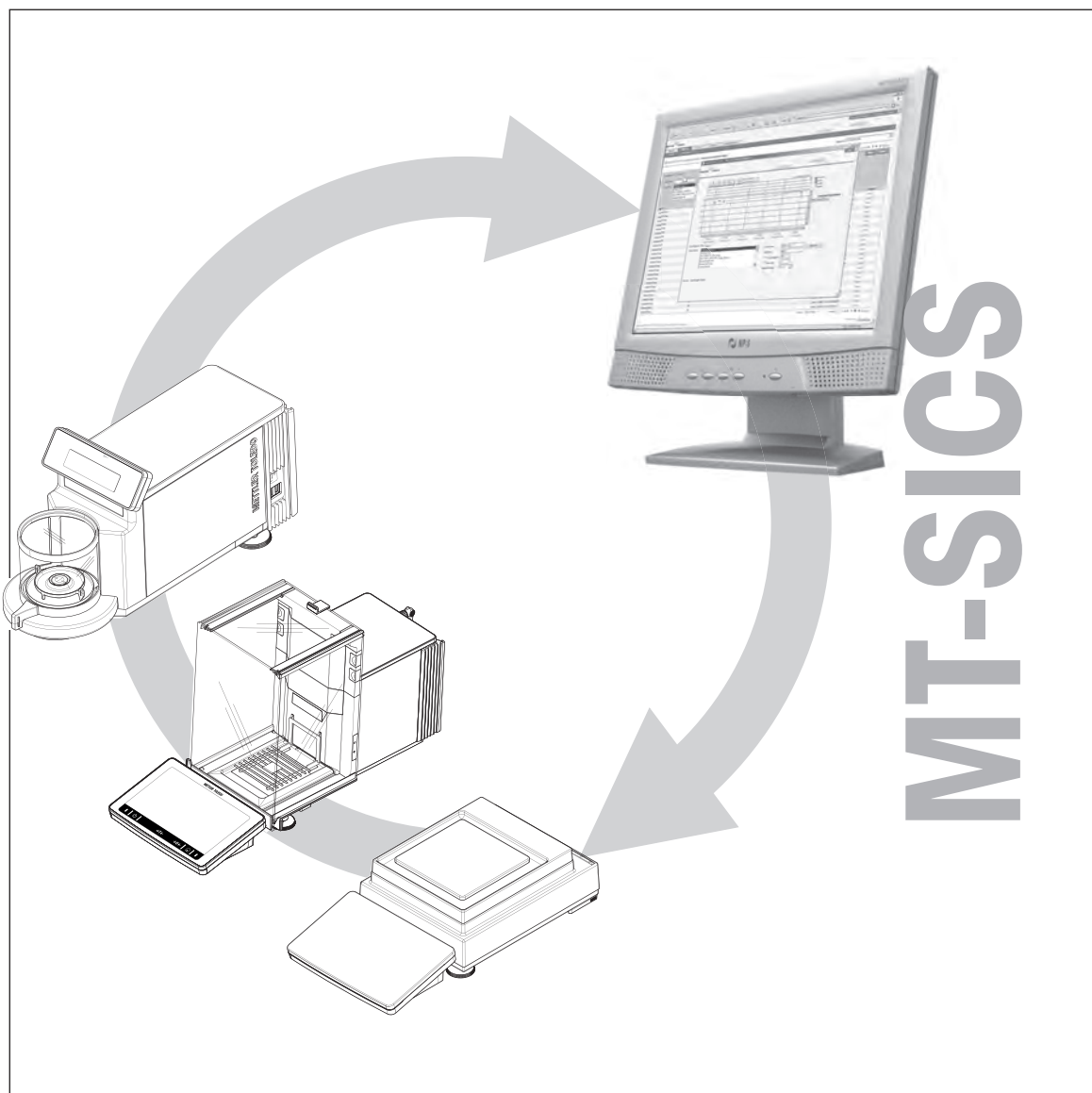


MT-SICS Interface Commands for XPR and XSR Balances



METTLER TOLEDO

Table of Contents

1	Introduction	3
2	Command Formats	4
2.1	Conventions	4
2.2	Response formats	5
2.2.1	Format of responses with weight value	5
2.2.2	Format of responses without weight value	6
2.3	Error messages	7
2.3.1	Command-specific error messages	7
2.3.2	General error messages	7
2.4	Tips for programmers	9
2.5	Read only	11
3	Commands and Responses	12
	@ – Cancel	12
	A10 – Target weight and tolerances	13
	A36 – Result identification label and value	14
	A37 – Task identification label and value	16
	CO – Adjustment setting	18
	C1 – Start adjustment according to current settings	20
	D – Write text to display	21
	DAT – Date	22
	DW – Show weight	23
	IO – Currently available MT-SICS commands	24
	I1 – MT-SICS level and level versions	25
	I2 – Device data (Type and capacity)	26
	I3 – Software version number and type definition number	27
	I4 – Serial number	28
	I5 – Software material number	29
	I10 – Device identification	30
	I11 – Model designation	31
	I14 – Device information	32
	K – Keys control	34
	M01 – Weighing mode	36
	M02 – Environment condition	37
	M03 – Zero drift compensation	38
	M11 – Key beeper volume	39
	M12 – Acoustic beep signal	40
	M19 – Adjustment weight	41
	M21 – Unit	42
	M23 – Readability, 1 d/xd	46
	M29 – Weighing value release	47
	M37 – Draft shield door opening width	48
	M40 – Inner draft shield door opening width	49
	PWR – Switch on / Switch off	50
	S – Stable weight value	51
	SI – Weight value immediately	52
	SIR – Weight value immediately and repeat	53
	SIRU – Weight value in display unit immediately and repeat	54
	SIU – Weight value in display unit immediately	55
	SM0 – Dynamic weighing: Cancel all SMx commands	56
	SM1 – Dynamic weighing: Start immediately and send the result	57
	SM2 – Dynamic weighing: Start after a minimum load is exceeded send result	58
	SM3 – Dynamic weighing: Start after a minimum load is exceeded, send result and repeat ..	60
	SM4 – Dynamic weighing: Time interval	62

SNR – Send stable weight value and repeat on stable weight change.....	63
SNRU – Send stable weight value with currently displayed unit and repeat on stable weight change.....	65
SR – Send stable weight value and repeat on any weight change	67
SRU – Send stable weight value with currently displayed unit and repeat on any weight change.....	69
ST – Stable weight value on pressing the (transfer) key	71
SU – Stable weight value in display unit	72
T – Tare	73
TA – Tare weight value	74
TAC – Clear tare weight value.....	75
TI – Tare immediately.....	76
TIM – Time.....	77
TST3 – Test with internal weight.....	78
WS – Draft shield doors.....	79
Z – Zero	81
ZI – Zero immediately	82
4 What if...?	83
Index	85

1 Introduction

To enable you to integrate balances into your systems in a simple way, balance functions can be accessed through an appropriate set of commands described in this document.

Additional documentation on data interface

Settings of the interface such as baud rate, number of data bits, parity, handshake protocols and connector pin assignment are described in the Reference Manual of the instrument or cable in question.

- ▶ www.mt.com/XPR-micro-RM
- ▶ www.mt.com/XPR-analytical-RM
- ▶ www.mt.com/XPR-micro-analytical-RM
- ▶ www.mt.com/XSR-analytical-RM
- ▶ www.mt.com/XPR-precision-RM
- ▶ www.mt.com/XSR-precision-RM

Data exchange with the balance

Each command received by the balance via the data interface is acknowledged by a response of the balance to the initial device. Commands and balance responses are data strings with a fixed format, and will be described in detail in the command description.

The commands that are available for your balance can be called up as a list using the [IO ▶ Page 24] command.

See also

📖 Tips for programmers ▶ Page 9

2 Command Formats

Commands sent to the balance comprise one or more characters of the ASCII character set.

