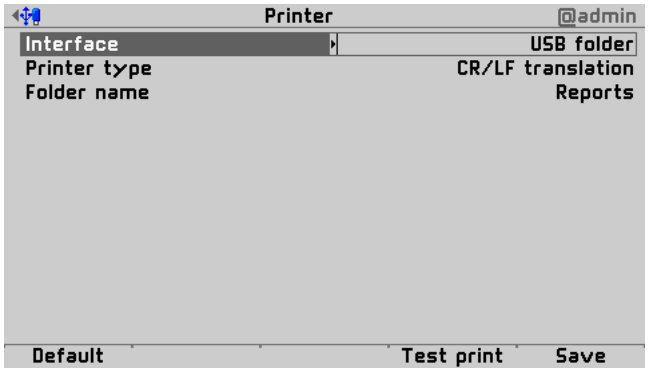
▶ Press the [Test print] soft key.

▷ A test page (see Chapter 13.2) is printed.

▶ Check the printer settings and change if necessary.

▶ Press the [Save] soft key to save the settings.

USB folder



▷ A selection window appears.

▶ Select and confirm the individual settings.

[Printer type]

The selection depends on the print file processing: raw, CR/LF translation, EPSON TM-U220, EPSON LQ 300k, Generic PCL5 (Unicode), Generic PCL5 (Codepage), Generic ESC/P2

[Folder name]

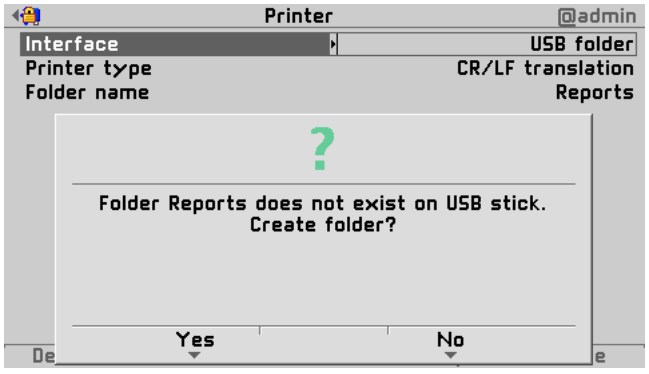
Print file storage location (here: Reports).

The user-defined directory path is subject to the following restrictions:

- Max. 128 characters .
- 0-9, A-Z (not case-sensitive) are permitted.
- Must not start with space or „/".
- Must not contain space, „//", „../", „ /", „..." and „/ ".
- Must not end with space, „." or „/".
- Must not use „<", „>", „:", „"", „/", „\", „|", „?" and „*".

Input: via keyboard

▶ Press the [Test print] soft key.



▷ A prompt window appears.

▶ Press the [Yes] soft key.

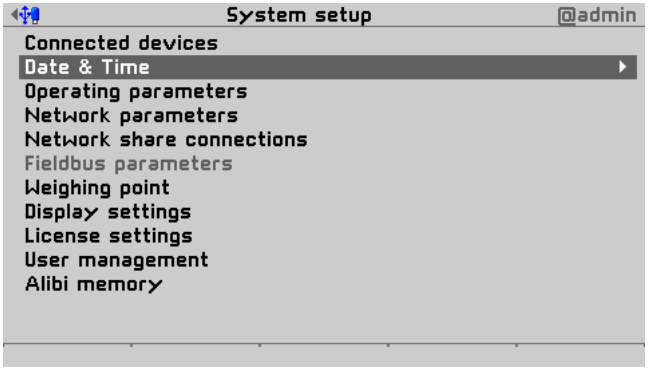
▷ A test file is created in the new created folder.

▶ Check the settings and change if necessary.

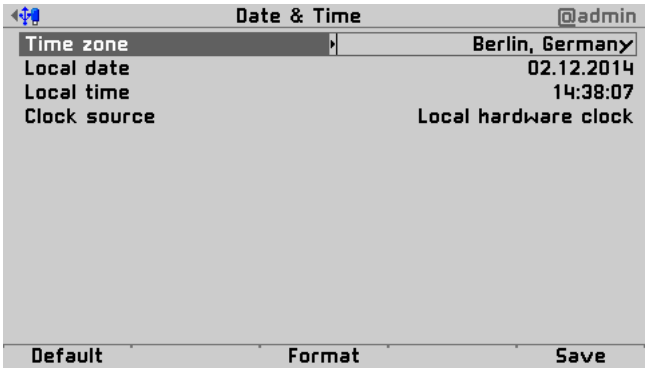
▶ Press the [Save] soft key to save the settings.

5.19.2 Setting the Date and Time

The parameters for date and time are set under this menu item.



▶ Select and confirm [System setup] - [Date & Time] using the cursor.



▷ A selection window appears.

▶ Select and confirm the individual parameters.

[Time zone]

Selection:
all existing time zones

[Local date]

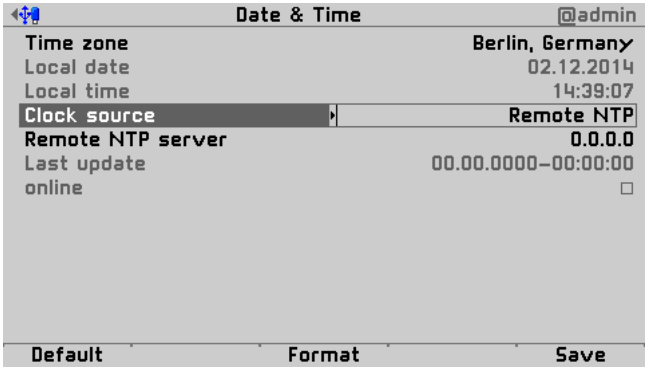
Can be configured if 'local hardware clock' has been selected under [Clock source].

Input: via keyboard

[Local time]

Can be configured if 'local hardware clock' has been selected under [Clock source].

Input: via keyboard



[Clock source]

Selection:
local hardware clock, NTP server (Network Time Protocol)

[NTP server]

The IP address can only be entered if under [Clock source] 'NTP server (Network Time Protocol)' has been selected.

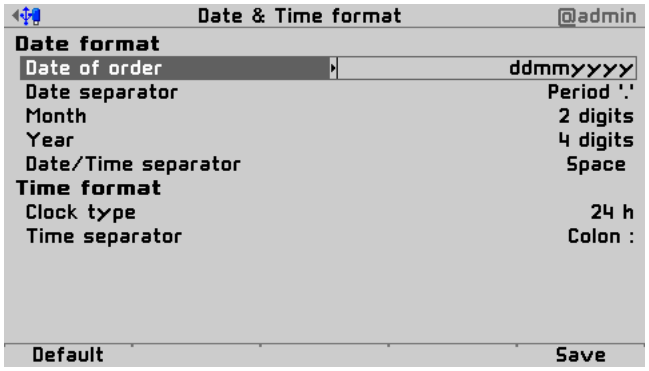
Input: IP address via keyboard

[Last update]

Indicates when the last data was received by the NTP server.

[online]

The checkbox ☑ indicates whether the NTP server was successfully contacted during the last attempt.



- ▶ Press the [Format] soft key to set the format parameters.
- ▷ A selection window appears.
- ▶ Select and confirm the individual settings.

[Date of order]

Selection:
mmddyyyy, ddmmyyyy, yyyymmdd, yyyyddmm
d = day, m = month, y = year

[Date separator]

Selection:
Slash '/', Hyphen '-', Period '.', Space ' ',
Japanese 年月日, None

[Month]

Selection:
2 digits, 3 characters

[Year]

Selection:
2 digits, 4 digits

[Date/Time separator]

Selection:
Hyphen '-', Space ' ', None

[Clock type]

Selection:
12 h, 24 h

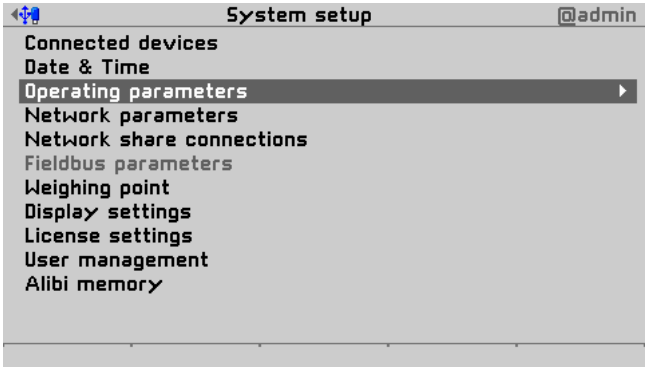
[Time separator]

Selection:
Colon ':', Hyphen '-', Japanese 時分秒, None

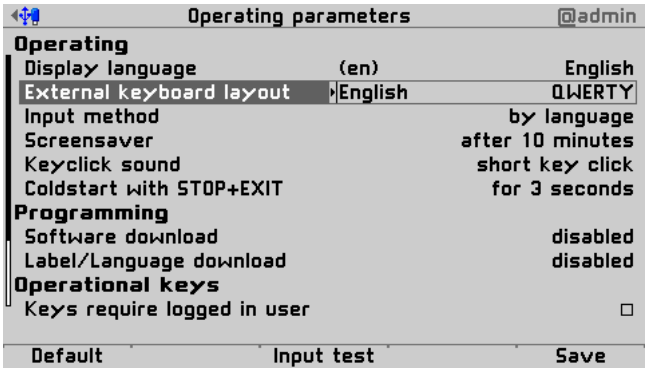
- ▶ Press the [Save] soft key to save the settings.

5.19.3 Setting the Operating Parameters

The operating parameters are set under this menu item.



▶ Select and confirm [System setup] - [Operating parameters] using the cursor.



▷ A selection window appears.

▶ Select and confirm the individual parameters.

Note	When user management is activated, the settings for the logged-in user remain active.

Display language]

Selection:
(de) Deutsch, <(en) Englisch>

Note	When user management is activated, the operating language only changes once the currently logged-in user logs out. It is only possible to switch languages immediately using the F1 or F2 key.

[External keyboard layout]

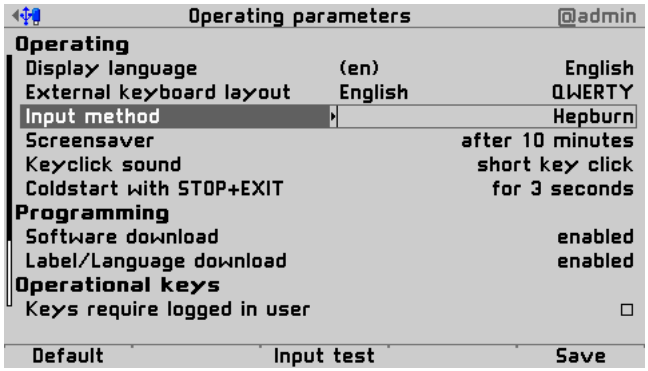
Selection:
<Englisch QWERTY>, German QWERTZ, French AZERTY, Italian QWERTY, Spanish QWERTY, Russian QWERTY/йцукен

[Input method]

This function makes it possible to enter Japanese (Hepburn) or Chinese (Pinyin) characters even if the language in question (Japanese or Chinese) is not selected or another language (such as English) has been selected under [Display language].

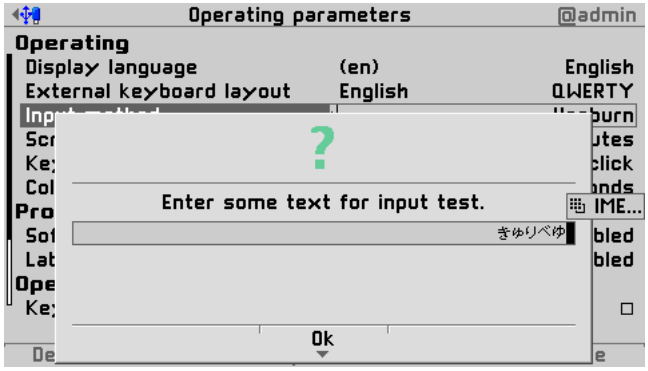
Selection:

<by language>,
Hepburn (transliteration of Japanese „Hiragana" characters into Latin script),
Pinyin (phonetic transliteration based on the Latin alphabet)



Input Test for Keyboard and Keypad

▶ Press the [Input test] soft key to test the entry.



▷ An input window appears.

▶ Enter the desired characters.

During the input test using the keypad, pressing the key on the instrument switches between

- in this case: Hepburn
- Numbers
- Uppercase letters
- Lowercase letters

▶ Press the [OK] soft key to end the input test.

[Screensaver]

Once the screensaver is switched on, operation is only possible once a password has been entered or a key has been pressed.

Selection:
[no screensaver], after 1 minute, after 5 minutes, after 10 minutes, after 30 minutes

[Keyclick sound]

Duration of acoustic signal when keys are pressed

Selection:
no key click, <short key click>, medium key click, long key click

[Coldstart with STOP+EXIT]

A cold start leads to a loss of all data on the database.

⚠ **Caution**

Selection:
<disabled>, immediately, 3 s

[Software download]

Load and start a new application on the device via the network.

Possible production downtime!

This parameter must always be set to "locked" for production systems.

⚠ **Caution**

Selection:
<disabled>, enabled

Software can only be downloaded in running operation when "enabled" has been selected.

[Label/Language download]

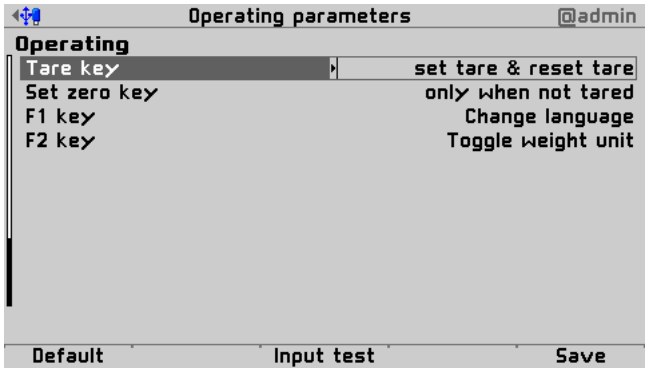
Load labels and language files via network temporarily into the device.

Note	After a cold start the files will be lost. Loading the language files permanently into the device is possible via the update software "FlashIt!" from version 02.73.11.

Selection:
<disabled>, enabled

[Keys require logged in user]

If the checkbox ☑ is ticked, the keys with weighing point functions (e.g. Set zero; F1 and F2, if configurated for weighing point functions) are locked for users who are not logged in.



[Tare key]

The function of the tare key →T← can be configured.

Selection:
disabled, <set tare & reset tare>, set tare & set tare again

'Disabled' means that the key has no function.

'Set tare & reset tare' means that the device will be tared if it has not been tared previously and the tare will be reset if the device has already been tared.

'Set tare & set tare again' means that each time a key is pressed, the instant value in the tare memory is applied and the net display switches to 0.

[Set zero key]

The function of the set zero key →0← can be configured.

Selection:
disabled, <only when not tared>, reset tare on zero set

'Disabled' means that the set zero key on the keypad has no function.

The key's function can be limited to gross mode with 'only when not tared' or switched automatically to gross mode with 'reset tare on zero set'.

If the zero-setting key with these settings has no effect, the configured zero-setting range (around the zero-point set with the dead load) is already utilized due to a previous zero-setting operation and/or automatic zero setting (see Chapter 5.11.16).

[F1 key], [F2 key]

Selection:
no function, Change language, Change user, Lock device, Toggle weight unit, Set tare, Reset tare, set tare & reset tare, set tare & zero set, Analog test, Show 10-fold resolution

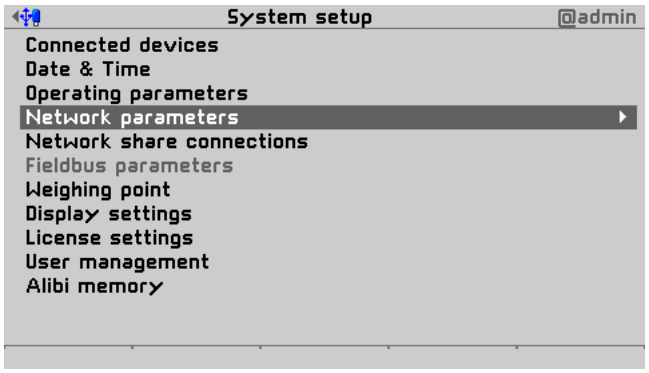
Note	Weighing point functions are only active when the weight display is switched on.

Selection	Function
No function	The key has no function.
Change language	The menus are displayed immediately in the selected language.
Change user	The login window opens on the display.
Lock device	This function is only possible, if the user management has been activated.
Toggle weight unit	Can be switched between display units (see Chapter 5.11.15). This function is only possible if at least two units have been selected.
Set tare	The current gross weight is stored in the tare memory.
Reset tare	Switching to gross mode.
Set tare & reset tare	The device will be tared if it has not been tared previously and the tare will be reset if the device has already been tared.
Set tare & zero set	The device will be tared if it has not been tared previously and display will be set to 0.
Analog test	Can be used to test the selected analog weighing point only when the current weight is displayed.
Show 10-fold resolution	The weight value is displayed for a brief time at an increased resolution (10-fold).

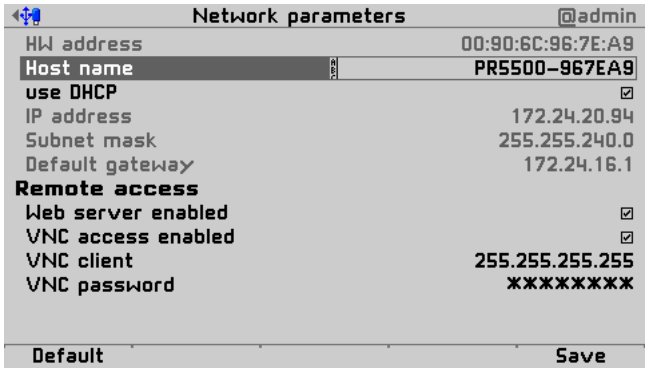
▶ Press the [Save] soft key to save the settings.

5.19.4 Network Parameters

The network parameters are set under this menu item.



▶ Select and confirm [System setup] - [Network parameters] using the cursor.



▷ A selection window appears.

▶ Select and confirm the individual parameters.

Unavailable parameters are grayed out.

[HW address]

Fixed address determined by the device.

[Device name (hostname)]

Caution!

The device name must be unique in the network!

The user-defined device name is subject to the following restrictions:

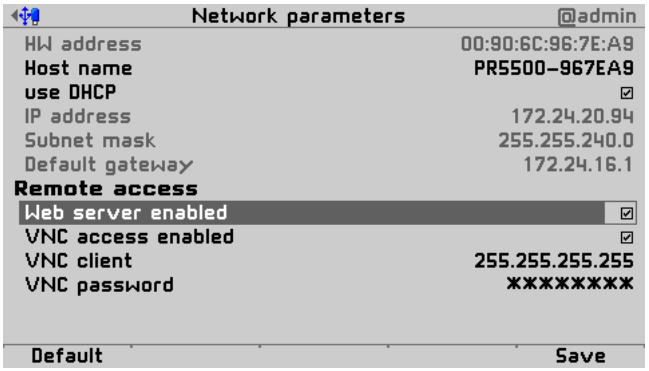
- Minimum amount of characters: 2, maximum amount of characters: 24.
- The first character must be a letter. Spaces are not permitted.
- 0-9, A-Z (not case-sensitive) are permitted.
- **-** or **.** may be included, but not at the end nor one after the other.

Input: via keyboard

[use DHCP]

If the checkbox ☑ is ticked (presetting: DHCP selected), the server automatically allocates the IP address, subnet mask, and default gateway.

If the checkbox is not ticked, the settings for the 'IP address', 'Subnet mask', and 'Default gateway' must be defined in conjunction with the responsible system administrator.



[Web server enabled]

If the checkbox ☑ is ticked, the device website can be used.

[VNC access enabled]

If the checkbox ☑ is ticked, the device can be operated via VNC.

[VNC client]

This address can be used to allow access to the interface; see following table.

[VNC password]

If a password in entered (max. 8 characters), this password must be entered in the VNC client to access the interface.

▶ Press the [Save] soft key to save the settings.

VNC client	172.24.21.101	Access only from client machine with this address.
VNC client	172.24.21.255	Access from any client with address within range 172.24.21.1 - ..254.
VNC client	255.255.255.255	Access from client with any address.

[Default]

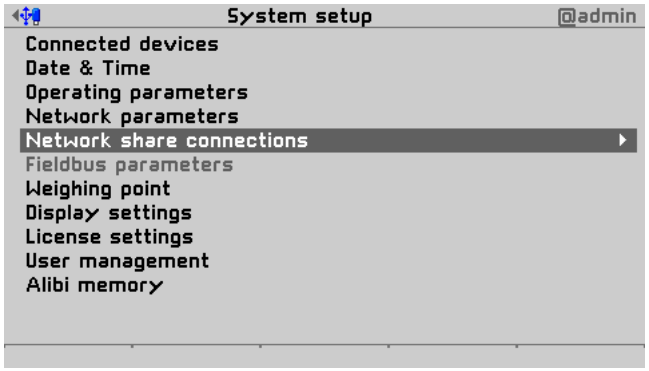
- resets the host name to PR5500-XXXXXX, where XXXXXX stands for the last 3 bytes of the hardware address (MAC ID).
- sets [use DHCP] to active.
- sets the IP address to 0.0.0.0.
- sets the subnet mask to 0.0.0.0.
- sets the default gateway to 0.0.0.0.
- sets the VNC client to 255.255.255.255.
- resets the VNC password to ‚no password'.

5.19.5 Network Share Connections

Under this menu item, network share connections are configured and provided for system maintenance (such as data storage/backups on the network).

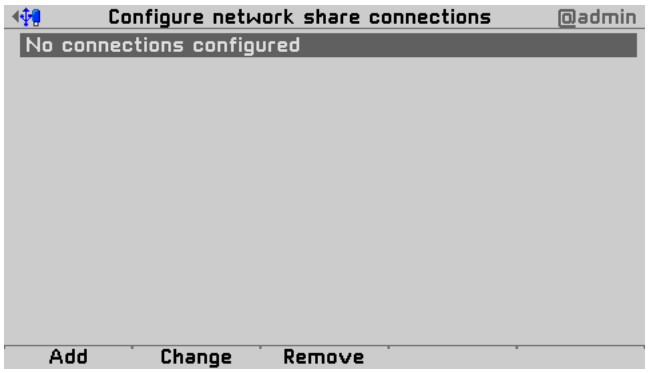
The following order must be observed without exception:

1. One or more directories on the server/notebook/PC must be shared; see the manual for the operating system in question (e.g., Windows 7: click the directory, right-click on ‚Advanced Sharing...' and activate the selection ‚Share this folder'. Then click ‚OK'.)
2. On the instrument under [System setup] - [Network share connections], configure the connections to the shared directories on the server/notebook/PC.



▶ Select and confirm [Network share connections] using the cursor.

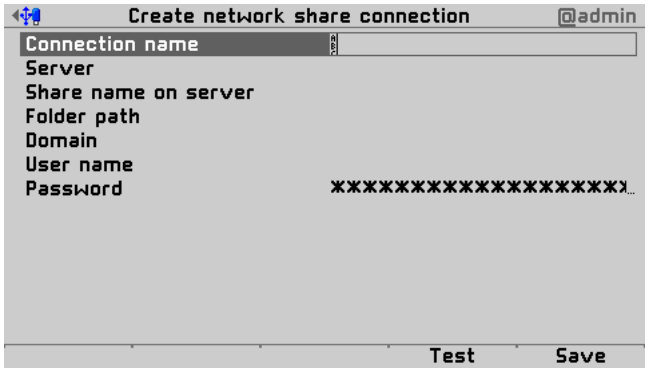
5.19.5.1 Adding a Network Share Connection



▷ A selection window appears.

Here: the list is empty because no connection has been configured.

▶ Press the [Add] soft key to configure a new connection.



▷ A selection window appears.

▶ Select and confirm the individual parameters.

[Connection name]

The name must be unique in the network.

Input:
max. 16 alphanumeric characters

[Server]

Enter the hostname (see page 260) or IP address.

[Share name on server]

The existing name on the server where the directory was created.

Input:
max. 64 characters

[Folder path]

The existing directory path within network sharing (if required).

The user-defined directory path is subject to the following restrictions:

- Max. 128 characters .
- 0-9, A-Z (not case-sensitive) are permitted.
- Must not start with space or „/".
- Must not contain space, „//", „./", „ /", „.." and „/ ".
- Must not end with space, „." or „/".
- Must not use „<", „>", „:", „"", „/", „\", „|", „?" and „*".

Input: via keyboard

[Domain]

The existing domain for network sharing (if required).

Input:
max. 64 characters

[User name]

User name on the network (if required).

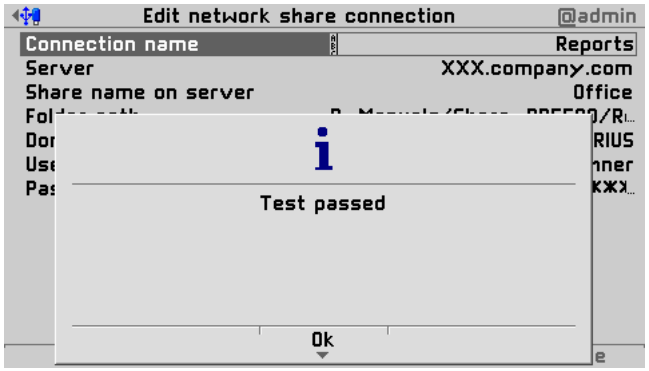
Input:
max. 64 alpha numeric characters

[Password]

Password on the network (if required).

Input:
max. 64 alpha numeric characters

▶ Press the [Test] soft key to test the connection.

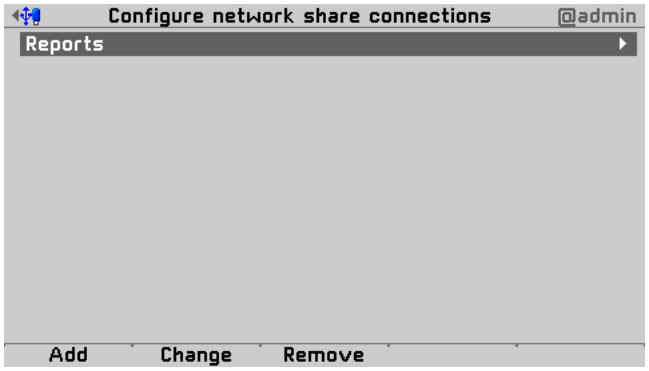


▷ An info window appears.

▶ Press the [OK] soft key to hide the window.

If an error message appears, the configuration must be changed.

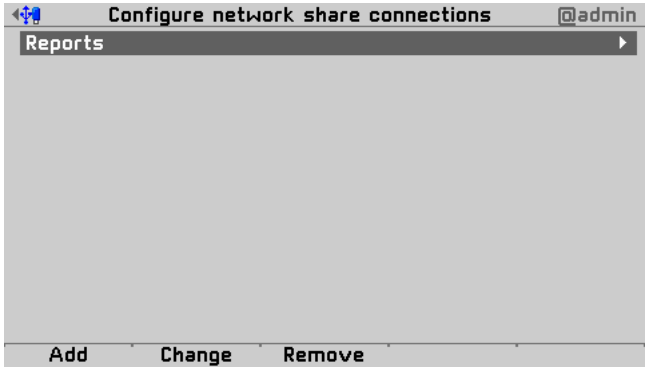
▶ Press the [Save] soft key to save the connection.



▷ A selection window appears.

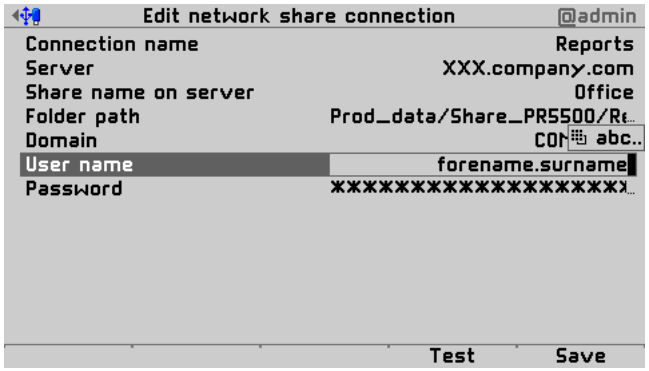
The newly configured connection (in this case: Reports) is displayed.

5.19.5.2 Changing a Network Share Connection



▶ Select the appropriate connection using the cursor.

▶ Press the [Change] soft key to change the connection configuration.



▷ A selection window appears.

▶ Use the cursor to select, confirm, and change individual parameters if necessary; see Chapter 5.19.5.1.

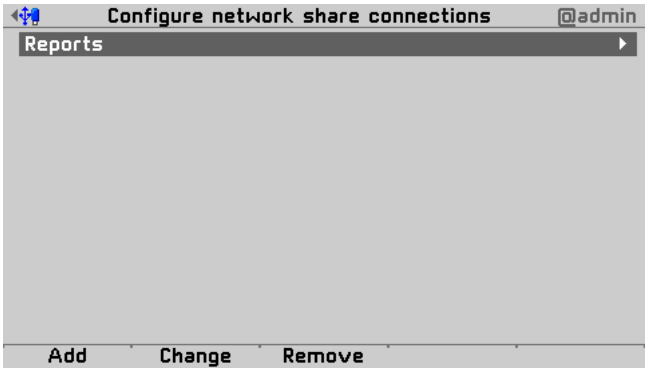
▶ Press the [Test] soft key to test the connection.

▶ Change the configuration again if necessary.

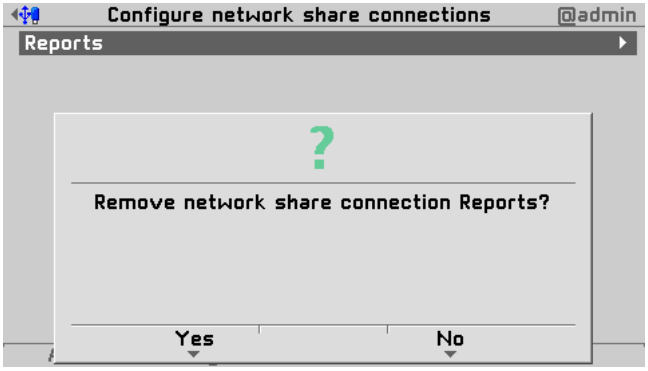
▶ Press the [Save] soft key to save the connection.

5.19.5.3 Removing a Network Share Connection

Note	Only the setting is deleted in the instrument. No network share files are deleted.



- ▶ Select the appropriate connection using the cursor.
- ▶ Press the [Remove] soft key to delete the connection.

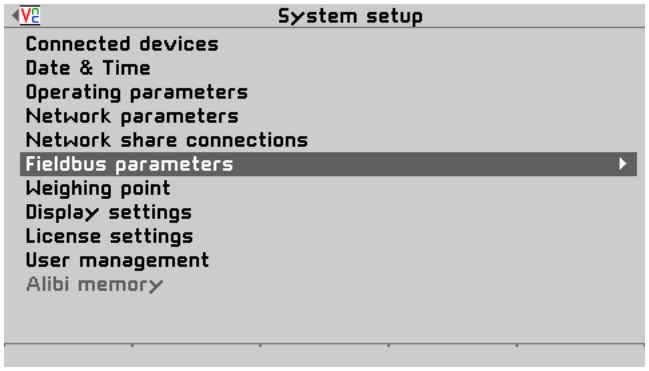


- ▷ A prompt window appears.
- ▶ Press the corresponding soft key.

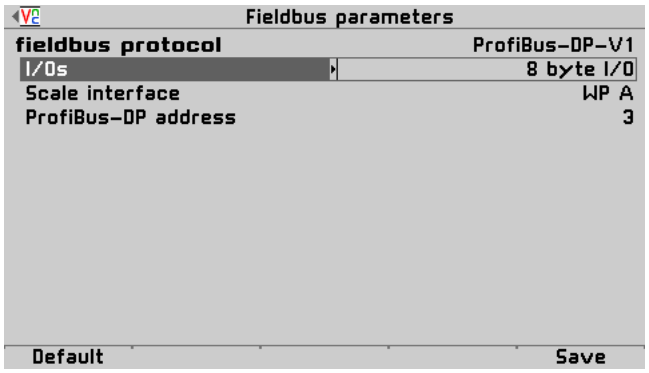
5.19.6 Fieldbus Parameters

5.19.6.1 Generell Information

The fieldbus parameters are set under this menu item. This menu item can only be selected if a PR 1721/6x card has been installed in the Option-1/FB slot.



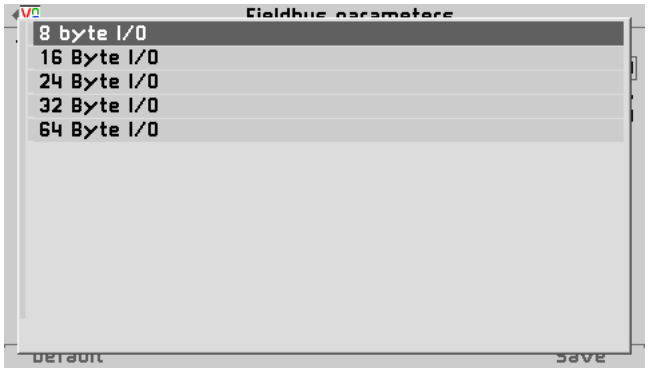
▶ Select and confirm [System setup] - [Fieldbus parameters] using the cursor.



▷ The protocol displayed automatically depends on the installed fieldbus card (here: ProfiBus-DP-V1):

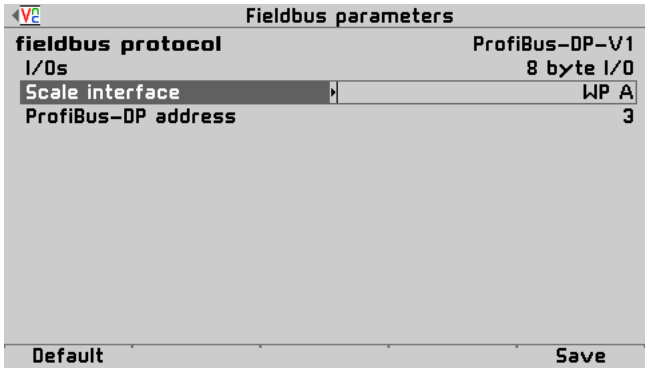
[Profibus-DP] for PR 1721/61,
[DeviceNet] for PR 1721/64,
[CC-Link] for PR 1721/65,
[ProfiNet I/O] for PR 1721/66 and
[EtherNet IP] for PR 1721/67.

▶ Confirm the first line.

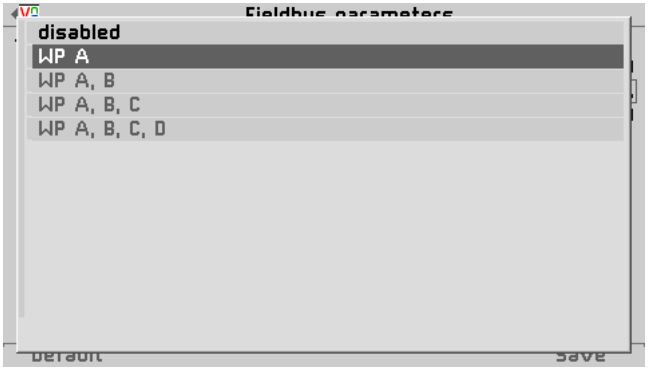


▷ A selection window appears.

▶ Select and confirm the desired range using the cursor.



▶ Select and confirm „Scale interface“ using the cursor.



▷ A selection window appears.

▶ Select and confirm the desired line using the cursor.

If 'disabled' is selected, no weight values or statuses can be transmitted.

Only for application programmers who want to use the entire range.

If 'WP A' has been selected, e. g. 32 bytes can be selected under 'I/As' nevertheless. However, the first 8 bytes are used by WP A.

[Fieldbus address]

The input is dependent on the respective fieldbus.

▶ Press the [Save] soft key to save the settings.

5.19.6.2 ProfiBus-DP Settings for S7

Requirements

- The PR 1721/61 ProfiBus-DP fieldbus card is installed; see Chapter 4.4.8.
- The parameters have been selected and saved according to the weighing points (1x WP = 8 byte I/O); see Chapter 5.19.6.1.

Procedure

▶ Establish communication with the PLC (in this case: SIEMENS S7-300/400).

▶ Create/open a project in the SIMATIC MANAGER.

▶ Under ‚HW config. > Tools > Install GSD files', load the file ‚SART_5500.gsd' from the CD.

▷ This file appears under profile -> ... as ‚PR 5500 Process Controller'.

▶ Select the appropriate modules (I/O size consistent) here according to the device configuration.

▶ Find the access addresses in the relevant application manual (Chapter ‚Description of the I/O Area').

Example: The gross weight should be read for weighing point WP A.

I/O size = 8 bytes, counted from byte 0–7

Card Test

The fieldbus card has 2 LEDs (OP, ST). Communication is functioning correctly when the LEDs are green (see Chapter 4.4.8.

All inputs and outputs are displayed under [System maintenance] - [Test hardware] - [I/O card test] - [Option-FB PR 1721/61].

Note	Further details can be found in the supplementary application manual ‚How to...' (available upon request from Technical.Support@Sartorius.com).

5.19.6.3 DeviceNet Settings for Rockwell Workstation

Requirements

- The PR 1721/64 DeviceNet fieldbus card is installed; see Chapter 4.4.9.
- The parameters have been selected and saved according to the weighing points (1x WP = 8 byte I/O); see Chapter 5.19.6.1.

Procedure

▶ Establish communication with the workstation in the ‚RSLinx' program (initial ser.DF1, recommended ETH-LAN).

▶ Register the file ‚sag_5500_DVN.EDS' in the ‚RSNetWorx for DeviceNet' program.

▶ Add a database entry in the hardware window under [Vendor] - [Sartorius Mechatronics T&H GmbH] - [Communications Adapter]:

- Drag ‚Scanner 1769 SDN' to ‚Graph' and enter slot number (e.g., 3).
- Drag ‚MAXXIS Device' to ‚Graph' and apply the MAC ID specified on the instrument.

▶ Start the ‚RSLogix5000' program.

▶ Create a new project (‚New') with a hardware structure according to the hardware components and enter Slot1...n.

▶ In [Backplane] - [CompactBus Local] - [1769-SDN/B], select [Properties Slot(n)].

▷ The ‚Module Properties Report' window appears.

▶ Enter values for input size [2/4/6/8] and output size [2/4/6/8] (32-bit) according to the active weighing points (1x WP = 2 x 32-bit = 8 byte I/O).

▶ Upload from the workstation to the project newly created with the <RSLogix5000> program.

▶ In the <RSLogix5000> program, set the access to ‚Online' in [Controller Tags] as [DINT per WP 2 lines with 4 bytes each].

▶ Additional settings are defined in the application in question, such as phase (see corresponding manual).

Card Test

The fieldbus card has 2 LEDs (MS, NS). Communication is functioning correctly when the LEDs are green (see Chapter 4.4.9).

All inputs and outputs are displayed under [System maintenance] - [Test hardware] - [I/O card test] - [Option-FB PR 1721/64].

Note	Further details can be found in the supplementary application manual ‚How to...' (available upon request from Technical.Support@Sartorius.com). ‚RSLinx', ‚RSNetWorx', and ‚RSLogix5000' are products of Rockwell Automation®.

5.19.6.4 ProfiNet I/O Settings for S7

Requirements

- The PR 1721/66 ProfiNet I/O fieldbus card is installed; see Chapter 4.4.11.
- The parameters have been selected and saved according to the weighing points (1x WP = 8 byte I/O); see Chapter 5.19.6.1.

Procedure

▶ Establish communication with the PLC (in this case: SIEMENS S7-300/400).

Attention!	A unique device name must be assigned for the hardware configuration and assignment/ download.

There are two options:

- CPU with ProfiNet port (here: CPU1511-1PN), direct access
  - ▶ Under ‚Network > Available consumers', assign the device names under the detected devices and select ‚Download'.
- Communication Processor (here: CP343-1)

  Data is accessed via the function code ‚FC11PN I-O send' and ‚FC12PN I-O receive'.
  - ▶ Select ‚Available consumers' under ‚CP343-1 > PLC > Ethernet > Edit Ethernet Mode > Browse'.
  - ▶ Select device ‚PR 5500', assign the device name, and select ‚Download'.

▶ Create/open a project in the ‚SIMATIC MANAGER'.

▶ Under ‚HW config. > Tools > Install HTML files', load the file ‚GSDML-xxx-Sartorius-PR5500-xxx.html' from the CD.

▷ This file appears under profile -> ... as ‚PR 5500 Process Controller'.

▶ Select the appropriate modules (I/O size consistent) here according to the device configuration.

▶ Find the access addresses in the relevant application manual (Chapter ‚Description of the I/O Area').

Example: The gross weight should be read for weighing point WP A.

I/O size = 8 bytes, counted from byte 0–7

Card Test

The fieldbus card has 3 LEDs (MS, Link, NS). Communication is functioning correctly when the LEDs are green (see Chapter 4.4.11).

All inputs and outputs are displayed under [System maintenance] - [Test hardware] - [I/O card test] - [Option-FB PR 1721/66].

Note	Further details can be found in the supplementary application manual ‚How to...' (available upon request from Technical.Support@Sartorius.com).

5.19.6.5 EtherNet IP Settings for Rockwell Workstation

Requirements

- The PR 1721/67 EtherNet-IP fieldbus card is installed; see Chapter 4.4.12.
- The parameters have been selected and saved; see Chapter 5.19.6.1.

Procedure

▶ Establish communication with the workstation in the ‚RSLinx' program (initial ser.DF1, recommended ETH-LAN).

▶ Register the file ‚sag_5500_ETH.EDS' in the ‚RSNetWorx for EtherNetIP' program.

▶ Add a database entry in the hardware window under [Vendor] - [Sartorius Mechatronics T&H GmbH] - [Communications Adapter]:

Drag ‚MAXXIS Device' to ‚Graph' and apply the ETHIP address specified on the instrument.

▶ Start the ‚RSLogix5000' program.

▶ Upload from the workstation to the project newly created with the <RSLogix5000> program.

▶ In the <RSLogix5000> program, set the access to ‚Online' in [Controller Tags] as [DINT per WP 2 lines with 4 bytes each].

▶ Additional settings are defined in the application in question, such as phase (see corresponding manual).

Card Test

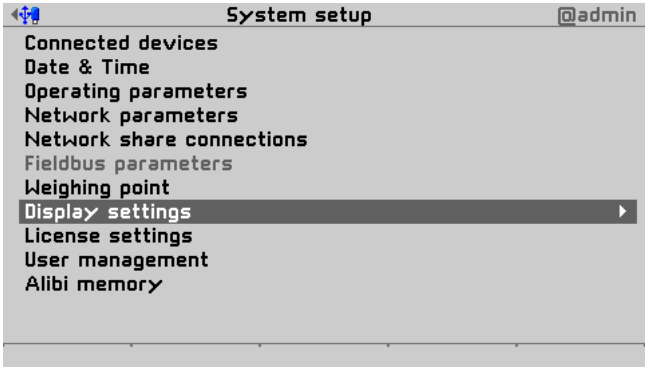
The fieldbus card has 3 LEDs (MS, Link, NS). Communication is functioning correctly when the LEDs are green (see Chapter 4.4.12).

All inputs and outputs are displayed under [System maintenance] - [Test hardware] - [I/O card test] - [Option-FB PR 1721/67].