Basic rules

	Enter commands only in uppercase. Nevertheless, units have to be capitalized properly.
_	The possible parameters of the command must be separated from one another and from the command name by a space (ASCII 32 dec.).
"text"	The possible input for "text" is a sequence of characters (8-bit ASCII character set from 32 dec. to 255 dec.).
..CR LF	Each command must be closed by C _R L _F (ASCII 13 dec., 10 dec.). The characters C _R L _F , which can be inputted using the Enter or Return key of most entry keypads, are not listed in this description every time, but it is essential they be included for communication with the balance.

2.1 Conventions

Throughout this manual, the following conventions are used for command and response syntax:

< >	Triangle brackets indicate that you must specify a value for the enclosed parameter. The brackets are not sent with the command string.
[]	Square brackets indicate that the enclosed expression is optional and can be omitted. The brackets are not sent with the command string.
a..b	Intervals or ranges are represented using the "dot-dot" notation indicating the set of numbers from a to b including a and b.
↓	Commands sent to the balance.
↑	Response of the balance.

Example

Command to balance which writes **Hello** into the balance display:

↓	D_ "Hello"	The quotation marks " " must be inserted in the entry
↑	D_A	Command executed successfully

The command terminator C_RL_F is not shown.

2.2 Response formats

All responses sent by the balance to the transmitter to acknowledge the received command have one of the following formats:

- Response with weight value
- Response without weight value
- Error message

2.2.1 Format of responses with weight value

Syntax

A general description of the response with weight value is the following.

<ID>	␣	<Status>	␣	<WeightValue>	␣	<Unit>	C _R	L _F
1-2 characters		1 character		10 characters		1-5 characters		

Parameters

Name	Type	Values	Meaning
<ID>	String		Response identification, refers to the invoking command
␣	Blank		Space (ASCII 32 dec.)
<Status>	Character	S	S table weight value
		D	Unstable ("D" for D ynamic) weight value
<WeightValue>	Float		Weighing result; shown as a number with 10 characters (after a blank/space!), including decimal point, and minus sign (–) directly in front of the first digit if the value is negative. The weight value appears right aligned. Preceding zeros are not shown except for the zero to the left of the decimal point. The decimal places shown are depending on the balance model and the settings in the Tolerance profile .
<Unit>	String		Weight unit
C _R	Byte		Carriage return (ASCII 13 dec.)
L _F	Byte		Line feed (ASCII 10 dec.)

Examples

Response with stable weight value of 14.256 g:

↓	S	Request a stable weight value
↑	S␣S␣␣␣␣␣14.256␣g	

Response with stable weight value of 152.38 g outside the fine range:

↓	S	Request a stable weight value
↑	S␣S␣␣␣152.38␣g	

2.2.2 Format of responses without weight value

Syntax

A general description of the response without weight value is the following:

<ID>	_	<Status>	_	Parameters...	C _R	L _F
1-5 characters		1 character				

Parameters

Name	Type	Values	Meaning
<ID>	String		Response identification, refers to the invoking command
_	Blank		Space (ASCII 32 dec.)
<Status>	Character	A	Command executed successfully
		B	Command not yet terminated, additional responses following
Parameters...			Command-dependent response code
C _R	Byte		Carriage return (ASCII 13 dec.)
L _F	Byte		Line feed (ASCII 10 dec.)

Examples

Set the key beeper volume:

↓	M11_30	Set the key beeper volume to 30%
↑	M11_A	Command executed successfully

Query the actual key beeper volume:

↓	M11	Query of the current key beeper volume
↑	M11_A_30	Current key beeper volume is set to 30%

2.3 Error messages

2.3.1 Command-specific error messages

Syntax

A general description of the response without weight value is the following:

<ID>	␣	<Status>	C _R	L _F
1-5 characters		1 character		

Parameters

Name	Type	Values	Meaning
<ID>	String		Response identification, refers to the invoking command
␣	Blank		Space (ASCII 32 dec.)
<Status>	Character	+	Balance is in overload range (weighing range exceeded)
		-	Balance is in underload range (e.g. weighing pan is not in place)
		L	Logical error (e.g. parameter not allowed)
		I	Internal error (e.g. balance not ready yet)
C _R	Byte		Carriage return (ASCII 13 dec.)
L _F	Byte		Line feed (ASCII 10 dec.)

Examples

Trial to set the key beeper volume to 110%:

↓	M11_110	Set the key beeper volume to 110%
↑	M11_L	Command not executed successfully; parameters is outside valid range

Response while balance is in overload range:

↓	SI	Request a weight value immediately
↑	S_+	Overload; no weight value available

2.3.2 General error messages

Syntax

There are three different error messages:

<ID>	C _R	L _F
2 characters		

Parameters

Name	Type	Values	Meaning
<ID>	String	ES	Syntax error: The balance has not recognized the received command or the command is not allowed
		ET	Transmission error: The balance has received a "faulty" command, e.g. owing to a parity error or interface break
		EL	Logical error: The balance can not execute the received command

Name	Type	Values	Meaning
C _R	Byte		Carriage return (ASCII 13 dec.)
L _F	Byte		Line feed (ASCII 10 dec.)

Example

Trial to set the key beeper volume to 30%:

↓	m11_30	m accidentally written in lowercase
↑	ES	Syntax error; m not recognized as a command

2.4 Tips for programmers

Overview of command of specific models

This reference manual covers the MT-SICS commands for balances. As the balances can differ based on model and software version, not all the MT-SICS commands are usable on every model.

Note

We recommend using the [I0 ► Page 24] command to get a list of all commands that are supported by your particular balance.

Example

↓	I0	Requests a list of commands.
↑	I0_B_0_"I0"	command I0.
↑	I0_B...	...
↑	I0_B_0_"@"	command [@ – Cancel ► Page 12].
↑	I0_B_1_"D"	command [D – Write text to display ► Page 21].
↑	I0_B...	...
↑	I0_A_3_"SM4"	command SM4.

If you need a list of commands including the version of a command, use [I1 ► Page 25].

Command and response

You can improve the dependability of your application software by having your program evaluate the response of the balance to a command. The response is the acknowledgment that the balance has received the command.

Cancel

To be able to start from a determined state, when establishing the communication between balance and system, you should send a cancel command **see** [@ ► Page 12] to the balance. When the balance or system is switched on or off, faulty characters can be received or sent.

Several commands in succession

If several commands are sent in succession without waiting for the corresponding responses, it is possible that the balance confuses the sequence of command processing or ignores entire commands.

Note

Always wait for the answer before you send a new command.

Ranges

If the fine range of DeltaRange or DualRange balances has been exceeded or the user defines a reduced readability in the **Tolerance profile** a number of defined digits are replaced by a space (e.g. **100d** -> 2 digits as space).

Carriage Return, Line Feed

Depending on the platform, C_RL_F is not just a "new line" (Java: "newLine()" or C/C++ "\n"):

Platform	'New Line'
DOS/Windows	C _R L _F
Macintosh	C _R
Unix	L _F

All commands must be closed by a C_RL_F (dec: 13, 10; hex: 0D, 0A).

Quotation marks ""

Quotation marks included in the command must always be entered. If a quotation mark is located within the string, it may be escaped by a backslash (\):

↓	D_"place 4\"filter!"	
↑	D_A	Balance display: place 4" filter!

Behavior with automatic door control

Various commands implicitly support motor-operated draft shield doors (where used). This means that motor-operated draft shield doors can be activated whenever a stable weight value has to be recorded in the shortest possible time. Activating automatic door control results in the following:

- Condition of doors saved
- Doors closed
- Commands executed
- Doors open as configured

The most important operations for the behavior described above are:

- Zeroing, taring
- S* commands

Other definitions

- The command is executed even when automatic door control is not activated.
- Even if the doors cannot be closed (clamping protection), the command is executed as configured.
- If a command in progress is interrupted (Timeout, Cancel, etc.), previous saved conditions of the doors.
- If the door condition cannot be reestablished, the doors either remain where they are or are closed (as configured).

See also

- 📖 S – Stable weight value ► Page 51
- 📖 SI – Weight value immediately ► Page 52
- 📖 SIR – Weight value immediately and repeat ► Page 53
- 📖 SIRU – Weight value in display unit immediately and repeat ► Page 54
- 📖 SIU – Weight value in display unit immediately ► Page 55
- 📖 SR – Send stable weight value and repeat on any weight change ► Page 67
- 📖 SU – Stable weight value in display unit ► Page 72
- 📖 T – Tare ► Page 73
- 📖 TA – Tare weight value ► Page 74
- 📖 TI – Tare immediately ► Page 76
- 📖 Z – Zero ► Page 81
- 📖 ZI – Zero immediately ► Page 82

2.5 Read only

Several commands support the query but no longer the setting of a value. However, they return success for the special case of trying to set the value that is set already. The affected commands have documented this behavior in their individual descriptions.

3 Commands and Responses

@ – Cancel

Description

The @ command terminates running processes such as zero, tare that were issued on the same interface. If the device is in standby mode, it is turned on.

Syntax

Command

@	Terminates running processes such as zero, tare that were issued on the same interface. If the device is in standby mode, it is turned on.
---	--

Response

I4_A_ "<SNR>"	Serial number is emitted; the balance is ready for operation.
---------------	---

Comments

- All commands awaiting responses are cancelled.
- The cancel command is always executed.
- The emitted serial number corresponds to the serial number of the terminal (if one is present), **see** [I4 ► Page 28].

Example

↓	@	Cancel
↑	I4_A_ "B021002593"	Balance is "reset", its serial number is B021002593.

See also

📖 I4 – Serial number ► Page 28

A10 – Target weight and tolerances

Description

Use A10 to set the target weights and tolerances, or query the current values. As soon as you have specified the values, the SmartTrac updates.

Syntax

Commands

A10	Query of the target weight and tolerances.
A10_<No>_<Value>_<Unit>	Set the target weight, + tolerance, - tolerance.

Responses

A10_B_0_<Value>_<Unit> A10_B_1_<Value>_<Unit> A10_A_2_<Value>_<Unit>	Query of the target weight, + tolerance, - tolerance.
A10_A	Command understood and executed successfully.
A10_I	Command understood but currently not executable.
A10_L	Command understood but not executable.

Parameters

Name	Type	Values	Meaning
<No>	Integer	0	Target weight
		1	+ tolerance
		2	- tolerance
<Value>	Float		Target weight
<Unit>	String	Max 5 chars	Weight unit, % with +/- tolerances possible

Comments

- Set the target value to 0 g and tolerances to 2.5%:
 A10_0_0_g
 A10_1_2.5_%
 A10_2_2.5_%
- As soon as you have specified the values, the SmartTrac updates.
- If too many decimal places are defined, the balance returns L.
- Reset target and tolerances:
 A10_0_""_""
 >_A10_A
 A10_1_""_""
 >_A10_A
 A10_2_""_""
 >_A10_A

Examples

↓	A10	Query of the target weight and tolerances.
↑	A10_B_0_100.12_g	Current setting is target weight 100.12 g, + tolerance is 5.25 g and - tolerance is 7.6%.
↑	A10_B_1_5.25_g	
↑	A10_A_2_7.6_%	
↓	A10_0_100.12_g	Set the target weight to 100.12 g.
↑	A10_A	Target weight is set.

A36 – Result identification label and value

Description

Use A36 to set or query the result identification label and value of currently running task.

Syntax

Commands

A36	Query the result identification label and value of the application.
A36_<IDNumber>	Query the ID number of the application.
A36_<IDNumber>_<"Label">_<"Value">	Set the result identification label and value of the application.

Responses

A36_B_<IDNumber>_<"Label">_<"Value"> A36_B... A36_A_<IDNumber>_<"Label">_<"Value">	Current identification label and value of the application.
A36_A	Command understood and executed successfully.
A36_L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<IDNumber>	Integer	1 ... n	Identification number within the application (n is model dependent) XPR up to 3 ID numbers are possible XSR up to 1 ID number is possible
<"Label">	String	1 - 32 chars	Label of the identification
<"Value">	String	0 - 32 chars	Value of the identification

Comments

- A sufficient number of available IDs must be configured in the UI.
- To write the ID type must be set to "manual".
- To write the label the user needs sufficient user rights. To write the value only (keeping the label the same) the user does not need any privileged user rights.
- To write the label the method must not be locked.

Examples

↓	A36	Query the result identification label and value of the application.
↑	A36_B_1_"Result_ID_1_label"__"Result_ID_1_value"	ID number 1, label "Result ID 1 label" and value "Result ID 1 value" are set.
↑	A36_A_2_"Result_ID_2_label"__"Result_ID_2_value"	ID number 2, label "Result ID 2 label" and value "Result ID 2 value" are set.
↓	A36_2	Query the identification labels and values of the application.
↑	A36_A_2_"Result_ID_2_label"__"Result_ID_2_value"	Label "Result ID 2 label" and value "Result ID 2 value" are set.

↓	A36_2_"NewLabel"_"NewValue"	Set the identification label "NewLabel" and value "NewValue" to ID number 2.
↑	A36_A	The identification label and value are set.

A37 – Task identification label and value

Description

Use A37 to set or query the task identification label and value of currently running task.

Syntax

Commands

A37	Query the task identification label and value of the application.
A37_<IDNumber>	Query the ID number of the application.
A37_<IDNumber>_<"Label">_<"Value">	Set the task identification label and value of the application.

Responses

A37_B_<IDNumber>_<"Label">_<"Value"> A37_B... A37_A_<IDNumber>_<"Label">_<"Value">	Current identification label and value from the application.
A37_A	Command understood and executed successfully.
A37_L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<IDNumber>	Integer	1 ... n	Identification number within the application (n is model dependent) XPR up to 3 ID numbers are possible XSR up to 1 ID number is possible
<"Label">	String	1 - 32 chars	Label of the identification
<"Value">	String	0 - 32 chars	Value of the identification

Comments

- A sufficient number of available IDs must be configured in the UI.
- To write the ID type must be set to "manual".
- To write the label the user needs sufficient user rights. To write the value only (keeping the label the same) the user does not need any privileged user rights.
- To write the label the method must not be locked.

Examples

↓	A37	Query the result identification label and value of the application.
↑	A37_B_1_"Result_ID_1_label"__"Result_ID_1_value"	ID number 1, label "Task ID 1 label" and value "Task ID 1 value" are set.
↑	A37_A_2_"Result_ID_2_label"__"Result_ID_2_value"	ID number 2, label "Task ID 2 label" and value "Task ID 2 value" are set.
↓	A37_2	Query the identification labels and values of the application.
↑	A37_A_2_"Result_ID_2_label"__"Result_ID_2_value"	Label "Task ID 2 label" and value "Task ID 2 value" are set.

↓	A37_2_"NewLabel"_"NewValue"	Set the identification label "NewLabel" and value "NewValue" to ID number 2.
↑	A37_A	The identification label and value are set.

C0 – Adjustment setting

Description

This command queries and sets the type of adjustment. Additional commands are required to actually trigger and to define the weight for external adjustment.

Syntax

Commands

C0	Query of the current adjustment setting.
C0_<Mode>_<WeightType>	Set the adjustment setting.

Responses

C0_A_<Mode>_<WeightType>_<"WeightValue_ Unit">	Weight value and unit specify the value of the weight for an external adjustment requested from the user via the display, see [C1 ► Page 20].
C0_I	Command understood but currently not executable (balance is currently executing another command).
C0_A	Adjustment setting set successfully.
C0_L	Command understood but not executable (incorrect parameter or setting not available on the balance, e.g. on approved balances).