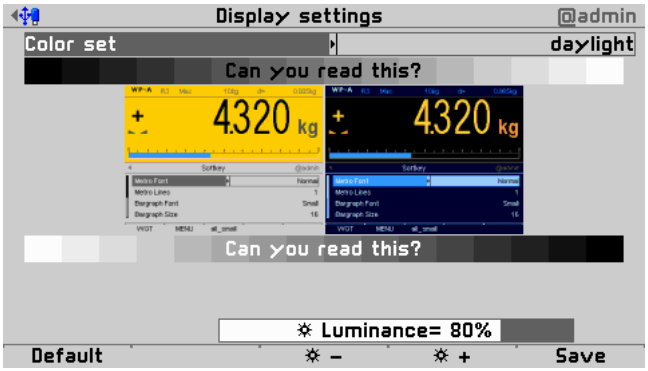
Note	Further details can be found in the supplementary application manual ‚How to...' (available upon request from Technical.Support@Sartorius.com). ‚RSLinx', ‚RSNetWorx', and ‚RSLogix5000' are products of Rockwell Automation®.

5.19.7 Display Settings

The brightness can be adjusted to suit lighting conditions here.



▶ Select and confirm [System setup] - [Display settings] using the cursor.



▷ A selection window appears.

▶ Select and confirm the individual parameters.

[Color set]

Selection:
<daylight>, night shade

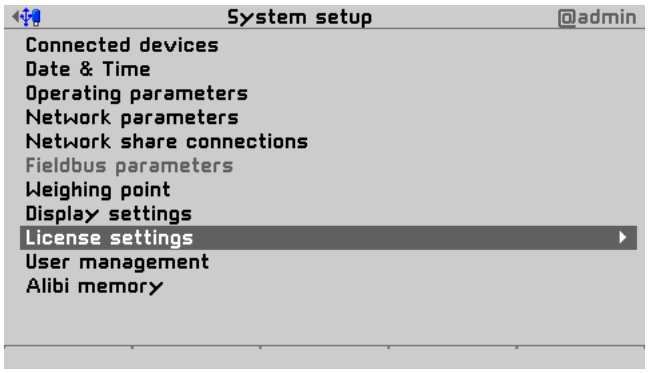
[Luminance]

Selection:
via soft key [☼ -] and [☼ +] in 5 % steps

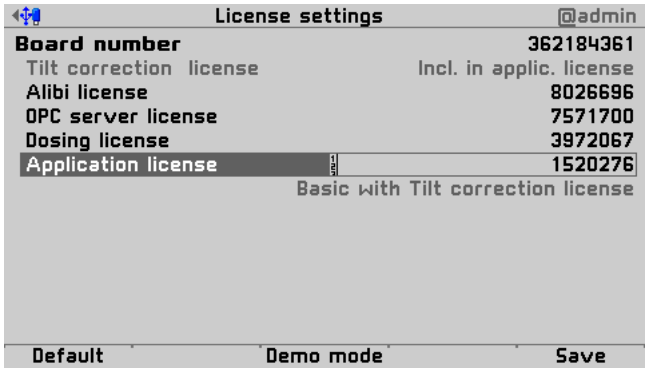
▶ Press the [Save] soft key to save the settings.

5.19.8 License Settings

Licenses for functions and application programs are activated under this menu item.



▶ Select and confirm [System setup] - [License settings] using the cursor.



Activating an Application License

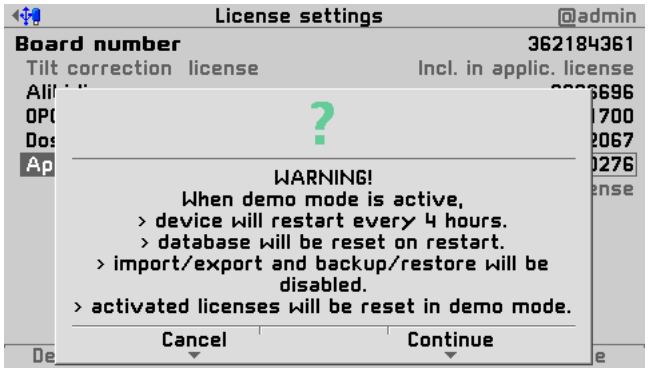
▷ A selection/input window appears.

The nine-digit board number is displayed.

▶ Enter the license number for the desired function/ application as a seven-digit number using the keyboard.

Note	License numbers are delivered with the device as a certificate and are valid only for this device/board number.

▶ Press the [Save] soft key to save the entry.

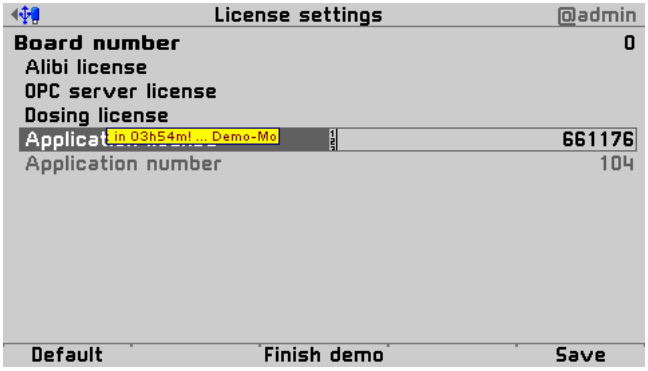


Activating the Demo Mode

▶ Press the [Demo mode] soft key to operate the selected application in demo mode.

▷ A prompt window appears.

▶ Press the [Continue] soft key to start demo mode.



▷ A message appears, indicating an impending cold start.

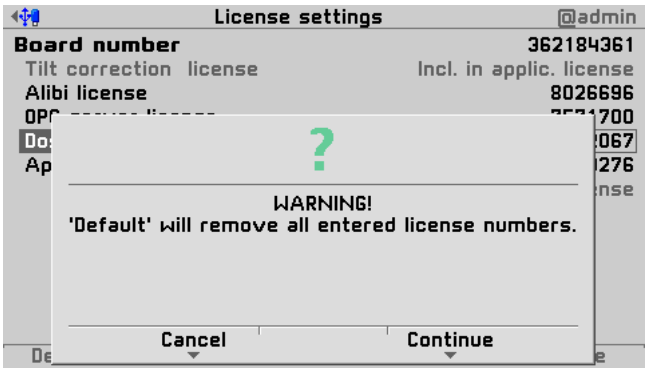
▶ To switch on demo mode, enter the corresponding license number (here: example for dosing) and confirm with the [Save] soft key (see following table).

▶ The desired dosing is carried out.

▶ To end demo mode, press the [End demo] soft key.

▷ The previously entered license number for demo mode is deleted. The previous board number and license number are rewritten again.

Product	License number	Name
PR 5500/91	1550459	Alibi memory license
PR 5500/92	3550167	OPC server license
PR 5500/93	9546082	Dosing license
PR 5500/xx	1786623	Universal license
PR 5500/81	0928277	Phase license
PR 5500/83	7961243	Batching license
PR 5500/86	8965110	IBC license
PR 5500/87	8395383	Basic tilt correction license



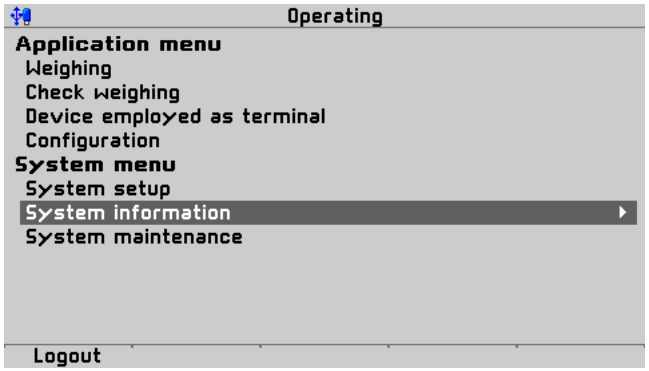
Restoring Factory Settings

▶ Press the [Default] soft key.

▷ A prompt window appears.

▶ Press the corresponding soft key.

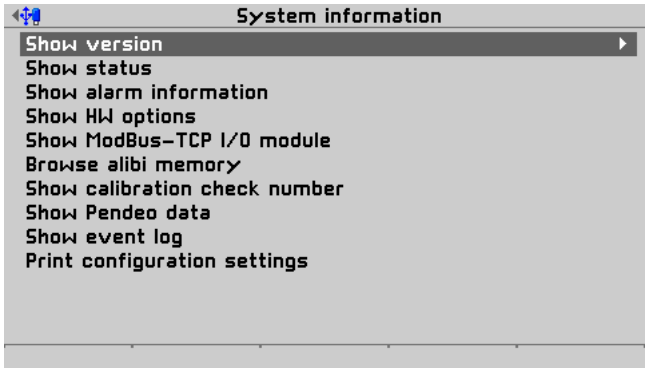
5.20 System Information



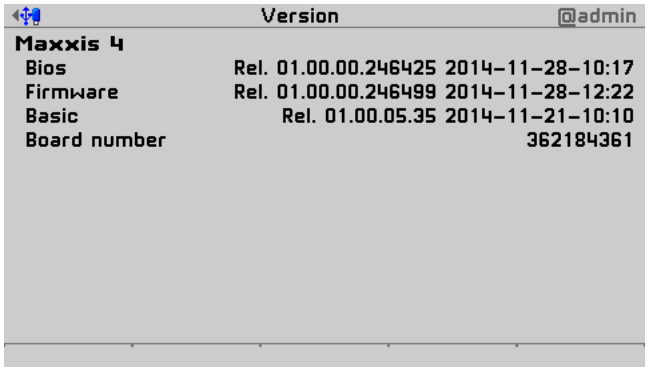
▶ Select and confirm [System information] using the cursor.

Unavailable applications/functions are grayed out.

5.20.1 Showing the Version



▶ Select and confirm [System information] - [Show version] using the cursor.



▷ The following information is shown:

[Bios]

BIOS release and creation date

[Firmware]

Firmware release and creation date

[Basic]

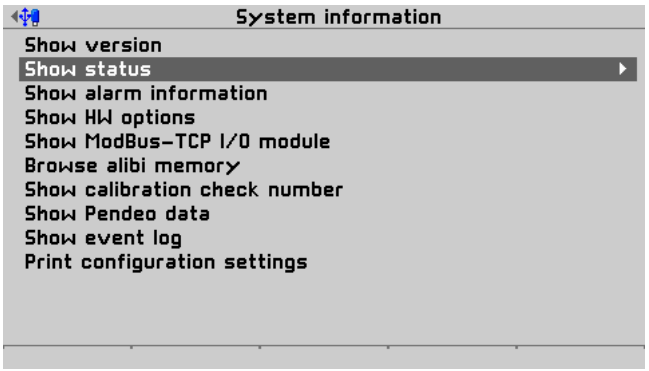
- Application name
- Application release and creation date

[Board number]

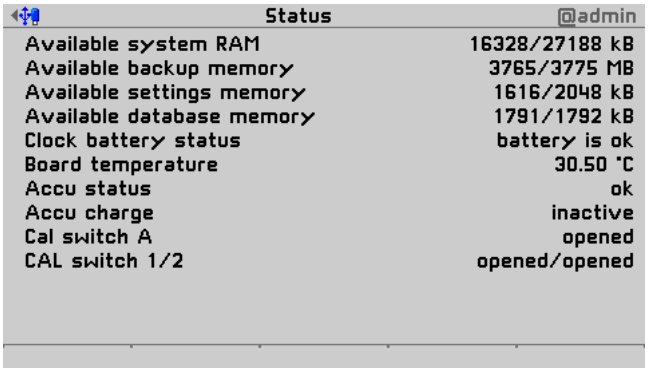
Nine-digit board number

▶ Press the ESC/EXIT key to return to the previous window.

5.20.2 Showing the Status



▶ Select and confirm [System information] - [Show status] using the cursor.



▷ This line shows the following device statuses:

[Available system RAM]

Free working system memory space

[Available backup memory]

Free memory for backups

[Available settings memory]

Free memory for settings

[Available database memory]

Free database memory

[Clock battery status]

Battery status

[board temperature]

Main board temperature

[Accu status]

Alarm at

- temperatures >60°C: The standby battery is too hot and is not charging. If this does not go away, then the ambient temperature must be checked, see Chapter 12.4.1.
- Overloading
- < min. voltage

If the error can not be corrected automatically, the following error message appears:

"Accu defective or not connected."

Replace a by Sartorius service or equivalent qualified personnel.

[Status battery capacity]

Display of charge strength: Aus, 60 mA, 300 mA

[CAL switch A/B]

Appears only if the required option is installed. Otherwise ‚n.a.' (not applicated) is displayed.

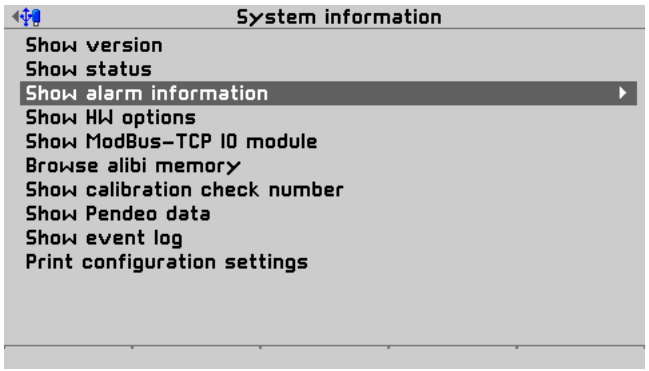
Status display

[CAL switch 1/2]

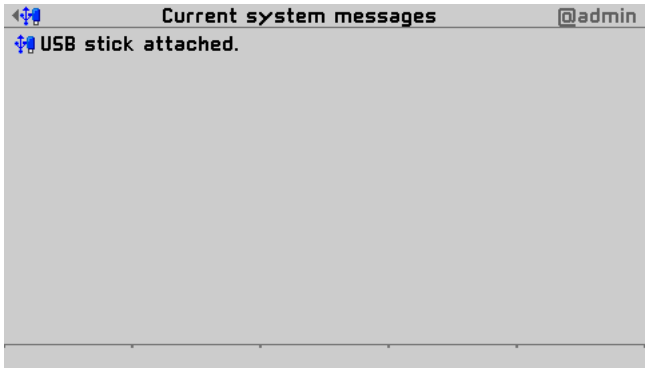
Status display

▶ Press the ESC/EXIT key to return to the previous window.

5.20.3 Showing Alarm information

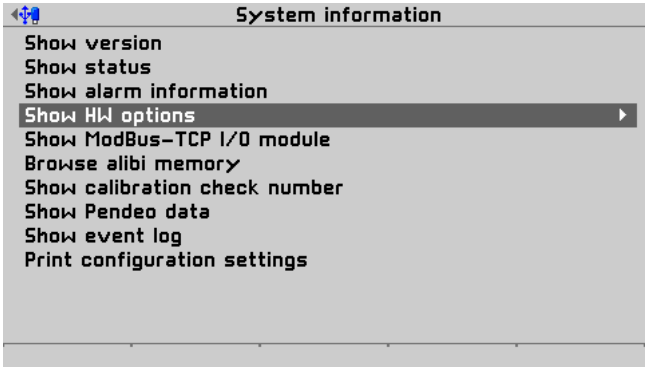


▶ Select and confirm [System information] - [Show alarm information] using the cursor.

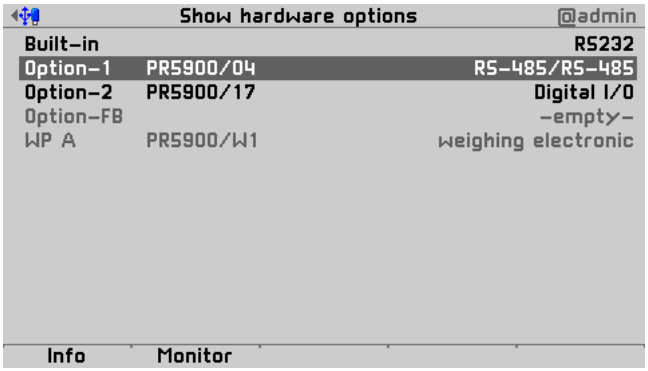


▷ Current system messages are shown.

5.20.4 Showing Hardware Options



▶ Select and confirm [System information] - [Show HW options] using the cursor.



▷ The installed options are displayed.

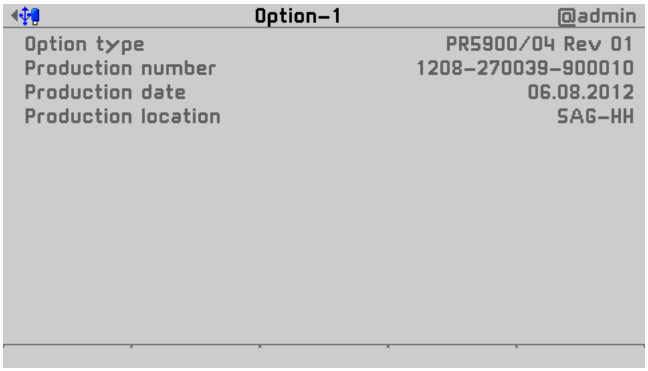
Optional cards not detected by the system are displayed as follows:

PR xxxx/xx Option not supported

Optional cards detected by the system but not identified are displayed as follows:

Information could not be read -assigned-

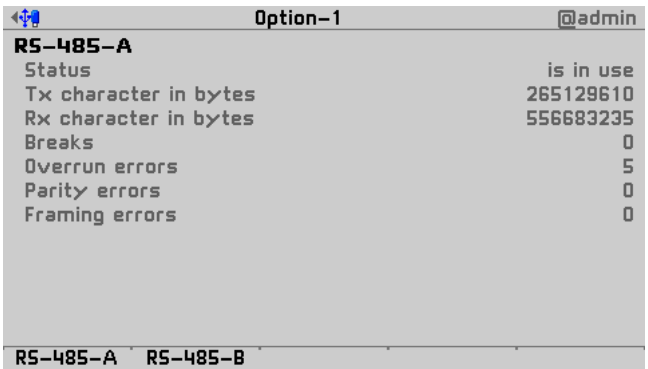
▶ Press the [Info] soft key.



▷ Information about the optional card is displayed.

▶ Press the ESC/EXIT key to return to the previous window.

▶ Press the [Monitor] soft key.



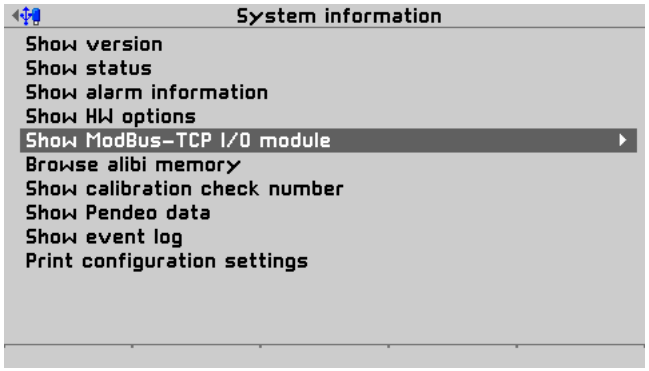
▷ The current values are displayed; example: Option-1 RS-485-A interface.

▶ Press the [RS-485-B] soft key to display the current values for the Option-1 RS-485-B interface.

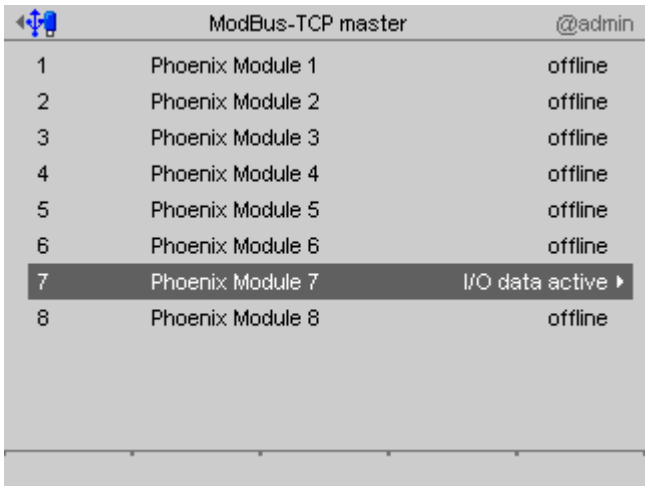
▶ Press the ESC/EXIT key to return to the previous window.

5.20.5 ModBus-TCP IO Modules

If the ModBus-TCP master is active in an application, the IO modules can be monitored under this menu item.

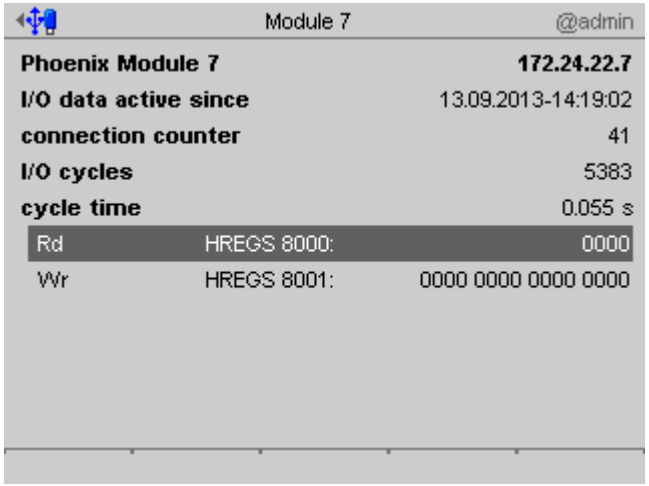


▶ Select and confirm [System information] - [ModBus-TCP I/O module] using the cursor.



▷ The modules and their status are displayed.

▶ Select and confirm the corresponding module.



▷ An info window appears.

[Phoenix Module 7]

IP-Adresse

[I/O data active since]

Date and time of last established connection.

[Connection counter]

Counts each connection in ascending order.

[I/O cycles]

Counts each data exchange in ascending order.

[Cycle time]

Indicates how often data is exchanged (in this case, every 0.055 s).

The following lines show the exchanged data with register number.

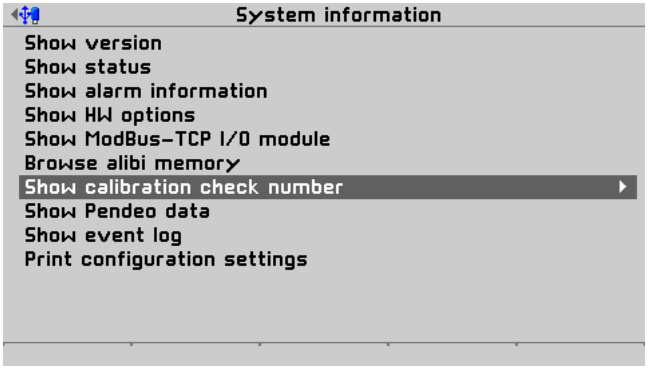
▶ Press the ESC/EXIT key to return to the previous window.

5.20.6 Browsing the Alibi Memory

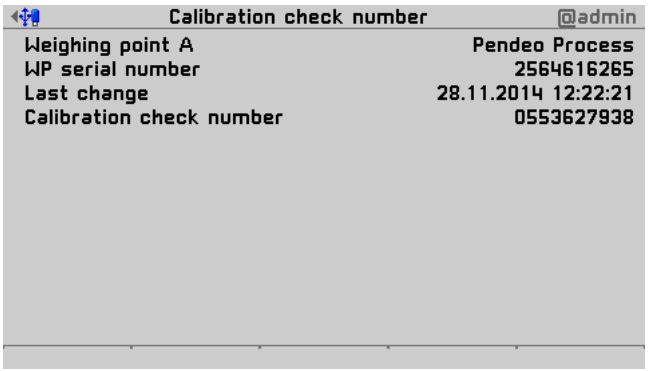
Note	A license is required for this function; see Chapter 5.19.8. For more information, see 6.2.

5.20.7 Showing Calibration Check Numbers

The overview of corresponding check numbers is displayed under this menu item.



▶ Select and confirm [System information] - [Show calibration check numbers] using the cursor.

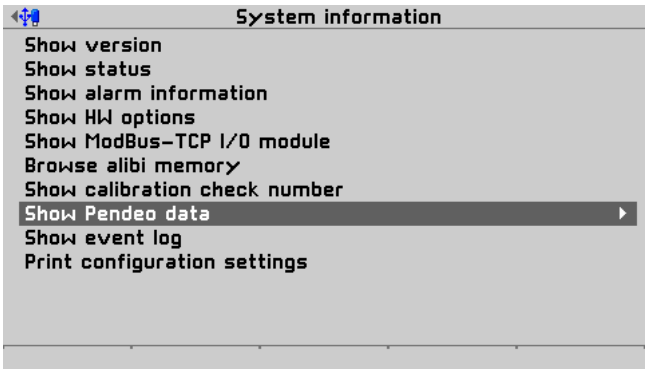


▷ The current check number for the weighing points is shown.

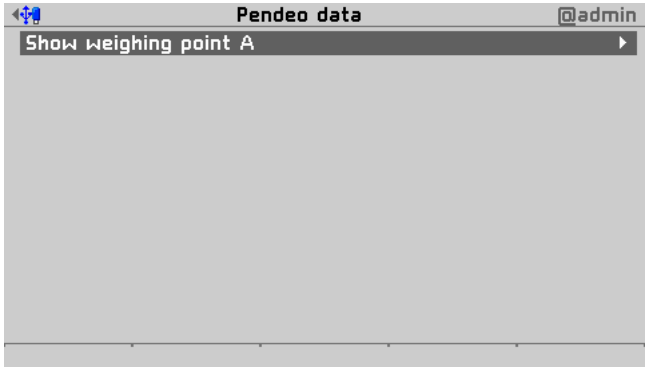
▶ Press the ESC/EXIT key to return to the previous window.

5.20.8 Showing Pendeo data

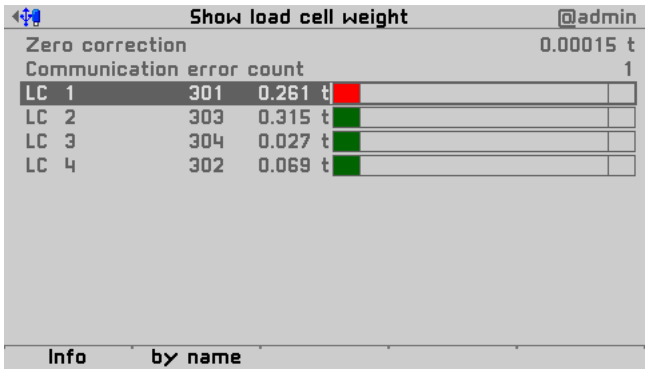
Information about the Pendeo load cells is displayed under this menu item.



▶ Select and confirm [System information] - [Show Pendeo data] using the cursor.



▶ Confirm the line.



▷ An information windows appears.

[Zero correction]

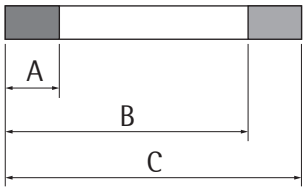
The zero point correction in use is displayed.

[Communication error count]

The communication errors (time frames exceeded) for the load cells are counted here in ascending order and displayed.

[WZ 1...n]

Bar graph display



The bar graph shows three areas:

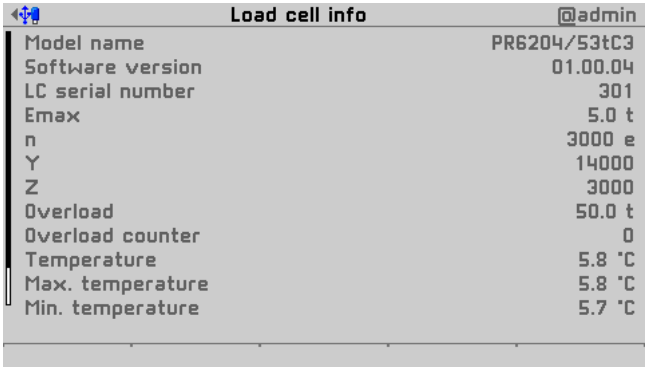
A = Dead load (can be changed by calibration)

B = Nominal load E_{max} (max. capacity of load cell) including dead load (load cell, cannot be changed)

C = Max. usable load including dead load (load cell, cannot be changed)

The colors have the following meanings:

- Red: Weight value is above maximum capacity (overload) or below -¼ d.
- Green: Weight value is within tolerances.
- Orange: Weight value is above nominal load E_{max} (max. capacity of load cell).

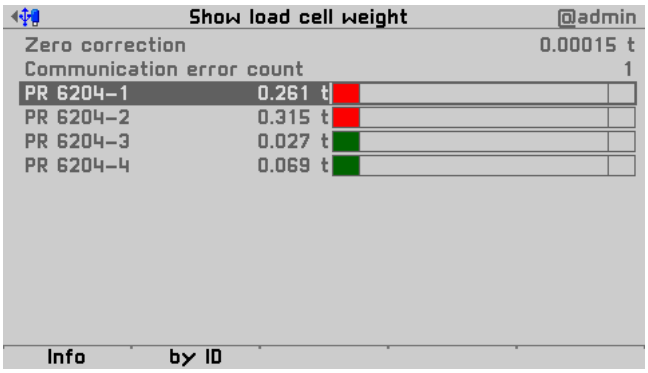


[Info]

▶ Select the desired load cell and press [Info] soft key.

▷ The load cell data are displayed:

Emax =	Max. capacity
n =	Max. resolution
Y =	Min. load cell verification interval
Z =	Factor for dead load output return after load
Overload =	Weight value above usable load
Overload counter =	Number of weight values above max. load The higher the number, the higher the probability of a faulty load cell.
Temperature	Current measured temperature
Max. temperature	Max. measured temperature
Min. temperature	Min. measured temperature
Max. weight value at	Date and time display Time of largest load on load cells
Max. weight value	Display



[by name]

If names have been assigned under [Calib]-[Assign load cell name], these names are displayed.

[by ID]

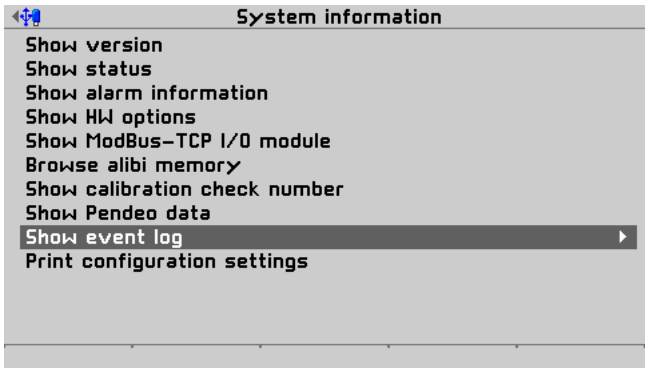
Show load cell item number.

▶ Press the ESC/EXIT key to return to the previous window.

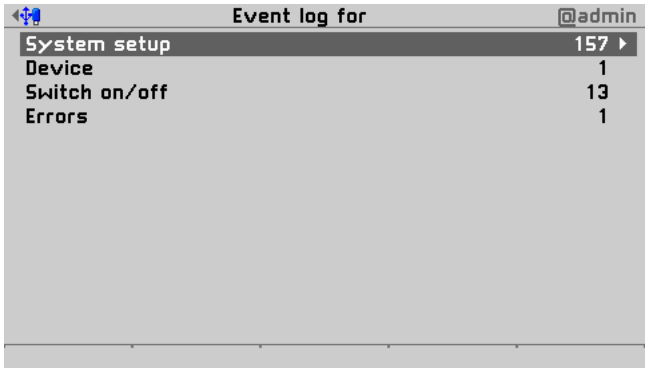
5.20.9 Displaying Event Log

Event logs for the following areas are displayed under this menu item:

- System setup (e.g., user login/logout, calibration, etc.)
- Device (e.g., search for Pendeo load cells)
- Switch on and off (e.g., switch on and off device)
- Errors

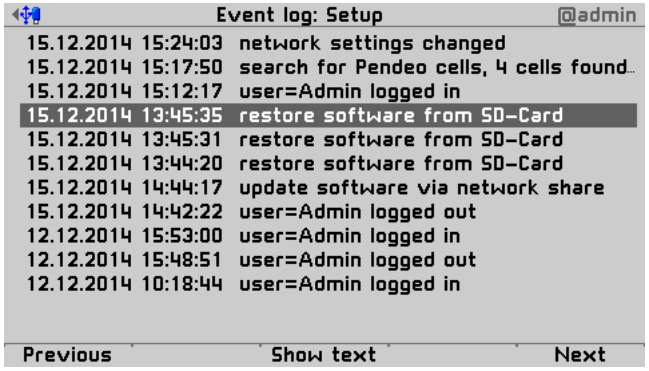


▶ Select and confirm [System information] - [Show event log] using the cursor.



▷ A selection window appears.

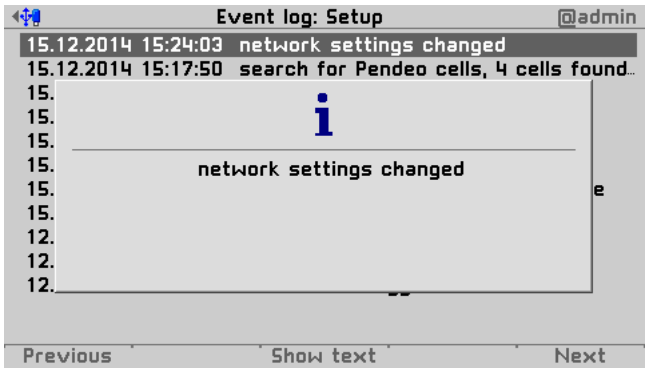
▶ Select and confirm the desired menu item.



▷ The protocol is displayed.

▶ Press [Previous]/[Next] soft key if necessary in order to scroll through the lines of the logs.

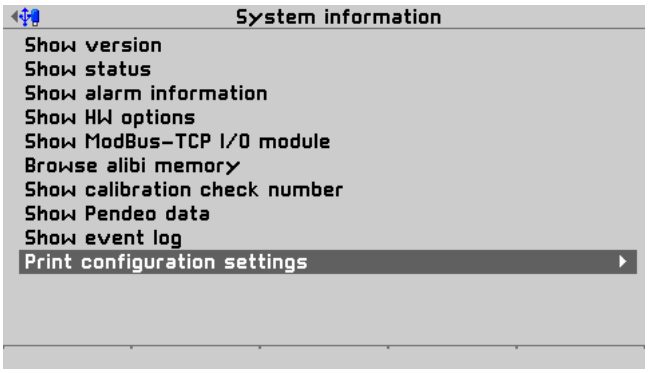
▶ Press [Show text] soft key to view the whole text.

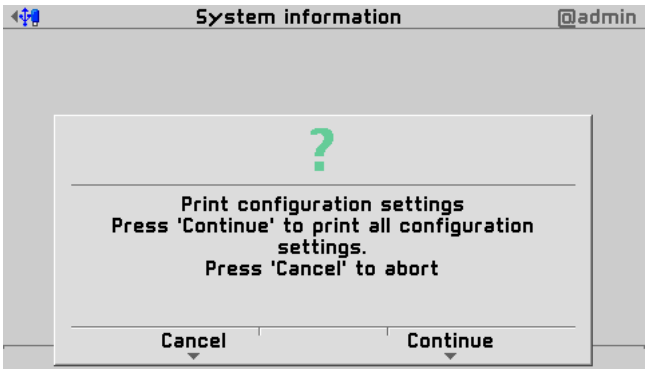


▷ An information window appears.

▶ Press the ESC/EXIT key to return to the previous window.

5.20.10 Printing Out Configuration Settings





Requirements

- Print parameters have been entered; see Chapter 5.19.1.4.

Note	If no printer has been connected, the message "No printer configured" appears.

- Printer is connected; see Chapter 5.19.1.4.

Procedure

▶ Select and confirm [System information] - [Print configuration settings].

▷ A prompt window appears.

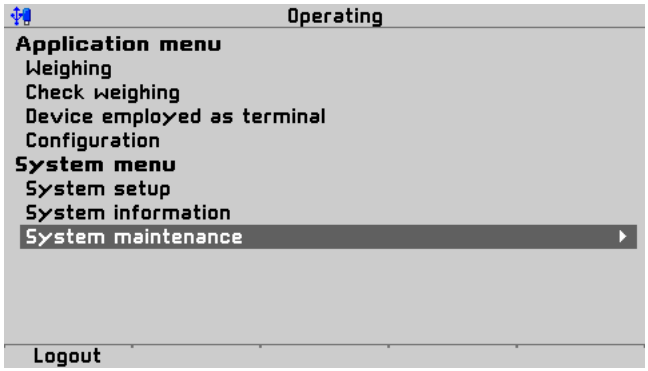
▶ Press the corresponding soft key.

▷ The configuration is printed out; for an example, see Chapter 13.1.

6 Extended Functions

6.1 System Maintenance

6.1.1 General Information



The following functions can be accessed via the [System maintenance] menu.

When user management is activated, the logged in user must have rights for the following:

- Complete system maintenance
- Importing (importing and restoring)
- Exporting (exporting and saving)

6.1.2 Saving to selected Media (Backup)

This function is required to back up the current configuration and/or device database to connected storage devices and/or network share connections.

This may be necessary for one of the following reasons:

- The current data is needed on another device.
- The configuration data is to be archived centrally.
- The configuration and/or database might be deleted accidentally.
- The configuration might be changed inadvertently.

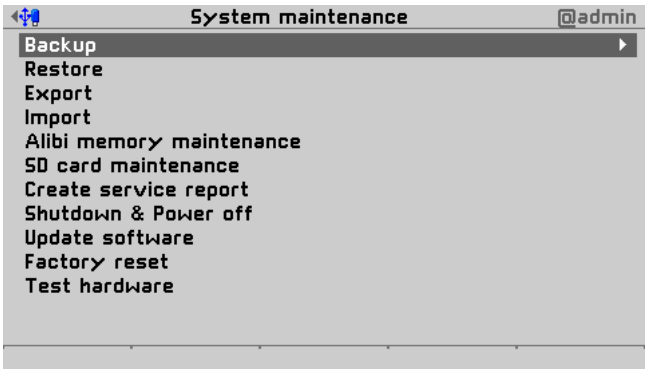
The saved data can be restored later.

The backup stores the data sets in a format that can only be restored via the „Restore“ function.

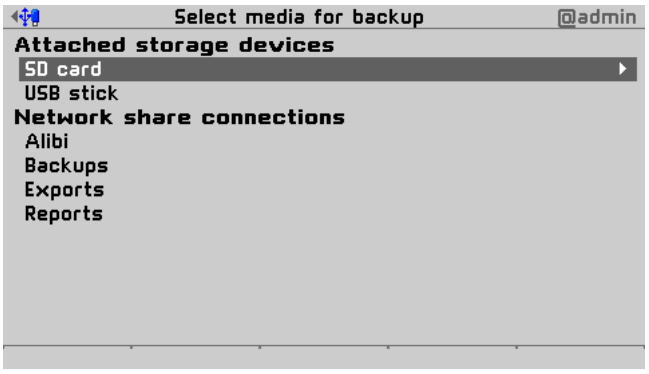
The backup can be saved:

- to the internal SD card,
- to a USB stick, or
- to the shared directories on the network.

Note	If ‚EXIT' key is pressed during backup stored data is deleted.



▶ Select and confirm [System maintenance]-[Backup].



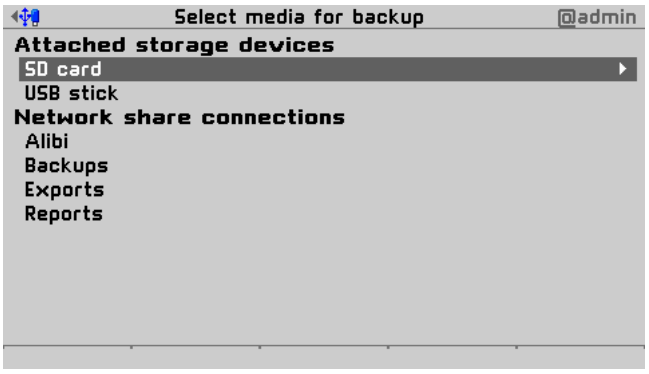
▷ A selection window shows the available storage media.

Note	Connections to the shared folders are only shown when these have been configured under [System setup] - [Network share connections].

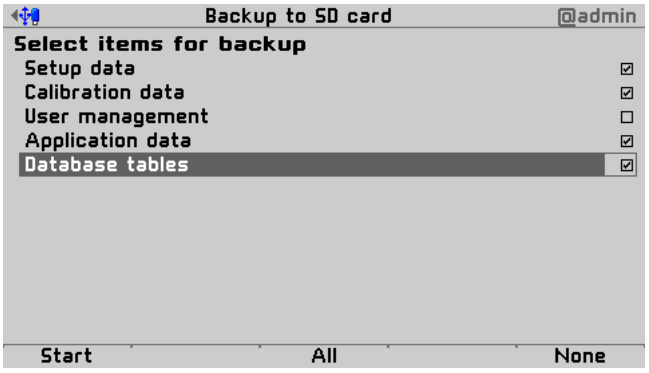
6.1.2.1 Saving to the SD Card (Backup)

The back-up is saved to the internal SD card in the event that it will be needed:

- on the same device, or
- on a replacement device.



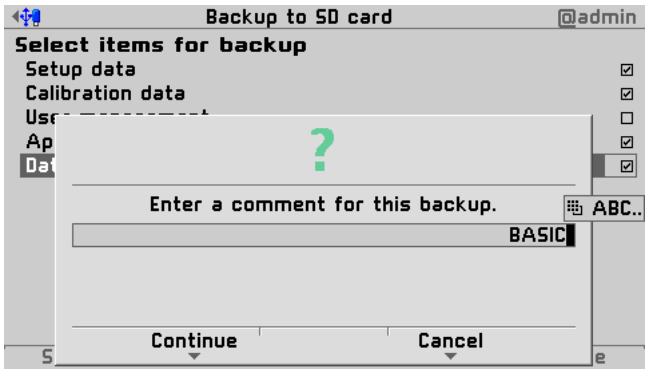
▶ Select and confirm [SD card].



▷ A selection window appears.

▶ Check the appropriate box ☑ or press the [All] soft key to select all possible items. Press the [None] soft key to de-select all selected items.

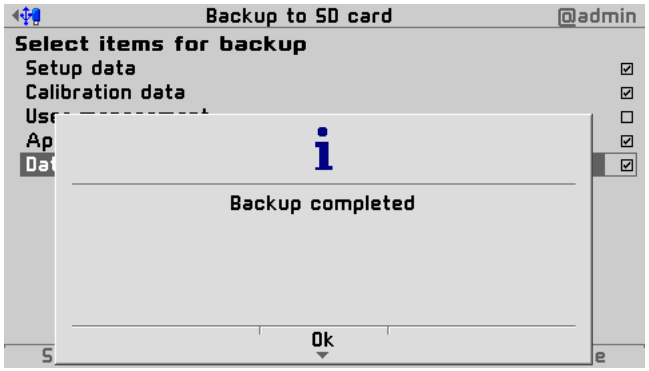
▶ Press the [Start] soft key to start the process.



▷ An input window appears.
▶ Enter a comment using the keyboard.
▶ Press the [Continue] soft key.
▷ The progress windows for the individual items appear and then disappear in sequence.

Note

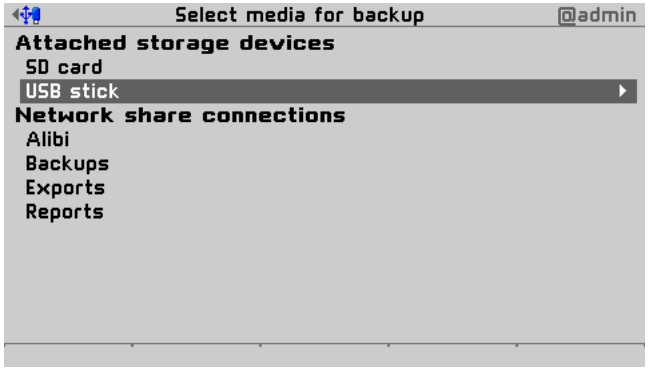
The data is stored to the SD card in the folder ‚backup':
/YYYYMMDDHHMMSS/
Where:
YYYYMMDDHHMMSS = time of the backup



▷ As soon as the process is complete, an info window appears.
▶ Press the [OK] soft key to return to the [System maintenance] menu.