Parameters

Name	Type	Values	Meaning
<Mode>	Integer	0	Mode = Manual The adjustment can only be triggered manually A change in the ambient conditions has no influence on the initiation of the adjustment procedure
		1	Mode = Internal adjustment > Start after temperature change When a considerable change in the ambient conditions is determined, an adjustment is triggered
		2	Mode = Internal adjustment > Start after temperature change Read only. This parameter can appear in the response after executing C0 and cannot be set. When this parameter is returned, an adjustment is pending
		3	Mode = No adjustment
<WeightType>	Integer	0	Internal weight (factory setting)
		1	External weight
<"WeightValue">	String		Weight values specify the value of the weight for an external adjustment requested from the user via the display or interface, see [C1 ► Page 20]
<"Unit">	String		The unit corresponds to the definition unit, e.g. gram (g)

Comments

- The external weight can be defined using, **see** [M19 ► Page 41].
- Use [C1 ► Page 20] to start an adjustment defined with c0.
- c0 must be reset manually; [@ ► Page 12] has no effect.

Example

↓	c0_0_1	Set adjustment setting to manual and external.
↑	c0_A	Adjustment setting set.

See also

- 📖 M19 – Adjustment weight ► Page 41
- 📖 C1 – Start adjustment according to current settings ► Page 20

C1 – Start adjustment according to current settings

Description

c1 is used to trigger an adjustment as defined using the c0 command.

Syntax

Command

C1	Start the adjustment according to the current setting, see [C0 ► Page 18].
----	---

First Responses

C1_B	The adjustment procedure has been started. Wait for second response see Comments.
C1_I	Command understood but currently not executable (balance is currently executing another command). No further response follows.
C1_L	Command understood but not executable (e.g. approved version of the balance). No further response follows.

Further Responses

C1_<"WeightValue_Unit">	Weight request with external adjustment.
C1_A	Command understood and executed successfully.
C1_I	The adjustment was aborted as, e.g. stability not attained or the procedure was aborted.

Parameters

Name	Type	Values	Meaning
<"WeightValue">	String		Weight values specify the value of the weight for a sensitivity adjustment requested from the user via the display or interface
<"Unit">	String		The unit corresponds to the definition unit, e.g. gram (g)

Comments

- Commands sent to the balance during the adjustment operation are not processed and responded to in the appropriate manner until the adjustment is at an end.
- Use [@ ► Page 12] to abort a running adjustment.

Example

↓	C1	Start the adjustment according to the current setting.
↑	C1_B	Adjustment operation started.
↑	C1_ "_____0.00_g"	Prompt to unload the balance.
↑	C1_ "____2000.00_g"	Prompt to load the adjustment weight of 2000.00 g.
↑	C1_ "_____0.00_g"	Prompt to unload the balance.
↑	C1_A	Adjustment completed successfully.

See also

- 📖 C0 – Adjustment setting ► Page 18
- 📖 M19 – Adjustment weight ► Page 41

D – Write text to display

Description

Use **D** to write text to the balance display.

Syntax

Command

D_<"Text">	Write text into the balance display.
------------	--------------------------------------

Responses

D_A	Command understood and executed successfully: Text appears instead of weight value
D_I	Command understood but currently not executable.
D_L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Text>	String		Text on the balance display

Comments

- The maximum number of characters of "text" visible in the display depends on the balance type. If the maximum number of characters is exceeded, the text disappears on the right side.
- Quotation marks can be displayed as indicated in chapter [Tips for programmers ► Page 10].

Examples

↓	D_"HELLO"	Write HELLO into the balance display.
↑	D_A	The full text HELLO appears in the balance display.
↓	D_" "	Clear the balance display.
↑	D_A	Balance display cleared, marked by a symbol, e. g. "I".

See also

- 📖 DW – Show weight ► Page 23
- 📖 Tips for programmers ► Page 10

DAT – Date

Description

Set or query the balance system date.

Syntax

Commands

DAT	Query of the current date of the balance.
DAT_<Day>_<Month>_<Year>	Set the date of the balance.

Responses

DAT_A_<Day>_<Month>_<Year>	Current date of the balance.
DAT_A	Command understood and executed successfully.
DAT_I	Command understood but currently not executable (balance is currently executing another command).
DAT_L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Day>	Integer	01 ... 31	Day
<Month>	Integer	01 ... 12	Month
<Year>	Integer	2000 ... 2099	Year

Example

↓	DAT	Query of the current date of the balance.
↑	DAT_A_01_10_2017	The date of the balance is 1st October 2017.

See also

📖 TIM – Time ► Page 77

DW – Show weight

Description

Writes the current weight value to the balance display using the set unit. This command is used to reset the display after using the `D` command.

Syntax

Command

DW	Switch back from the D command.
----	---------------------------------

Responses

DW_A	Command understood and executed successfully: Main display shows the current weight value.
DW_I	Command understood but currently not executable.

Comment

- `DW` resets the balance display following a [`D` ► Page 21] command.

Example

↓	DW	Switch the main display to show the current weight value.
↑	DW_A	Main display shows the current weight value.

See also

📖 `D` – Write text to display ► Page 21

I0 – Currently available MT-SICS commands

Description

The `I0` command lists all commands implemented in the present software.

All commands are listed first in level then in alphabetical order - even though levels are not supported anymore the Syntax of this command hasn't changed.

Syntax

Command

<code>I0</code>	Send list of all implemented MT-SICS commands.
-----------------	--

Responses

<code>I0_B_<Level>_<"Command"></code> <code>I0_B_<Level>_<"Command"></code> <code>I0_B</code> ... <code>I0_A_<Level>_<"Command"></code>	Number of the MT-SICS level where the command belongs to 2nd (next) command implemented. ... Last command implemented.
<code>I0_I</code>	Command understood but currently not executable (balance is currently executing another command).

Parameters

Name	Type	Values	Meaning
<Level>	Integer	0	MT-SICS level 0 (basic set)
		1	MT-SICS level 1 (elementary commands)
		2	MT-SICS level 2 (extended command list)
		3	MT-SICS level 3 (method-specific command set)
<"Command">	String		MT-SICS command

Example

↓	<code>I0</code>	Requests a list of commands.
↑	<code>I0_B_0_"I0"</code>	command <code>I0</code> .
↑	<code>I0_B...</code>	...
↑	<code>I0_B_0_"@"</code>	command [<code>@</code> – Cancel ▶ Page 12].
↑	<code>I0_B_1_"D"</code>	command [<code>D</code> – Write text to display ▶ Page 21].
↑	<code>I0_B...</code>	...
↑	<code>I0_A_3_"SM4"</code>	command <code>SM4</code> .

See also

📄 `@` – Cancel ▶ Page 12

I1 – MT-SICS level and level versions

Description

Query MT-SICS level and versions.

Syntax

Command

I1	Query of MT-SICS level and MT-SICS versions.
----	--

Responses

I1_A_<"Level">_<"V0">_<"V1">_<"V2">_<"V3">	Current MT-SICS level and MT-SICS versions.
I1_I	Command understood but currently not executable.

Parameters

Name	Type	Values	Meaning
<Level>	String	0	MT-SICS level 0
		01	MT-SICS level 0 and 1
		012	MT-SICS level 0, 1 and 2
		03	MT-SICS level 0 and 3
		013	MT-SICS level 0, 1 and 3
		0123	MT-SICS level 0, 1, 2, and 3
		3	Device-specific with MT-SICS level 3
<"V0"> ... <"V3">	String		MT-SICS versions of the related level (0 to 3)

Comments

- The command [I14 – Device information ► Page 32] provides more comprehensive and detailed information.
- Levels and versions are not supported anymore but remain in this command out of legacy reasons.

Example

↓	I1	Query the current MT-SICS level and version.
↑	I1_A_"0123"_<"2.00">_<"2.20">_<"1.00">_<"1.50">	Level 0-3 is implemented and the according version numbers are shown.

See also

📖 I14 – Device information ► Page 32

I2 – Device data (Type and capacity)

Description

Use I2 to query the device data (type and capacity), including the weighing capacity. The response is output as a single string.

Syntax

Command

I2	Query of the balance data.
----	----------------------------

Responses

I2_A_<"Type">_<Capacity>_<Unit">	Balance type and capacity.
I2_I	Command understood but currently not executable (balance is currently executing another command, e.g. taring) .

Parameters

Name	Type	Values	Meaning
<"Type">	String		Type of balance
<"Capacity">	String		Capacity of balance
<"Unit">	String		Weight unit

Comment

- The number of characters of "text" depends on the balance type and capacity.

Example

↓	I2	Query of the balance data.
↑	I2_A_"XPR6U_6.1_g"	Balance type and capacity.

See also

📖 I14 – Device information ► Page 32

I3 – Software version number and type definition number

Description

Provides the software version number and the type definition number.

Syntax

Command

I3	Query of the balance software version and type definition number.
----	---

Responses

I3_A_<"Software_TDNR">	Balance software version and type definition number.
I3_I	Command understood but currently not executable (balance is currently executing another command, e.g. taring).

Parameters

Name	Type	Values	Meaning
<"Software TDNR">	String		Software version number and type definition number (TDNR)

Comments

- Only the software version of the terminal software is issued.
- If no terminal is present, the bridge software is issued instead.
- More detailed information is available with [I14 ► Page 32].

Example

↓	I3	Query of the software version number(s) and type definition number.
↑	I3_A_"2.10_10.28.0.493.142"	2.10: Software version number. 10.28.0.493.142: Type definition. number

See also

📄 I14 – Device information ► Page 32

I4 – Serial number

Description

Use **I4** to query the serial number of the balance terminal.

Syntax

Command

I4	Query of the serial number.
----	-----------------------------

Responses

I4_A_<"SerialNumber">	Serial number.
I4_I	Command not understood, not executable at present Command understood but currently not executable (balance is currently executing another command, e.g. initial zero setting).

Parameter

Name	Type	Values	Meaning
<"SerialNumber">	String		Serial number

Comments

- The serial number matches with that on the model plate and is unique for each balance.
- The serial number can be used, for example, as a device address in a network solution.
- The balance response to **I4** appears unsolicitedly after switching on and after the cancel command [**@** ► Page 12].

Example

↓	I4	Query of the serial number.
↑	I4_A_"B021002593"	The serial number is "B021002593".

See also

📄 **@** – Cancel ► Page 12

I5 – Software material number

Description

Use I5 to query the software material number (SW-ID).

Syntax

Command

I5	Query of the software material number and index.
----	--

Responses

I5_A_<"Software">	Software material number and index.
I5_I	Command understood but currently not executable (balance is currently executing another command).

Parameter

Name	Type	Values	Meaning
<"Software">	String		Software material number and index

Comment

- The SW-ID is unique for Mettler-Toledo software. It consists of a 8 digit number and an alphabetic character as an index

Example

↓	I5	Query of the software material number and index.
↑	I5_A_"12121306C"	12121306C: Software material number and index.

I10 – Device identification

Description

Use I10 to query or define the balance identification (balance ID). This allows an individual name to be assigned to a balance.

Syntax

Commands

I10	Query of the current balance ID.
I10_<"ID">	Set the balance ID.

Responses

I10_A_<"ID">	Current balance ID.
I10_A	Command understood and executed successfully.
I10_I	Command understood but currently not executable (balance is currently executing another command).
I10_L	Command not executed as the balance ID is too long (max. 20 characters).

Parameter

Name	Type	Values	Meaning
<"ID">	String	5 ... 20 chars	Balance or weigh module identification

Comments

- A sequence of maximum 20 alphanumeric characters are possible as <ID>.
- The set balance ID is retained even after the cancel command [@ ▶ Page 12].

Example

↓	I10	Query of the current balance ID.
↑	I10_A_"My_Balance"	The balance ID is "My Balance".

I11 – Model designation

Description

This command is used to output the model designation.

Syntax

Command

I11	Query of the current balance or weigh module type.
-----	--

Responses

I11_A_<"Model">	Current balance or weigh module type.
I11_I	Type can not be transferred at present as another operation is taking place.

Parameter

Name	Type	Values	Meaning
<"Model">	String	Max 20 chars	Balance or weigh module type

Comments

- A sequence of maximum 20 alphanumeric characters is possible as <Model>.
- The following abbreviations used in model designations are relevant to MT-SICS:
 - DR = Delta Range.
 - DU = Dual Range.
 - /M, /A = Approved balance or weigh module.

Example

↓	I11	Query of the current balance type.
↑	I11_A_"XPR603SDR"	The balance is an "XPR603SDR".

I14 – Device information

Description

This command is used to output detailed information about the device. All components – including optional accessories – are taken into account and the associated data is output.

Syntax

Command

I14_<No>	Query of the current balance information.
----------	---

Responses

I14_A_<No>_<Index>_<"Info">	Current balance information.
I14_I	Command understood but currently not executable.
I14_L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<No>	Integer	0	Instrument configuration
		1	Instrument description
		2	SW-ID (number)
		3	SW version
		4	Serial number
		5	TDNR number
<Index>	Integer		Index of instrument module
<"Info">	String	<Bridge>	Weighing bridge information corresponding to <No>
		<Terminal>	Balance terminal information corresponding to <No>
		<Balance>	Balance information corresponding to <No>
		<Option>	reserved
		<Printer> <Second Display>	

Comment

- The response to the query of instrument configuration can comprise one or more lines.

Example

↓	I14	Query of the current instrument descriptions.
↑	I14_B_0_1_"Bridge"	Platform.
↑	I14_B_0_2_"Terminal"	Terminal.
↑	I14_B_1_1_"XR6TU"	Platform is a "XR6TU".
↑	I14_B_1_2_"PRPT"	XPR Terminal.
↑	I14_B_2_1_"30219664A"	Software identification number of the platform is "30219664A".
↑	I14_B_2_2_"30240964H"	SW identification number of the terminal is "30240964H".
↑	I14_B_3_1_"2.0.1.14"	Version of the bridge software is "2.0.1.14".
↑	I14_B_3_2_"2.0.1.141"	Version of the terminal software is "2.0.1.141".
↑	I14_B_4_1_"B731000001"	Serial number of the platform is "B731000001".
↑	I14_B_4_2_"1234567890"	Serial number of the terminal is "1234567890".
↑	I14_B_5_1_"1.2.3.4.5"	Type definition number (TDNR) of the platform is "1.2.3.4.5".
↑	I14_A_5_2_"1.2.3.4.5"	TDNR of the terminal is "1.2.3.4.5".

K – Keys control

Description

With the `K` command, the behavior of the terminal keys may be configured: first, the `K` command controls whether a key invokes its corresponding function or not and second, it configures whether an indication of which key has been pressed or released is sent to the host interface or not.

Using this functionality, an application running on a connected system (e.g. a PC or PLC) may make use of the balance terminal to interact with the balance operator.

Syntax

Command

<code>K_<Mode></code>	Set configuration.
-----------------------------	--------------------

Responses

<code>K_A[_<FunctionID>]</code>	Command understood and executed successfully. Mode 4: Function with <code><FunctionID></code> was invoked by pressing the corresponding key and executed successfully.
<code>K_I[_<FunctionID>]</code>	Command understood but currently not executable (balance is actually in menu or input mode). Mode 4: Function with <code><FunctionID></code> by pressing the corresponding key, but it could not be successfully executed (e.g. calibration was aborted by user or a negative value was tared).
<code>K_L</code>	Command understood but not executable (incorrect or no parameter).