6.1.2.2 Saving to the USB Stick (Backup)

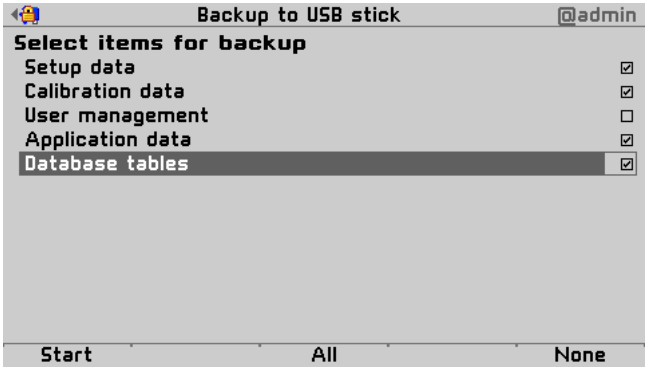
The backup is saved to a USB stick when archiving on a central data carrier is required.



▶ Select and confirm [USB stick].

Note

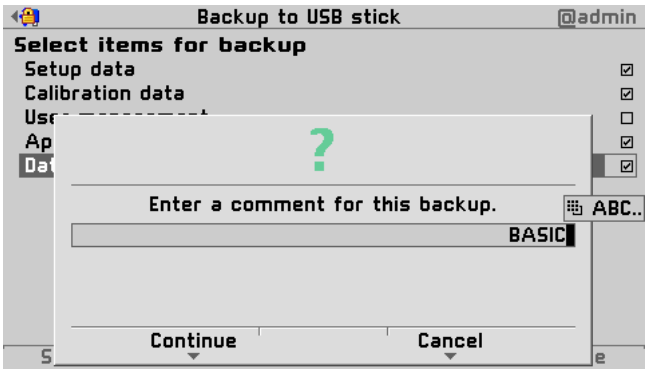
If no USB stick is plugged in, a warning appears.
▶ Plug in a USB stick and wait until the symbol appears in the info line.
▶ Press the [Retry] soft key.



▷ A selection window appears.

▶ Check the appropriate box ☑ or press the [All] soft key to select all possible items. Press the [None] soft key to de-select all selected items.

▶ Press the [Start] soft key to start the process.



▷ An input window appears.

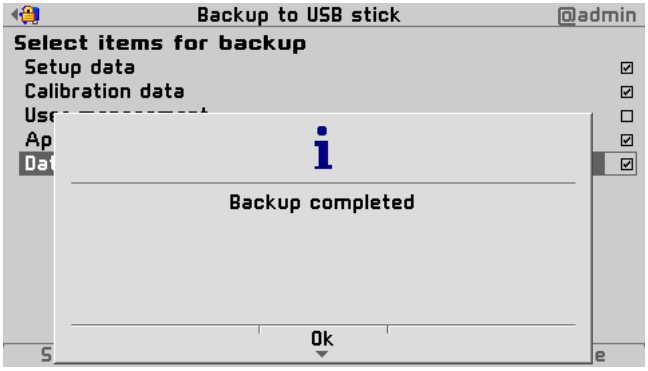
▶ Enter a comment using the keyboard.

▶ Press the [Continue] soft key.

▷ The progress windows for the individual items appear and then disappear in sequence.

Note

The data is stored to the USB stick in the folder ‚backup':
/pr5500/hostname/YYYYMMDDHHMMSS/
Where:
Hostname = device name from the network settings
YYYYMMDDHHMMSS = time of the backup



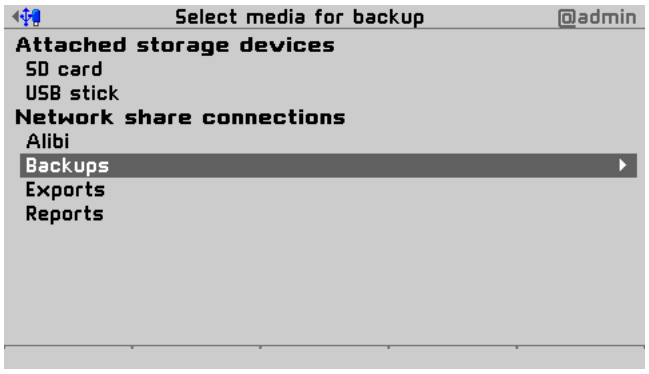
▷ As soon as the process is complete, an info window appears.

▶ Press the [OK] soft key to return to the [System maintenance] menu.

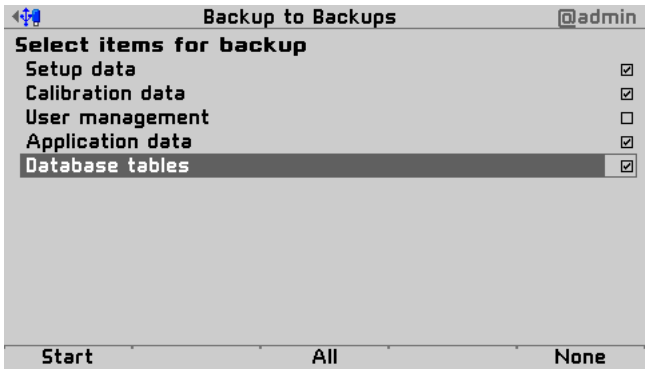
6.1.2.3 Saving to the shared Folder (Backup)

The backup is saved to a shared directory when archiving on a central data carrier is required.

Note	Connections to the shared folders are only shown when these have been configured under [System setup] - [Network share connections].



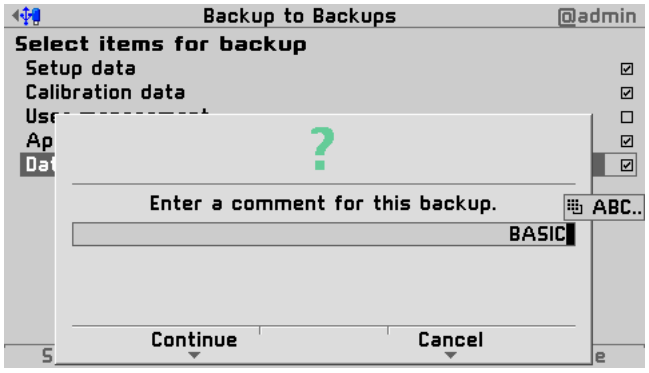
▶ Here: Select and confirm [Backups].



▷ A selection window appears.

▶ Check the appropriate box ☑ or press the [All] soft key to select all possible items. Press the [None] soft key to de-select all selected items.

▶ Press the [Start] soft key to start the process.



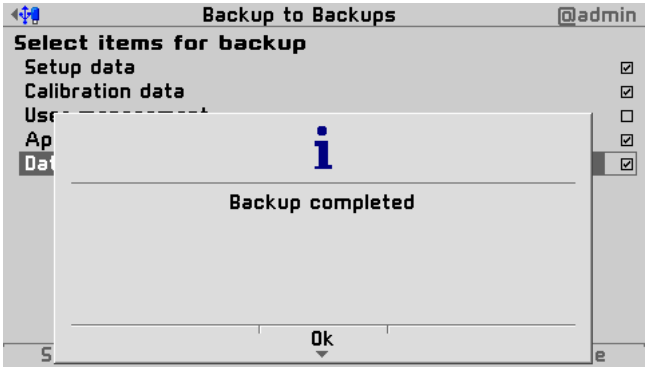
▷ An input window appears.

▶ Enter a comment using the keyboard.

▶ Press the [Continue] soft key.

▷ The progress windows for the individual items appear and then disappear in sequence.

Note	The data is stored to the network share connection in the folder ‚backups': /pr5500/hostname/YYYYMMDDHHMMSS/ Where: Hostname = device name from the network settings YYYYMMDDHHMMSS = time of the backup



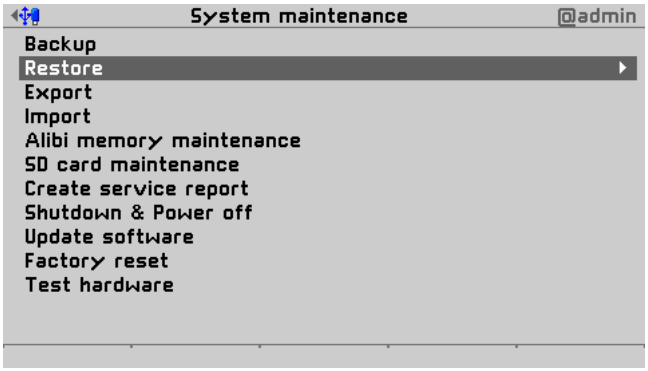
▷ As soon as the process is complete, an info window appears.

▶ Press the [OK] soft key to return to the [System maintenance] menu.

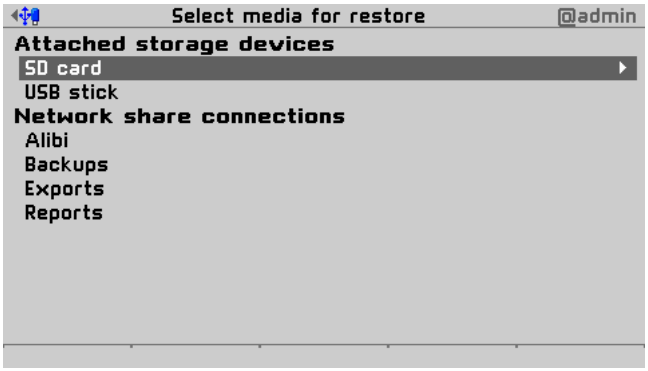
6.1.3 Restoring Backup Data from External Media

This function is required to restore backup data (see Chapter 6.1.2) from external media to device.

Important	During the restoring process, all data selected on the device is overwritten with the data from the backup. The following applies: - Restoring the setup data will replace all settings and therefore delete all settings made after the backup. - Restoring the calibration data will replace the current calibration and therefore delete all calibrations made after the backup. - Restoring the user management data will overwrite all users and therefore delete all users created after the backup. - Restoring the application data will overwrite all settings and therefore delete all settings made after the backup. - Restoring the database will overwrite all tables and entries in the database.



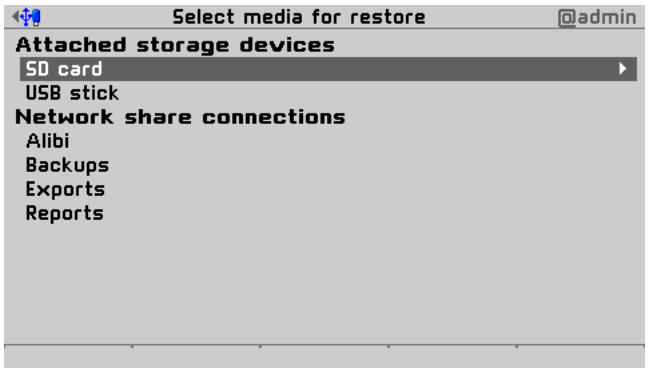
▶ Select and confirm [System maintenance]- [Restore] .



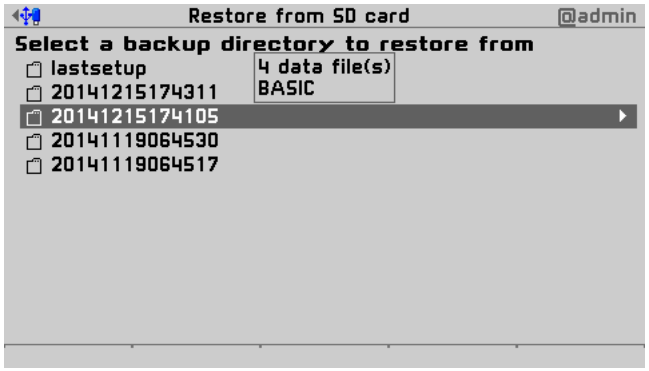
▷ A selection window with available storage media appears.

Note	The connections to the share folders are only displayed if previously configured under [System setup]- [Network share connections].

6.1.3.1 Restoring Backup Data from SD Card

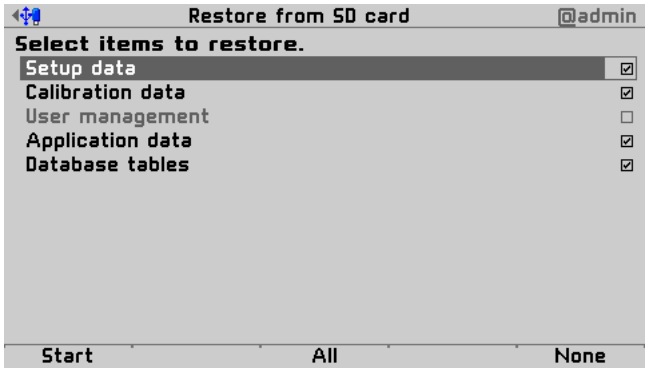


▶ Select and confirm [SD card].



▷ A selection window appears.

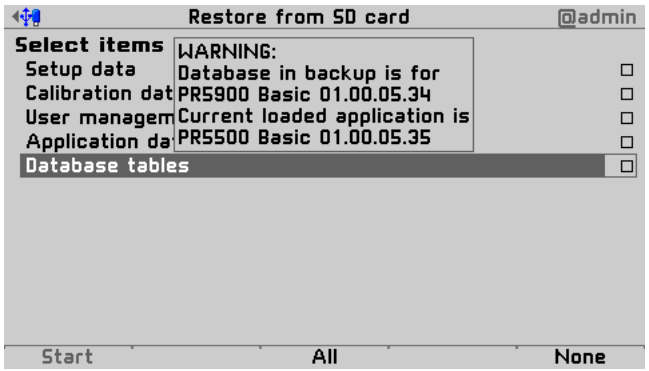
▶ Select and confirm the corresponding folder.



▷ A selection window appears.

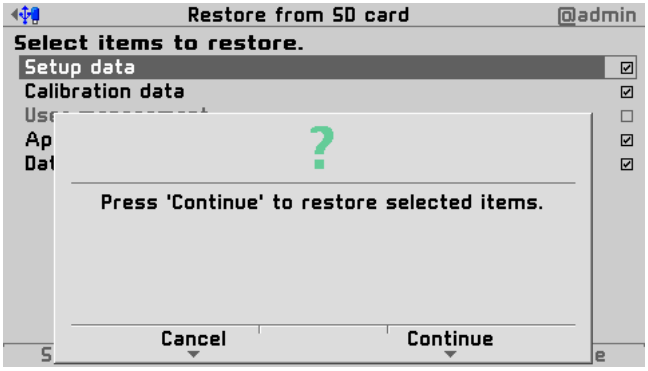
▶ Check the appropriate box ☑ or press the [All] soft key to select all possible items. Press the [None] soft key to de-select all selected items.

▶ Press the [Start] soft key to start the process.



▷ Should database tables stored on external media not be suitable for current application a warning message appears.

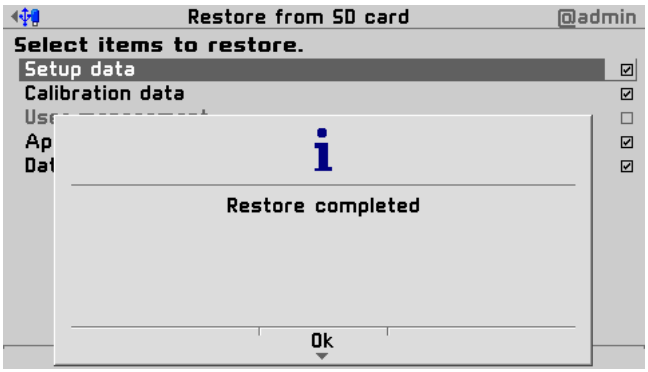
▶ If necessary, select a different backup directory or deselect „Database tables“.



▷ A prompt window appears.

▶ Press [Continue] soft key.

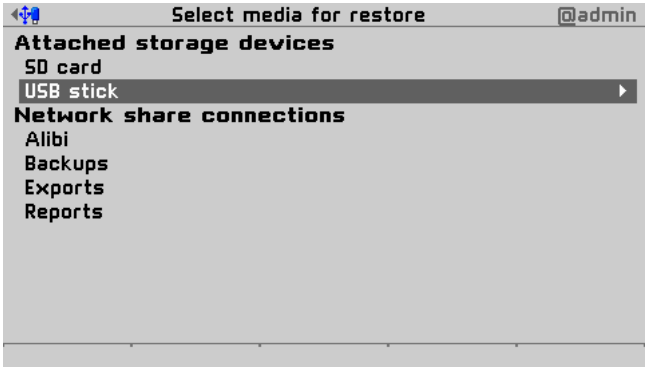
▷ The progress windows for the individual items appear and then disappear in sequence.



▷ As soon as the process is complete, an info window appears.

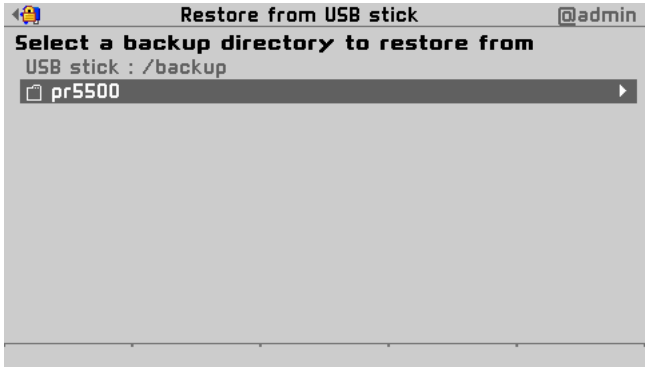
▶ Press the [OK] soft key to return to the [System maintenance] menu.

6.1.3.2 Restoring Backup Data from USB Stick



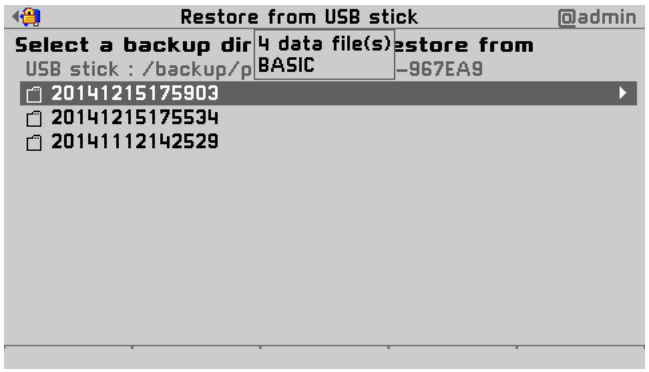
▶ Select and confirm [USB stick].

Note	If no USB stick is plugged in, a warning appears. ▶ Plug in a USB stick and wait until the symbol appears in the info line. ▶ Press the [Retry] soft key.



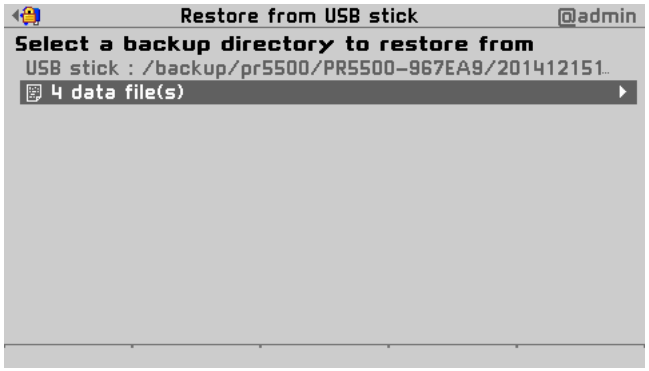
▷ The content appears.

▶ Navigate to, select and confirm the corresponding folder.



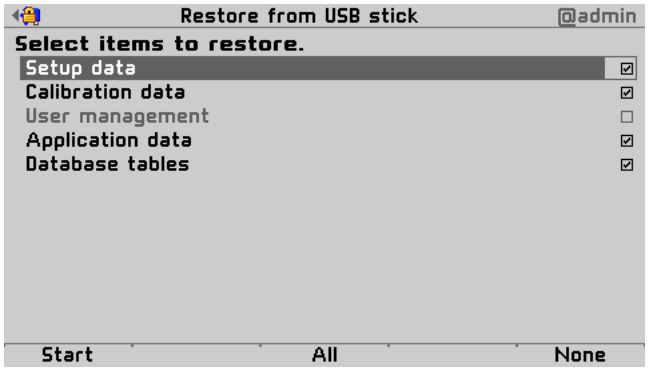
▷ A selection window appears.

▶ Select and confirm the corresponding folder.



▷ A selection window appears.

▶ Select and confirm the corresponding line.

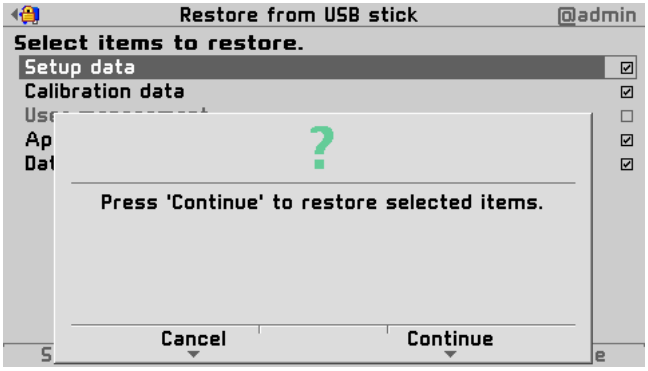


▷ A selection window appears.

▶ Check the appropriate box ☑ or press the [All] soft key to select all possible items. Press the [None] soft key to de-select all selected items.

▶ Press the [Start] soft key to start the process.

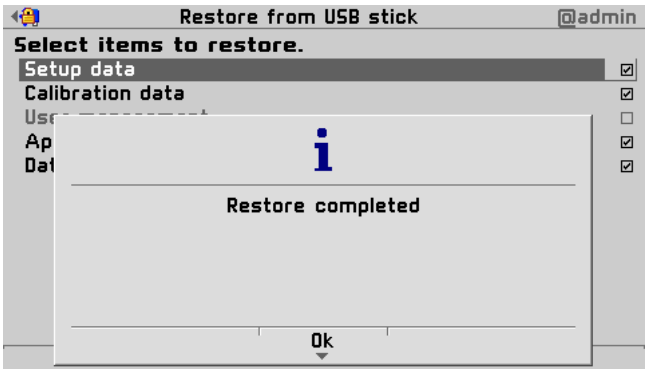
Note	Should database tables stored on external media not be suitable for current application a warning message appears, see Chapter 6.1.3.1. ▶ Select other backup folder if available.



▷ A prompt window appears.

▶ Press [Continue] soft key.

▷ The progress windows for the individual items appear and then disappear in sequence.

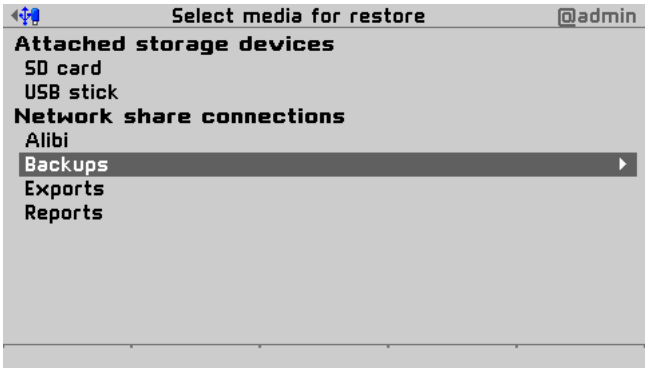


▷ As soon as the process is complete, an info window appears.

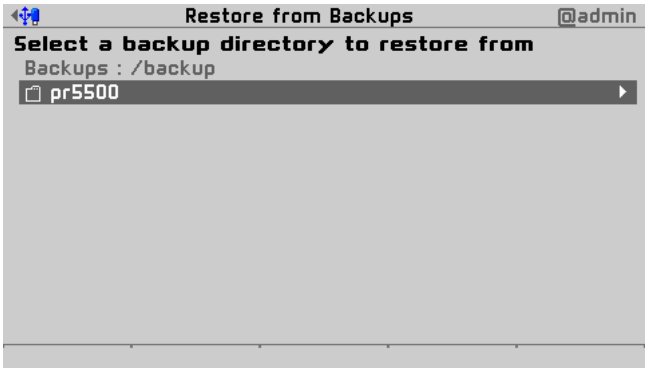
▶ Press the [OK] soft key to return to the [System maintenance] menu.

6.1.3.3 Restoring Backup Data from the shared Folder

Note	Connections to the shared folders are only shown when these have been configured under [System setup] - [Network share connections].

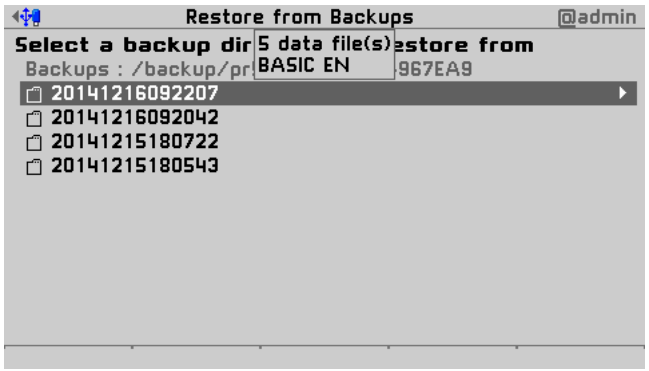


▶ Here: Select and confirm [Backups].



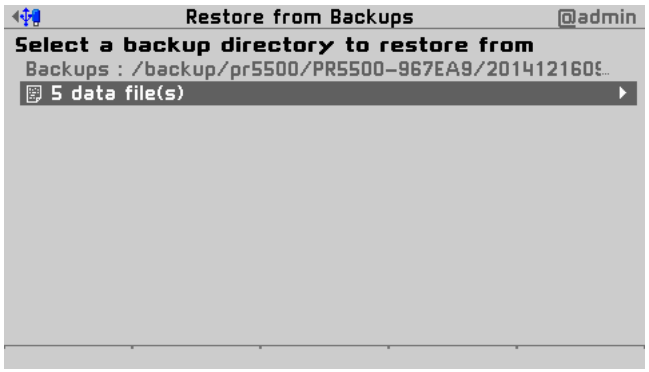
▷ The content appears.

▶ Navigate to, select and confirm the corresponding folder.



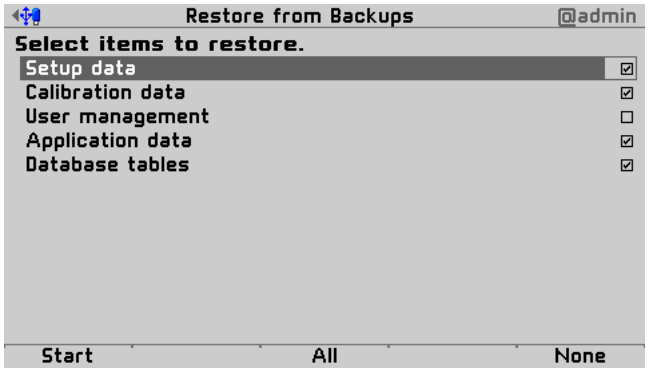
▷ A selection window appears.

▶ Select and confirm the corresponding folder.



▷ A selection window appears.

▶ Select and confirm the corresponding line.



▷ A selection window appears.

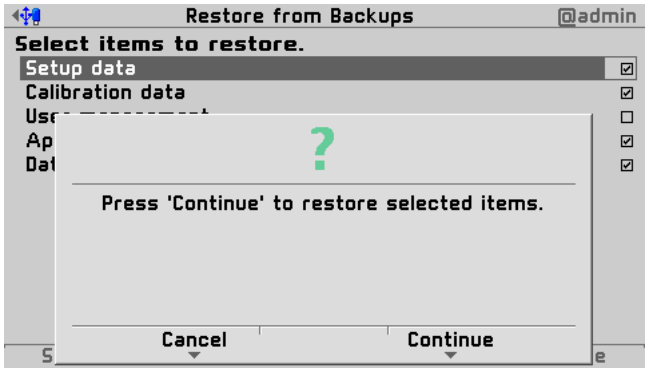
▶ Check the appropriate box ☑ or press the [All] soft key to select all possible items. Press the [None] soft key to de-select all selected items.

▶ Press the [Start] soft key to start the process.

Note

Should database tables stored on external media not be suitable for current application a warning message appears, see Chapter 6.1.3.1.

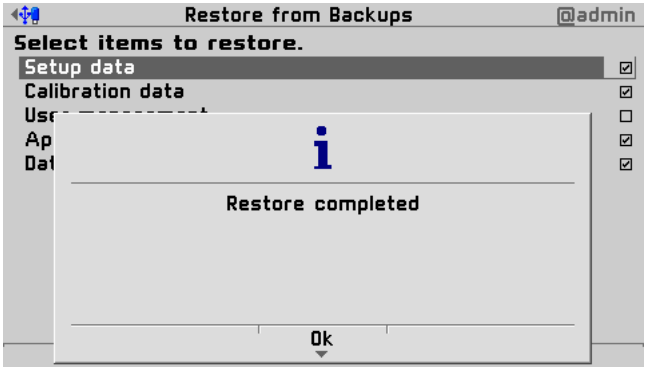
▶ Select other backup folder if available.



▷ A prompt window appears.

▶ Press [Continue] soft key.

▷ The progress windows for the individual items appear and then disappear in sequence.



▷ As soon as the process is complete, an info window appears.

▶ Press the [OK] soft key to return to the [System maintenance] menu.

6.1.4 Exporting to selected Media

This function is required to export device data to external storage media (e.g. processing of data base tables).

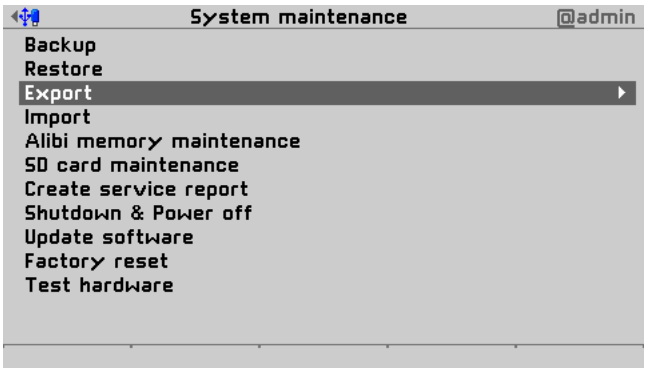
Note	Only data saved on the device using the [Save] soft key is exported.

Exported data is saved in XML format. These files can then be opened in an editor (e.g. Windows Notepad) for closer inspection, or to apply an import filter for XML processing software.

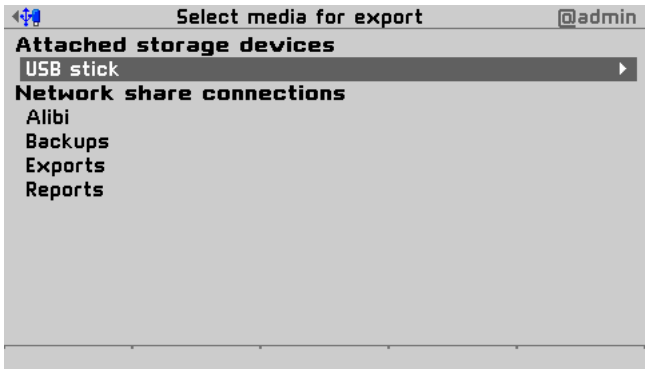
Examples

- Exporting all settings and compiling the host names assigned for the network settings to generate a list of device names.
- Exporting all calibration data to generate a report for all weighing points in the system.
- Exporting the database to generate statistics from the REPORT table for the batching software.
- Exporting the alibi memory to archive alibi entries for long-term storage.

Note	The export data is stored to external storage media in the following folder: /pr5500/hostname/YYYYMMDDHHMMSS/ Where: Hostname = device name from the network settings YYYYMMDDHHMMSS = time of the export



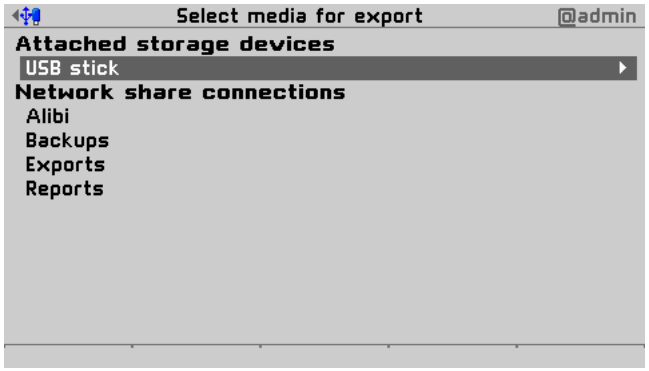
▶ Select and confirm [System maintenance]-[Export].



▷ A selection window with available storage media appears.

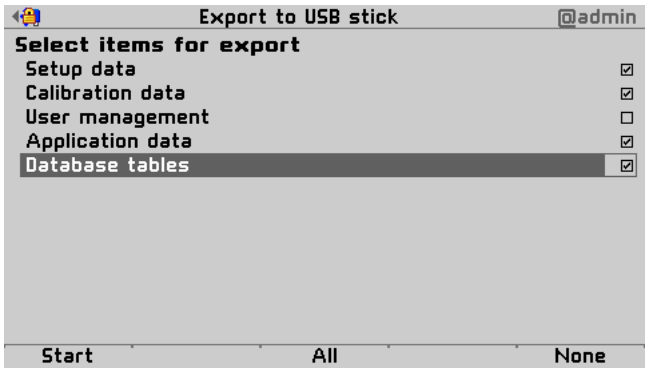
Note	The connections to the share folders are only displayed if previously configured under [System setup]- [Network share connections].

6.1.4.1 Exporting Data to USB Stick



▶ Select and confirm [USB stick].

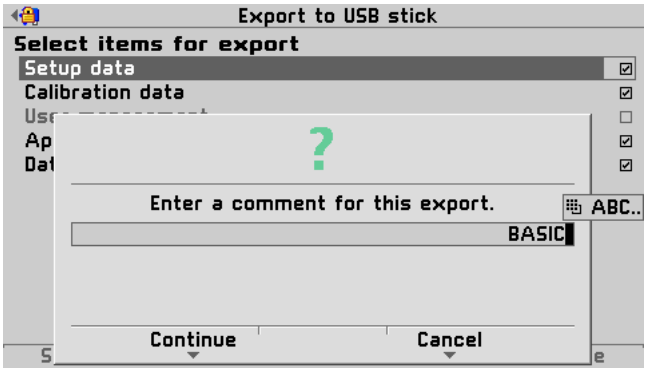
Note	If no USB stick is plugged in, a warning appears. ▶ Plug in a USB stick and wait until the symbol appears in the info line. ▶ Press the [Retry] soft key.



▷ A selection window appears.

▶ Check the appropriate box ☑ or press the [All] soft key to select all possible items. Press the [None] soft key to de-select all selected items.

▶ Press the [Start] soft key to start the process.

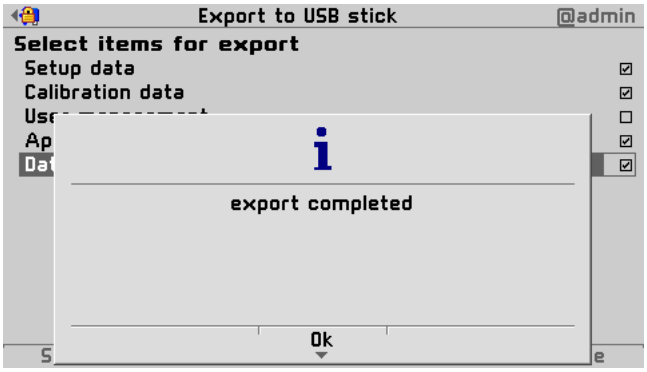


▷ An input window appears.

▶ Enter a comment using the keyboard.

▶ Press the [Continue] soft key.

▷ The progress windows for the individual items appear and then disappear in sequence.

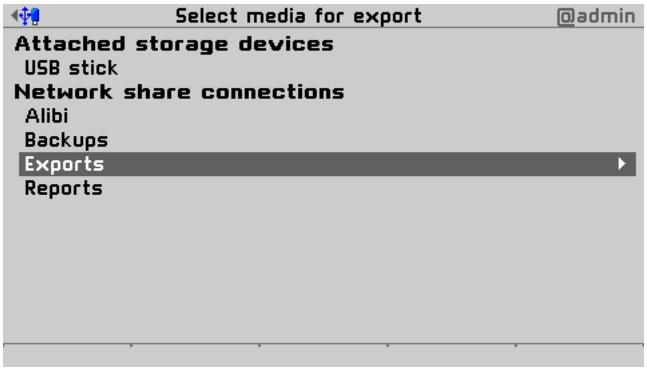


▷ As soon as the process is complete, an info window appears.

▶ Press the [OK] soft key to return to the [System maintenance] menu.

6.1.4.2 Exporting Data to shared Folder

Note	Connections to the shared folders are only shown when these have been configured under [System setup] - [Network share connections].

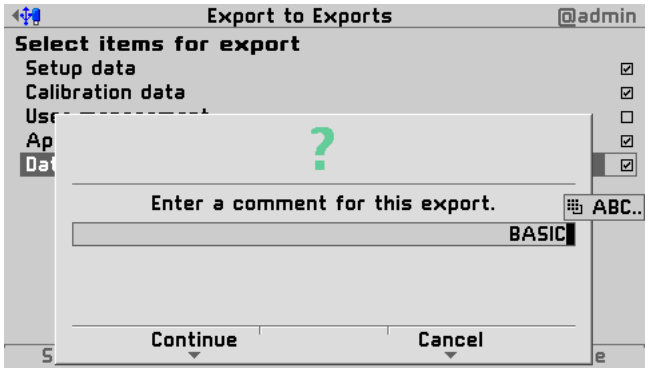


▶ Here: Select and confirm [Exports].

▷ A selection window appears.

▶ Check the appropriate box ☑ or press the [All] soft key to select all possible items. Press the [None] soft key to de-select all selected items.

▶ Press the [Start] soft key to start the process.

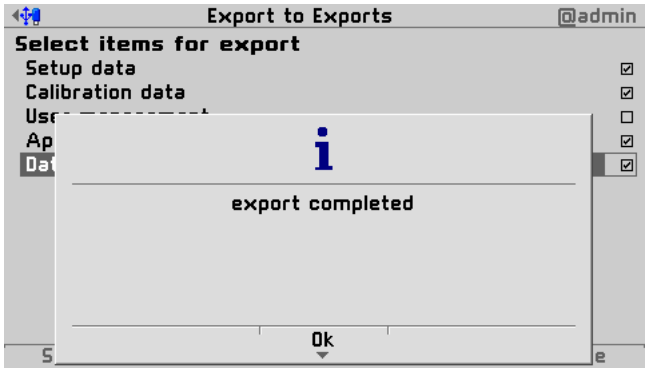


▷ An input window appears.

▶ Enter a comment using the keyboard.

▶ Press the [Continue] soft key.

▷ The progress windows for the individual items appear and then disappear in sequence.



▷ As soon as the process is complete, an info window appears.

▶ Press the [OK] soft key to return to the [System maintenance] menu.

6.1.5 Importing Data from External Media

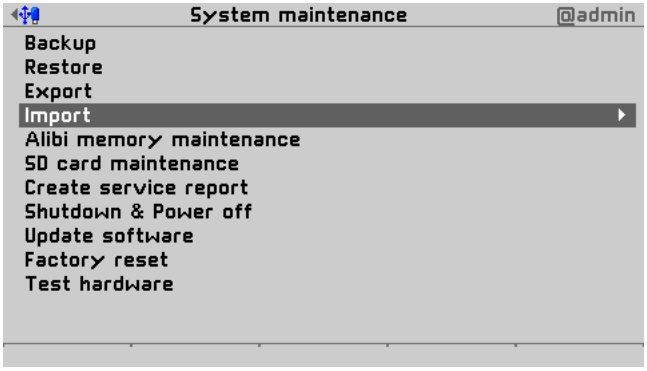
This function is required to import the exported data (or e.g. database tables generated by the PC) on device.

Data to be imported must be in XML format. The format must be the same as that of exporting. The data can be created manually (using e.g. Windows Notepad) or via software export with known format.

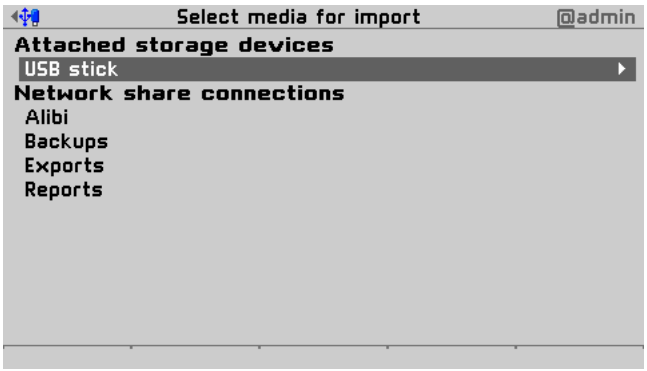
Examples

- Creating operating parameters to make the parameters for all devices available in the system.
- Providing data for user management to ensure the same access rights for all devices.
- Providing a new tare table every day for the BASIC application.

Important	During the importing process, only data present in the data set being imported will be overwritten. The following applies: - Importing the setup data will only replace the settings present in the data set. For example, if the data set only contains operating parameters, the other settings will remain unchanged. - Importing the calibration data will only replace the calibration values present in the data set. - Importing the user management data will only replace the settings present in the data set. For example, if the data set only contains new users, the existing users will remain unchanged. - Importing the application data will only replace the settings present in the data set. For example, if the data set only contains print parameters, the other settings will remain unchanged. - Importing the database tables will only replace the tables present in the data set. If the data set contains the tare table only, the text table will remain unchanged in the device; the tare table will be overwritten completely however.



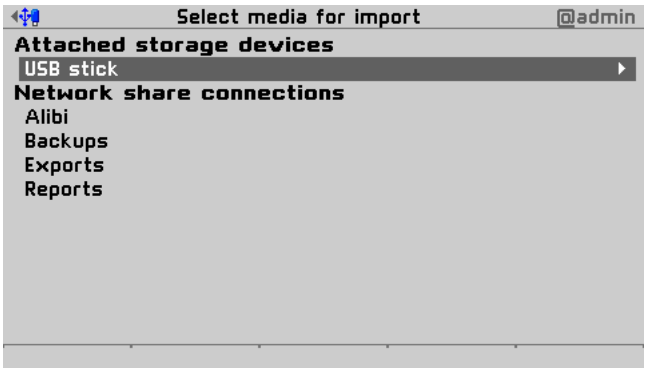
▶ Select and confirm [System maintenance]-[Import].



▷ A selection window with available storage media appears.

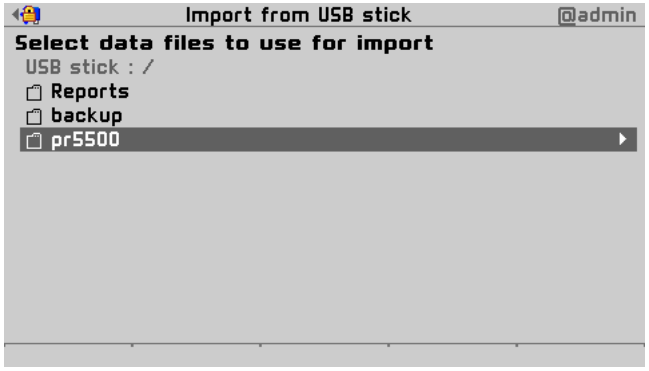
Note	The connections to the share folders are only displayed if previously configured under [System setup]- [Network share connections].