Additional Responses in Mode 3:

<code>K_<EventID>_<KeyID></code>	Key <code><KeyID></code> has issued an <code><EventID></code> .
--	---

Additional Responses in Mode 4:

<code>K_B_<FunctionID></code>	Function with <code><FunctionID></code> was invoked and started; the execution needs time to complete.
-------------------------------------	--

Parameters

Name	Type	Values	Meaning
<code><Mode></code>	Integer	1	Functions are executed, no indications are sent (factory setting)
		2	Functions are not executed, no indications are sent
		3	Functions are not executed, indications are sent
		4	Functions are executed, indications are sent
<code><EventID></code>	Char	R	Key was pressed and held around 2 seconds
		C	Key was released (after being pressed shortly or for 2 seconds)
<code><FunctionID></code>	Integer	0	Adjustment
		1	Tare
		2	Zero
		3 ... 6	Reserved
		7	Test
<code><KeyID></code>	Integer		Indicator for pressed key

<KeyID>	Integer	1		Home
		2 ... 4	reserved	
		5		Zero
		6	reserved	
		7	+ Add to protocol	Transfer to protocol
		8 ... 9	reserved	
		10		Tare On/Off

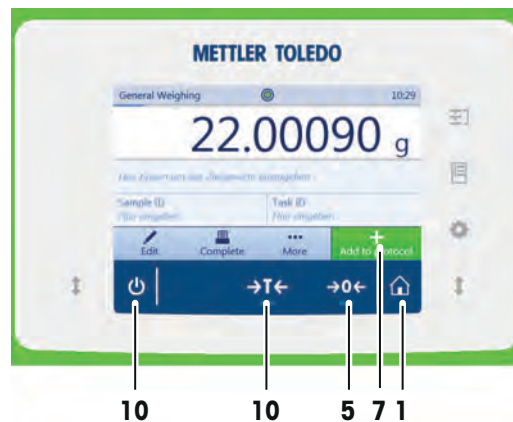
Comments

- There is no key number assigned to the door keys; therefore, no response is invoked upon pressing one of these keys.
- K_{_1} is the factory setting (default value).
- K_{_1} active after balance switched on and after the cancel command [@ ▶ Page 12].
- K_{_2} door function is not disabled.
- Only one K mode is active at one time.
- The mapping of the key numbers on the different terminals are displayed below:

XPR Balances



XSR Balances



Example

When a code with a press and hold is sent, new key commands will not be accepted.

↓	K _{_4}	Set mode 4: when a key is pressed, execute the corresponding function and send the function number as a response.
↑	K _{_A}	Command executed successfully.
↑	K _{_B_1}	The taring function has been started → taring active.
↑	K _{_A_1}	Taring completed successfully.
↑	K _{_B_1}	The taring function has been started → taring active.
↑	K _{_I_1}	Taring not completed successfully, taring aborted (e.g. tried to tare a negative value).

M01 – Weighing mode

Description

Use M01 to query the weighing mode or the current setting.

Syntax

Commands

M01	Query of the current weighing mode.
M01_<WeighingMode>	[Read only ► Page 11]

Responses

M01_A_<WeighingMode>	Current weighing mode.
M01_A	Command understood and executed successfully.
M01_I	Command understood but currently not executable.
M01_L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<WeighingMode>	Integer	0	Normal weighing/Universal
		1	reserved
		2	Sensor mode
		3	reserved

Comment

- Please check possible settings with product specific Reference Manual.

Example

↓	M01	Query of the current weighing mode.
↑	M01_A_0	Weighing mode is set.

See also

📖 M02 – Environment condition ► Page 37

M02 – Environment condition

Description

Use M02 to query the local ambient condition setting of the balance.

Syntax

Commands

M02	Query of the current environment.
M02_<Environment>	[Read only ► Page 11]

Responses

M02_A_<Environment>	Current environment.
M02_A	Command understood and executed successfully.
M02_I	Command understood but currently not executable.
M02_L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Environment>	Integer	0	Very stable
		1	Stable
		2	Standard
		3	Unstable
		4	Very unstable

Comment

- Not all balances offer the complete range of settings. If a setting is made that is not supported by the balance, an error message is issued (M02_L).

Example

↓	M02	Query the environment.
↑	M02_A_3	Environment is set to unstable.

M03 – Zero drift compensation

Description

Use M03 to query the status of the zero drift compensation.

Syntax

Commands

M03	Query current status of the zero drift compensation.
M03_<ZeroDriftCompensation>	[Read only ► Page 11].

Responses

M03_A_<ZeroDriftCompensation>	Current zero drift compensation
M03_A	Command understood and executed successfully.
M03_I	Command understood but currently not executable.
M03_L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<ZeroDriftCompensation>	Integer	0	Zero drift compensation is activated (is not supported by approved balances)
		1	Zero drift compensation is deactivated

Example

↓	M03	Query zero drift compensation.
↑	M03_A_1	Zero drift compensation is activated.

M11 – Key beeper volume

Description

Use M11 to query the volume of the terminal key beeper or the current setting.

Syntax

Commands

M11	Query of the current beeper volume.
M11_<BeeperVolume>	[Read only ► Page 11]

Responses

M11_A_<BeeperVolume>	Current key beeper volume.
M11_A	Command understood and executed successfully.
M11_I	Command understood but currently not executable.
M11_L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<BeeperVolume>	Integer	0 ... 100	Key beeper volume in %

Comment

- The parameter setting will be saved.

Examples

↓	M11	Query of the current key beeper volume.
↑	M11_A_60	The key beeper volume is 60%.
↓	M11_80	Set the key beeper volume to 80%.
↑	M11_A	The key beeper volume is set to 80%.

See also

📖 M12 – Acoustic beep signal ► Page 40

M12 – Acoustic beep signal

Description

This command triggers an acoustic beep signal.

Syntax

Command

M12_<BeeperVariant>	Trigger the acoustic beep signal.
---------------------	-----------------------------------

Responses

M12_A	Command understood and executed successfully.
M12_I	Command understood but currently not executable.
M12_L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<BeeperVariant>	Integer	0	Beep variant 1 (e.g. 1x beep)
		1	Beep variant 2 (e.g. high sound)
		2	Beep variant 3 (e.g. deep sound)

Comment

- You can set the volume of the beeper using [M11 ► Page 39].

Example

↓	M12_1	Trigger a beep variant 2.
↑	M12_A	Beep has been triggered.

See also

📖 M11 – Key beeper volume ► Page 39

M19 – Adjustment weight

Description

Use M19 to set your external adjustment weight, or to query the current weight value and unit.

Syntax

Commands

M19	Query of the current adjustment weight.
M19_<Value>_<Unit>	Set the adjustment weight.

Responses

M19_A_<Value>_<Unit>	Current adjustment weight.
M19_A	Command understood and executed successfully.
M19_I	Command understood but currently not executable.
M19_L	Command understood but not executable (incorrect parameter) or adjustment weight is too low.

Parameters

Name	Type	Values	Meaning
<Value>	Float		Value of the adjustment weight, balance specific limitation
<Unit>	String		Weight unit of the adjustment weight = defined unit of the balance

Comment

- The valid weight values depend on the balance model.

Examples

↓	M19	Query of the current adjustment weight.
↑	M19_A_100.123_g	The adjustment weight is 100.123 g.
↓	M19_500.015_g	Set the adjustment weight to 500.015 g.
↑	M19_A	The adjustment weight is set to 500.015 g.

See also

📖 C0 – Adjustment setting ► Page 18

📖 C1 – Start adjustment according to current settings ► Page 20

M21 – Unit

Description

Use M21 to set the required weighing unit for the output channels of the weight or request current setting.

Syntax

Commands

M21	Query the unit of all output channels.
M21_<Channel>	Query the unit of output channel only.
M21_<Channel>_<Unit>	Set the unit of an output channel.

Responses

M21_B_<Channel>_<Unit>	Current first unit.
M21_B...	...
M21_A_<Channel>_<Unit>	Current last unit.
M21_<Channel>_<Unit>	Unit of output channel.
M21_A	Command understood and executed successfully.
M21_I	Command understood but currently not executable.
M21_L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Channel>	Integer	0	Host unit, used on the MT-SICS Host
		1	Display unit, used on the terminal screen
		2	Info unit, used in the info field on the terminal screen

Name	Type	Values	Meaning		
<Unit>	Integer	0	Gram	g	
		1	Kilogram	kg	
		2	reserved		
		3	Milligram	mg	
		4	Microgram	µg	
		5	Carat	ct	
		6	Newton	N	
		7	Pound avdp	lb	
		8	Ounce avdp	oz	
		9	Ounce troy	ozt	
		10	Grain	GN	
		11	Pennyweight	dwt	
		12	Momme	mom	
		13	Mesghal	msg	
		14	Tael Hongkong	tlh	
		15	Tael Singapore	tls	
		16	Tael Taiwan	tlt	
		17	Tical	tcl	
		18	Tola	tola	
		19	Baht	baht	
		20	lb	oz	
		25	no unit	--	
		26	Piece	PCS	available with method Piece Counting
		27	Percent	%	reserved
		28	Custom unit	cu1	available if custom unit is switched on

Comments

- The units depend on the allowed unit in the **Tolerance profile** and on the balance model.
- All *s* commands (except *SIRU*, *SIU*, *SNRU*, *SRU*, *ST*, *SU*) are given in Host unit according to the definition of the MT-SICS. Only weight units are accepted as Host unit.
- In the event of a power failure, the host unit is lost and, following a restart, the weighing unit is displayed as "g".
- It is not possible to use "no unit" for the displayed unit.
- The units and/or their notation may be different in older software versions.

Examples

↓	M21	Query of the current unit.
↑	M21_B_0_0 M21_B_1_3	Current host unit is g. Current display unit is mg.
↓	M21_0_1	Set the unit to 1 kg.
↑	M21_A	The unit is set to 1 kg.

M23 – Readability, 1d/xd

Description

Use M23 to query the readability (how many digits of the weighing result should be displayed or sent).

Syntax

Commands

M23	Query of the current readability.
M23_<Readability>	Readability. Only works if value already set.

Responses

M23_A_<Readability>	Current readability.
M23_A	Command understood and executed successfully.
M23_I	Command understood but currently not executable.
M23_L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Readability>	Integer	0	1d
		1	10d
		2	100d
		3	1000d
		4	2d
		5	5d

Comment

- The readability is specified in digits [d] – this is the smallest increment a balance may display.

Example

↓	M23	Query the readability.
↑	M23_A_1	The readability is 10d.

See also

📖 T – Tare ► Page 73

📖 Z – Zero ► Page 81

M29 – Weighing value release

Description

Use M29 to query the weight value release or the current setting.

Syntax

Commands

M29	Query of the current value release setting.
M29_<ValueRelease>	[Read only ► Page 11]

Responses

M29_A_<ValueRelease>	Current value release.
M29_A	Command understood and executed successfully.
M29_I	Command understood but currently not executable.
M29_L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<ValueRelease>	Integer	0	Very fast
		1	Fast
		2	Reliable and fast
		3	Reliable
		4	Very reliable

Comment

- Not all balances offer the complete range of settings. If a setting is made that is not supported by the balance, an error message is issued (M29_L).

Example

↓	M29	Query the value release.
↑	M29_A_3	The value release is reliable.

M37 – Draft shield door opening width

Description

Use M37 to set the draft shield door opening width or to request current setting.

Syntax

Commands

M37	Query of the current draft shield door opening width.
M37_<Opening>	Set the draft shield door opening width.

Responses

M37_A_<Opening>	Current setting of the draft shield door opening width.
M37_A	Command understood and executed successfully.
M37_I	Command understood but currently not executable.
M37_L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Opening>	Integer	25	Door opening 25%
		50	Door opening 50%
		75	Door opening 75%
		100	Door open

Comment

- Only the values available in the set-up of the balance are expected (25%, 50%, 75%, and 100%).

Examples

↓	M37	Query of the current draft shield door opening width.
↑	M37_A_75	Door opening width is 75%.
↓	M37_100	Set the draft shield door opening width to 100%.
↑	M37_A	Door opening width 100% is set.

See also

[WS – Draft shield doors ► Page 79]

M40 – Inner draft shield door opening width

Description

Use M40 to set the inner draft shield door opening width or query the current setting.

Syntax

Commands

M40	Query of the current inner draft shield door opening width.
M40_<Opening>	Set the inner draft shield door opening width.

Responses

M40_A_<Opening>	Current setting of the inner draft shield door opening width.
M40_A	Command understood and executed successfully.
M40_I	Command understood but currently not executable.
M40_L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Opening>	Integer	25	Door opening 25%
		50	Door opening 50%
		75	Door opening 75%
		100	Door open

Comment

- Only the values available in the set-up of the balance are expected (25%, 50%, 75%, and 100%).

Examples

↓	M40	Query of the current inner draft shield door opening width.
↑	M40_A_50	Door opening width is set to 50%.
↓	M40_100	Set the inner draft shield door opening width to 100%.
↑	M40_A	Door opening width 100% is set.

See also

[WS – Draft shield doors ► Page 79]

PWR – Switch on / Switch off

Description

Use `PWR` to switch the balance on or off. When it is switched off, standby mode is activated.

Syntax

Command

<code>PWR_<OnOff></code>	Switch the balance on or off.
--------------------------------	-------------------------------

Responses

<code>PWR_A</code>	Balance has been switched off successfully.
<code>PWR_A_</code> <code>I4_A_<"SNR"></code>	Balance with the serial number "SNR" has been switched on successfully see [I4 ► Page 28].
<code>PWR_I</code>	Command understood but currently not executable (balance is currently executing another command, e.g. taring, or application is not in Home screen).
<code>PWR_L</code>	Command understood but not executable.

Parameter

Name	Type	Values	Meaning
<code><OnOff></code>	Integer	0	Set the balance to standby mode
		1	Switch the balance on

Comment

- The balance response to [I4 ► Page 28] appears unsolicited after switching the balance on.

Example

↓	<code>PWR_1</code>	Switch the balance on.
↑	<code>PWR_A</code>	The balance has been switched on successfully.
↑	<code>I4_A_"0123456789"</code>	The serial number is shown.

See also

📖 I4 – Serial number ► Page 28

S – Stable weight value

Description

Use `s` to send a stable weight value, along with the host unit, from the balance to the connected communication partner via the interface.

Syntax

Command

<code>S</code>	Send the current stable net weight value.
----------------	---

Responses

<code>S_S_<WeightValue>_<Unit></code>	Current stable weight value in unit actually set under host unit.
<code>S_I</code>	Command understood but currently not executable (balance is currently executing another command, e.g. taring, or timeout as stability was not reached).
<code>S_L</code>	Command understood but not executable (incorrect parameter).
<code>S_+</code>	Balance in overload range.
<code>S_-</code>	Balance in underload range.

Comments

- The duration of the timeout depends on the balance type.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	<code>S</code>	Send a stable weight value.
↑	<code>S_S_00000100.00_g</code>	The current, stable ("S") weight value is 100.00 g.

SI – Weight value immediately

Description

Use **SI** to immediately send the current weight value, along with the host unit, from the balance to the connected communication partner via the interface.

Syntax

Command

SI	Send the current net weight value, irrespective of balance stability.
----	---

Responses

S_S_<WeightValue>_<Unit>	Stable weight value in unit actually set under host unit.
S_D_<WeightValue>_<Unit>	Non-stable (dynamic) weight value in unit actually set under host unit.
S_I	Command understood but currently not executable (balance is currently executing another command, e.g. taring).
S_L	Command understood but not executable (incorrect parameter).
S_+	Balance in overload range.
S_-	Balance in underload range.

Comments

- The balance response to the command **SI** with the last internal weight value (stable or dynamic) before receipt of the command **SI**.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	SI	Send current weight value.
↑	S_D_129.07_g	The weight value is unstable (dynamic, "D") and is currently 129.07 g.