6.1.5.1 Importing Data from USB Stick



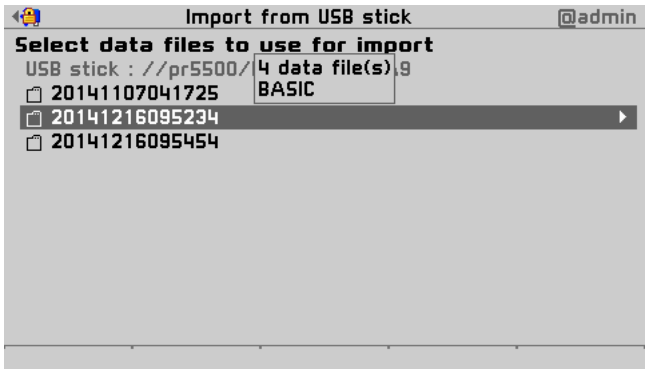
▶ Select and confirm [USB stick].

Note	If no USB stick is plugged in, a warning appears. ▶ Plug in a USB stick and wait until the symbol appears in the info line. ▶ Press the [Retry] soft key.



▷ The content appears.

▶ Navigate to, select and confirm the corresponding folder.

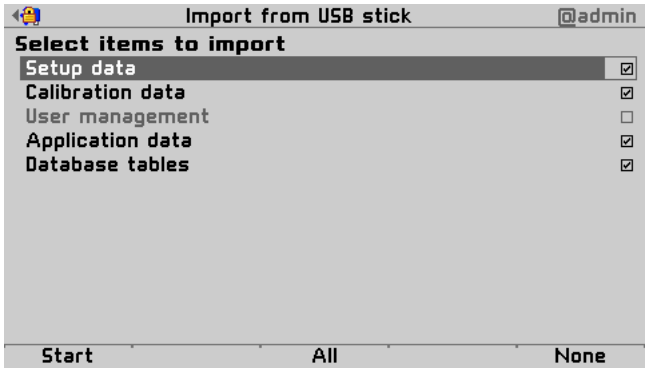


▷ A selection window appears.

▶ Select and confirm the corresponding folder.

▷ A selection window appears.

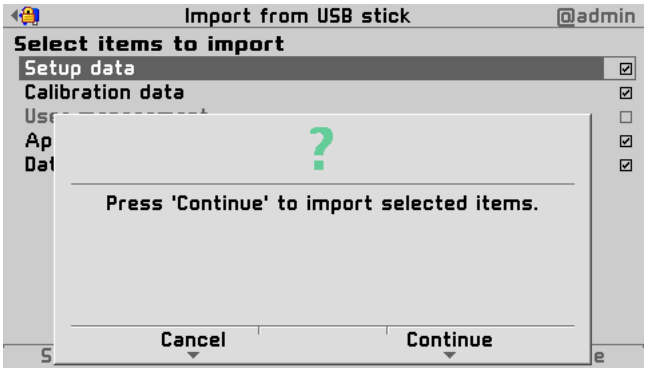
▶ Select and confirm the corresponding line.



▷ A selection window appears.

▶ Check the appropriate box ☑ or press the [All] soft key to select all possible items. Press the [None] soft key to de-select all selected items.

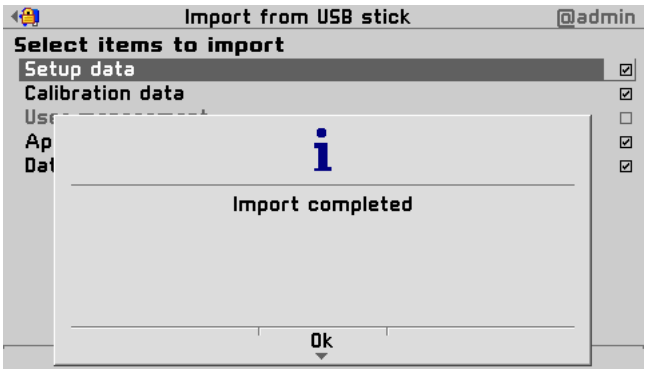
▶ Press the [Start] soft key to start the process.



▷ A prompt window appears.

▶ Press [Continue] soft key.

▷ The progress windows for the individual items appear and then disappear in sequence.

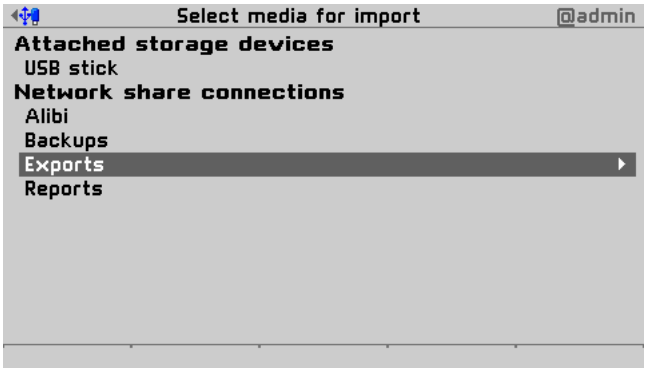


▷ As soon as the process is complete, an info window appears.

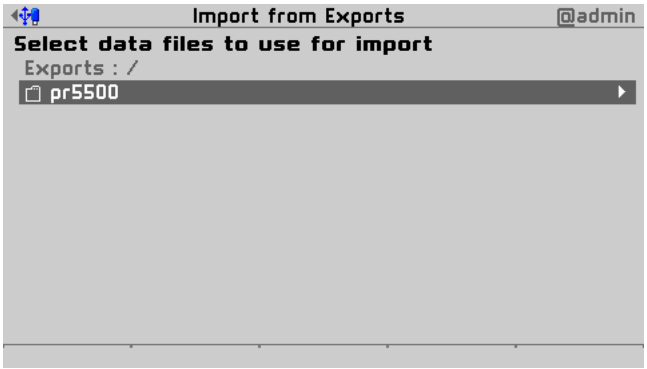
▶ Press the [OK] soft key to return to the [System maintenance] menu.

6.1.5.2 Importing Data from the shared Folder

Note	Connections to the shared folders are only shown when these have been configured under [System setup] - [Network share connections].

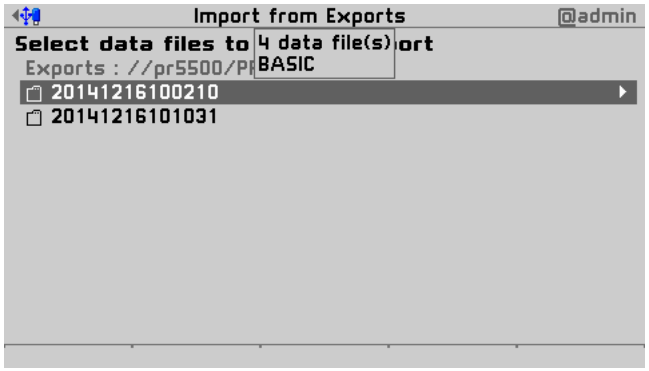


▶ Here: select and confirm [Exports].



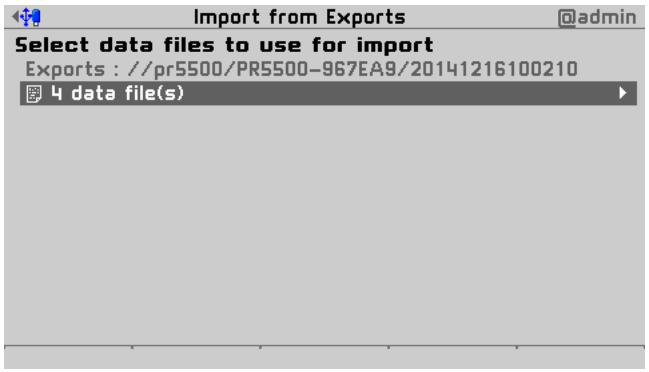
▷ The content appears.

▶ Navigate to, select and confirm the corresponding folder.



▷ A selection window appears.

▶ Select and confirm the corresponding folder.



▷ A selection window appears.

▶ Select and confirm the corresponding line.

▷ A selection window appears.

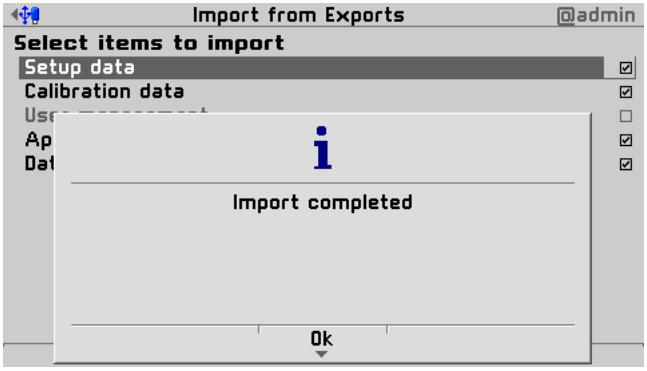
▶ Check the appropriate box ☑ or press the [All] soft key to select all possible items. Press the [None] soft key to de-select all selected items.

▶ Press the [Start] soft key to start the process.

▷ A prompt window appears.

▶ Press [Continue] soft key.

▷ The progress windows for the individual items appear and then disappear in sequence.



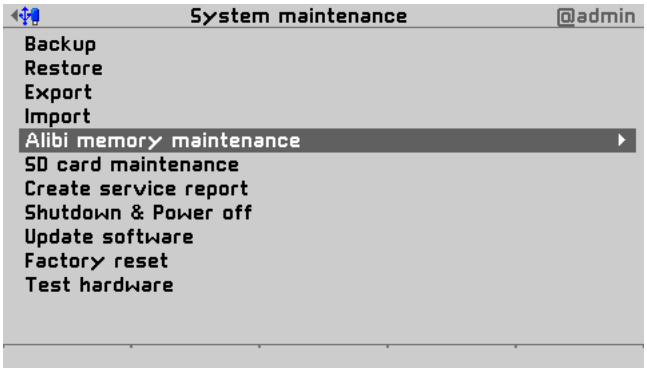
▷ As soon as the process is complete, an info window appears.

▶ Press the [OK] soft key to return to the [System maintenance] menu.

6.1.6 Alibi Memory Maintenance

This function is required to:

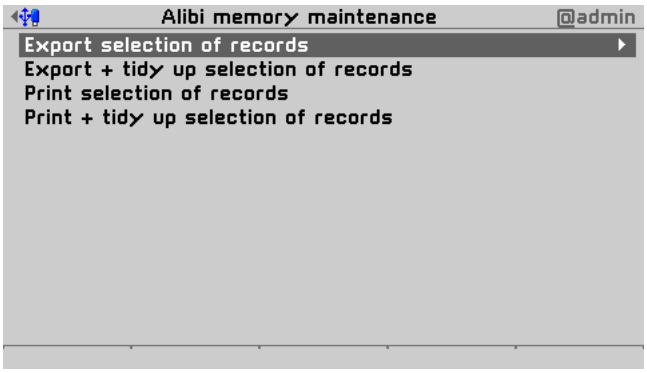
- export a selection of data records from the Alibi memory to a storage media in XML format.
- export a selection of data records from the Alibi memory to a storage media in XML format and then delete the data on the device.
- print a selection of data records.
- print a selection of data records and then delete the data on the device.



▶ Select and confirm [System maintenance]-[Alibi memory maintenance].

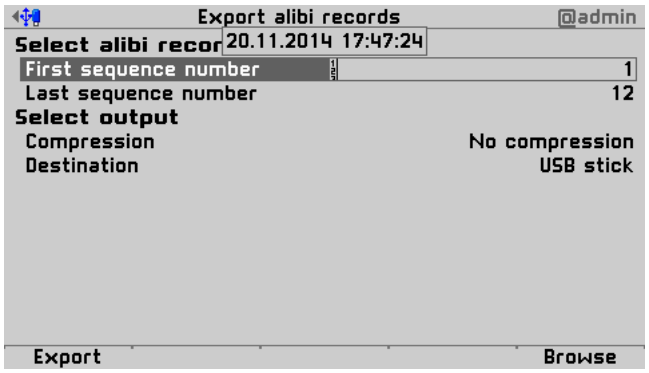
6.1.6.1 Exporting a Selection of Data Records

This function is required to export a selection of data records to a storage media.



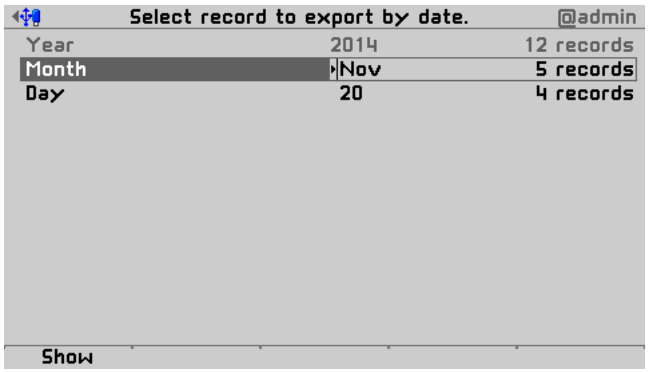
▷ A selection window appears.

▶ Select and confirm [Export selection of records].



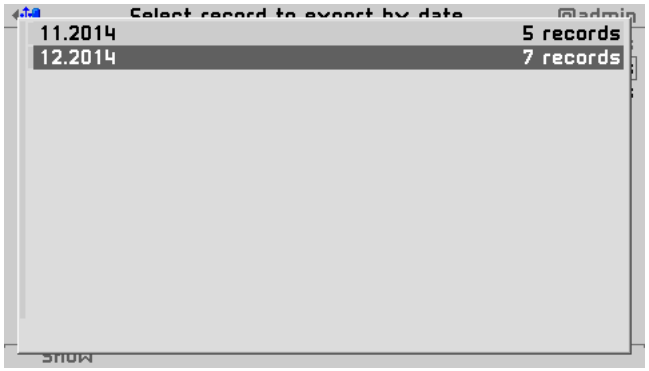
▷ A window appears, displaying the available export range.

▶ Press the [Browse] soft key to search for the first data record in the range.



▷ A selection window appears.

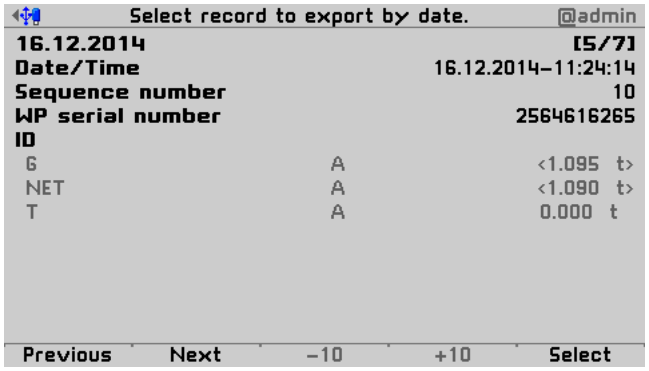
▶ Confirm the selection.



▷ A selection window appears.

▶ Confirm the selection.

▶ Press the [Show] soft key.



▶ Press the [Previous]/[Next] soft key to view the desired data record.

▶ Press the [Select] soft key to choose the first data record in the range.

▷ The window reappears, now displaying the sequence number for the selected data record (in this case, 10) under [First sequence number].

▶ Repeat the process to choose the last sequence number.

▶ Select the output parameters.

[Compression]

Selection:
<no compression>,
Best speed (reduced size by a factor of ~10, requires ~10 % longer),
Best compression (reduced size by a factor of ~20, requires ~70 % longer)

[Destination]

Selection:
USB stick,
network share connections (configured under [System setup] - [Network share connections])

▶ Press the [Export] soft key to start the export.

▷ A prompt window appears.

▶ Press the [Continue] soft key.

Note

If no USB stick is plugged in, a warning appears.

▶ Plug in a USB stick and wait until the symbol appears in the info line.

▶ Press the [Retry] soft key.

▷ The XML file is saved to the USB stick.

▷ As soon as the process is complete, an info window appears.

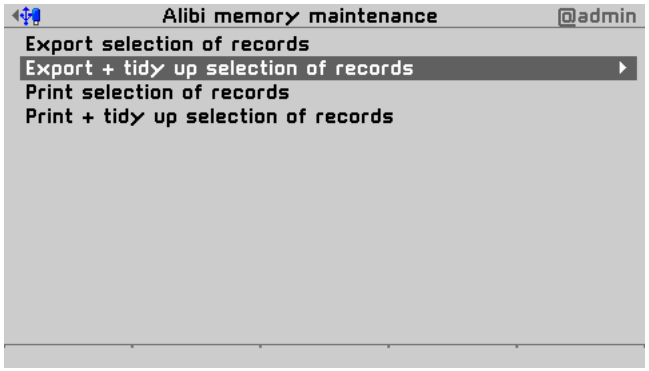
A progress window appears during the save process.

▶ Press the [OK] soft key to return to the [Alibi memory maintenance] menu.

Note	
	Storing on the USB stick The exported data is stored on the USB stick in the corresponding folder: /export/hostname/alibi Where hostname = device name from the network settings The file name is created from the date, time, sequence number range in brackets and the file extension, e.g., 2014032014332317 [27-139].xml. **Storing in network share connection** The exported data is stored in a network share connection. The file name is created from the date, time, sequence number range in brackets and the file extension, e.g., 2014032014332317 [27-139].xml.

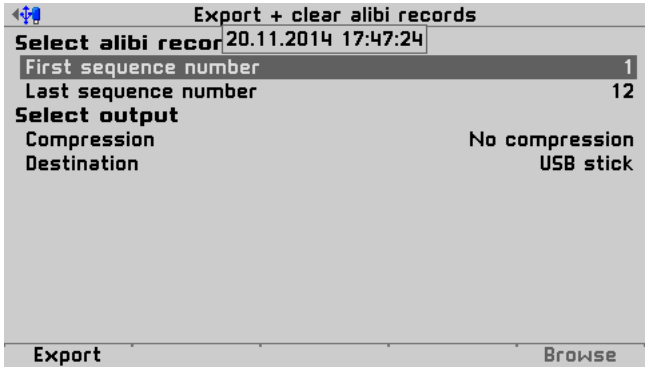
6.1.6.2 Exporting and Clearing a Selection of Data Records

This function is required to export a selection of data records to a storage media and then delete the data on the device.



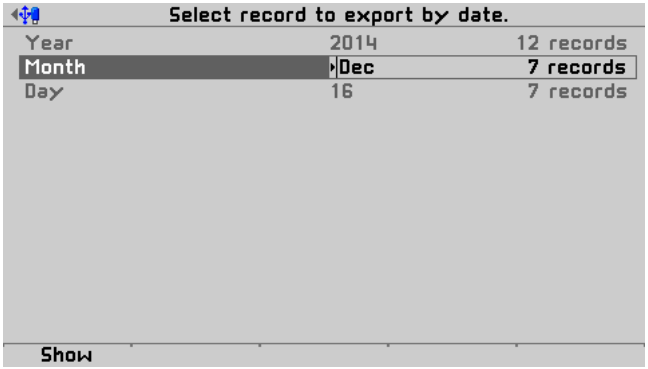
▷ A selection window appears.

▶ Select and confirm [Export + tidy up selection of records].



▷ A window appears, displaying the available export range. The first data record in the range is automatically selected and cannot be changed.

▶ Select [Last sequence number] and press the [Browse] soft key to search for the last data record in the range.



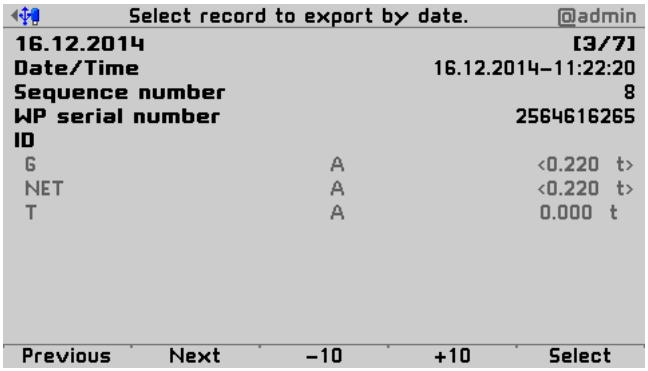
▷ A selection window appears.

▶ Confirm the selection.

▷ A selection window appears.

▶ Confirm the selection.

▶ Press the [Show] soft key.



▶ Press the [Previous]/[Next] soft key to view the desired data record.

▶ Press the [Select] soft key to choose the last data record in the range.

▷ The window reappears, now displaying the sequence number for the selected data record (in this case, 8) under [Last sequence number].

▶ Repeat the process to choose the last sequence number.

▶ Select the output parameters.

[Compression]

Selection:
<no compression>,
Best speed (reduced size by a factor of ~10, requires ~10 % longer),
Best compression (reduced size by a factor of ~20, requires ~70 % longer)

[Destination]

Selection:
USB stick,
network share connections (configured under [System setup] - [Network share connections])

▶ Press the [Export] soft key to start the export.

▷ A prompt window appears.

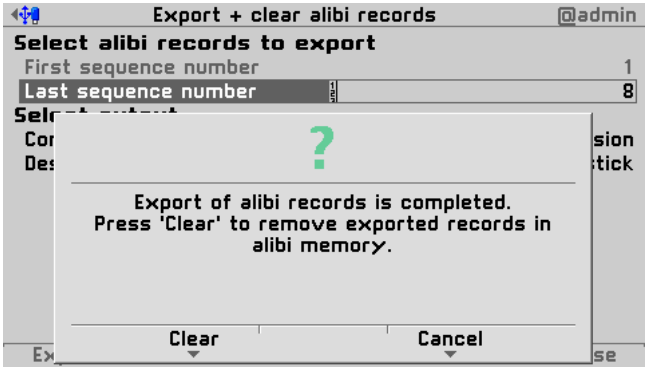
▶ Press the [Continue] soft key.

Note

If no USB stick is plugged in, a warning appears.

▶ Plug in a USB stick and wait until the symbol appears in the info line.

▶ Press the [Retry] soft key.



▷ The XML file is saved to the USB stick.

A progress window appears during the save process.

▷ A prompt window appears.

▶ Press the [Clear] soft key to remove the exported data records from the Alibi memory.

▷ As soon as the process is complete, an info window appears.

▶ Press the [OK] soft key to return to the [Alibi memory maintenance] menu.

Note

Storing on the USB stick

The exported data is stored on the USB stick in the corresponding folder:

/export/hostname/alibi

Where hostname = device name from the network settings

The file name is created from the date, time, sequence number range in brackets and the file extension, e.g., 2014032014332317 [27-139].xml.

Storing in network share connection

The exported data is stored in a network share connection.

The file name is created from the date, time, sequence number range in brackets and the file extension, e.g., 2014032014332317 [27-139].xml.

6.1.6.3 Printing a Selection of Data Records

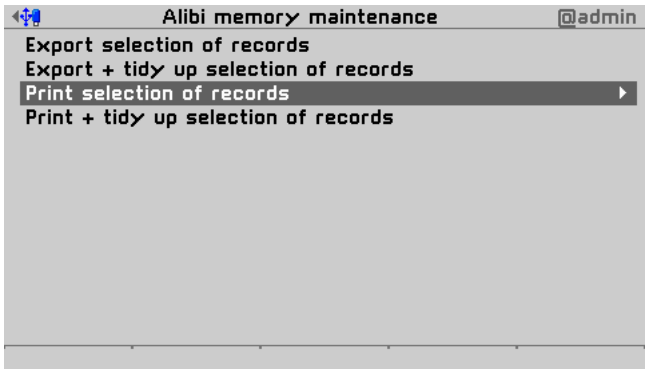
This function is required to print a selection of data records.

Requirements

Printer is connected; see 5.19.1.4

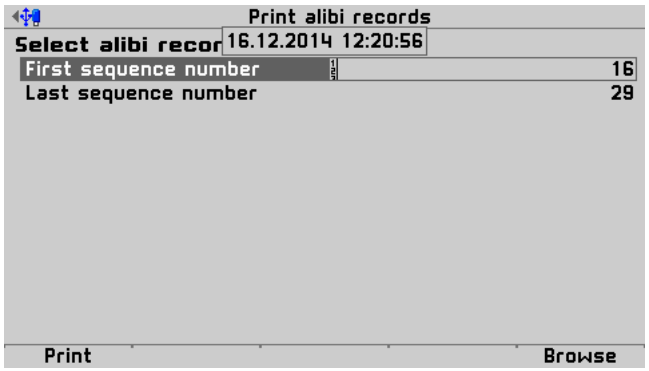
Note	If no printer has been connected, the message "No printer configured" appears.

Procedure



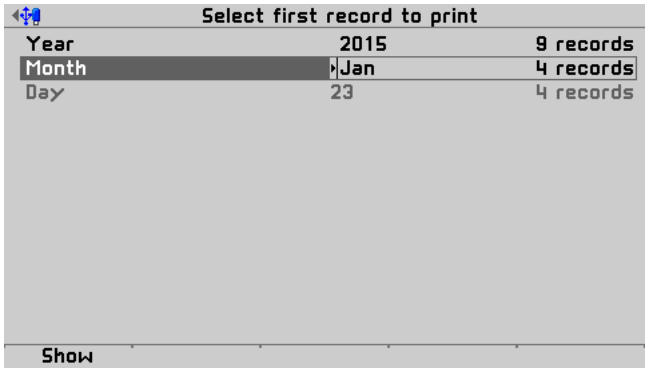
▷ A selection window appears.

▶ Select and confirm [Print selection of records].



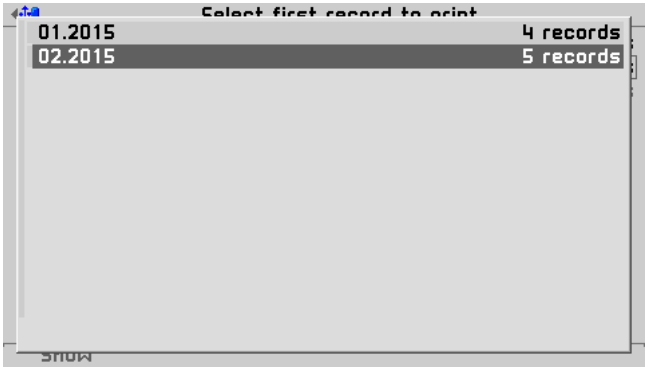
▷ A window appears, displaying the available print range.

▶ Press the [Browse] soft key to search for the first data record in the range.



▷ A selection window appears.

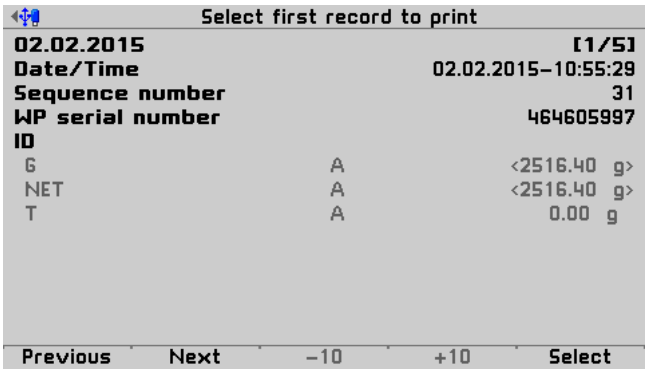
▶ Confirm the selection.



▷ A selection window appears.

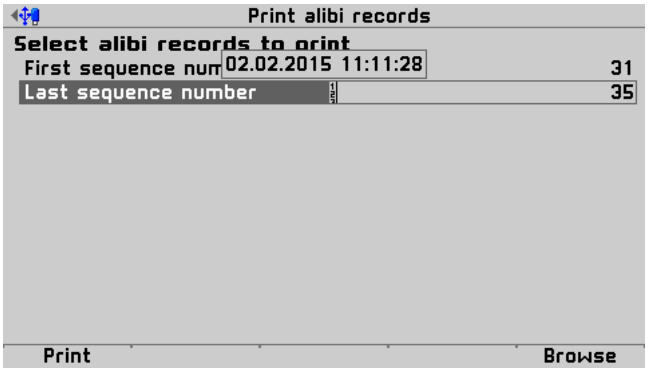
▶ Confirm the selection.

▶ Press the [Show] soft key.



▶ Press the [Previous]/[Next] soft key to view the desired data record.

▶ Press the [Select] soft key to choose the first data record in the range.

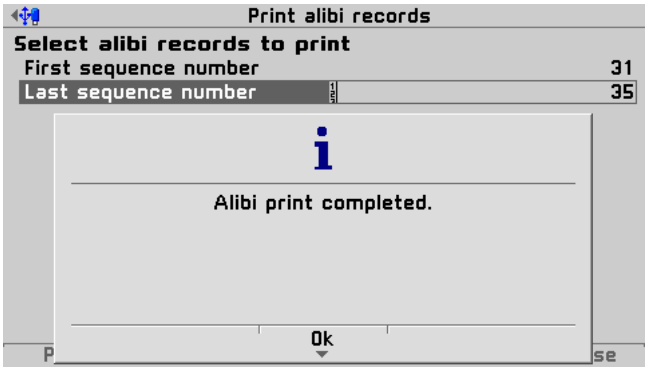


▷ The window reappears, now displaying the sequence number for the selected data record (in this case, 31) under [First sequence number].

▶ Repeat the process to choose the last sequence number.

▶ Press the [Print] soft key to start the printout.

▷ A progress window appears during the print process.



▷ As soon as the process is complete, an info window appears.

▶ Press the [OK] soft key to return to the [Alibi memory maintenance] menu.

For an example of an Alibi printout; see Chapter 13.3.

6.1.6.4 Printing and Clearing a Selection of Data Records

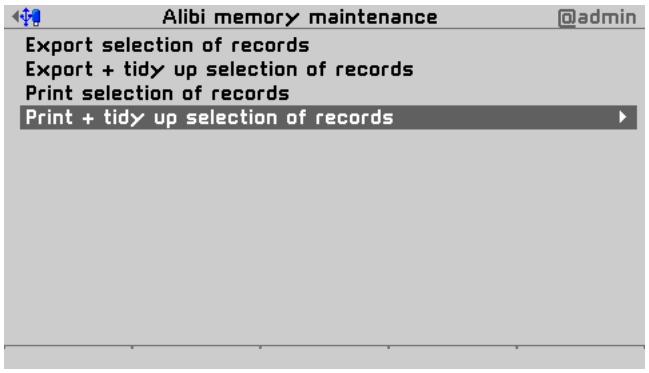
This function is required to print and clear a selection of data records.

Requirements

Printer is connected; see Chapter 5.19.1.4.

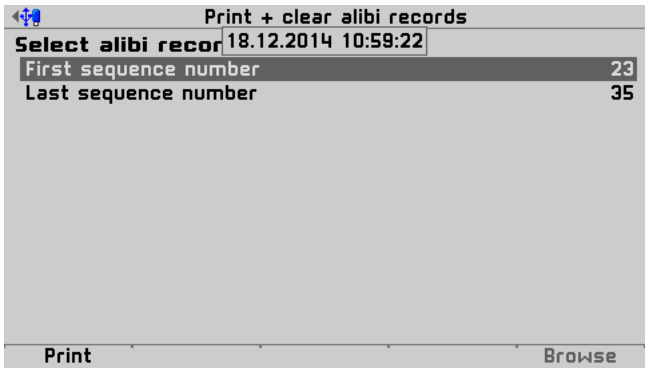
Note	If no printer has been connected, the message "No printer configured" appears.

Procedure

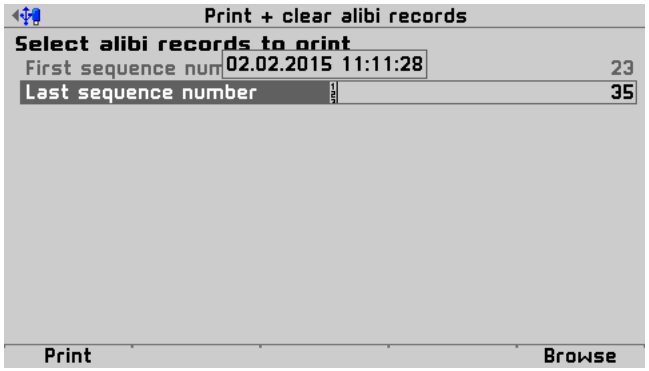


▷ A selection window appears.

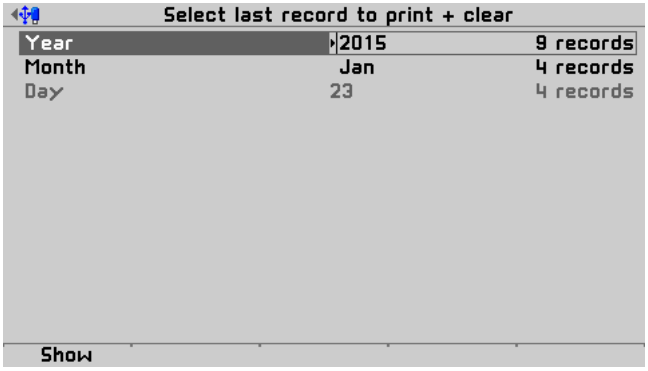
▶ Select and confirm [Print + tidy up selection of records].



▷ A window appears, displaying the available print range. The first data record in the range is automatically selected and cannot be changed.

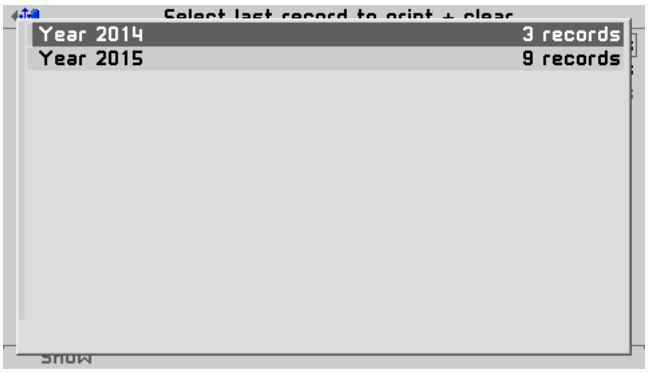


▶ Press the [Browse] soft key to search for the last data record in the range.



▷ A selection window appears.

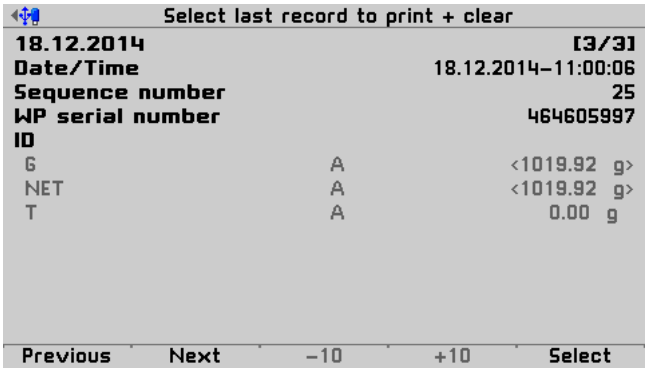
▶ Confirm the selection.



▷ A selection window appears.

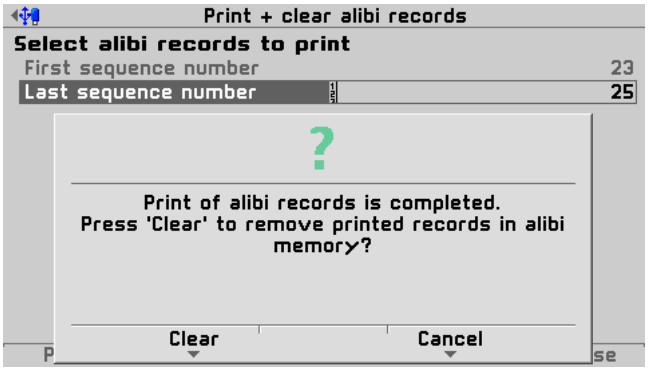
▶ Confirm the selection.

▶ Press the [Show] soft key.



▶ Press the [Previous]/[Next] soft key to view the desired data record.

▶ Press the [Select] soft key to choose the last data record in the range.



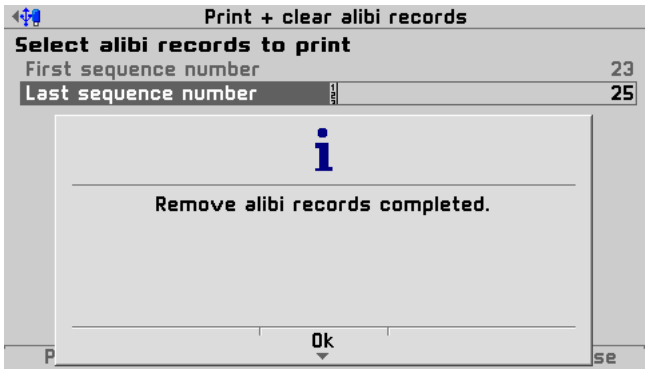
▶ Press the [Print] soft key to start the printout.

▷ A progress window appears during the print process.

For an example of an Alibi printout; see Chapter 13.3.

▷ Once the data records are printed, a prompt window appears.

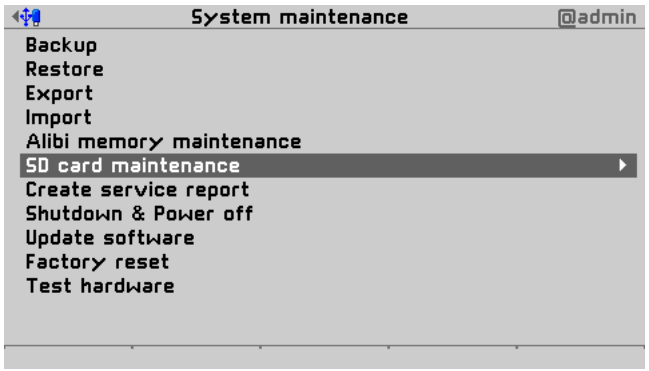
▶ Press the [Delete] soft key to delete the printed data records from the Alibi memory.



▷ As soon as the process is complete, an info window appears.

▶ Press the [OK] soft key to return to the [Alibi memory maintenance] menu.

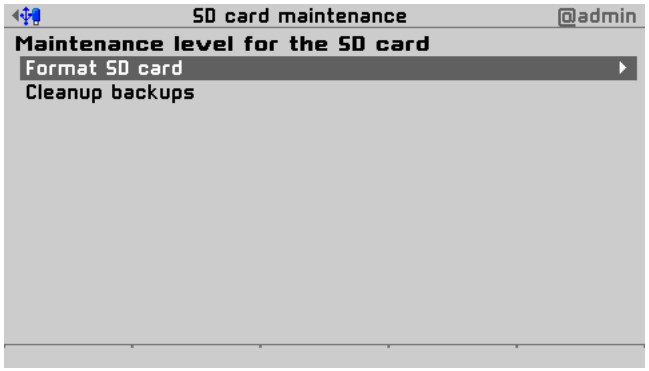
6.1.7 SD Card Maintenance



▶ Select and confirm [System maintenance]-[SD card maintenance].

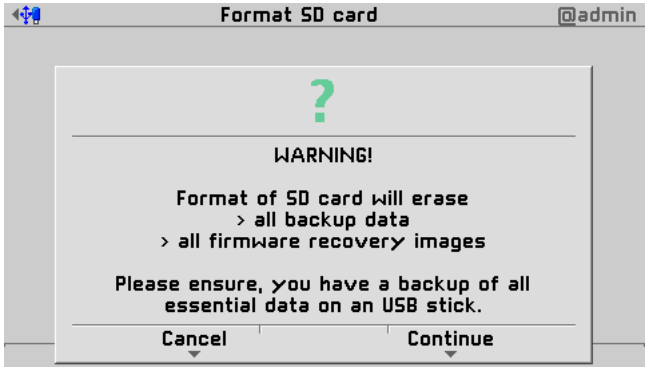
6.1.7.1 Formatting the SD Card

This function is required to format the SD card or delete backups that are no longer needed.



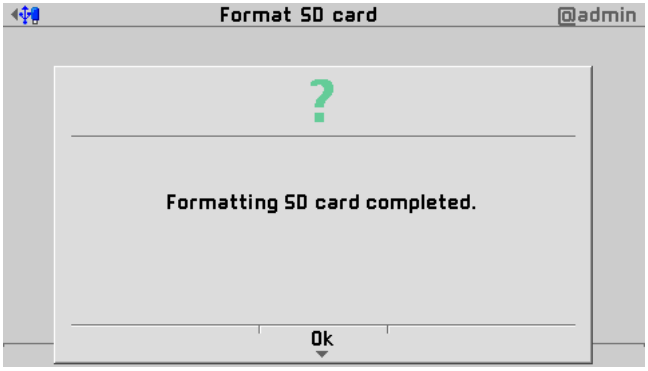
▷ A selection window appears.

▶ Select and confirm [Format SD card] to format the SD card.



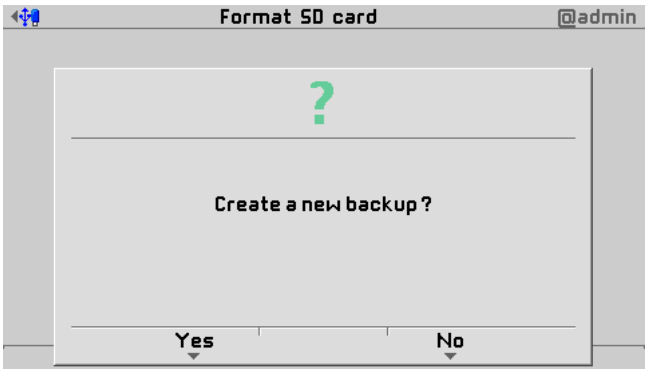
▷ A prompt window appears.

▶ Press the [Continue] soft key.



▷ As soon as the process is complete, an info window appears.

▶ Press the [OK] soft key.



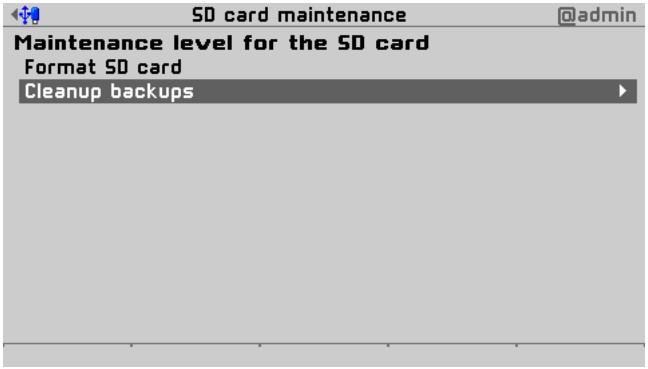
▷ A prompt window appears.

▶ Press the [Yes] soft key to create a new backup and return to the [SD card maintenance] menu.

6.1.7.2 Cleaning Up Backups

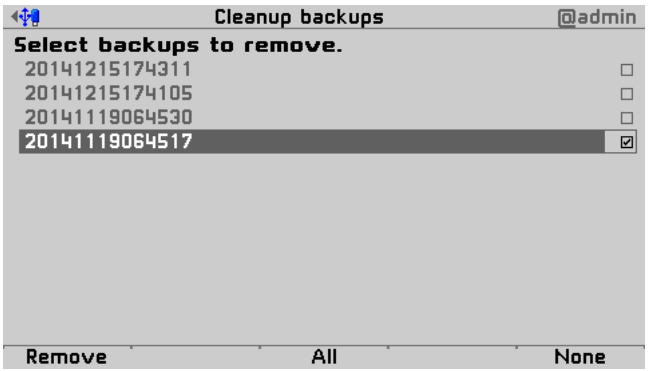
This function is required to view backups on the SD card and delete them if necessary.

Note	Access to the SD card slows down considerably if too many backups are saved to the card. If more than 100 backups are saved to the card, not all backups will be accessible.



▶ Select and confirm [Cleanup backups].

Note	The newest three backups **cannot** be deleted.



▷ A selection window appears.

▶ Check the appropriate box ☑ or press the [All] soft key to select all possible items. Press the [None] soft key to de-select all selected items.

▶ Press the [Remove] soft key to delete the selection.

▶ Press the ESC/EXIT key to return to the [System maintenance] menu.

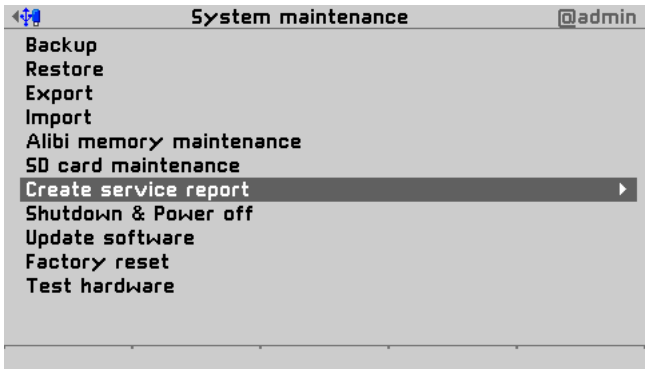
6.1.8 Creating a Service Report

This function is required to generate a service report file with the following data:

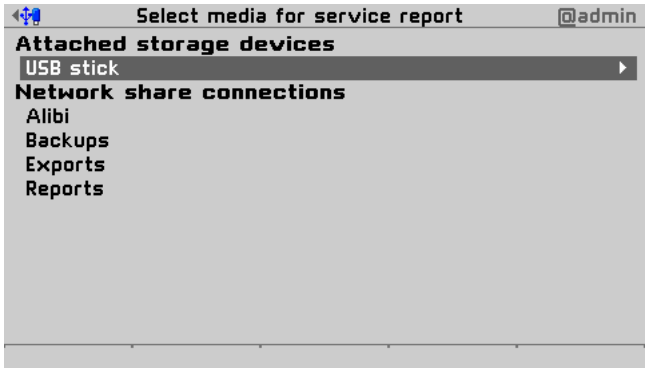
- All system setup data
- All user management data
- All I/O card data
- Statistics on database and Alibi memory usage
- Error logs
- Logs (audit trails)
- Log files

This file can be sent to customer service for analysis in the event of technical queries.

Note	For contact info; see Chapter 1.



▶ Select and confirm [System maintenance]-[Create service report].

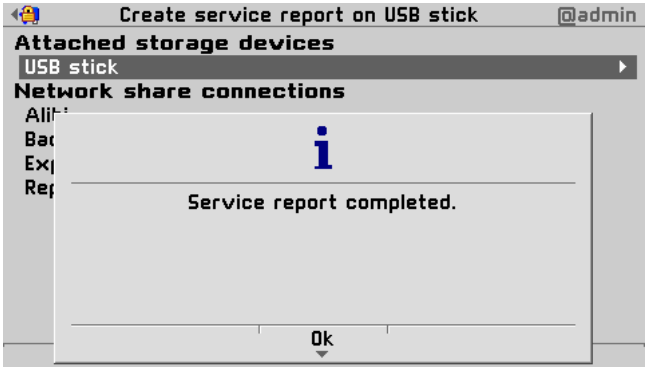


▷ A selection window with available storage media appears.

Note	The connections to the share folders are only displayed if previously configured under [System setup]- [Network share connections].

▶ Here: Select and confirm [USB stick].

Note	If no USB stick is plugged in, a warning appears. ▶ Plug in a USB stick and wait until the symbol appears in the info line. ▶ Press the [Retry] soft key.



▷ The service report file (PR5500-servicereport-devicename-date + generated number.xml) is saved to the "Service reports" folder on the storage media (here: USB stick).

▷ As soon as the process is complete, an info window appears.

▶ Press the [OK] soft key to return to the [System maintenance] menu.

▶ Remove the USB stick from the device and insert in a PC to send the file to customer service via e-mail.

6.1.9 Switching Off the Device

This function is required to disconnect the device from the power immediately, e.g., to install an option card. Before switching off, all data are stored on the SD card and automatically restored again after switching on.

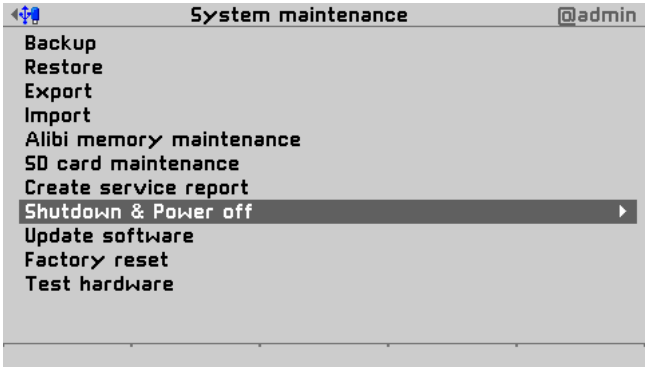
- The battery will be deactivated immediately.
- The application will be closed.

Possible data loss!

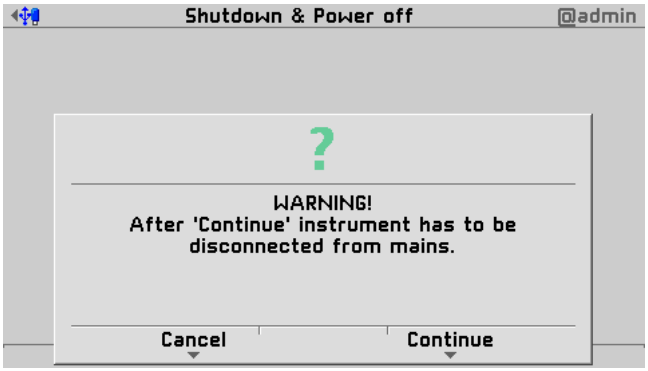
If no SD card is inserted or the SD card is not detected, the data will not be saved after pressing the [Continue] soft key.

⚠ Caution

The SD card must be inserted and detected by the device.

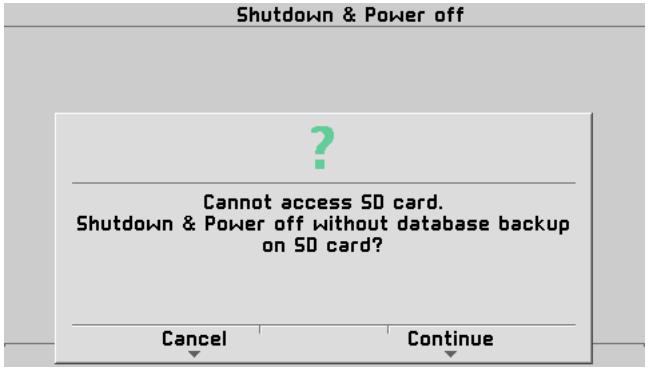


▶ Select and confirm [System maintenance]-[Shutdown & Power off].



▷ A prompt window appears.

▶ Press the [Continue] soft key.



▷ If no SD card is inserted or the SD card is not detected, a prompt window will appear.

▶ Press the [Cancel] soft key to avoid data loss.

▶ Insert the SD card and confirm the line [Shutdown & Power off].

▷ A prompt window appears.

▶ Press the [Continue] soft key.

▶ Disconnect the power plug.

6.1.10 Updating the Software

6.1.10.1 General Information

This function is required to install up-to-date software on the device.

The following options are available:

There are two ways to update the software:

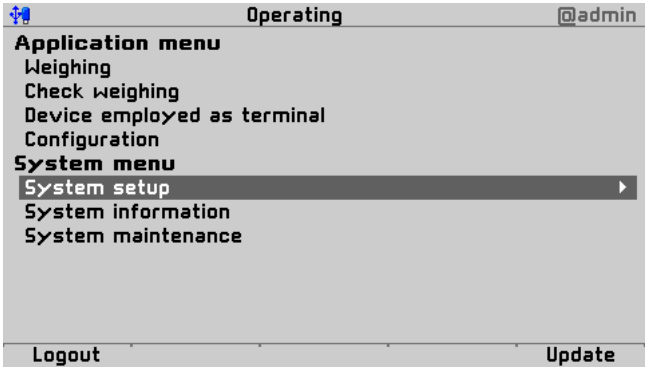
- via soft key (one click software update)
- via menu

6.1.10.2 One Click Software Update

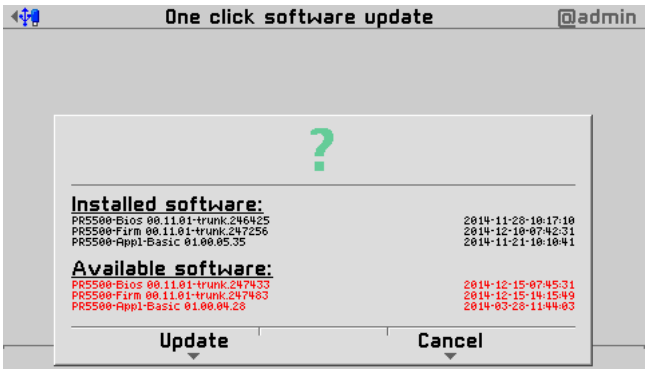
This function can be used if new software versions from a department are provided on the company's central network and these should be easily installed by an authorized operator.

To execute the software update via soft key, the following requirements must be met:

- Network share connection ‚ONECLICKUPDATE' is created under [System setup] - [Network share connections].
- The files, if they exist, must have the following names:
  - pr5500-r01-bios.bin
  - pr5500-r01-firm.bin
  - pr5500-appl.bin
  - pr5500-labl.bin (optional)
- The parameter [W&M] must be set to ‚none'.
- The parameter ‚Settings locked' is deactivated.
- The CAL switches are open.



▶ Press [Update] soft key in the operating menu.



▷ A prompt window appears.
The installed and available software is listed.

green:	Installed and availabled versions are the same.
red:	Installed and availabled versions are different.

▶ Press [Update] soft key.

▷ A database backup is stored to a temporary folder on the SD card.

▷ The software is loaded onto the device.

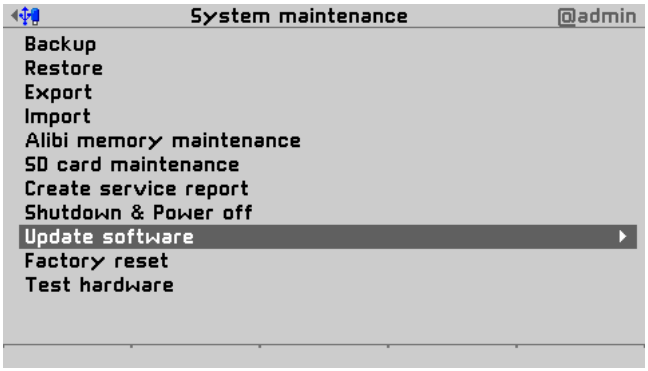
▷ The device runs a cold start.

▷ The database is restored from the temporary backup.

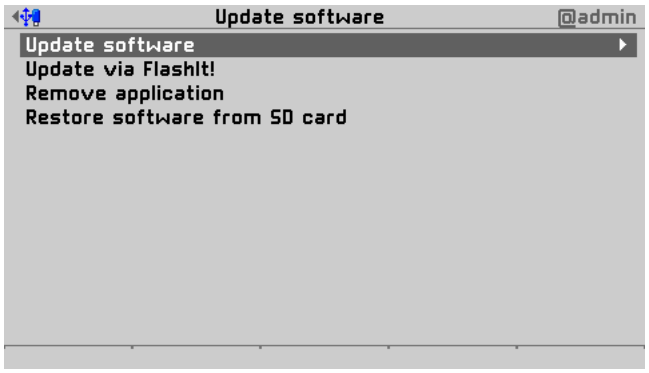
6.1.10.3 Software Update via Menu

The following options are:

- Update from SD card
- Update from USB stick
- Update via network share connection
- Update via FlashIt!
- Restore software from SD card



▶ Select and confirm
[System maintenance]-[Update software].

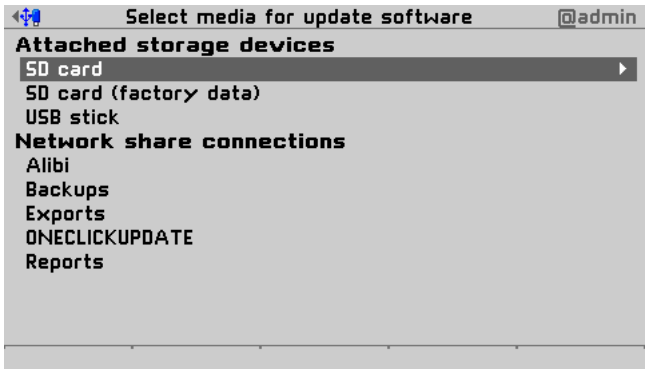


▷ A selection window appears.

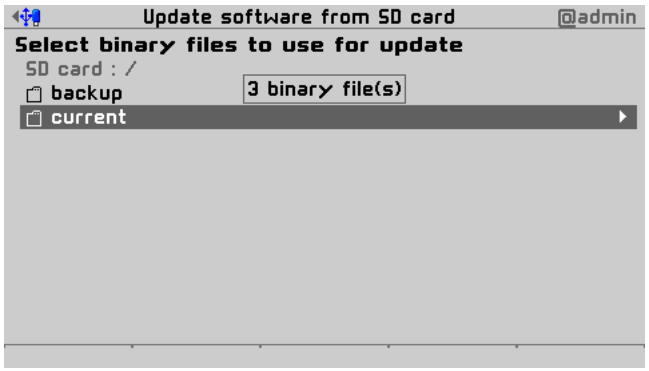
▶ Select and confirm [Update software].

Update from SD card

This function is required to restore a software version stored on the SD card.

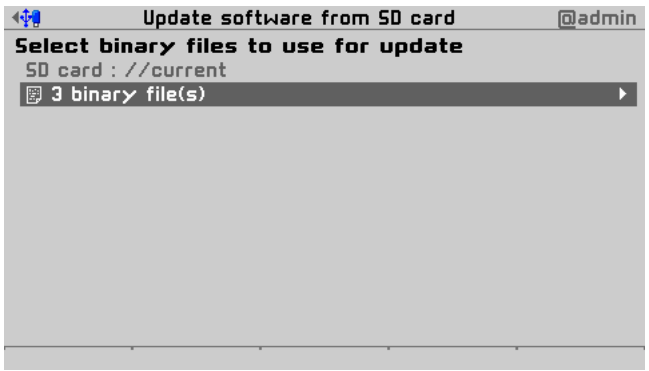


▶ Select and confirm [SD card].



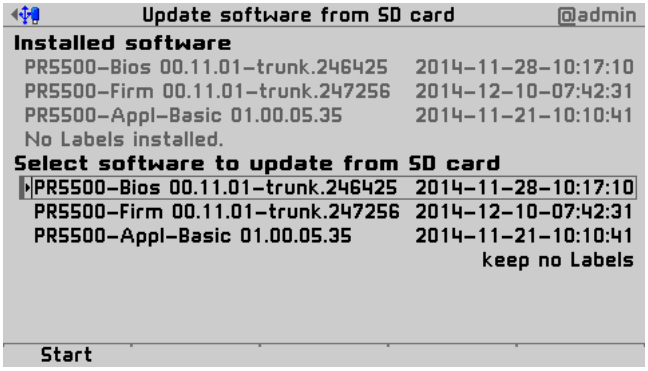
▷ A selection window appears.

▶ Select and confirm [current].



▷ A selection window appears.

▶ Here: Select and confirm [3 binary files].

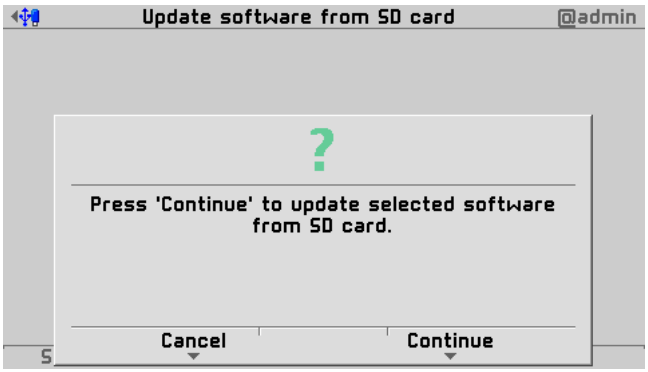


▷ A selection window appears.

Here is the software installed on the device and the delivery status of the software listed.

Select software see page 323.

▶ Press [Start] soft key to start the updating.



▷ A prompt window appears.

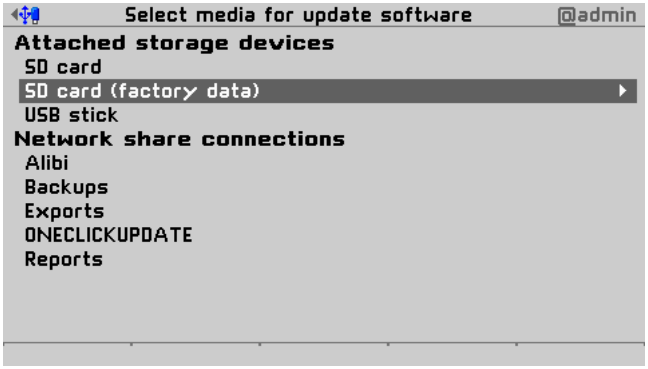
▶ Press [Continue] soft key.

▷ The software are updated on the device.

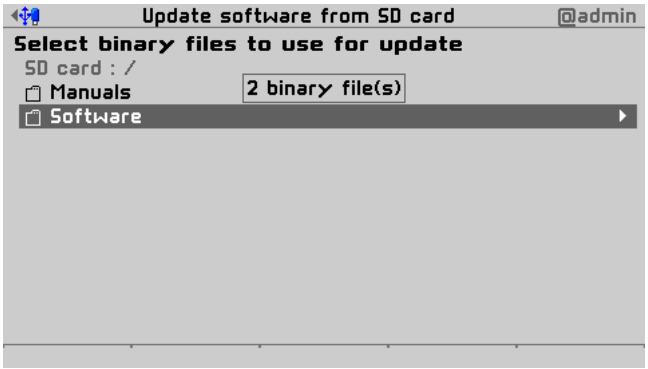
▷ The device runs a cold start.

Update from SD card (factory data)

This menu item is selected to restore the delivery status of the software.

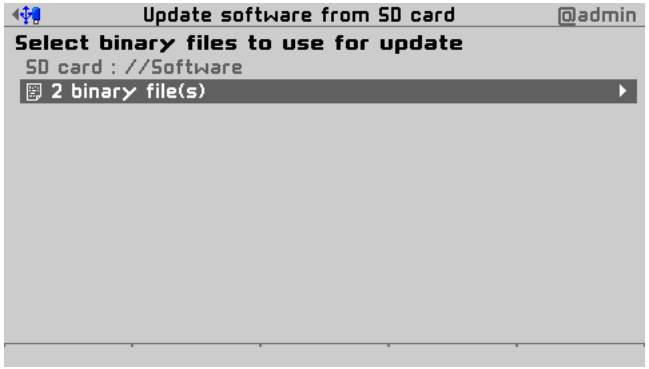


▶ Select and confirm [SD card (factory data)].



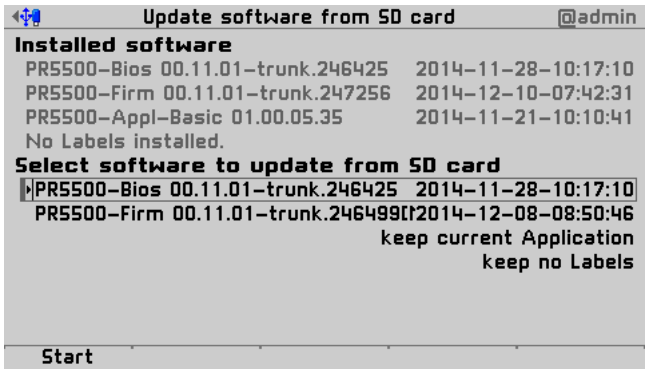
▷ A selection window appears.

▶ Select and confirm [Software].



▷ A selection window appears.

▶ Select and confirm [2 binary files].

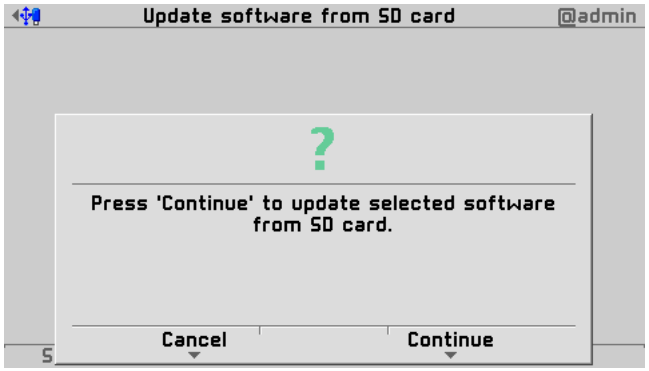


▷ A selection window appears.

Here is the software installed on the device and the delivery status of the software listed.

Select software see page 323.

▶ Press [Start] soft key to start the updating.



▷ A prompt window appears.

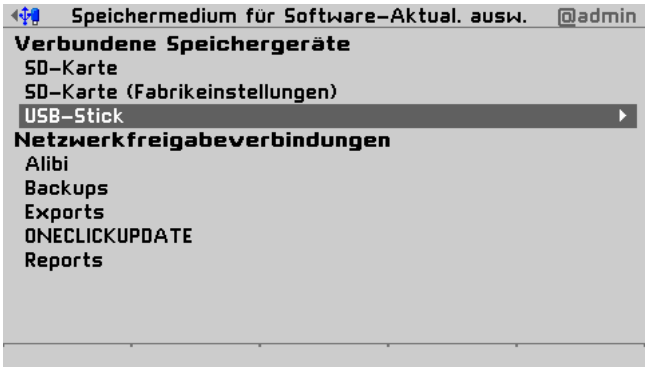
▶ Press [Continue] soft key.

▷ The software are updated on the device.

▷ The device runs a cold start.

Update from USB stick

Note	The software file names may not be changed!



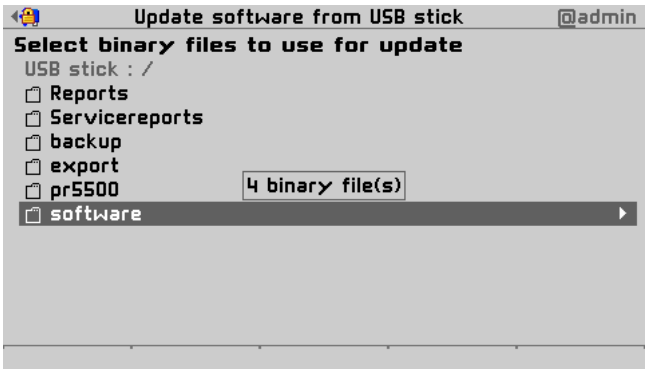
Requirement

The USB stick has been plugged into the device.

Procedure

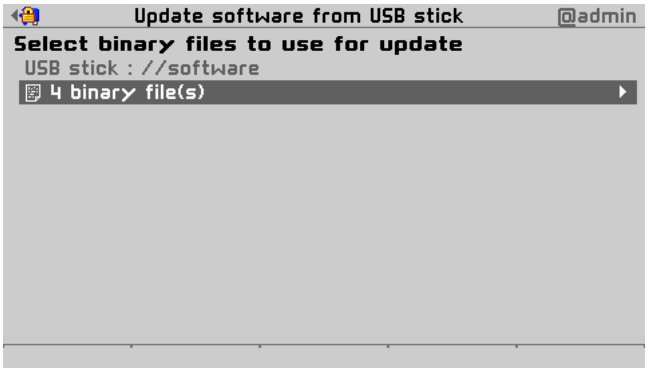
▶ Select and confirm [USB stick].

Note	If no USB stick is plugged in, a warning appears. ▶ Plug in a USB stick and wait until the symbol appears in the info line. ▶ Press the [Retry] soft key.



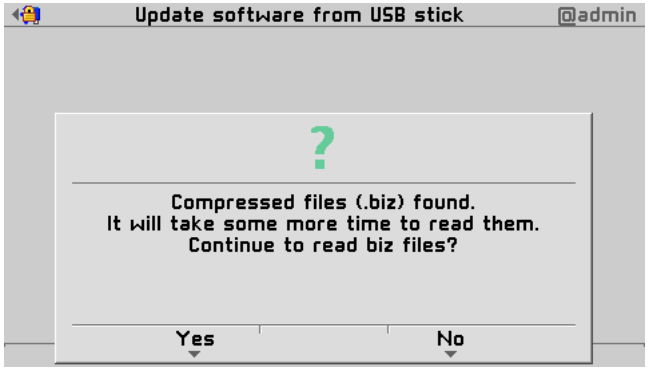
▷ A selection window appears. The displayed content is an example.

▶ Here: Select and confirm [Software].



▷ A selection window appears.

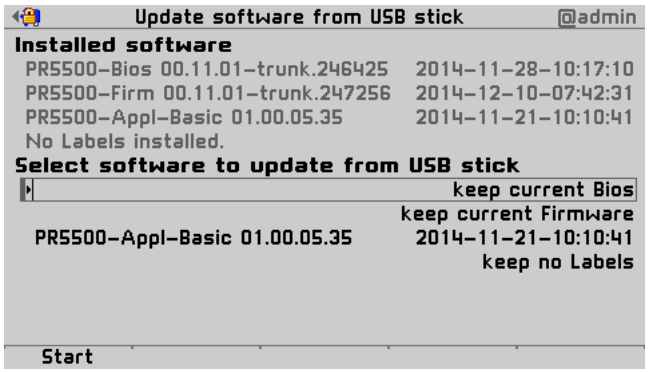
▶ Here: Select and confirm [4 binary files].



There are BIZ files on the storage media:

▷ A prompt window appears.

▶ Press [Yes] soft key.

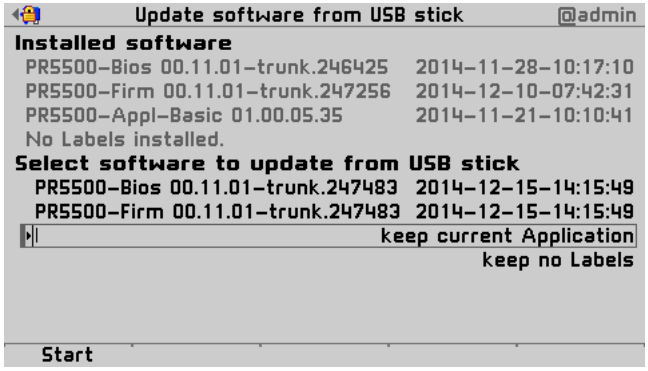


▷ A selection window appears.

Here is the software installed on the device and the software stored on the USB stick listed.

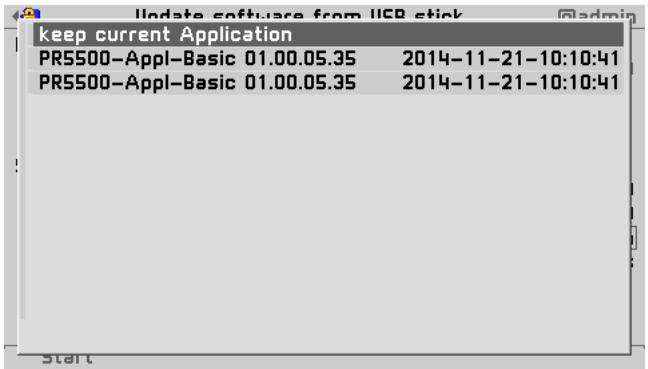
Are different versions available, the version to be installed can be selected.

Note	Check versions: If e.g. Firmware 02.10 is combined with Bios 02.00 the update can't be started.



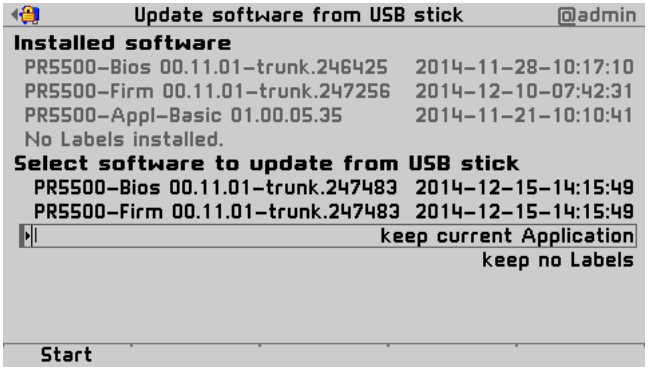
Here: Bios and Firmware are to be updated and the application is to be kept.

▶ Select and confirm the third line.

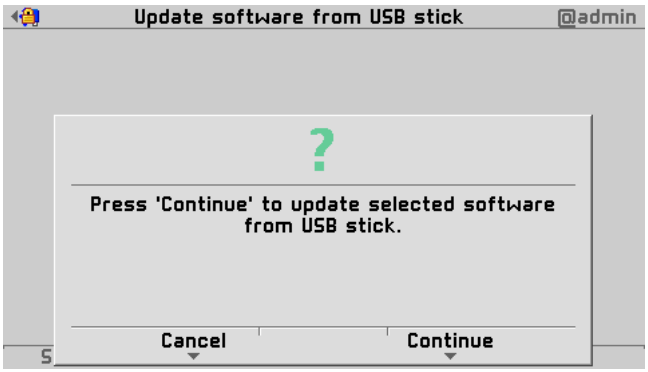


▷ A selection window appears.

▶ Select and confirm the corresponding line.



▶ Press [Start] soft key to start updating.



▷ A prompt window appears.

▶ Press [Continue] soft key.

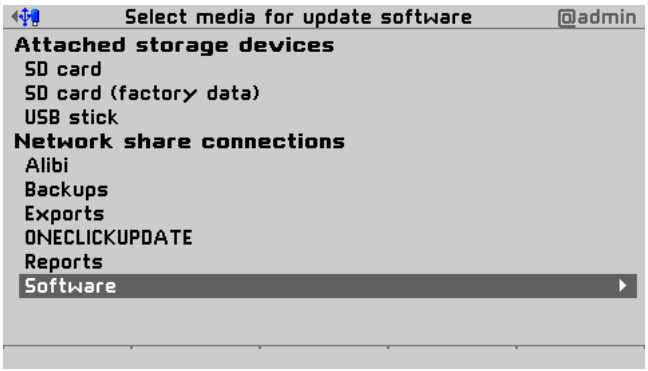
▷ Bios and Firmware are updated on device. The application is kept.

▷ The device runs a cold start.

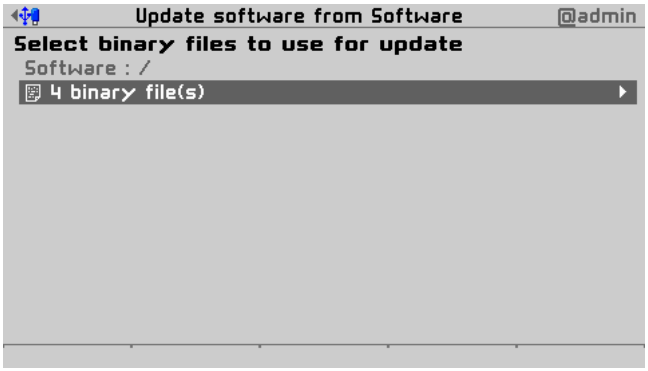
Update via network share connection

To update the software via a network share connection, the following requirements must be met:

- Network share connection has been created under [System setup] - [Network share connections]; see Chapter 5.19.5.
- The software files must be located in the directory (here: ‚Software') on the Notebook/PC.

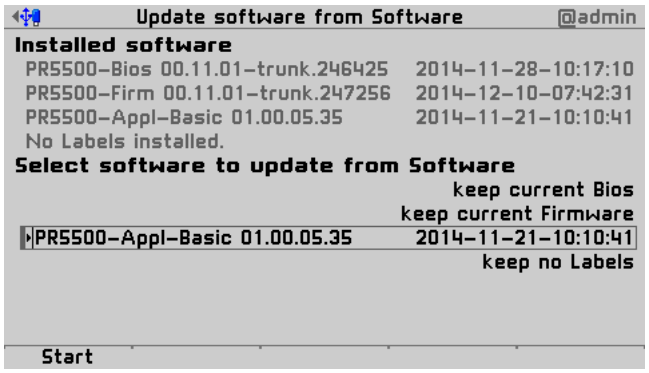


▶ Select and confirm network share connection [Software].



▷ A selection window appears.

▶ Here: Select and confirm [4 binary files].

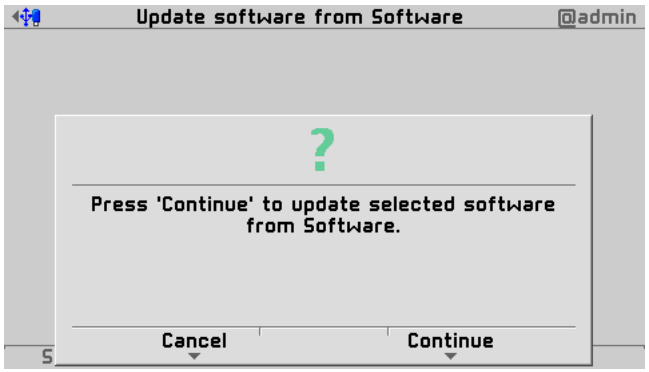


▷ A selection window appears

Here is the software installed on the device and the software stored in network share connection (folder ‚Software') listed.

Select software see page 323.

▶ Press [Start] soft key to start the updating.



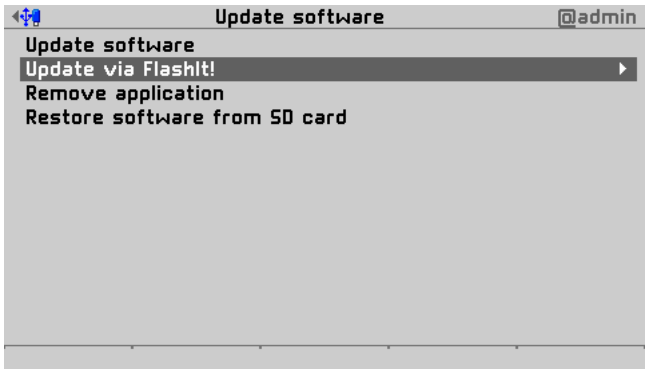
▷ A prompt window appears.

▶ Press [Continue] soft key.

▷ The software are updated on the device.

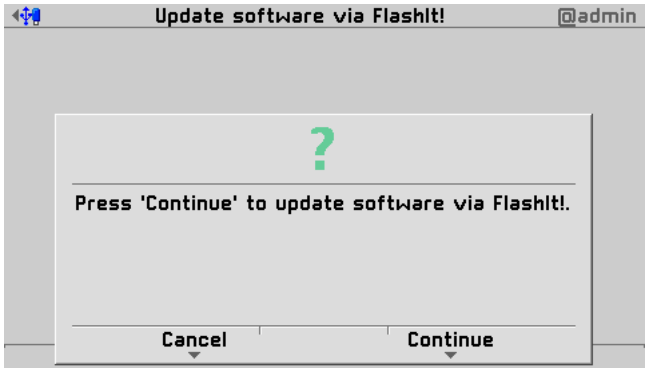
▷ The device runs a cold start.

Update via FlashIt!



Requirements

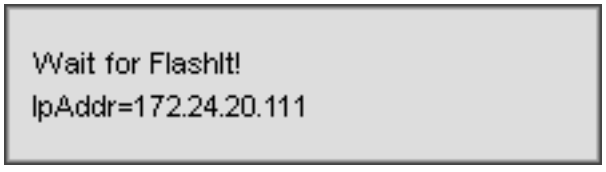
- The program "FlashIt!" (on the accompanying CD) is installed on the notebook/PC.
- The device is connected to the notebook/PC directly or via network.
- The software files are stored on the notebook/PC.



Procedure

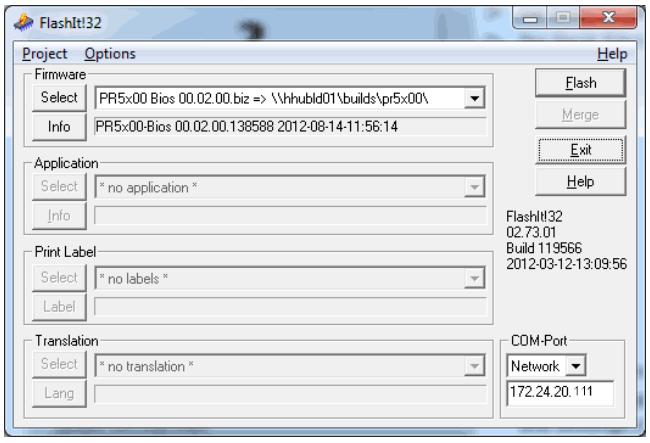
▷ A prompt window appears.

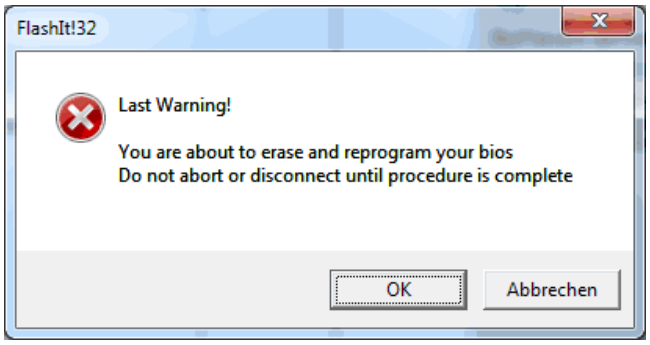
▶ Press the [Continue] soft key.



▷ A window appears on the display.

▷ The device waits for the update to start on the notebook/PC.





The files are installed in the following order:

- PR5x00-Firm xx
- PR5x00-Bios xx (only when required for firmware)
- Applikation (PR5x00-Basic xx in this case)

▶ Double-click the corresponding file in the "Explorer."

▷ "FlashIt!" opens and the file is displayed next to [Select].

▶ Select [Network].

▶ Enter the device IP address (shown in the window on the device display).

▶ Click [Flash] to start the procedure.

▷ A confirmation prompt appears when the Bios is updated.

▶ Click [OK].

▷ The process starts now.

▷ The window appears on the device display after the file has been loaded onto the device.

▶ The next files can then be loaded.

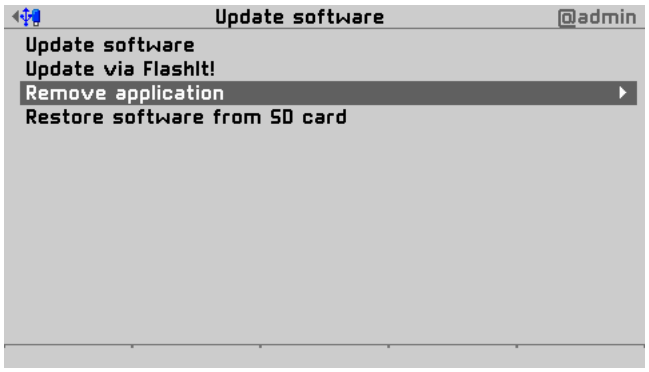
▷ After the last file has been loaded, the window appears again on the device display.

▷ Press the Exit key to stop the flash process.

▷ The device runs a cold start.

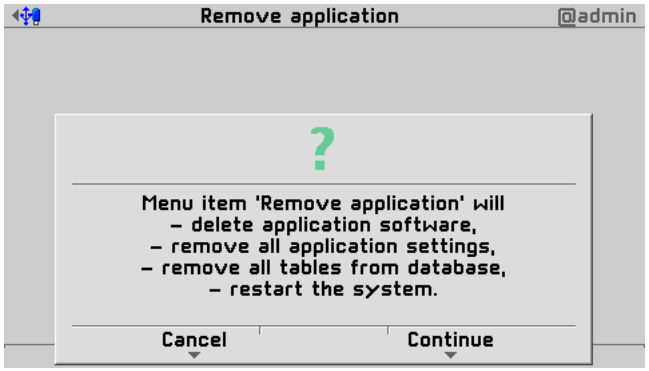
Remove application

This function is required to remove the available application with all specific settings and database tables. This is essential during the development of own applications to be loaded into device via PR 1750.



▷ A selection window appears.

▶ Select and confirm [Remove application].



▷ A confirm window appears.

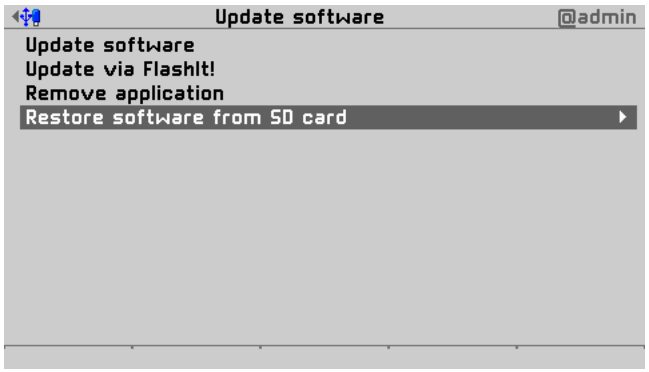
▶ Press [Continue] soft key.

▷ Application, settings and database tables are removed.

▷ The device runs a cold start.

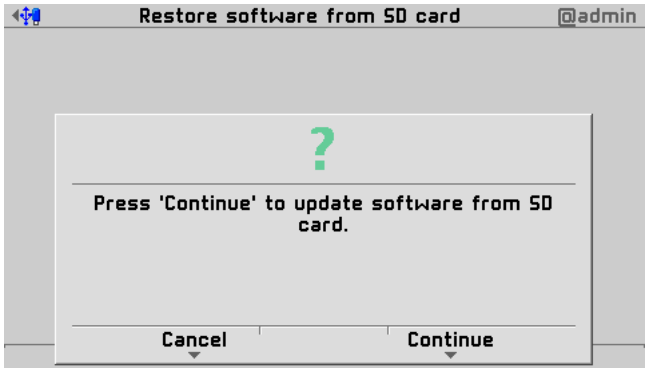
Restore software from SD card

This function is required after the SD card has been inserted into a replacement device. The application software with corresponding settings and database tables are loaded into device without any confirmation, see also Chapter 13.7.



▷ A selection window appears.

▶ Select and confirm [Restore software from SD card].



▷ A confirm window appears.

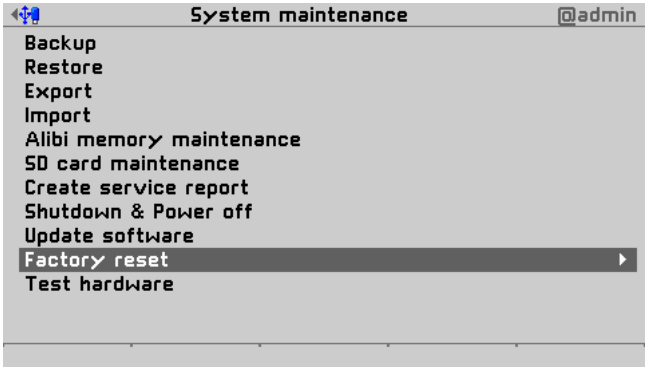
▶ Press [Continue] soft key.

▷ Application software, settings and database tables are loaded into device.

▷ The device runs a cold start.

6.1.11 Resetting the Device to the Factory Settings

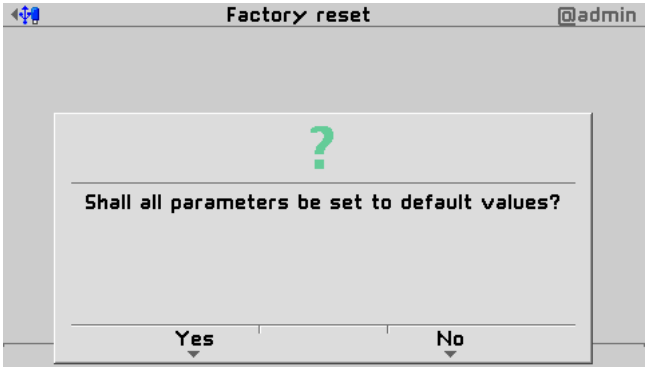
Note	The device can only be reset to the factory settings when overwrite protection is deactivated; see Chapter 5.1.5.



This function is required to reset the device to the factory settings:

- All calibration data
- All system settings (including licenses and user management)
- All Alibi memory records
- All database tables

▶ Select and confirm [System maintenance]-[Factory reset].



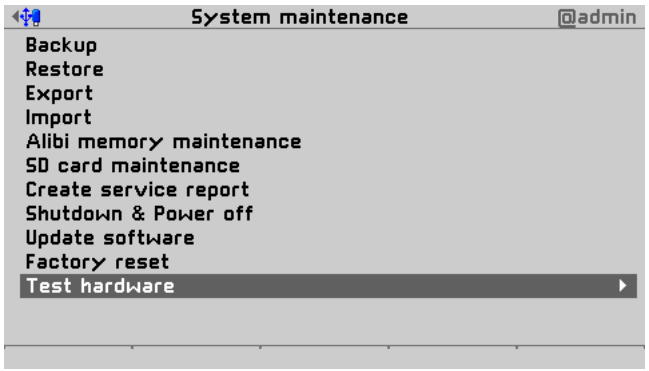
▷ A prompt window appears.

▶ Press the [Yes] soft key.

▷ The device restarts with the factory settings.

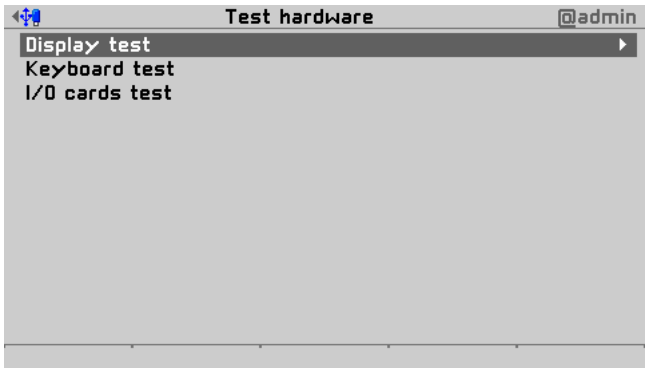
6.1.12 Hardware Test

This function is required to test the display, keys, and I/O cards.



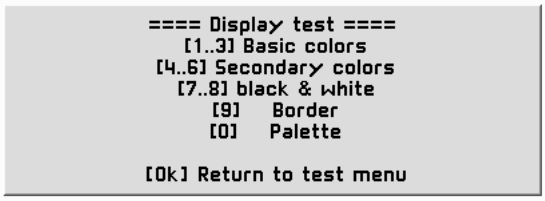
▶ Select and confirm [System maintenance]-[Hardware test].

6.1.12.1 Display Test



▷ A selection window appears.

▶ Select and confirm [Display test].

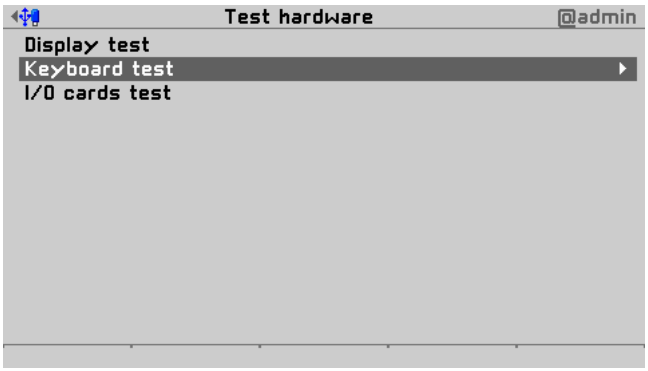


▷ An info window appears.

▶ Press the corresponding keys to test the display.

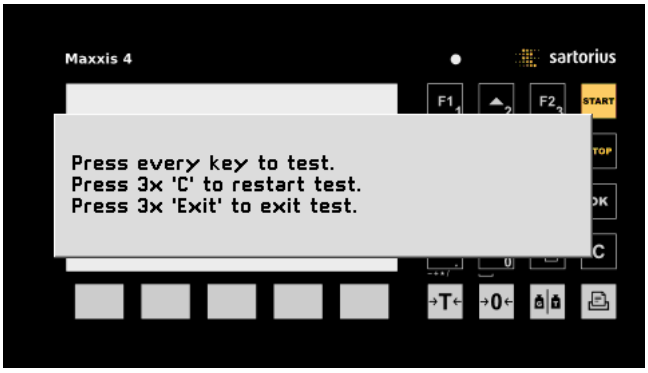
▶ Press the ESC/EXIT key to return to the test menu.

6.1.12.2 Keyboard Test



▷ A selection window appears.

▶ Select and confirm [Keyboard test].



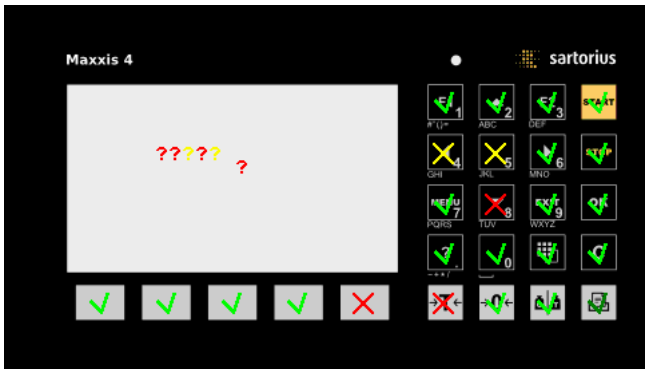
▷ The device front is displayed.

▶ Press each key to test the keyboard.

▷ Each key will be checked off green (light green/ dark green) on the display as it is pressed.

▷ When all keys have been checked off, an info window appears.

▶ Press the ESC/EXIT key three times to return to the test menu.

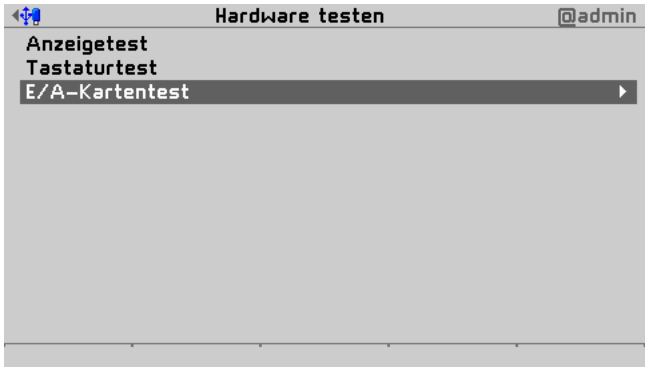


▷ Errors are displayed by crosses and question marks in red/yellow.

Display	Cause
red/yellow cross	Keys are bridged (e.g. short circuit in keypad foil).
red/yellow question mark	Unknown key position (e.g. keypad connection plugged wrong)

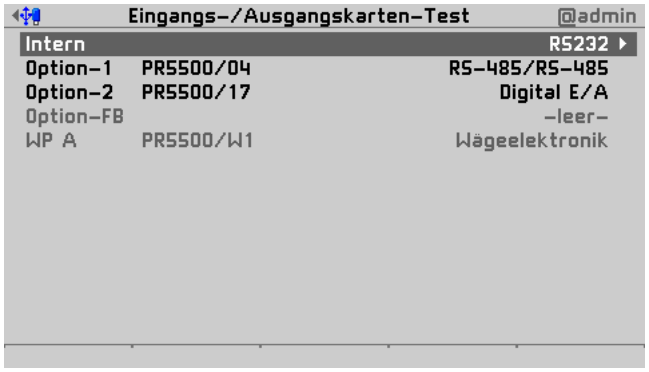
▶ Press the ESC/EXIT key three times to return to the test menu.

6.1.12.3 I/O Card Test



▷ A selection window appears.

▶ Select and confirm [I/O cards test].



▷ A selection window appears.

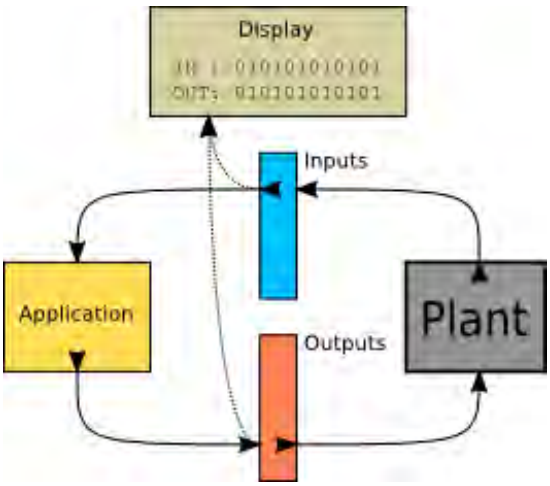
The test process differs depending on the function of the card.

There are several modes for the analog and digital I/O cards test:

- Test mode 1 „Monitor"
- Test mode 2 „Intern"
- Test mode 3 „Extern"

Note	If a card is not being used by the application currently loaded, test mode 3 „Extern" is selected automatically. The „Monitor" and „Intern" test modes are not available in this case.

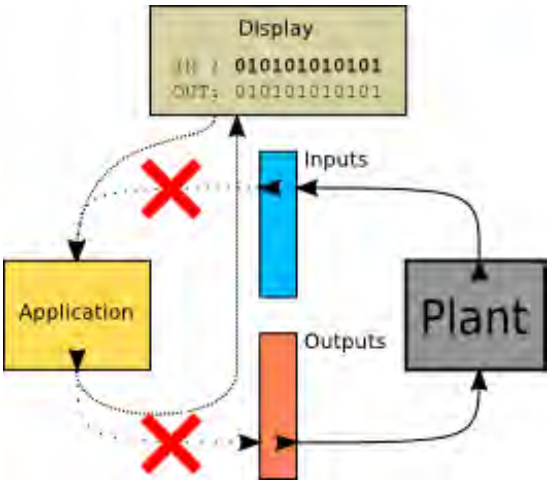
Test mode 1



Active PLC:

- The physical inputs of the system (plant) are directed to the PLC (application).
- The physical outputs of the system (plant) are set by the PLC (application).
- The physical inputs and outputs are displayed (display).

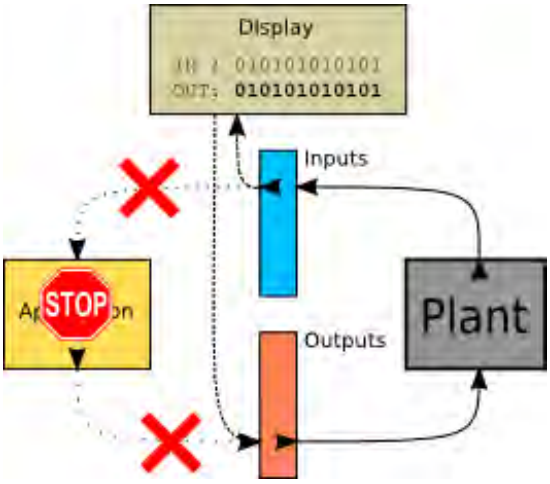
Test mode 2



Active PLC:

- The entered input values are sent to the PLC (application).
- The PLC output is displayed (display).
- The physical inputs and outputs of the system (plant) are deactivated and passive (in secured condition).

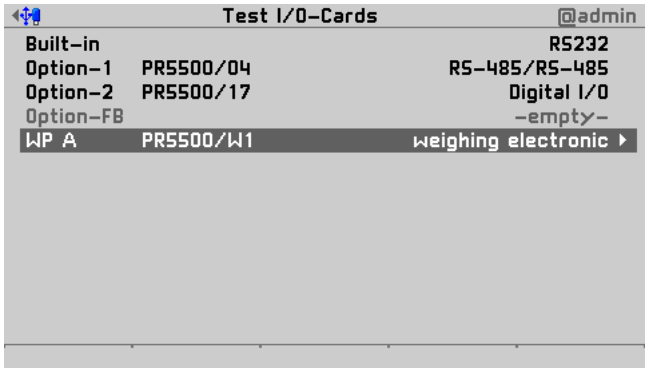
Test mode 3



Deactivated PLC:

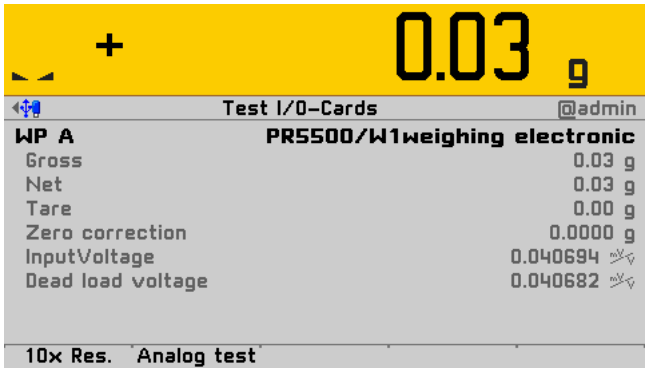
- The physical inputs are displayed (display).
- Output values can be entered.
- The given output values are set on the physical outputs.

Example: PR 5500/W1



▷ A selection window appears.

▶ Select the desired card and confirm.



▷ An info window appears.

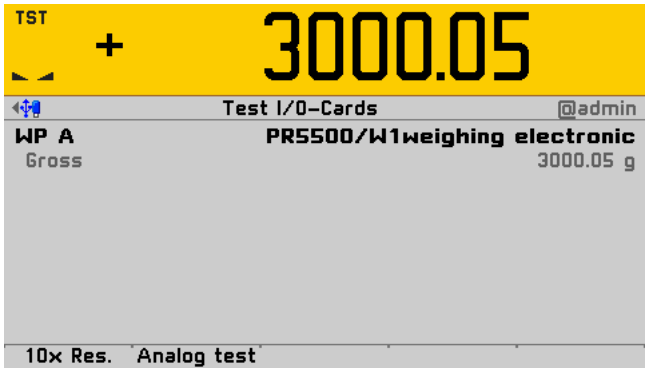
[Gross], [Net], [Tare]
Display the current values.

[Zero correction]
Displays the zero set range already used.

[InputVoltage]
The displayed value x input voltage (e.g., 12 V) gives the value to be measured; see Chapter 4.4.4.6.

[Dead load voltage]
Displays the value calibrated for the dead load.

▶ Press the [Analog test] soft key.



▷ An info window appears.

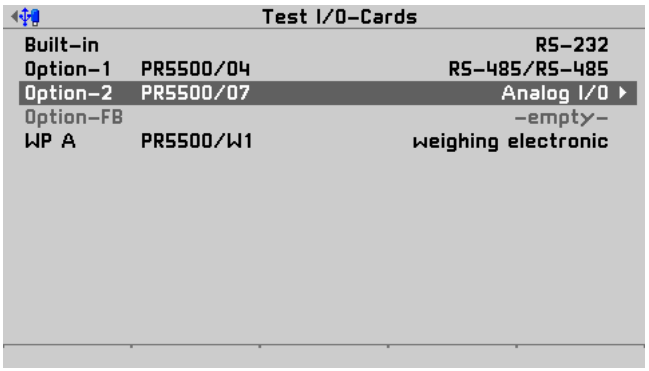
▶ Press the [10x Res.] soft key if necessary to display the weight value in an increased resolution (10-fold).

Press the soft key again to switch off the increased resolution (10-fold).

▶ Press the ESC/EXIT key to return to the card test menu.

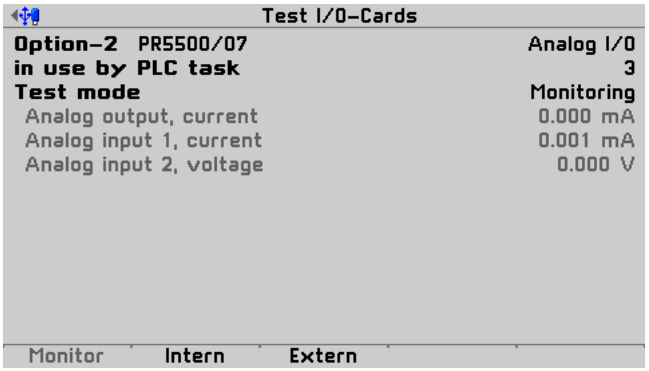
Adapting the Analog Output: PR 5500/07

The output current can be adjusted in small ranges. This is required, if small deviations from the nominal value occur in a connected PLC.



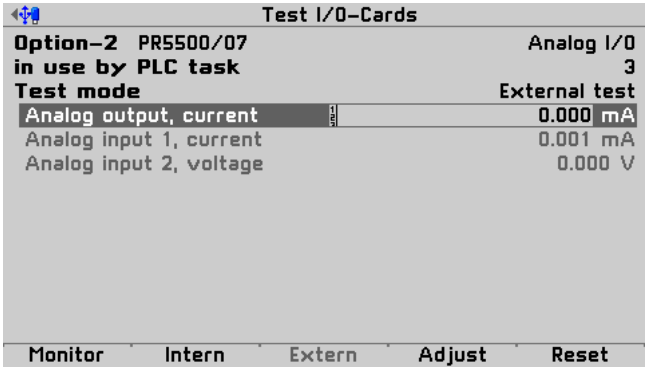
▷ A selection window appears.

▶ Select the desired card and confirm.



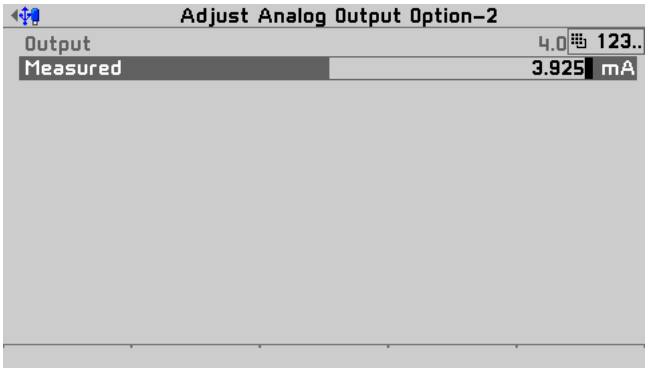
▷ An info window appears. The "Monitor" test mode is active.

▶ Press the [Extern] soft key.

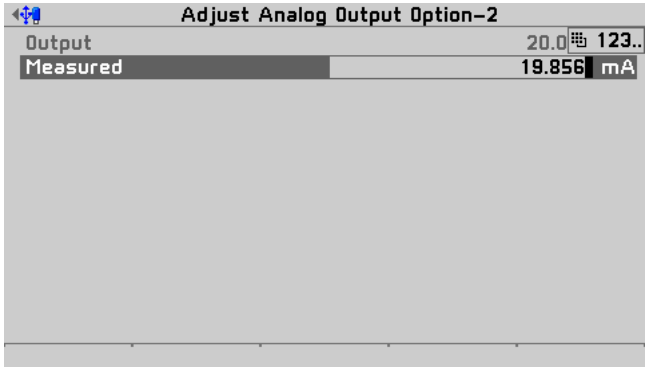


▷ An info window appears. The “External test” mode is active.

▶ Press the [Adjust] soft key.

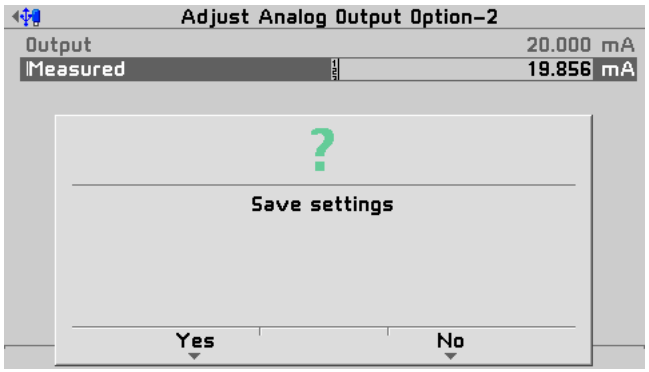


▶ Enter the value for 4 mA (measured, for example, by the connected PLC) under [Measured].



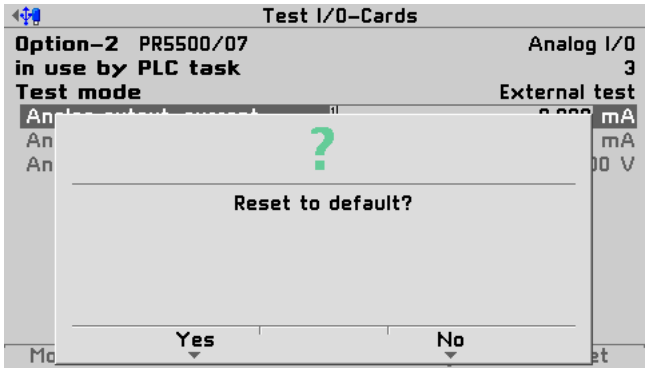
▷ An info window appears for the second value (20 mA).

▶ Enter the value for 20 mA (measured, for example, by the connected PLC) under [Measured].



▷ A prompt window appears.

▶ Press the [Yes] soft key to save the settings.



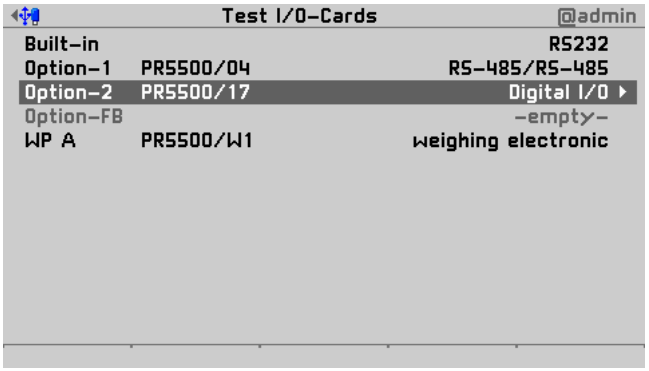
▶ Press the [Reset] soft key to reset to the factory settings (4 mA and 20 mA).

▷ A prompt window appears.

▶ Press the [Yes] soft key to reset to the factory settings.

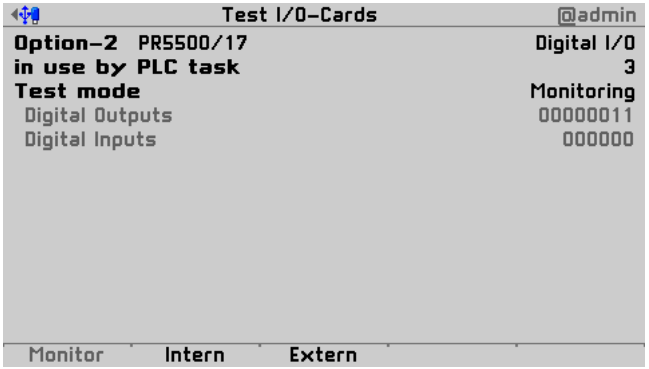
▷ Press the ESC/EXIT key to return to the card test menu.

Example: PR 5500/17



▷ A selection window appears.

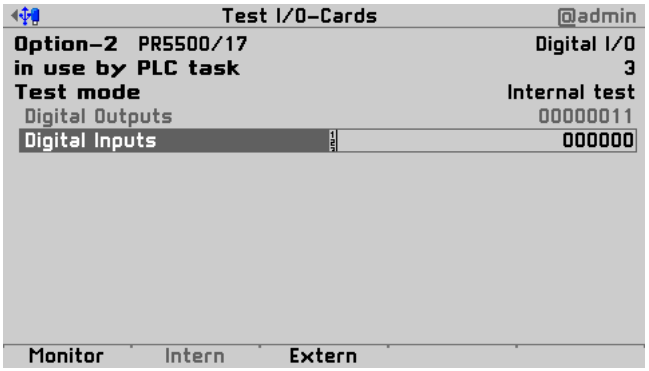
▶ Select the desired card and confirm.



▷ An info window appears. The test mode 1 is active.

▷ The current input and output values from the PLC (application) are displayed; see „Test mode 1".

Note	If the option is not used by the application, the test mode 3 is active and the values cannot be changed.

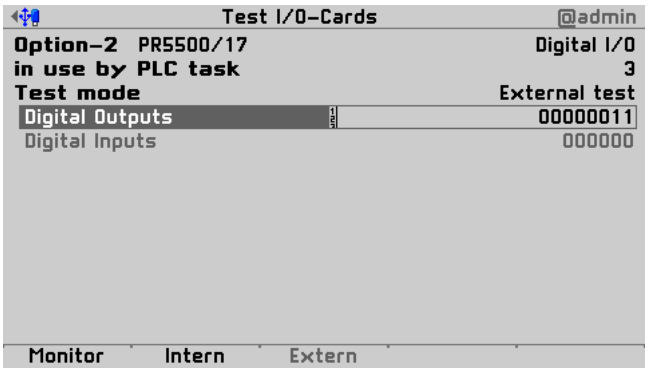


▶ Press the [Intern] soft key.

▶ Set the input values via keyboard and confirm. Input: 0 and 1 (e.g.: 1111; 0010)

▷ An info window appears. The "Internal test" mode is active.

▷ The inputs are simulated to test the functionality of the PLC (application); see „Test mode 2".



▶ Press the [Extern] soft key.

▶ Set the output values via keyboard and confirm. Input: 0 and 1 (e.g.: 1111; 0010)

▷ An info window appears. The "External test" mode is active.

▷ The physical inputs and outputs (hardware) are tested without the involvement of the PLC (application); see „Test mode 3".

▷ Press the ESC/EXIT key to return to the card test menu.

6.1.13 Functions via the WEB Site

If the device is connected to the network, this can be displayed through the UPnP view (see Chapter 5.6.1).

▶ Double-click the device icon.

▷ The menu appears on the screen. The device name entered under [host name] appears under the header in brackets.

Configuration

- [Remote Configuration (VNC)] — For device operation using the VNC program without additional installation of VNC; see Chapter 5.6.5.
- [Remote Configuration (VNC) Pop-up Window]
- [Configuration Printout] — Can be used for displaying the configuration printout; see Chapter 13.1.

View

- [Indicator] — Displays the weighing point in a status window; see Chapter 6.1.13.1.
- [Indicator Pop-up Window]
- [Browse Database] — Browse the application-specific database; see Chapter 6.1.13.2.
- [Browse alibi memory] — Browse the Alibi memory; see Chapter 6.1.13.3.
- [Manuals] — PDF files are saved to the SD card; see Chapter 6.1.13.4.

Service level

Note	Some functions require additional rights. When user management is activated, the logged in user must have rights for "Use functions on the website" and the appropriate system rights.

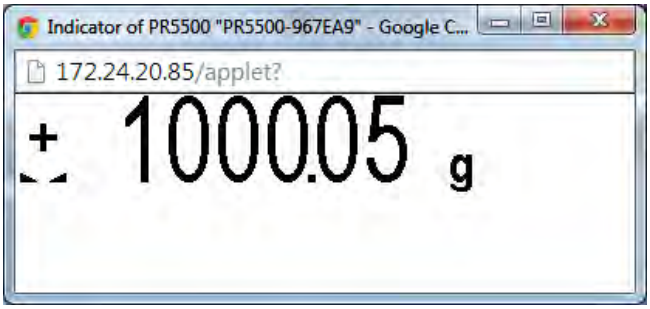
- [Browse eventlog] — Browse event log; see Chapter 6.1.13.5.
- [Browse logfiles] — Browse, display, copy, print log files; see Chapter 6.1.13.6.
- [Show last fatal system error] — Browse, display, copy, print the error log; see Chapter 6.1.13.7.
- [Screenshot] — Saves a screenshot; see Chapter 6.1.13.8.
- [Export database] — Export the database as an XML file to a selected folder; see Chapter 6.1.13.9.
- [Export Alibi memory] — Export the Alibi memory as an XML file to a selected folder; see Chapter 6.1.13.10.
- [Export service report] — Export the service report as an XML file to a selected folder; see Chapter 6.1.13.11.
- [Backup and restore setup data] — Create a backup and restore setup data; see Chapter 6.1.13.12.
- [Upload language files] — Upload language files to the device; see Chapter 6.1.13.13.

6.1.13.1 Displaying Weighing Points in a Table

▶ Click on [Weighing Points] under "View."

▷ A status window with weighing point appears.

▶ Click on the symbol ← to return to the menu window.



▶ Click on [Weighing Points Pop-up Window] under "View."

▷ A status window with weighing point appears in a separate window.

▶ Click on the symbol ☒ to return to the menu window.

6.1.13.2 Displaying the Application-specific Database

▶ Click on [Browse Database] under "View."

▷ A table appears. Click on the entries in the table to display the corresponding content.

▶ Click on the symbol ← to return to the menu window.

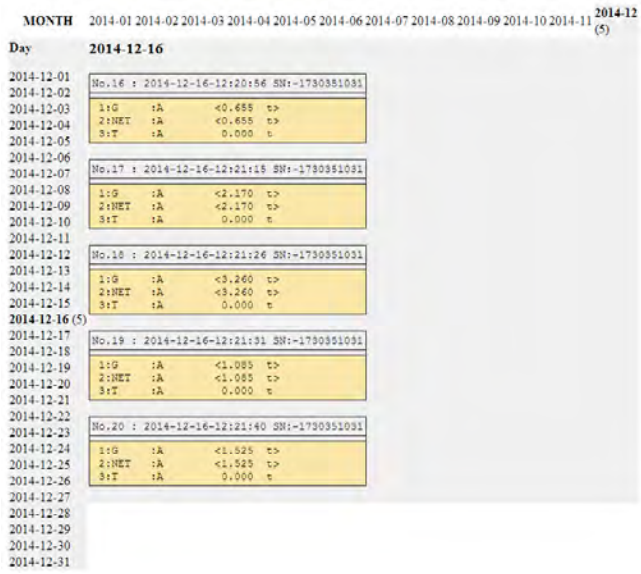
6.1.13.3 Browsing the Alibi Memory

▶ Click on [Browse Alibi Memory] under "View."

▷ A calendar window appears. Past months are underlined. The current day is displayed in bold in the "Day" row and column.

The number of saves is given in parentheses.

▶ Click on the desired date.



▷ A table appears for each save.

▷ Click on the symbol ← to return to the menu window.

6.1.13.4 Displaying Manuals

▶ Click on [Manuals] under "View."

▷ Several files are listed. Click on a file to view its contents.

▶ Click on the symbol ← to return to the menu window.

6.1.13.5 Browsing the Event Log

The log is a table showing the individual events on the device. This log can be used to analyze any possible problems.

The three event types are:

- Error
- Info
- Warning

The four source types are:

- [Fatal error]
- [Setup]
- [Power system]
- [Indicator]

▶ Click on [Browse Eventlog] under "Service level."

▷ The "Eventlogger" window opens.

Eventlogger

To refresh the event view press Refresh reading the events. If you do not want to show all events press Stop reading the events. There are 3 different types of events (Error, Info, Warning) and 4 different sources (Fatalerror, Setup, Powersystem, Indicator).

Refresh reading the events

Stop reading the events

Show 10 entries Search:

Title	Type	From	Date	Description
Event	Warning	Indicator	2014-12-17 18:09:59	Negative input
Event	Warning	Indicator	2014-12-17 18:09:11	Overload off
Event	Warning	Indicator	2014-12-17 18:09:09	Overload on
Event	Info	Setup	2014-12-17 18:07:11	new vnc connection from 172.24.20.91
Event	Info	Setup	2014-12-17 17:39:21	network settings changed
Event	Info	Setup	2014-12-17 17:38:43	parameter for wp=A save , user=Admin
Event	Info	Setup	2014-12-17 17:38:32	span set with load wp=A, user=Admin
Event	Info	Setup	2014-12-17 17:37:56	deadload with load wp=A, user=Admin
Event	Info	Setup	2014-12-17 17:37:51	step set wp=A, user=Admin
Event	Info	Setup	2014-12-17 17:37:45	max set wp=A, user=Admin

Showing 1 to 10 of 271 entries First Previous 1 2 3 4 5 Next Last

▶ Click on the symbol [←] to return to the menu window.

6.1.13.6 Browsing Log Files

Log files can be used to analyze any possible problems.

▶ Click on [Browse logfiles] under "Service level."

▷ Several files are listed. Click on a file to view its contents.

▶ Click on the symbol [←] to return to the menu window.

6.1.13.7 Displaying a Log of the Last System Error

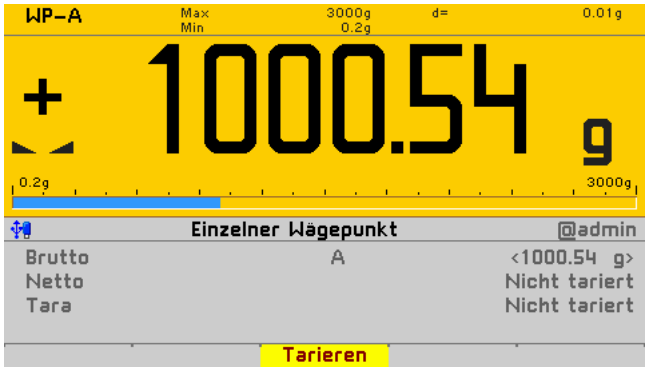
Logs can be used to analyze any possible problems.

Note	This data can also be found in the service report.

```
#5 2014-11-20 08:24:07
EXCEPTION 5($014): Reserved
PC=C0004102 FRM=4014 SR=2000
D0=02CFA0C0 A0=0000003A SP+00=8000766C
D1=000000CC A1=41FCAF3A SP+04=8000762B
D2=00000002 A2=80000B7C SP+08=000491F0
D3=00000005 A3=00000000 SP+12=00000005
D4=00000000 A4=00000066 SP+16=00004552
D5=41296500 A5=412C16F4 SP+20=41296500
D6=00000000 A6=800076F0 SP+24=80000EF6
D7=00000000 A7=800075AC SP+28=8000766C
C00040F2:202F0010    MOVE.L  $0010(A7),D0
C00040F6:25400020    MOVE.L  D0,$0020(A2)
C00040FA:4C010800    MULS.L  D1,D0
C00040FE:206A0028    MOVEA.L $0028(A2),A0
C0004102>4C6A0000001C DIVU.L  $001C(A2),D0
C0004108:2400        MOVE.L  D0,D2
C000410A:06820000003A ADDI.L  #$0000003A,D2
```

- ▶ Click on [Show last fatal system error] under "Service level."
- ▷ The last saved system error appears.
- ▶ Click on the symbol ← to return to the menu window.

6.1.13.8 Saving a Device Screenshot



- ▶ Switch to the desired display (in this case, weighing).
- ▶ Click on [Screenshot] in the WEB menu under "Service level."
- ▶ The device display is shown on the notebook/ screen.
- ▶ Right-click on the display and save to the desired folder via the "Save image as..." option.
- ▶ Click on the symbol ← to return to the menu window.

6.1.13.9 Exporting a Database

This function allows a database to be exported as an XML file to a selected folder.

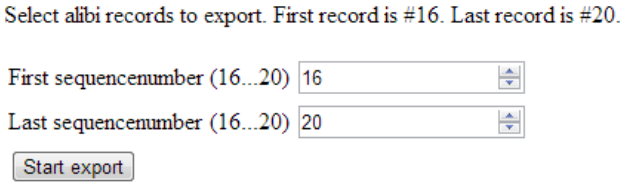
- ▶ Click on [Export database] under "Service level."
- ▷ An input window may appear.
- ▶ Enter and confirm the user name and password if necessary.
- ▷ The file download window of the internet browser appears.
- ▶ Click [Save].
- ▶ Select a folder to store the XML file.
- ▶ Click [Save].

6.1.13.10 Exporting the Alibi Memory

This function allows the Alibi memory to be exported as an XML file to a selected folder.

Example: "Internet Explorer"

- ▶ Click on [Export Alibi memory] under "Service level."
- ▷ An input window may appear.
- ▶ Enter and confirm the user name and password if necessary.



- ▷ A page for selecting export alibi entries appears.
- ▶ Enter the desired range of data records (in this case, 1–51) and click [Start export].
- ▷ The file download window of the internet browser appears.
- ▶ Click [Save].
- ▶ Select a folder to store the XML file.
- ▶ Click [Save].
- ▶ Click on the symbol ← to return to the menu window.

6.1.13.11 Exporting the Service Report

This function allows the service report to be exported as an XML file to a selected folder. If an error occurs, this file can be sent to customer service.

Example: "Internet Explorer"

- ▶ Click on [Export service report] under "Service level."
- ▷ An input window may appear.
- ▶ Enter and confirm the user name and password if necessary.
- ▷ The file download window of the internet browser appears.
- ▶ Click [Save].
- ▶ Select a folder to store the XML file.
- ▶ Click [Save].

6.1.13.12 Backing Up and Restoring Setup Data

This function makes it possible to:

- create a backup with setup, user, calibration, and application data on the PC.
- restore the setup, user, calibration, and application data on the device.

Note	This function cannot be used to back up the databases on the PC and restore them in the instrument. This is possible only under [System Maintenance] in the system menu.

▶ Click on [Backup and restore setup data] under "Service level."

▷ An input window may appear.

▶ Enter and confirm the user name and password if necessary.

[Backup]

▷ The backup and restore menu appears.

▶ Click on [Backup] to create a backup.

Example: "Internet Explorer"

▶ Click the tab of the created file.

▷ The XML file is opened.

▶ Save the XML file under [File] – [Save as...] in a selected folder.

▶ Select [Save].

▷ The backup is saved to the selected folder.

▶ Close the XML file under [File] – [Close].

[Restore]

▶ Click on [Browse] to select an XML file to be restored.

Example: "Internet Explorer"

▷ The file upload window of the internet browser appears.

▶ Select the XML file (e.g., setup-PR5500-967EA9-20141218-093913.xml).

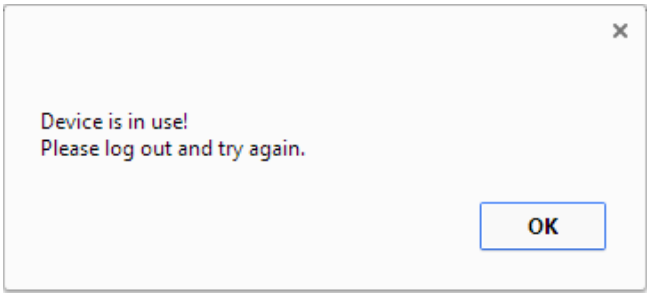
▶ Select [Open].

▷ The file name is displayed in the selection window.

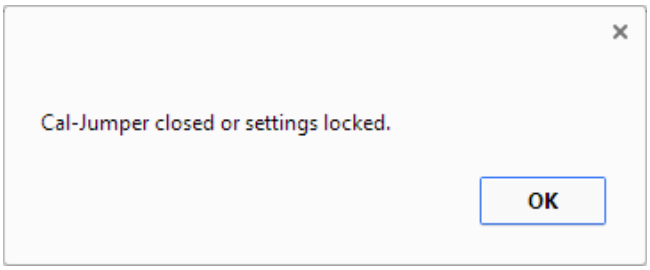
▶ Click on [Restore].

▷ The setup data is saved to the device.

Possible Error Messages



The displayed message appears when the user is not logged off.



The displayed message appears when the CAL switch is closed and/or "Settings locked" is active.

6.1.13.13 Loading Language Files

This function allows language files to be loaded.

Note	This function allows translations to be tested during development. The files are not permanently saved and are lost when the next cold start occurs. To permanently save the files, the language files must be loaded onto the instrument together with the application via "Update software".

- ▶ Click on [Upload Language Files] under "Service level".
- ▷ A selection window appears.
- ▶ Click on [Browse], select the desired mo files, and click [Upload] to load the files onto the device.
- ▶ Click on the symbol [←] to return to the menu window.

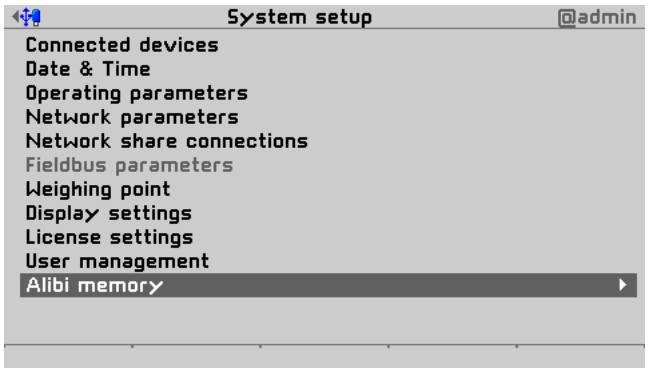
6.2 Alibi Memory

6.2.1 General Information

Note	A license is required for this function; see Chapter 5.19.8. If CAL switch 1 is closed or if the parameters ‚W&M' and ‚Settings locked' are set for a weighing point, the alibi memory cannot be deleted and the settings are not changed. **The alibi memory must be set before verifying the weighing points!**

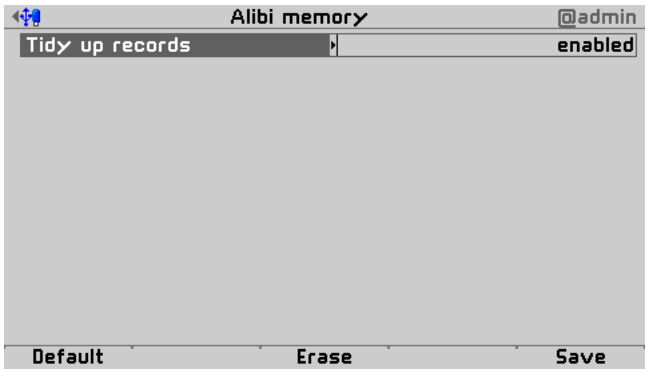
6.2.2 Erasing the Alibi Memory

This function is required to automatically overwrite individual data sets or manually delete the entire Alibi memory.

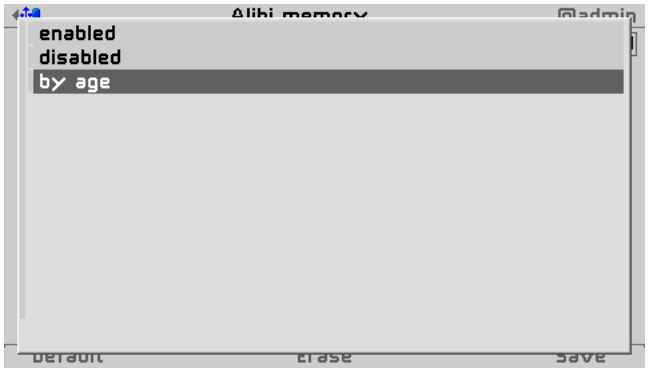


▶ Select and confirm
[System setup] - [Alibi memory] using the cursor.

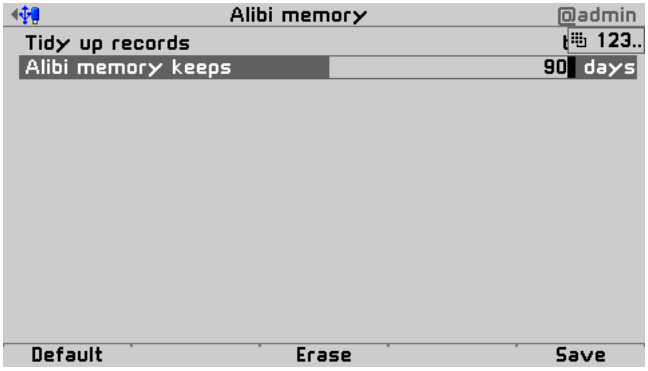
6.2.2.1 Overwriting Data Records Automatically



▷ A selection window appears.
▶ Confirm the selection.



▷ A selection window appears.
If "enabled" is selected, the oldest data set in the entire Alibi memory will automatically be overwritten.
If "disabled" is selected, data sets must be deleted manually when the Alibi memory is full.
▶ Select and confirm the options, e.g.,"by age."



▷ An input window appears.

▶ Enter the number of days using the keyboard to indicate how old a data set must be in order to be automatically overwritten.

▶ Confirm the entry.

▶ Press the [Save] soft key to save the settings.

Note	If the [Default] soft key is pressed, this number is reset to the default value.

6.2.2.2 Deleting the Alibi Memory Manually

▶ Press the [Delete] soft key to delete the entire Alibi memory manually.

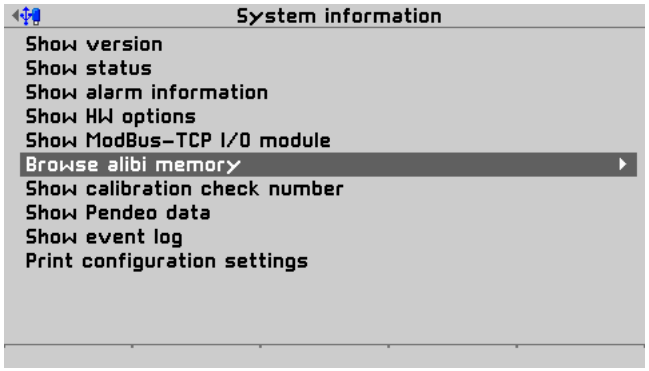
▷ A prompt window appears.

▶ Press the [Continue] soft key to confirm the manual deletion.

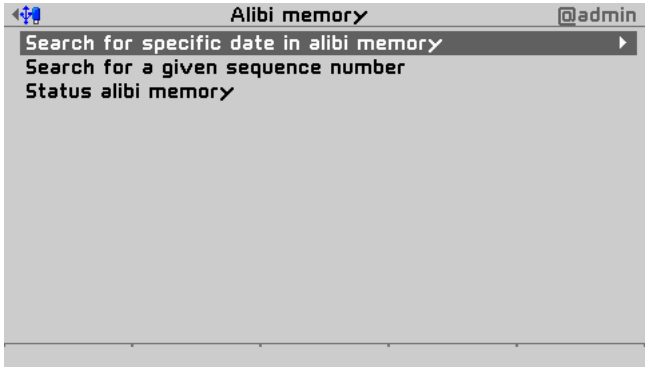
6.2.3 Browsing the Alibi Memory

The following options are available:

- Search by a specific date
- Search by a specific sequence no.
- Display the status of the Alibi memory

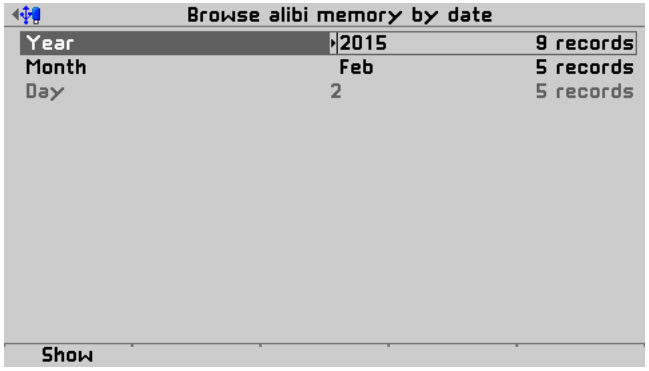


▶ Select and confirm [System information] - [Browse Alibi memory] using the cursor.



▷ A selection window appears.

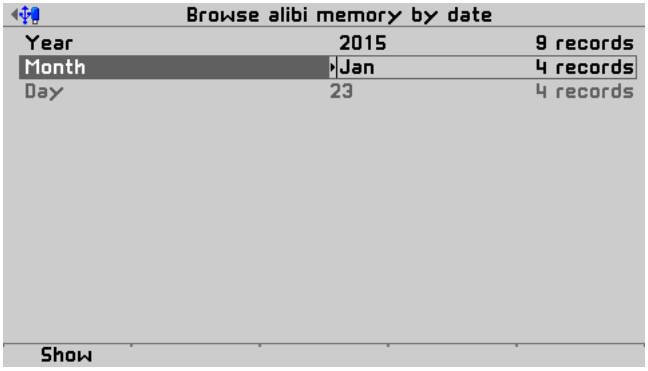
▶ Select and confirm [Search for specific date in alibi memory] with the cursor.



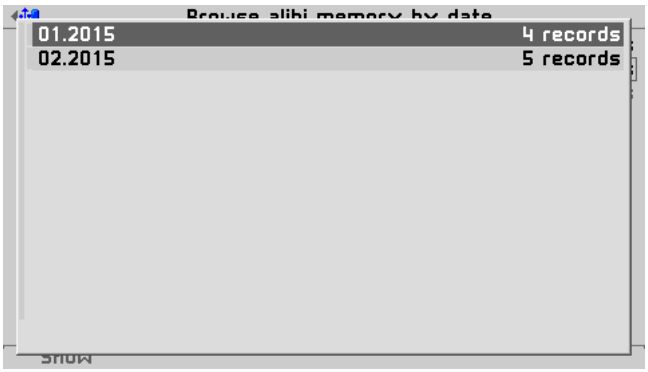
▷ A selection window appears.

▶ First select and confirm the "Year" line.

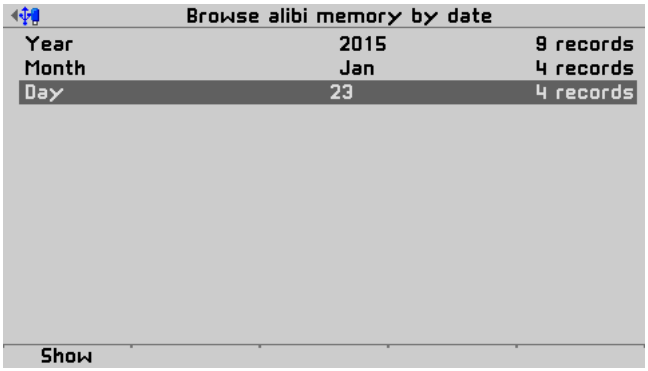
▶ Select the desired year and confirm.



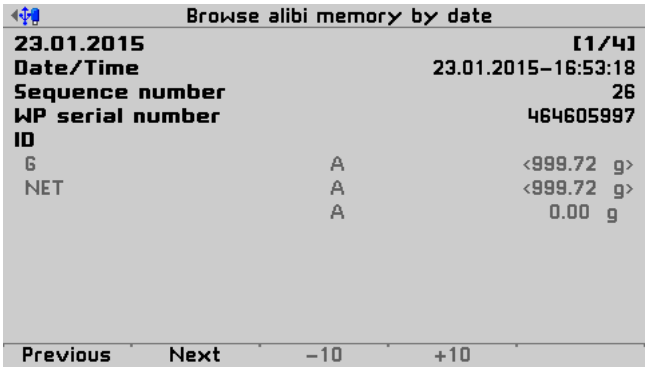
▶ Then select and confirm the "Month" line.



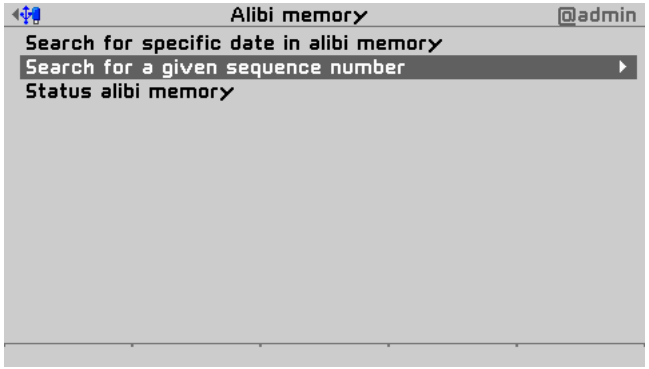
▶ Select the desired month and confirm.



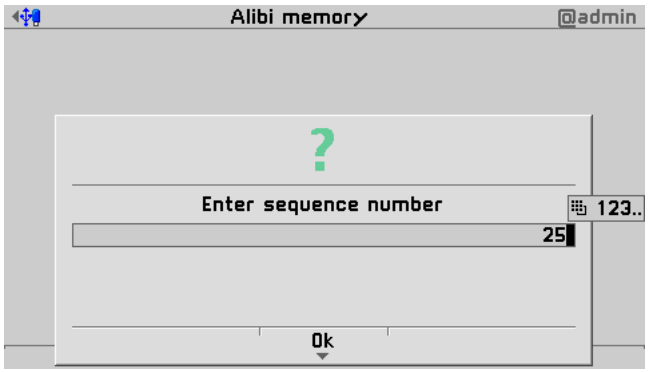
▶ Finally, select and confirm the "Day" line.
▶ Select the desired day and confirm.
▶ Press the [Show] soft key.



▷ The info window appears.
▶ Use the appropriate soft keys to scroll through the individual sequence numbers.
▶ Press the ESC/EXIT key to return to the previous window.



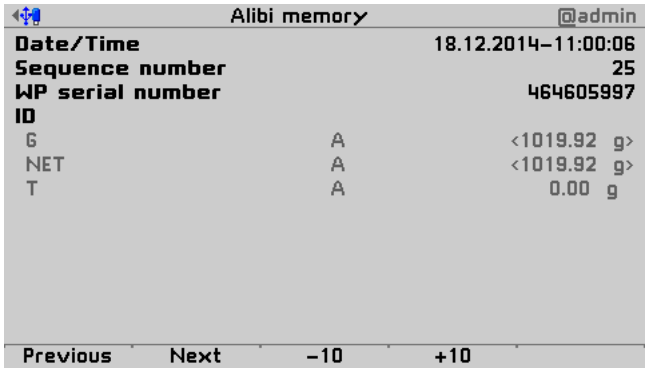
▶ Select and confirm [Search for a given sequence number] with the cursor.



▷ An input window appears.

▶ Enter the sequence number using the keyboard.

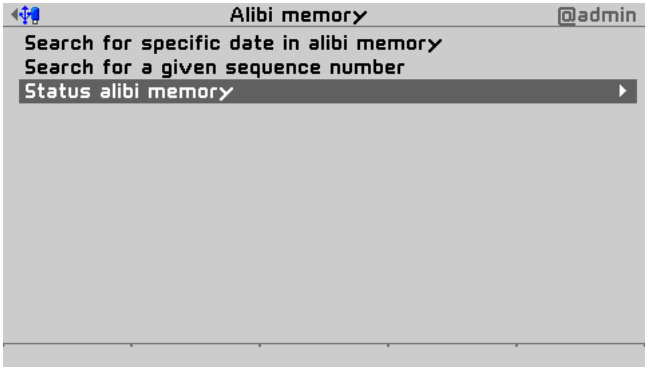
▶ Press the [OK] soft key.



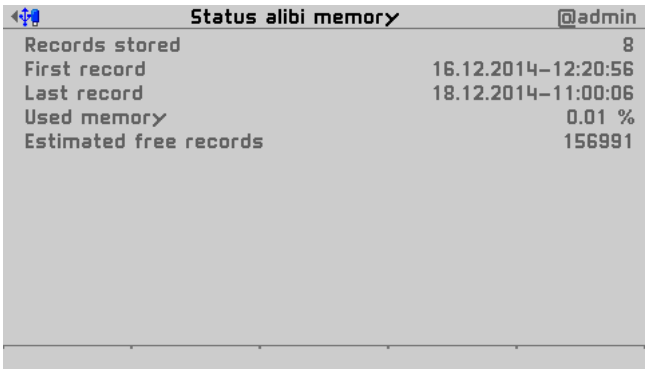
▷ The info window appears.

▶ Use the appropriate soft keys to scroll through the individual sequence numbers.

▶ Press the ESC/EXIT key to return to the previous window.



▶ Select and confirm [Status alibi memory] using the cursor.



▷ The info window for the Alibi memory appears.

▶ Press the ESC/EXIT key to return to the previous window.

6.2.4 Exporting and Printing Alibi Data Records

See Chapter 6.1.6.

6.3 BIOS Menu

6.3.1 General Information

If the device cannot carry out a normal system start, the BIOS menu must be used.

Note	The BIOS menu is in English, regardless of the selected language settings.

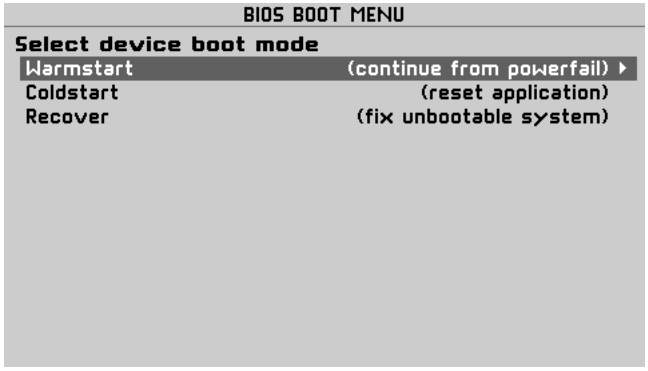
Requirements

- The supply voltage is disconnected.
- All LEDs have gone out.

If this is not the case, the connection to the standby battery must be interrupted with the power supply disconnected (pull the plug out carefully). Restore the connection afterwards.

Note	The battery is located below the weighing electronics board WP-A.

6.3.2 Accessing the BIOS Menu

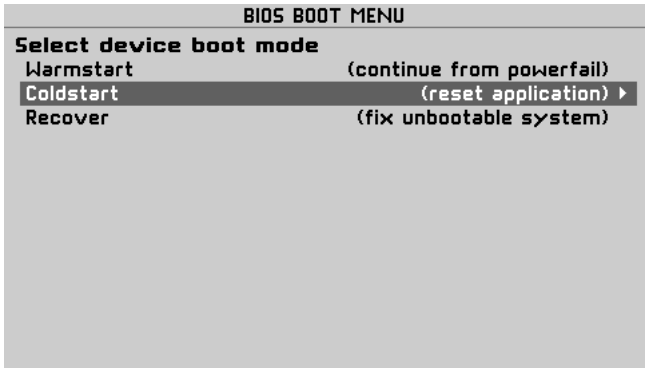


▶ Hold down the **STOP** key.
▶ Switch on the supply voltage.
▷ The message ‚STOP key detected' appears.
▶ Release the **STOP** key.
▷ The BIOS menu appears.

[Warmstart]

▶ Press the ▶ key/**OK** to confirm the selection.
▷ The device starts up in the same way it does after a power failure.

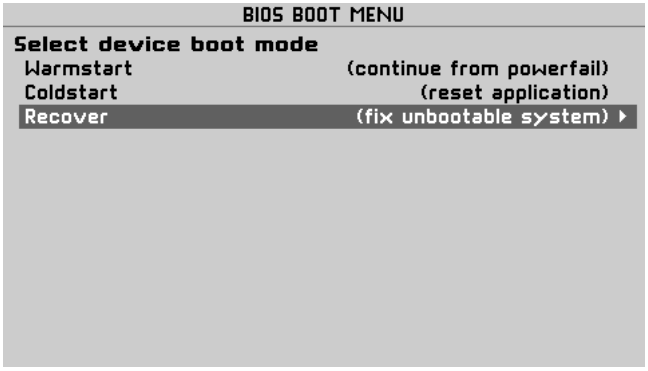
Note	This menu item is locked if a warm start is not possible. A warm start may not be possible for the following reasons: - Fatal system error - Faulty battery



[Coldstart]

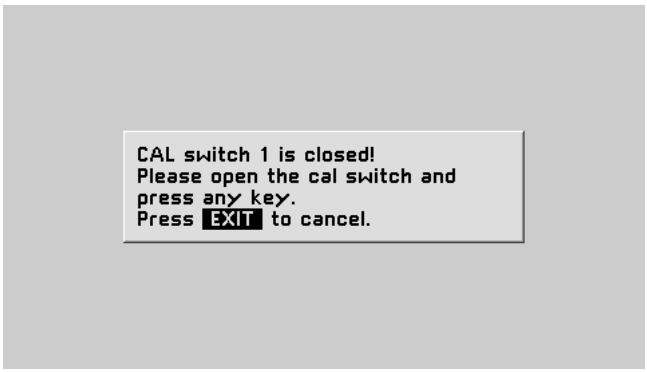
▶ Press the ▼ key to select the line.
▶ Press the ▶ key/**OK** to confirm the selection.
▷ The device starts, the database is cleared, and the application restarts.

Note	If the device starts successfully, an existing database backup, if there is one, can be re-imported (see Chapter 6.1.3).



[Recover]

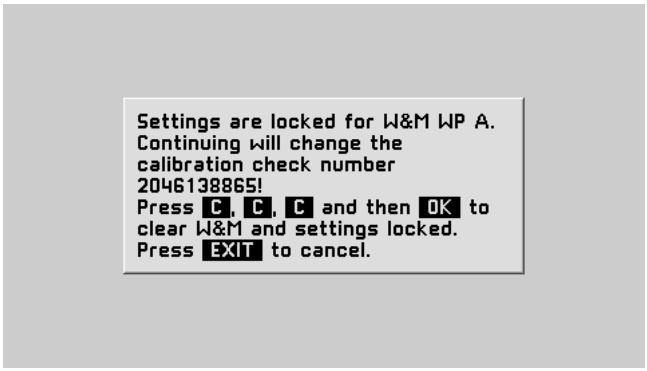
- ▶ Press the ▼ key to select the line.
- ▶ Press the ► key/**OK** to confirm the selection.
- ▷ The overwrite protection statuses are checked (CAL switches and parameter ‚Settings locked').



- ▷ This message appears if at least one CAL switch is closed.
- ▶ Open the CAL switch and press any key to check the statuses again.

Or

- ▶ Press the **EXIT** key to cancel the process and return to the BIOS menu.

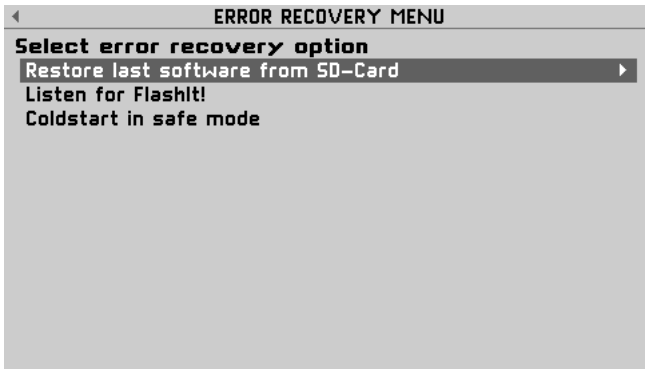


- ▷ This message appears if the ‚W&M' parameter has been set to another value besides ‚none' for at least one weighing point and ‚Settings locked' has been activated.
- ▶ Press the **C** key three times and then press the **OK** key to reset the ‚W&M' parameter and ‚Settings locked'.
- ▷ The calibration check number changes.

Or

- ▶ Press the **EXIT** key to cancel the process and return to the BIOS menu.

6.3.3 Troubleshooting Menu

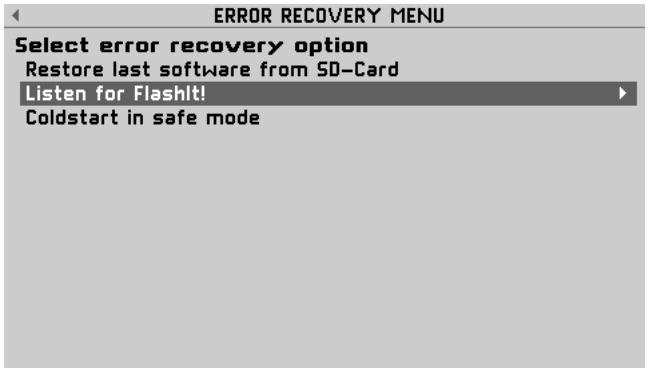


▷ If all checks have been carried out, the troubleshooting menu appears.

[Restore last software from SD-Card]

▶ Press the ▶ key/**OK** to confirm the selection.

▷ The last saved software image (bios, firmware, and application) is restored in the device.

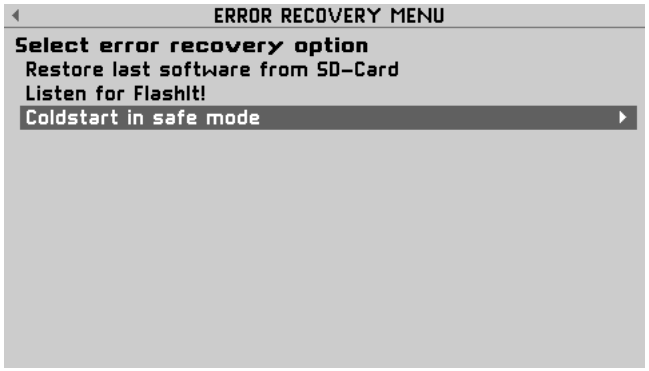


[Listen for FlashIt!]

▶ Press the ▼ key to select the line.

▶ Press the ▶ key/**OK** to confirm the selection.

▷ It is now possible to load software on the device via the network using the „FlashIt!“ program; see also page page 326.

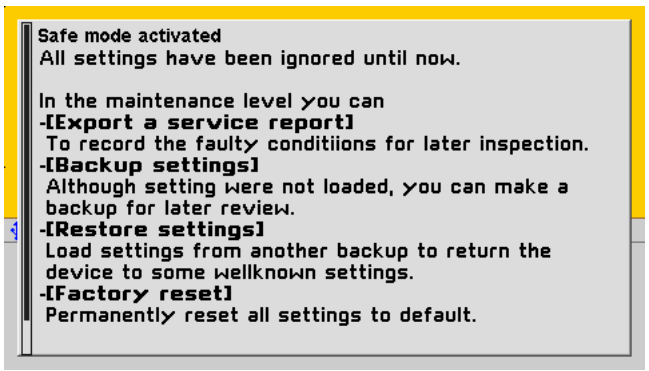


[Coldstart in safe mode]

▶ Press the ▼ key to select the line.

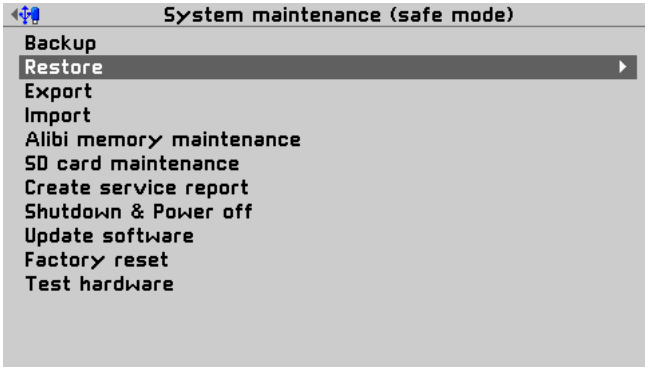
▶ Press the ▶ key/**OK** to confirm the selection.

▷ The device starts in a mode where all settings (even language settings) are ignored.

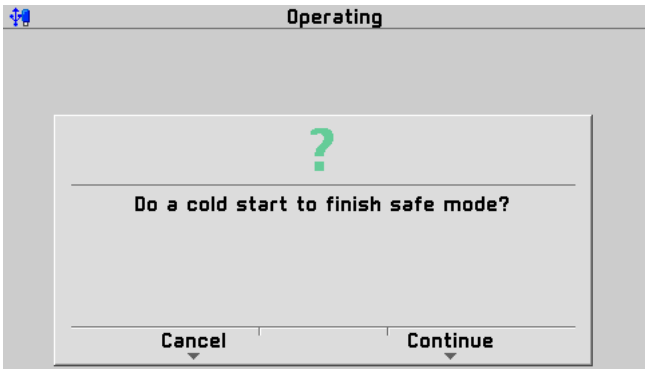


▷ A help window appears.

▶ Press the **EXIT** key to close the help window and switch to the system maintenance menu.



- ▶ Press the ▼ key to select the desired menu item.
- ▶ Press the ▶ key/**OK** to confirm the selection.
- ▶ The rest of the procedure is described in Chapter 6.1.
- ▶ Press the **EXIT** key to exit the system maintenance menu.



- ▷ A prompt window appears.
- ▶ Press the [Cancel] soft key to select additional menu items in the system maintenance menu if necessary.
- ▶ Press the [Next] soft key to carry out a cold start.

7 ModBus Protocol

7.1 General Description

The J-Bus/ModBus protocol implemented in the device permits fast, simple and reliable communication between a PC or a PLC.

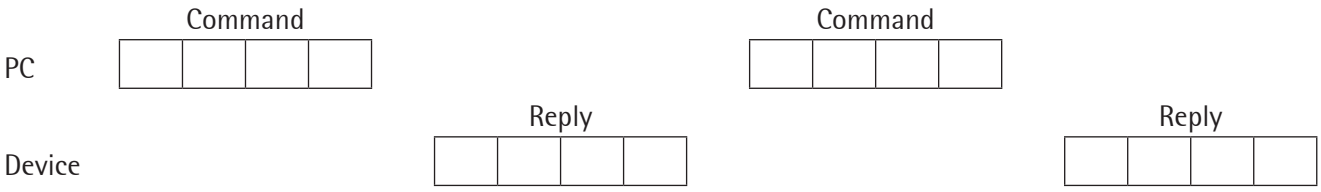
Device fully supports

- ModBus-RTU (via a serial interface), see Chapter 7.2
- ModBus-TCP (via a network interface), see Chapter 7.3
- ModBus-UDP (via a network interface), see Chapter 7.3

including functions 1, 2, 3, 4, 5, 6, 8 (sub-function 0), 15 and 16.

J-Bus is a French 'clone' of the ModBus. There is a small difference: J-Bus addresses count from 0 (instead of 1) to hex FFFF (instead of dec. 9999). Some ModBus masters automatically subtract 1 before sending a message, and some ModBus slaves subtract 1 to get the requested address. Therefore the address access may shift by 1; this is the only point which must be taken into account. In everyday practice, no other problems when connecting J-Bus and ModBus devices should appear.

Binary data from and to the SPM of device are transmitted using this protocol. Any data exchange includes two telegrams: a command from the PC to device and a reply from device to the PC.



Note	All 2-byte values (16-bit values/word) have the Motorola notation. Consequence: MSB - LSB

A reply is sent to each error-free command.

If the received command is correct but cannot be executed nevertheless (e.g. due to a faulty address or faulty data), an error telegram is the reply.

7.2 ModBus-RTU

A serial interface is used for connection.

The telegram consists of four blocks:

$Addr_8$	$Func_8$	<data>	Crc_{16}

Legend

$Addr_8$	Slave device address within a range of 0 or 1 to 247
$Func_8$	Function code
<data>	Additional data (see Chapter 7.4)
Crc_{16}	Checksum of all preceding characters

Note	A telegram sent to Slave 0 is executed by all ModBus participants, but replied by none of these devices.

At 9600 baud, the reply time is typically 4 ms and a max. of 8 ms.

A faulty command received by device (e.g., parity error in the data, or CRC error) is ignored and no reply is sent.

The pauses between the individual characters and a command must not exceed the 3.5-fold value of a character length; otherwise device detects a premature end of the command.

7.3 ModBus-TCP/UDP

Connection is via the network interface.

The telegram consists of six blocks:

$Trans_{16}$	$Proto_{16}$	$Size_{16}$	$Addr_{8}$	$Func_{8}$	<data>

Legend

$Trans_{16}$	Sequential transaction number. This number is used by the device so that the reply can be assigned to the query.
$Proto_{16}$	Reserved for future upgrades, always 0 here.
$Size_{16}$	Number of following bytes
$Addr_{8}$	Normally, the device address is not used with ModBus-TCP/UDP.
	It is used if ModBus-TCP/UDP is connected behind a ModBusRTU gateway.
	The device ignores this parameter for ModBus-TCP/-UDP.
$Func_{8}$	Function code (see Chapter 7.4)
<data>	Additional data (see Chapter 7.4)

Telegrams can be exchanged using TCP or UPD via Port 502. Normally, this is a fixed setting in the ModBus-TCP master.

For UDP, the reply time is typically 4 ms and a max. of 8 ms. When network traffic is heavy, failed telegram transmissions must be expected. Suitable measures must be taken in the Modbus-UDP master to force a repeated transmission in the event of telegram loss.

With TCP, the typical response time is approx. 10 ms. With heavy network traffic, transmission can be delayed (max. 120 seconds for extreme network loads or for long transmission distances such as via the Internet). However, no telegrams are normally lost.

Comparison

ModBus-TCP	**ModBus-UDP**
Reliable transmission: As long as the line is not interrupted, no telegram is lost.	Unreliable transmission: With heavy network traffic or transmission over long distances, telegram loss must be expected.
Low speed: With transmission problems, transmission can be delayed considerably.	High speed: The reply is transmitted quickly, or not at all.
Suitable for: - Parameter transmission - Result logging - Non-time-critical process control	Suitable for: - Transmission of dynamic values - Visualization - Time-critical process control (requiring timeout handling)

7.4 Functions

Function 1 or 2: read n bits

Command	Function number	Address of 1st bit	Number of bits
	1 byte	2 bytes	2 bytes
Value range	1, 2	0, 8 , 16...	8, 16, 24...

The bit address must always be the 1st bit of a byte. The number of bits to be read must not be smaller than 8 and must be a multiple of 8.

Reply	Function number	Number read. Bytes	Value of 1st byte	Value of 2nd byte	Value of last byte
	1 byte	1 byte	1 byte	1 byte	1 byte
			8th to 1st bit		Last bit

The number of bits is limited by the telegram to 2008 bits (251 bytes). If there are more than 2008 bits, then an error telegram is sent as a reply.

Example of function 1 for reading the status bits of the scale (8 bits start at bit 32) with ModBus-RTU.

Command	1	1	0	32	0	8	CRC	CRC

Reply	1	1	1	X	CRC	CRC

Example with ModBus-TCP:

Command	47	11	0	0	0	6	0	1	0	32	0	8

Reply	47	11	0	0	0	4	0	1	1	X

The individual bytes are shown.

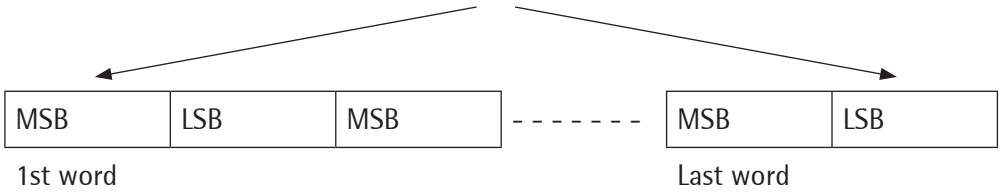
The read byte X is interpreted as follows:

Bit 0 = bit 32 of SPM = ADC error
Bit 1 = bit 33 of SPM = above Max (maximum capacity)
:
Bit 6 = bit 38 of SPM = weight is stable
Bit 7 = bit 39 of SPM = weight is below zero or above Max

Function 3 or 4: read n successive words

Command	Function number	Address of 1st word	Number of words
	1 byte	2 bytes	2 bytes
Value range	3, 4	0 to 63	1 to 64

Reply	Function number	Number of bytes	Value of words
	1 byte	1 byte	n bytes



If the address of one of the words to be read is out of the permissible range (0 to 16383), an error message is sent as a reply (the address plus the number of words must not exceed 16384).

The number of words is limited by the telegram to 125 words (250 bytes). If there are more than 125 words, then an error telegram is sent as a reply.

Example of function 3 for reading a gross weight (D8 = W16) of 893 kg with ModBus-RTU:

Command	1	3	0	16	0	2	CRC	CRC

Reply	1	3	4	0	0	3	125	CRC	CRC

Example with ModBus-TCP:

Command	47	12	0	0	0	6	0	3	0	16	0	2

Reply	47	12	0	0	0	7	0	3	4	0	0	3	125

The individual bytes are shown.

Function 5: Writing a Bit

Command	Function number	Address of the bit	Value of the bit	Always 0
	1 byte	2 bytes	1 byte	1 byte
Value range	5	0 to 127	0 or 255	0

Reply	Function number	Address of the bit	Value of the bit	Always 0
	1 byte	2 bytes	1 byte	1 byte

Example of function 5 for setting bit 113 (taring) with ModBus-RTU:

Command	1	5	0	113	255	0	CRC	CRC
Reply	1	5	0	113	255	0	CRC	CRC

Example with ModBus-TCP:

Command	47	13	0	0	0	6	0	5	0	113	255	0
Reply	47	13	0	0	0	6	0	5	0	113	255	

The individual bytes are shown.

Function 6: Writing a Word

Command	Function number	Word address	Value of the word
	1 byte	2 bytes	2 bytes
Value range	6	0 to 63	

Reply	Function number	Word address	Value of the word
	1 byte	2 bytes	2 bytes

If the address is out of the permissible range (0...16383), an error message is sent as a reply.

Function 8: Diagnosis

Command	Function number	Sub-function	Any value
	1 byte	2 bytes	2 bytes
Value range	8	0	

This function is intended for testing the communication.

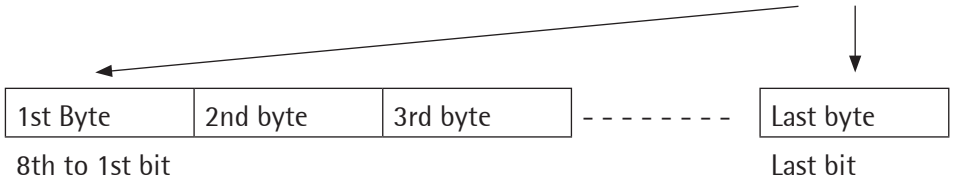
Only sub-function 0 is supported.

The received command is sent as a reply.

Reply	Function number	Sub-function	Value of the command
	1 byte	2 bytes	2 bytes

Function 15: write n successive bits

Command	Function number	Address of 1st bit	Number of bits	Number of bytes	Value of bits
	1 byte	2 bytes	2 bytes	1 byte	n bytes
Value range	15	0 to 127	8, 16, 24	1, 2, 3...	



The bit address must always be the 1st bit of a byte. The number of bits to be read must not be smaller than 8 and must be a multiple of 8. The number of bits is limited by the telegram to 2008 bits (251 bytes). If there are more than 2008 bits, then an error telegram is sent as a reply.

Reply	Function number	Address of 1st bit	Number of bits
	1 byte	2 bytes	2 bytes

Example of function 15 with ModBus-RTU:

Command	1	15	0	64	0	8	1	3	CRC	CRC
Reply	1	15	0	64	0	8	CRC	CRC		

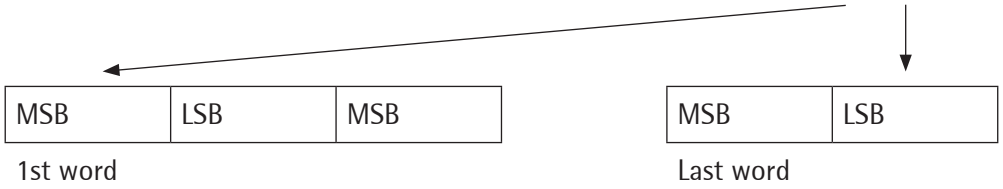
Example with ModBus-TCP:

Command	47	14	0	0	0	8	0	15	0	64	0	8	1	3
Reply	47	14	0	0	0	6	0	15	0	64	0	8		

The individual bytes are shown.

Function 16: write n successive words

Command	Function number	Address of 1st word	Number of words	Number of bytes	Value of words
	1 byte	2 bytes	2 bytes	1 byte	n bytes
Value range	16	0 to 63	1 to 64	2 to 128	



Reply	Function number	Address of 1st word	Number of words
	1 byte	2 bytes	2 bytes

If the address is out of the permissible range (0 to 16383), an error message is sent as a reply (the address plus the number of words must not exceed 16384).

The number of words is limited by the telegram to 125 words (250 bytes). If there are more than 125 words, then an error telegram is sent as a reply.

Example of function 16 for writing the limit_1 switch-on point using value 893 with ModBus-RTU:

Command	1	16	0	48	0	2	4	0	0	3	125	CRC	CRC
Reply	1	16	0	48	0	2	CRC	CRC					

Example with ModBus-TCP:

Command	47	15	0	0	0	8	0	16	0	48	0	2	4	0	0	3	125
Reply	47	15	0	0	0	6	0	16	0	48	0	2					

The individual bytes are shown.

7.5 Error Messages

If a command was transmitted correctly, but cannot be executed because, e.g. the address is too high, an error message is sent as a reply to the command.

The error message has the following format:

Function number +128	Function number
1 byte	1 byte

The 2nd byte contains the received function number; the most significant bit is set additionally.

Meaning of the error number:

1	The function number is unknown
2	The address is out of the permissible range
3	The data format is faulty (e.g. more data than specified in the number were written)

Example of an error message, which was generated by an invalid function number with ModBus-RTU.

Command	1	9	0	0	0	0	CRC	CRC
Reply	1	137	1	CRC	CRC			

Example with ModBus-TCP:

Command	47	16	0	0	0	8	0	9	0	0	0	0
Reply	47	16	0	0	0	3	0	137	1			

The individual bytes are shown.

7.6 Word Addresses

16	Gross weight, 1st byte (MSB)	Gross weight, 2nd byte
17	Gross weight, 3rd byte	Gross weight, 4th byte (LSB)

2	39	38	37	36	35	34	33	32	47	46	45	44	43	42	41	40
7	119	118	117	116	115	114	113	112	127	126	125	124	123	122	121	120

Address	Meaning
Read bits:	
32	ADC error
33	Above Max (FSD)
34	Above Max + n d
35	Below zero (minus sign)
36	Zero within ¼ d
37	Within the zero setting range
38	The weight is stable
39	The weight is below zero or above Max
Write bits:	
112	Set zero
113	Set tare
114	Reset tare

For additional bits, see the operating instructions of the respective application.

8 EW Com Protocol

This function enables the use of the following commands.

No license is required for its use.

Note	These commands can still be used for existing systems if available PR 16xx devices are being replaced. These commands may not be used for new systems.

8.1 Weight Function Commands

These commands only support weighing points with a max. of 6 digits before and a max. of 3 digits after the decimal point.

Command	Reply	Description
WG{A|B|C|D}	QG{A|B|C|D}vwwwwwemz	Read gross weight
WN{A|B|C|D}	QN{A|B|C|D}vwwwwwemz	Read net weight
WT{A|B|C|D}	QT{A|B|C|D}vwwwwwemz	Read tare weight
		vwwwwwe = Weight with a +/- sign and exponent (e.g. '002340' = 002.34 g; 001005 = 100 kg) e = Exponent: '5' = XXXXX; '4' = XXXX.X; '3' = XXX.XX; '2' = XX.XXX m = '1' = stability v = +/- sign and can be '-' or ' ' z = '1' = tared; '2' = test is active; '4' = in ¼ d Possible error messages: E100@0 general error for @ see Chapter 8.3 E30000 BCC error E50000 analog test active E60000 weighing point unknown
WZ{A|B|C|D}	Q	Zero device Possible error messages: E100@0 general error for @ see Chapter 8.3 E30000 BCC error E60000 weighing point unknown E70000 weighing point tared or no standstill
WS{A|B|C|D}	Q	Tare
WS{A|B|C|D}vwwwwwe	Q	Preset tare Possible error messages: E100@0 general error for @ see Chapter 8.3 E30000 BCC error E60000 weighing point unknown E63000 preset tare >MAX E70000 weighing point tared or no standstill

Command	Reply	Description
WF{A|B|C|D}	Q	Reset tare Possible error messages: E100@0 general error for @ see Chapter 8.3 E60000 weighing point unknown E70000 weighing point tared or no standstill
I	QIwwwww ddssnnnnn	d = Unit, variable (mg, g, kg, t, lb, oz) ss = Scale interval (01, 02, 05, 10, 20, 50) nnnnn = Span in mV/V (01234 corresponds to 0.1234 mV/V)

8.2 Other Commands

Command	Reply	Description
ZSDTTMMJJJJssmm	QZSD	Set date and time Possible error messages: E20000 telegram too long E60000 telegram too short
ZSC	QZSC	Reset communication
V	QV5500/00-vv.vv.vv B: nnnnnnnnn	Version query vv.vv.vv = Version number nnnnnnnnn = Board number

8.3 SPM Commands

Command	Reply	Description
mrx<aa><aa>	qmrx<0q>	Read SPM bit
mrb<aa><aa>	qmrb<dd>	Read SPM byte
mrw<aa><aa>	qmrw<dd><dd>	Read SPM word
mrd<aa><aa>	qmrd<dd<dd><dd><dd>	Read SPM double word
mrb<aa><aa><nn>	qmrb<dd>	Read SPM bytes
mrw<aa><aa><nn>	qmrw<dd>	Read SPM words
mrd<aa><aa><nn>	qmrd<dd>	Read SPM double words
Length 1 can be omitted.		
msx<aa><aa>	q	Set bit
mcx<aa><aa>	q	Clear bit
msb<aa><aa>	q	Set byte
mcb<aa><aa>	q	Clear byte
msw<aa><aa>	q	Set word
mcw<aa><aa>	q	Clear word
msd<aa><aa>	q	Set double word
mcd<aa><aa>	q	Clear double word
mwx<aa><aa><0q>	q	Write SPM bit
mwb<aa><aa><dd>	q	Write SPM byte
mww<aa><aa><dd><dd>	q	Write SPM word
mwd<aa><aa><dd><dd><dd><dd>	q	Write SPM D word
mwb<aa><aa><nn><dd>	q	Write nn SPM bytes
mww<aa><aa><nn><dd><dd>	q	Write nn SPM words
mwd<aa><aa><nn><dd><dd><dd><dd>	q	Write nn SPM D words
Length 1 can be omitted. An AND/OR function is also possible.		

Legend

(<aa> a character in binary code)

m	Memory command, binary
r,w,a,o,s,c	Read, write, AND, OR, set, clear
x,b,w,d	Bit, byte, word, double word
q	Confirmation
<aa><aa>	Address (high byte, low byte)
<dd>	Data byte
<nn>	Number of data
<0q>	1 bit
<dd>	Several data bytes

In case of error, the reply is e<xx><yy><zz>, see also Chapter 8.4.

Note	
	The addresses in these telegrams are binary. The addresses in the list in the Chapter 'Fieldbus Interfaces' in the corresponding Applikation Manual are decimal.

8.4 Error Messages for EW Com Commands

Errors	Description	Errors	Description
E20000	Error in telegram structure	E10010	Arithmetic overflow
E30000	BCC error	E10020	Overload
E40000	Hardware error messages	E10030	ADC hardware error
E50000	Analog test active	E10040	Weight > 5 digits
E60000	Wrong SPM address	E10050	No weight
E63000	Preset tare > MAX	E10060	No sense voltage
E70000	Tared weighing point or no stability	E10070	Mixed-up inputs

9 Repairs and Maintenance

Repairs are subject to inspection and must be carried out at Sartorius Intec. In case of defect or malfunction, please contact your local Sartorius Intec dealer or service center for repair. When returning the device for repair, please include a precise and complete description of the problem. Maintenance work may only be carried out by a trained technician with expert knowledge of the hazards involved and the required precautions.

9.1 Battery for Date/Time

The lithium battery for backing up the calendar/time chip is located on the main board.

The battery is activated before the instrument leaves the factory.

Note	Check the date and time after first turning on the device and change if necessary.

Replacing the Battery

If the voltage drops below the specified minimum, or in case of defect, the battery must be replaced by Sartorius Intec customer service or by an equivalent trained technician. For details on disposal, see Chapter 10.

For details on battery lifetime, see Chapter 12.3.1.

If the battery needs to be changed, this is shown on the display.

9.2 Rechargeable Battery for Voltage Supply

This device contains an NiMH rechargeable battery. In the event of a power failure, the processor is supplied for approx. 1 min. in order to save the current state and shut down properly.

Changing the Rechargeable Battery

If the voltage drops below the specified minimum, or in case of defect, the battery must be replaced by Sartorius Intec customer service or by an equivalent trained technician. For details on disposal, see Chapter 10.

9.3 Solder Work

Soldering work on the instrument is neither required nor permitted.

9.4 Cleaning

⚠ Warning

- **Prevent moisture from penetrating the interior.**
- **Do not use aggressive cleaning agents (solvents or similar).**
- **For use in the food industry, use a cleaning agent suitable for that particular working environment.**
- **Spraying with water or blowing off with compressed air is not permissible.**

▶ Disconnect the device from the power supply.

▶ Clean the device with a cloth lightly moistened with a soap solution.

▶ Wipe down the device with a soft, dry cloth after cleaning.

10 Disposal

If the packaging is no longer needed, it can be disposed of by local waste disposal authorities. The packaging is made from environmentally friendly materials, which are suitable for recycling.

For more information, please see the T&Cs.

Place discharged batteries in local collection boxes (not in the household waste). In Germany, corresponding collection boxes are made available by GRS (Stiftung Gemeinsames Rücknahmesystem Batterien) on request with Sartorius Intec.

Prior to scrapping, any batterie should be removed.

Contact your local authorities regarding the disposal of the devices.

In Germany, Sartorius Intec also offers a return service and legally compliant recycling of its equipment.

In other countries, please consult with the local authorities.

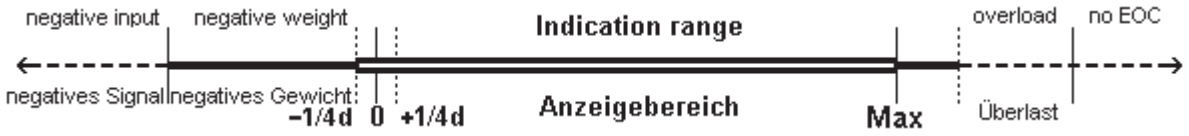
11 Error Messages

11.1 Error Messages in Measuring Circuit

The weighing electronics can generate error messages, which are output on the weight display.

Display	Error and Possible Cause	Remote display
Arith. error	Internal arithmetic overflow: - incorrect calibration values due to incorrect calibration, for example	Error 1
Overload	Input voltage is higher than Max + (x d): - Wrong settings - Too much weight on the scale	Error 2
No signal	Measuring input open: - Input signal is higher than the permissible range of 36 mV. - Measuring cable is interrupted (cable break detection) - Other hardware defect	Error 3
Value exceeds display	Measured value cannot be displayed. Example: 30,000 kg scale and weight unit toggle to mg. > 9,999,000 mg (= 9,999 kg) generates this error message.	Error 4
No sense voltage	No sense voltage: - Load cells not connected. - Sense line or supply line is interrupted. - Wrong polarity or sense voltage is low.	Error 6
Negative input	Negative input (< -0.1mV/V): - Wrong polarity of load cell signal. - Wrong polarity of supply voltage.	Error 7
No values from scale	Internal weighing point: Input signal is higher than the permissible range of 36 mV. Cannot read weight values from ADC (analog-digital converter). - Error in weighing electronics board - Defective load cell - Cable break	Error 9
Test active	No gross weight value: - Test is not yet finished.	Error 10

Wrong serial number Only if CAL switch is closed.	- Weighing electronics board has been changed after calibration. - Device is not calibrated.	Error ?
Read config failed	The stored configuration and calibration data are not read. - Transfer data stored in backup device using [System maintenance]-[Restore]-[SD card] recreating data in process controller (see Chapter 6.1.3.1) - Initially set weighing electronics (i.e. ‚Internal weighing point') to ‚not assigned', save and then assign.	Error A
Warmup 123	Device in warm-up mode, approx. 30 s.	123



11.2 Error Messages with xBPI Scales

11.2.1 Error Messages

Display	Error and Possible Cause	Remote display
Overload	Input voltage is higher than Max + (x d): - Wrong settings - Too much weight on the scale	Error 2
Value exceeds display	The weight value is not displayed: - Too many digits have been set	Error 4
No weight value	The xBPI scale is not providing any usable weights. - Taring process cannot be completed.	Error 5
Incompatible units	Incompatible mass units: - Wrong calibration values by e.g. incorrect calibration	Error 8
No values from scale	No communication with xBPI scale: - Cable break - Internal scale error - The scale is not connected to the supply voltage.	Error 9
Wrong configuration	- Tare disabled - Tare 2 not allowed - Application tare is too high	Error 13
Scale not ready	The scale is not ready for weighing: - The instrument is in the warm-up phase. - The instrument is in automatic taring mode. - The instrument was switched on with the scale loaded.	Error <
Wrong serial number	Serial number of scale does not match the number set in the device.	Error ?
Read config failed	The stored configuration and calibration data are not read. - Transfer data stored in backup device using [System maintenance]-[Restore]-[SD card] recreating data in process controller (see Chapter 6.1.3.1). - Initially set weighing electronics (i.e. ‚Internal weighing point') to ‚not assigned', save and then assign.	Error A

11.2.2 Error during "Set zero" and "Set tare"

An error occurs in the LOAD ERROR variable only with actions SET_ZERO and SET_TARE.

Possible error numbers are:

IND_STS_OK=0,	//! "OK" ok, didit
IND_STS_NO_WPT=1,	//! "no wpt" specified wpt does not exist
IND_STS_WPT_IN_USE=2,	//! "in use" weighing point is in use
IND_STS_NOT_TARED=3,	//! "not tared" cannot get TARE or NETTO if not tared
IND_STS_BAD_UNIT_EXPO=4,	//! "wrong expo/unit" bad unit
IND_STS_RANGE_ERROR=5,	//! "range error"
IND_STS_TEST_ACTIV=6,	//! "test active" test is active, no weights
IND_STS_CALI_ACTIV=7,	//! "cali active" in calibration, no weights
IND_STS_NO_STAND=8,	//! "no standstill" no standstill
IND_STS_IS_REACTOR=9,	//! "is reactor" wp is a reactor
IND_STS_NO_PHY_WPT=10,	//! "no physical weighing point assigned"
IND_STS_NOT_DOSING=11,	//! "not in dosing mode"
IND_STS_NOT_RESERVED=12,	//! "weighing point is not reserved"
IND_STS_TARE_ACTIV=13,	//! "tare is active"
IND_STS_NO_TEST=14,	//! "weighing point is not in test"
IND_STS_DIMMED=15,	//! "weight is dimmed"
IND_STS_WGT_ERROR=16,	//! "weight has error"
IND_STS_NOT_READY=17,	//! "scale not ready"
IND_STS_TARE_BELOW_ZERO=18,	//! "cannot tare below zero"

PHY_WPT_STS_CMD_ERR= 101,	
PHY_WPT_STS_TIMEOUT= 102,	//! for xBPI: timeout in sending a command to the scale

11.3 Error Messages with Pendeo® Load Cells

Display	Error and Possible Cause	Remote display
Overload	Input voltage is higher than Max + (x d): - Wrong settings - Too much weight on the scale	Error 2
Value exceeds display	The weight value is not displayed: - Too many digits have been set	Error 4
Incompatible units	Incompatible mass units: - Wrong calibration values by e.g. incorrect calibration	Error 8
No values from scale	No communication with Pendeo load cell: - Cable break - Internal scale error - The scale is not connected to the supply voltage.	Error 9
Wrong configuration	The number of load cells does not match with the configuration.	Error 13
Scale not ready	The scale is not ready for weighing: - Min. 1 load cell gives an error status or is defective (no communication).	Error <
Wrong serial number	Serial number of load cell does not correspond to the number set in the device.	Error ?
Warmup 123	Load cells in warm-up mode, approx. 30 s.	Error @
Read config failed	The stored configuration and calibration data are not read. - Transfer data stored in backup device using [System maintenance]-[Restore]-[SD card] recreating data in process controller (see Chapter 6.1.3.1). - Initially set weighing electronics (i.e. ‚Internal weighing point') to ‚not assigned', save and then assign.	Error A

11.4 Error messages with PR-Net Weighing Point

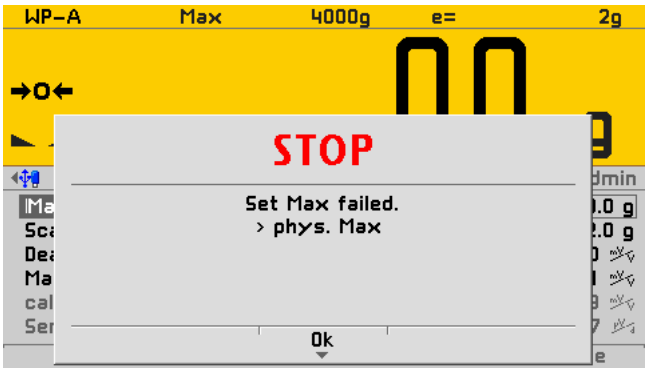
Display	Error and Possible Cause	Remote display
Wrong configuration	No IP address or no host name available.	Error 13

11.5 Error messages with Type ‚Mettler-Scale' Weighing Point

Display	Error and Possible Cause	Remote display
Arith. error	Internal arithmetic overflow: - Parameter/calibration values don't match with Mettler-Scale values.	Error 1

11.6 Error Messages during Calibration

11.6.1 Determining the Maximum Capacity (MAX)



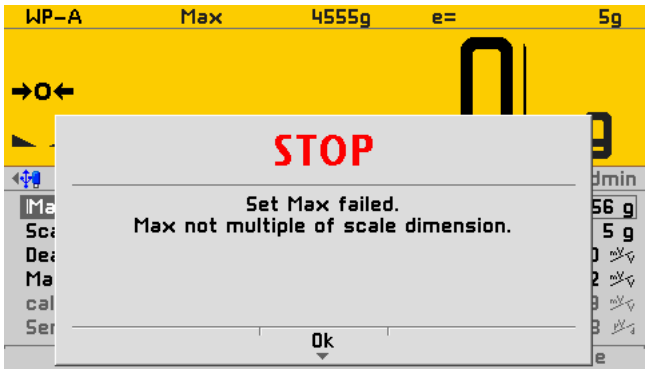
The maximum capacity of the scale can be increased retroactively.

This message appears when the measurement signal for the given maximum capacity would exceed the permissible input voltage.

The maximum capacity of the scale can be increased retroactively. When the capacity is reduced, however, a message appears when the new maximum capacity falls below the calibration weight ("calibrated at").

This message appears if the selected resolution is too low, e.g. 5 kg.

This message appears when the selected resolution is so high that less than 0.8 internal counts per scale interval (d) are available.

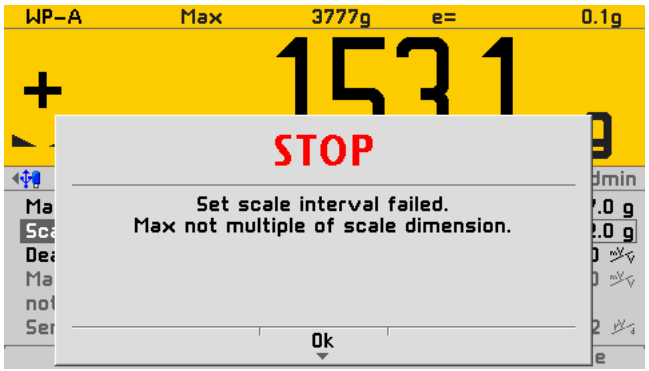


This message appears if the maximum capacity [Max] of the scale range (weighing range) is not an integer multiple of the scale interval (1 d).

Weight units do not match, e.g. subsequent change of [Max] from kg to mg.

This message appears if the selected resolution is so high that less than 0.8 µV/e are available when "OIML/ NSC" has been selected.
After [OK] is pressed, the input value for the maximum capacity [Max] is canceled.

11.6.2 Determining the Scale Interval



This message appears if the maximum capacity [Max] of the scale range is not an integer multiple of the scale interval.

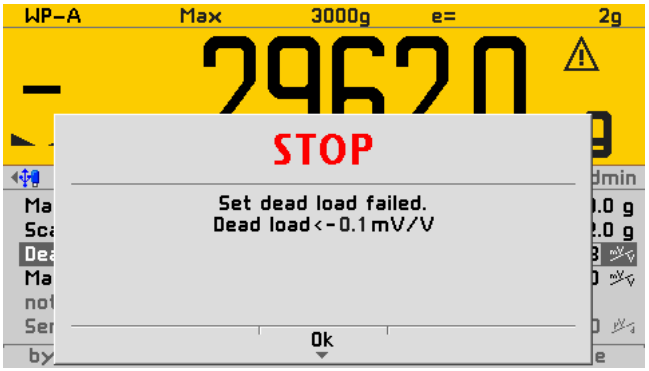
11.6.3 Determining the Dead Load

The dead load entered in mV/V plus maximum capacity in mV/V is higher than 3 mV/V (= 36 mV).

This message appears when the scale is not stable.

Remedy

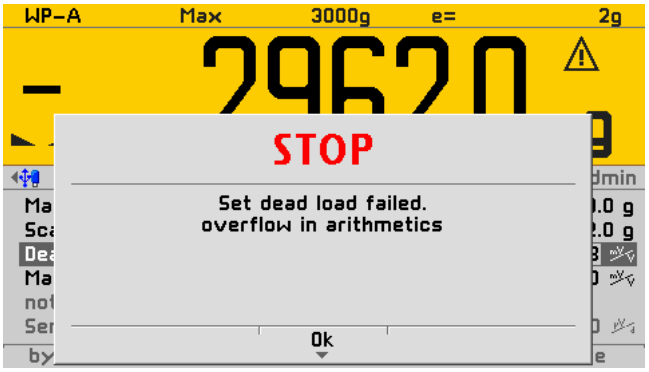
- ▶ Check the mechanical function of the scale.
- ▶ Adapt the filter setting; reduce the resolution.
- ▶ Adapt the stability conditions.



This message appears if the measurement signal is negative (load cells connected with wrong polarity or defective) when determining the dead load with [by load].

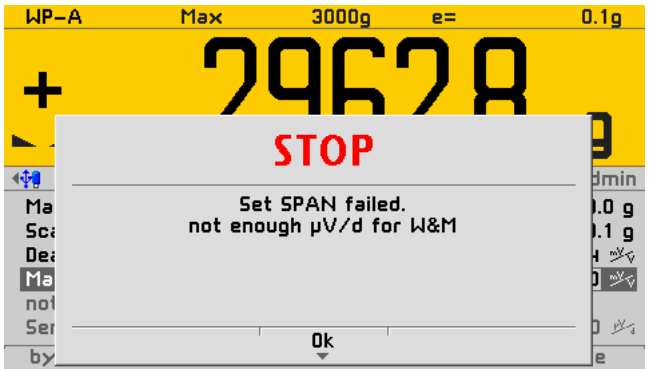
Cause

Load cell connected with wrong polarity, or defective, or mechanical problem of the scale.



This message appears if the dead load entered in mV/V is higher than 5 mV/V.

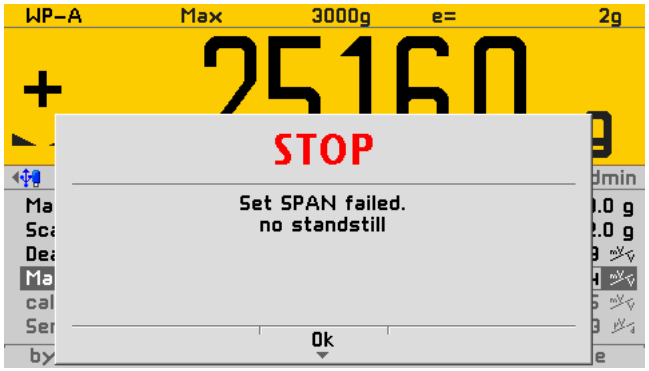
11.6.4 Calibrating with Weight



This message appears when the scale interval is too small, if ‚W&M' has been selected.

Remedy:

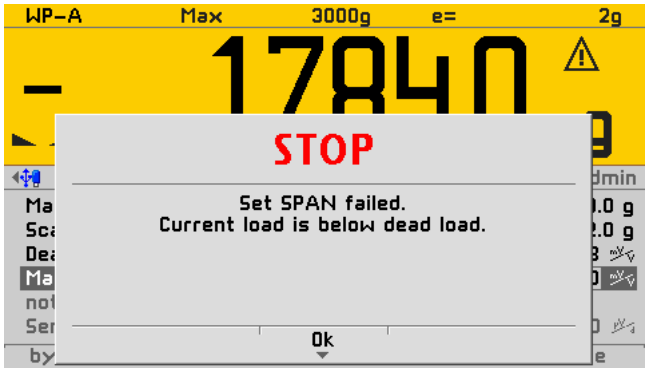
- ▶ Enter larger scale interval.



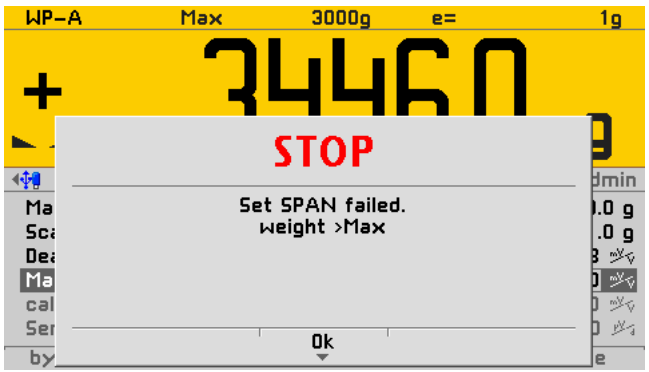
This message appears when the scale is not stable.

Remedy:

- ▶ Check the mechanical function of the scale.
- ▶ Adapt the filter setting; reduce the resolution.
- ▶ Adapt the stability conditions.



This message appears if the load has been removed from the scale rather than added.



This message appears when an attempt is made to calibrate the scale using a weight that is heavier than the [Max].

12 Specifications

12.1 Note on Using 'Free Software'

This device also contains "free software" in the firmware that is licensed under the GNU General Public License (GPL) Version 2, June 1991, and the GNU Lesser General Public License (LGPL) Version 2.1, February 1999.

This device also contains "free software" from MIT and BSD.

This 'free software' was developed by third parties, is copyrighted, and is provided free of charge.

The license terms and conditions of Free Software Foundation, Inc in English are included in the delivery of the instrument.

The source text with the terms can be found on the enclosed CD-ROM.

12.2 Decoding the Serial Number

30 252 00015		
30	274	00015
Location no.: 30 = Hamburg	Code for the year/month: 274* = February 2012	Current number

* will count up according to the year group table of Sartorius

12.3 General Data

The following characteristics are valid after a warm-up time of at least 60 minutes (reference temperature: 23°C).

12.3.1 Battery for Date/Time

The lithium battery for backing up the date/time chip is activated before the instrument leaves the factory.

Lifespan	Device continuously connected to mains voltage	10 years
	Device not connected to mains voltage for some time (e.g. in storage)	7 years

12.3.2 Rechargeable Battery for Voltage Supply

The NiMH rechargeable battery continues to supply the processor for approx. 1 minute after a power failure has occurred, in order to save the current status of the device. The temperature of the rechargeable battery is monitored and can be displayed.

12.3.3 Display

Type	**Size**	**Resolution**
TFT graphical color display	4.3''	480 x 272 pixels

12.3.4 Power Connection 230 V AC

Supply voltage	100 V-240 V AC	+10%/-15%	50/60 Hz
Max. power consumption	14 W/32 VA		
Primary fuse	2x 1 AT, 250 V, 5 x 20 mm; Littlefuse series 218, order no. 0218.001.P		

12.3.5 Power Connection 24 V DC

Supply voltage	24 V DC	±10%
Max. power consumption	1 W	
Primary fuse	1x 2 AT, 250 V, 5 x 20 mm e.g. made by Schurter: SPT5x20, order no.: 0001.2507	

12.4 Effect of Ambient Conditions

12.4.1 Ambient Conditions

Temperature range		
	Ambient temperature for operation	-10 to +50°C
	Ambient temperature for use in legal metrology	-10 to +40°C
	Power-on temperature	> 0°C
	Storage/transport	-20 to +70°C
Moisture		< 95%, no condensation (in accordance with IEC 68-2)
Protection class		IP65 front, IP20 rear
Elevation		< 2000 m

12.4.2 Electromagnetic Compatibility (EMC)

All data in compliance with NAMUR NE 21, EN 45501, and EN 61326.

Housing	Radio frequency electromagnetic fields (80-3000 MHz)	EN 61000-4-3	10 V/m
	Electrostatic discharge (ESD)	EN 61000-4-2	6/8 kV
Signal und control lines	Fast transients (bursts)	EN 61000-4-4	1 kV
	Peak voltages (surges) 1.2/50 µs	EN 61000-4-5	1/2 kV
	Conducted disturbances by radio frequency (0.15-80 MHz)	EN 61000-4-6	10 V
Mains inputs	Fast transients (bursts)	EN 61000-4-4	2 kV
	Peak voltages (surges) 1.2/50 µs	EN 61000-4-5	1/2 kV
	Conducted disturbances by radio frequency (0.15-80 MHz)	EN 61000-4-6	10 V
	Voltage dips	EN 61000-4-11	0/40/70% 20/200/500 ms
	Mains failure link	EN 61000-4-11	20 ms

12.4.3 RF Interference Suppression

Electromagnetic emission		EN 55011, Group 1, Class A For industrial areas

12.5 Mechanics

12.5.1 Design

Control cabinet housing made of stainless steel and aluminum, protection class IP65, rear IP20.

12.5.2 Dimensions

Width	186/192/199 mm
Height	90/96/103 mm
Depth	approx. 203 mm (incl. screen clamping rail)

12.5.3 Weights

Net weight	2.2 kg
Shipping weight	3.1 kg

12.6 Documentation on the Enclosed CD

The enclosed CD has a directory containing the following documents:

- Eu Declaration of Conformity
- Manuals

13 Appendix

13.1 Configuration Printout

```
Configuration of PR5500
printed            :28.01.2015 16:08:08
=======================================
Hardware           :          PR5500/00
Revision 01        :         2014-05-07
Production number  : 1011-104711-000001
---------------------------------------
Bios               :Rel 01.00.01.249020
                        2015-01-14 07:53
Firmware           :Rel 01.00.01.249118
                        2015-01-15 14:13
Basic              :    Rel 01.00.06.58
                        2015-01-15 10:59
Board number       :          362184361


HW options
=======================================
Option-1 PR5500/04        RS-485/RS-485
Revision 01        :         2012-08-06
Production number  : 1208-270039-900010
---------------------------------------
Option-2 PR5500/17          Digital I/O
Revision 01        :         2014-02-26
Production number  : 1011-101999-000004
---------------------------------------
Option-FB                       -empty-
---------------------------------------
WP A     PR5500/W1  weighing electronic
Revision 01        :         2014-05-14
Production number  : 1011-100815-000002


Operating parameters
=======================================
Operating
---------------------------------------
Display language   :(en)        English
External keyboard l:English      QWERTY
Input method       :              Pinyin
Screensaver        :   after 10 minutes
Keyclick sound     :       no key click
Coldstart with STOP:      for 3 seconds

Programming
---------------------------------------
Software download  :            enabled
Label/Language down:            enabled

Operational keys
---------------------------------------
Keys require logged:                off
Tare key           :set tare & reset ta
Set zero key       :only when not tared
F1 key             :    Change language
F2 key             : Toggle weight unit


General devices
=======================================
Remote display     :       not assigned


ModBus-RTU master  :       not assigned


PC via EW-Com      :       not assigned


Printer            :    Network printer
Protocol           :     LPR (Port 515)
Printer type       :Generic PCL5 (unico
Queue name         :                lp0
IP address         :       172.24.20.83


Add. application devices
=======================================
Ticket printer     :       not assigned


Printer 2          :    Network printer
Protocol           :     LPR (Port 515)
Printer type       :Generic PCL5 (unico
Queue name         :                lp0
IP address         :       172.24.20.83


Network settings
=======================================
HW address         :  00:90:6C:96:7E:A9
Host name          :      PR5500-967EA9
use DHCP           :                Yes
Web server enabled :                Yes
VNC access enabled :                Yes
VNC client         :    255.255.255.255


Network share connections
=======================================
Alibi
---------------------------------------
Connection name    :              Alibi
Server             :hhnfs01.sartorius.c
Share name on serve:              teams
Folder path        :D_Manuals/Share_PR5
Domain             :          SARTORIUS
User name          :     Monika.Eschner
```

```
Password           :          **********


Backups
----------------------------------------
Connection name    :              Backups
Server             :hhnfs01.sartorius.c
Share name on serve:                teams
Folder path        :D_Manuals/Share_PR5
Domain             :            SARTORIUS
User name          :      Monika.Eschner
Password           :          **********


Exports
----------------------------------------
Connection name    :              Exports
Server             :hhnfs01.sartorius.c
Share name on serve:                teams
Folder path        :D_Manuals/Share_PR5
Domain             :            SARTORIUS
User name          :      Monika.Eschner
Password           :          **********


ONECLICKUPDATE
----------------------------------------
Connection name    :      ONECLICKUPDATE
Server             :       172.24.22.198
Share name on serve:             tftpboot
Folder path        :
Domain             :
User name          :
Password           :


Reports
----------------------------------------
Connection name    :              Reports
Server             :hhnfs01.sartorius.c
Share name on serve:                Teams
Folder path        :D_Manuals/Share_PR5
Domain             :            SARTORIUS
User name          :      Monika.Eschner
Password           :          **********


Software
----------------------------------------
Connection name    :              Software
Server             :hhnfs01.sartorius.c
Share name on serve:                teams
Folder path        :D_Manuals/Share_PR5
Domain             :            SARTORIUS
User name          :      Monika.Eschner
Password           :          **********
```

```
License settings
========================================
Board number       :           362184361
OPC server license :             7571700
Dosing license     :             3972067
Alibi license      :             8026696
Application license:             1520276
                      Basic with Tilt cor


Weighing point A   :Internal weighing p
========================================
WP serial number   :           464605997
Last change        :2015-01-28 15:59:25
Calibration check n:          1619716956
Max                :          3000.00 g
                                300000 d
Scale interval     :             0.01 g
Dead load at       :      +0.040564 mV/V
                             103.3805 g
Max at             :      +1.177127 mV/V
                            3000.0000 g
calibrated at      :           2516.50 g
                           +0.987413 mV/V
Sensitivity        :           9.81 cnt/d
                            0.047085 uV/d


Units
----------------------------------------
Number of units    :       1 weight unit


Parameters
----------------------------------------
Settings locked    :                 off
W&M                :                none
Measurement time   :              160 ms
Digital filter     :           no filter
External load cell :           above 8 V
Standstill time    :             0.50 s
Standstill range   :             1.00 d
Tare timeout       :              2.5 s
Zeroset range      :             50.00 d
Zerotrack          :                 Yes
Zerotrack range    :             0.25 d
Zerotrack step     :             0.25 d
Zerotrack time     :              1.0 s
Overload           :                9 d
Minimum weight     :               20 d
Range mode         :       single range
```

13.2 Test Printout

```
Printer test pattern
====================
    0    1    1    2    2    3    3    4
12345678901234567890123456789012345678901
-- ascii --
 !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
`abcdefghijklmnopqrstuvwxyz{|}~
-- latin1 --
 ¡¢£¤¥¦§¨©ª«¬-®¯°±²³´µ¶·¸¹º»¼½¾¿
ÀÁÂÃÄÅÆÇÈÉÊËÌÍÎÏÐÑÒÓÔÕÖ×ØÙÚÛÜÝÞß
àáâãäåæçèéêëìíîïðñòóôõö÷øùúûüýþÿ
-- cyrillic --
ÈËЂЃЄSIЇJЉЊЋЌЙЎЏ
АБВГДЕЖЗИЙКЛМНОП
РСТУФХЦЧШЩЪЫЬЭЮЯ
абвгдежзийклмноп
рстуфхцчшщъыьэюя
èëђѓєsiїjљњћќйўџ
-- hiragana --
 ぁあぃいぅうぇえぉおかがきぎく
ぐけげこごさざしじすずせぜそぞた
だちぢっつづてでとどなにぬねのは
ばぱひびぴふぶぷへべぺほぼぽまみ
むめもゃやゅゆょよらりるれろゎわ
ゐゑをんゔかけ  ゙ ゚ ゙ ゚ゝゞ ㋆
-- katakana --
=ァアィイゥウェエォオカガキギク
グケゲコゴサザシジスズセゼソゾタ
ダチヂッツヅテデトドナニヌネノハ
バパヒビピフブプヘベペホボポマミ
ムメモャヤュユョヨラリルレロヮワ
ヰヱヲンヴヵヶヷヸヹヺ・ーヽヾヿ
-- CJK --
一丁丂七丄丅丆万丈三上下丌不与丐
丑丒专且丕世丗丘丙业丛东丝丞丢
两丧丨丩个丫丬中丮丰
龐龔龕龖龗龘龜龝龞龠龡龢龣龤龥
鼕鼖鼗鼘鼙鼚鼛鼜鼝鼞鼟鼠鼡鼢鼣
齀齁齂齃齄齅齆齇齈齉齊齋齌齍齎
止囟鑸鑹鑺钅钇钊钋钌钍钎钏钐钑
```

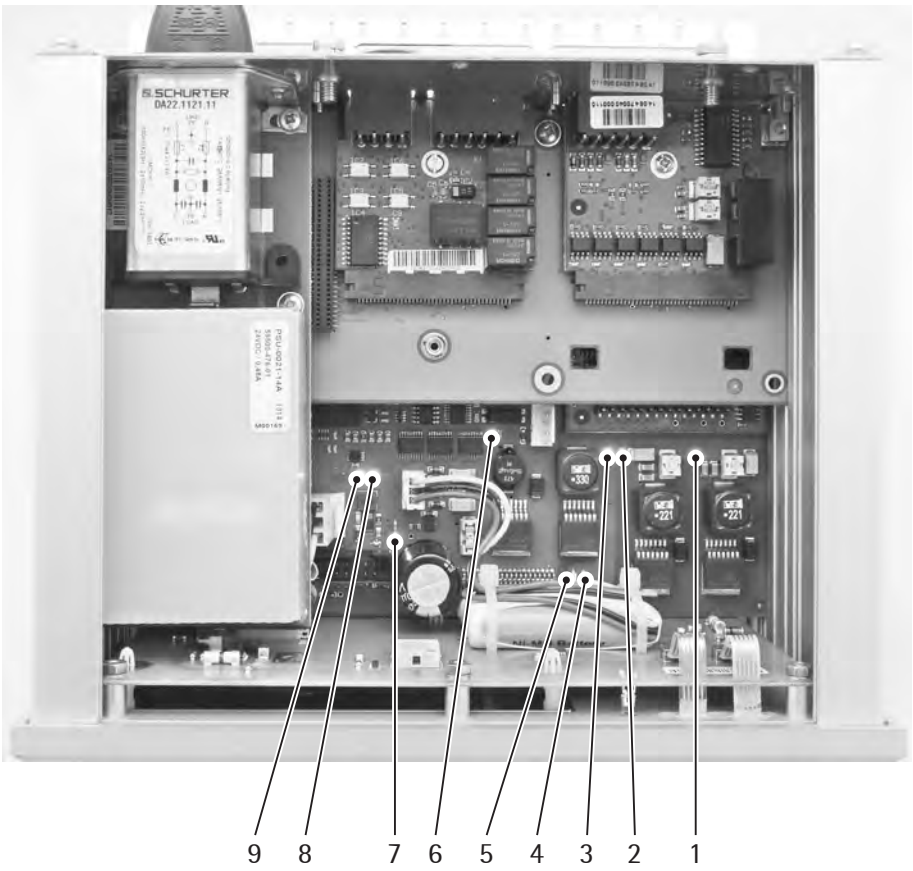
- ▶ Test line width and change if necessary.
- ▶ Check line coding and change in printer if necessary.

Note	Printer may not be able to output all characters.

13.3 Alibi Printout

```
---------------------------------------
Sequence number    :            #000027
Date/Time          :2015-01-11-10:50:29
Serial number      :         2564616265
G                  :   A    <1550.3  g>
NET                :   A    <1550.3  g>
T                  :   A        0.0  g
PR 5500 ALIBI
---------------------------------------
Sequence number    :            #000028
Date/Time          :2015-01-11-11:07:08
Serial number      :         2564616265
G                  :   A    <1550.5  g>
NET                :   A    <1550.5  g>
T                  :   A        0.0  g
PR 5500 ALIBI
---------------------------------------
Sequence number    :            #000029
Date/Time          :2015-01-11-11:12:44
Serial number      :         2564616265
G                  :   A       <0.1  g>
NET                :   A       <0.1  g>
T                  :   A        0.0  g
PR 5500 ALIBI
---------------------------------------
Sequence number    :            #000030
Date/Time          :2015-01-11-11:15:03
Serial number      :         2564616265
G                  :   A    <1000.2  g>
NET                :   A    <1000.2  g>
T                  :   A        0.0  g
PR 5500 ALIBI
---------------------------------------
Sequence number    :            #000031
Date/Time          :2015-01-11-11:20:41
Serial number      :         2564616265
G                  :   A    <2516.6  g>
NET                :   A    <2516.6  g>
T                  :   A        0.0  g
PR 5500 ALIBI
---------------------------------------
Sequence number    :            #000032
Date/Time          :2015-01-18-14:44:06
Serial number      :         2564616265
G                  :   A      <-0.4  g>
NET                :   A      <-0.4  g>
T                  :   A        0.0  g
PR 5500 ALIBI
---------------------------------------
Sequence number    :            #000033
Date/Time          :2015-01-18-14:44:37
Serial number      :         2564616265
G                  :   A      <-0.4  g>
NET                :   A      <-0.4  g>
T                  :   A        0.0  g
```

13.4 LEDs



LED	Function	LED	Function
1	ADC supply voltage +9 V	**6**	3.3 V
2	ADC supply voltage -9 V	**7**	Main supply voltage 24 V
3	5 V	**8**	5 V buffered
4	300 mA rechargeable battery current, illuminates when charging	**9**	3.3 VCC buffered
5	60 mA rechargeable battery current, illuminates when charging	**10**	USB supply (not shown) The LED is positioned below the carrier card for the option cards.

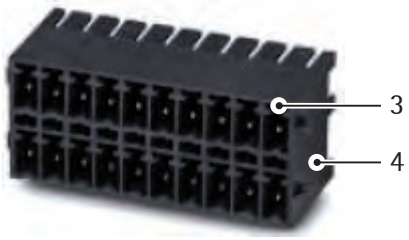
13.5 Terminal Coding

The combinatorics defined during the order process are used to encode the corresponding connectors before their delivery. The connectors only need to be encoded subsequently if plug-in cards are supplied after the original delivery.

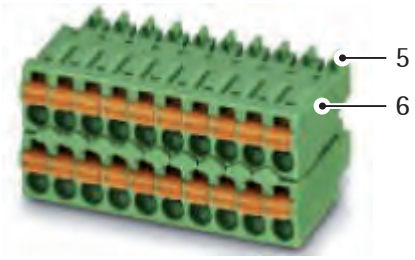
The coding position for the individual cards is described in Chapter 4.4.

Procedure

- Remove terminal (6) from terminal block (4).
- Disconnect coding pin (1) from coding profile (2).



- Insert coding pin (1) into the corresponding slot (3) of terminal block (4).



- Remove (pinch off) coding ridge (5) on terminal (6).
- Re-insert terminal (6) into terminal block (4).

13.6 Exchanging the Plug-In Cards

13.6.1 Safety Information

⚠ Warning

Before a plug-in card is inserted/removed, it is essential that

- **the device is shut down properly (menu [Operation]-[System maintenance]-[Shutdown & Power off]).**
- **the device is disconnected from any power sources.**
- **all LEDs have gone out.**

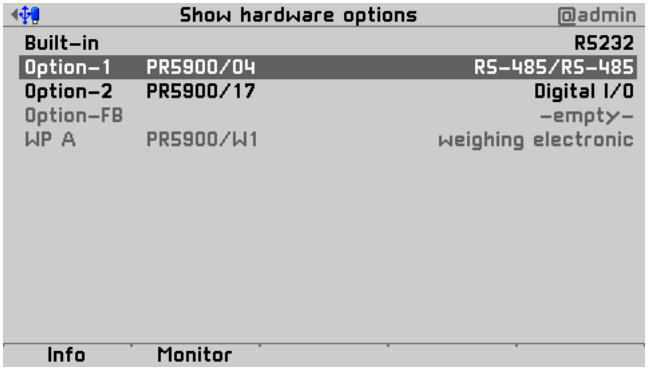
13.6.2 Optional and Fieldbus Cards

Note	If an option card has to be replaced by a fieldbus, the carrier plate (1) must be reversed!

▶ Insert all plugs again and switch on the device.

▷ Once the plug-in cards are replaced the device will detect them automatically.

Note	The installed plug-in cards can be displayed under [Operation]-[System information]-[Show HW options].



Interfaces (fixed installation)
Slot for optional card 1
Slot for optional card 2
Slot for fieldbus cards; in this case [-empty-] is displayed because no fieldbus card is installed.
Internal weighing electronics A

13.7 Replacing the Device

When replacing a faulty device, the data on the faulty device can be completely imported into the new device by plugging the SC card of the old device into the new device.

Settings and database can restored from the SD card (backup), see Chapter 6.1.3.1.

If the licenses (including board number) are also transferred to the new device, the SIL chip of the old device must also be connected to the new device.

⚠ Caution

The SD card is a fixed component of the device.

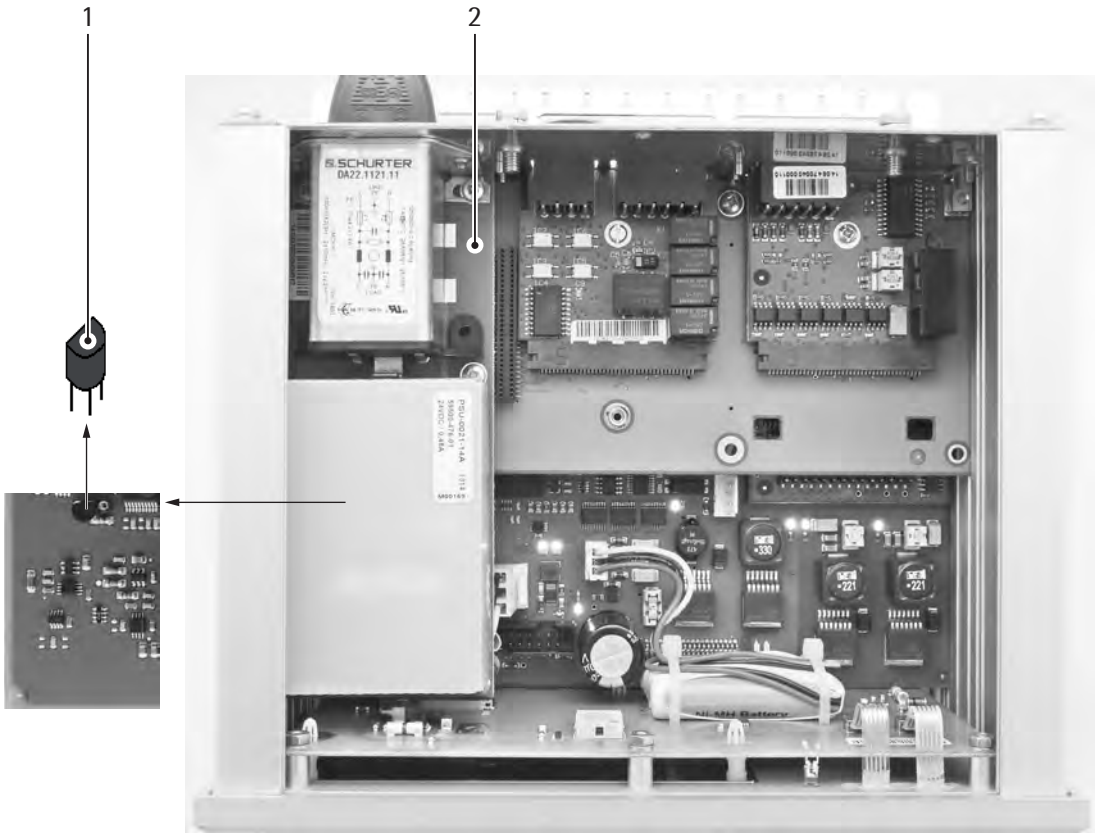
- **The SD card may only be removed together with the SIL chip during servicing.**
- **The SD card may not be used for data transfers.**

Procedure

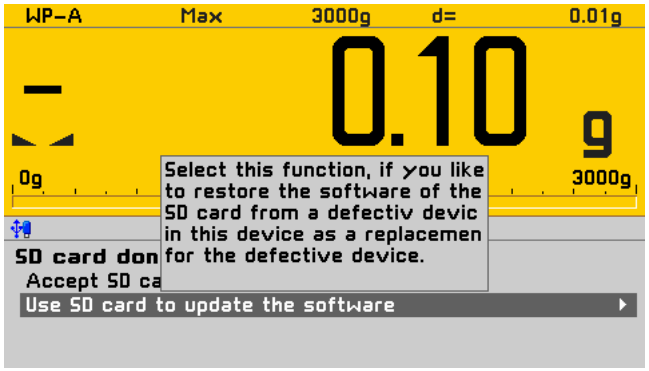
⚠ Warning

Before a component is inserted/removed, it is essential that

- **the device is shut down properly (menu [Operation]-[System maintenance]-[Shutdown & Power off]).**
- **the device is disconnected from any power sources.**
- **all LEDs have gone out.**



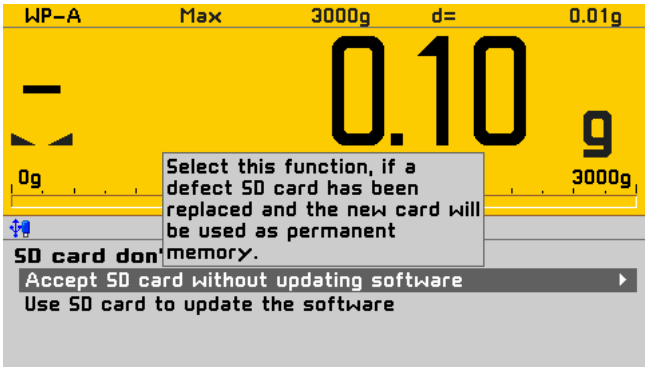
- ▶ Dismount the complete carrier plate (2).
- ▶ Remove the SIL chip (1) and SD card from the faulty device and insert in the replacement device.
- ▶ Switch on the device.
- ▶ Press the STOP and EXIT keys at the same time to trigger a cold start (for presets see Chapter 5.19.3).



- ▷ A selection window appears.
- ▶ Select and confirm the menu item [Use SD card to update the software].
- ▷ The device installs the BIOS, firmware, and application from the SD card.
- ▷ A prompt window appears if no database file is found in the folder.
- ▶ Press the [Yes] soft key to restore the database from the faulty device in the replacement device.
- ▶ Transfer additional settings; see Chapter 6.1.3.1.

13.8 Replacing the SD Card

Note	Only Sartorius-supplied SD cards may be used. There is no warranty for third-party cards.



- ▶ Export the data from the device onto a USB stick, see Chapter 6.1.4.1.
- ▶ Remove the defective SD card.
- ▶ Insert the new SD card.
- ▶ Only if the new card has already been used in another device: Press the STOP and EXIT keys at the same time to trigger a cold start.
- ▶ Only if the new card has already been used in another device: Select and confirm the menu item [Use SD card without updating software].
- ▶ Import the data from the USB stick into the device, see Chapter 6.1.5.1.

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