SIR – Weight value immediately and repeat

Description

Use **SIR** to immediately send the current weight value, along with the host unit, from the balance to the connected communication partner via the interface, but this time on a continuous basis.

Syntax

Command

SIR	Send the net weight values repeatedly, irrespective of balance stability.
-----	---

Responses

S_S_<WeightValue>_<Unit>	Stable weight value in unit actually set under host unit.
S_D_<WeightValue>_<Unit>	Non-stable (dynamic) weight value in unit actually set under host unit.
S_I	Command understood but currently not executable (balance is currently executing another command, e.g. taring).
S_L	Command understood but not executable (incorrect parameter).
S_+	Balance in overload range.
S_-	Balance in underload range.

Comments

- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to chapter Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	SIR	Send current weight values at intervals.
↑	S_D_129.07_g	The balance sends stable ("S") or unstable ("D") weight values at intervals.
↑	S_D_129.08_g	
↑	S_S_129.09_g	
↑	S_S_129.09_g	
↑	S_D_114.87_g	
↑	S_...	

See also

- 📖 S – Stable weight value ► Page 51
- 📖 SI – Weight value immediately ► Page 52
- 📖 SR – Send stable weight value and repeat on any weight change ► Page 67
- 📖 @ – Cancel ► Page 12

SIRU – Weight value in display unit immediately and repeat

Description

Request current weight value in display unit independent of the stability and repeat sending responses until the command is stopped.

Syntax

Command

SIRU	Requests the current weight value and repeat.
------	---

Responses

S_S_<WeightValue>_<Unit>	Stable weight value in unit actually set under host unit.
S_D_<WeightValue>_<Unit>	Non-stable (dynamic) weight value in unit actually set under host unit.
S_I	Command understood but currently not executable (balance is currently executing another command, e.g. taring).
S_L	Command understood but not executable (incorrect parameter).
S_+	Balance in overload range.
S_-	Balance in underload range.

Comments

- As the [SIR ► Page 53] command, but with currently displayed unit.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to chapter Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	SIRU	Query of the current weight value with currently displayed unit.
↑	S_D_12.34_lb	Non-stable (dynamic) weight value of 12.34 lb.
↑	S_D_12.44_lb	Non-stable (dynamic) weight value of 12.44 lb.
↑	S_D_12.43_lb	Non-stable (dynamic) weight value of 12.43 lb.

See also

📖 SIR – Weight value immediately and repeat ► Page 53

SIU – Weight value in display unit immediately

Description

Request current weight value in display unit independent of the stability.

Syntax

Command

SIU	Request the current weight value in display unit.
-----	---

Responses

S_S_<WeightValue>_<Unit>	Stable weight value in unit actually set under host unit.
S_D_<WeightValue>_<Unit>	Non-stable (dynamic) weight value in unit actually set under host unit.
S_I	Command understood but currently not executable (balance is currently executing another command, e.g. taring).
S_L	Command understood but not executable (incorrect parameter).
S_+	Balance in overload range.
S_-	Balance in underload range.

Comments

- As the [SI ► Page 52] command, but with currently displayed unit.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to chapter Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	SIU	Requests the current weight value in display unit independent of the stability.
↑	S_D_12.34_lb	Non-stable (dynamic) weight value is 12.34 lb.

SM0 – Dynamic weighing: Cancel all SMx commands

Description

Use `SM0` to cancel any SMx commands that are in progress.

Syntax

Command

SM0	Cancel all SMx commands except [SM4 ► Page 62].
-----	---

Responses

SM0_A	Command understood and executed successfully.
SM0_I	Command understood but currently not executable (balance is currently executing another command).
SM1_L	Command understood but not executable (parameter is incorrect).

Comment

- Prerequisite: The currently running task has **Capture mode** set to **Dynamic**.

Example

↓	SM0	Cancel all SMx commands except [SM4 ► Page 62].
↑	SM0_A_3	Any SMx commands are canceled.

SM1 – Dynamic weighing: Start immediately and send the result

Description

Use **SM1** to start dynamic weighing immediately. The result is transferred via the interface once the weighing time has elapsed.

Syntax

Command

SM1	Start dynamic weighing immediately and transfer the result.
-----	---

First Responses

SM1_A	Dynamic weighing has been started, wait for second response. During the weighing operation, e.g. until the second response, no further commands can be executed (except SM0).
SM1_I	Command understood but currently not executable (balance is currently executing another command). No second response follows.
SM1_L	Command understood but not executable (parameter is incorrect). No second response follows.

Further Responses

SM_*_<WeightValue>_<Unit>	Transfer of the result completed successfully. Weight value corresponds to the result of the measurement cycle. The unit corresponds to the current weight unit in the display.
SM_+	Abort, overload during the measurement cycle.
SM_-	Abort, underload during the measurement cycle.
SM_I	The dynamic weighing has been aborted.

Parameters

Name	Type	Values	Meaning
SM_*	String	S	Identification for dynamic weighing value
<WeightValue>	Float		Weight value in display unit
<Unit>	String		Weight unit

Comments

- Prerequisite: The currently running task has **Capture mode** set to **Dynamic**.
- Prerequisite: Setting **Automatic result** is set to **Deactivated**.
- The balance does not perform stability or plausibility checks for the start.
- Prerequisite: A weight is already placed on the balance because weighing starts immediately after **SM1**.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to chapter Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	SM1	Start a dynamic weighing immediately and transfer the result.
↑	SM1_A	Command understood, result follows.
↑	SM_*_23.76_g	Result of the dynamic weighing is 23.76 g.

SM2 – Dynamic weighing: Start after a minimum load is exceeded send result

Description

Use **SM2** to start dynamic weighing if the applied weight exceeds the specified minimum load. The result is transferred via the interface once the weighing time has elapsed.

Syntax

Command

SM2	Start a dynamic weighing automatically after the defined minimum load is exceeded and transfer the result (once).
-----	---

First Responses

SM2_A	Dynamic weighing has been started, wait for second response. During the weighing operation, e.g. until the second response, no further commands can be executed.
SM2_I	Command understood but currently not executable (balance is currently executing another command). No second response follows.
SM2_L	Command understood but not executable (e.g. parameter is incorrect). No second response follows.

Further Responses

SM_*_<WeightValue>_<Unit>	Transfer of the result completed successfully. Weight value corresponds to the result of the measurement cycle. The unit corresponds to the current weight unit in the display.
SM_+	Abort, overload during the measurement cycle.
SM_-	Abort, underload during the measurement cycle.
SM_I	The dynamic weighing has been aborted.

Parameters

Name	Type	Values	Meaning
SM_*	String	S	Identification for dynamic weighing value
<WeightValue>	Float		Weight value in display unit
<Unit>	String		Weight unit

Comments

- Prerequisite: The currently running task has **Capture mode** set to **Dynamic**.
- Prerequisite: Setting **Automatic result** is set to **Activated**.
- The threshold for the minimum load can be defined in the **Methods** settings.
- The single start standby can be cancelled by the [SM0 ▶ Page 56] and [@ ▶ Page 12] commands before start of the weighing.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to chapter Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	SM2	Start a dynamic weighing after the defined minimum load is exceeded and transfer the result.
↑	SM2_A	Command understood, result follows.
↑	SM_*_24.30_g	Result of the dynamic weighing is 24.30 g.

SM3 – Dynamic weighing: Start after a minimum load is exceeded, send result and repeat

Description

Use **SM3** to start several dynamic weighing procedures in succession if the applied weights exceed the specified minimum load. The results are transferred via the interface once the weighing time has elapsed.

Syntax

Command

SM3	Start dynamic weighing automatically.
-----	---------------------------------------

First Responses

SM3_A	Dynamic weighing has been started, wait for second response. During the weighing operation, e.g. until the second response, no further commands can be executed.
SM3_I	Command understood but currently not executable (balance is currently executing another command). No second response follows.
SM3_L	Command understood but not executable (parameter is incorrect). No second response follows.

Further Responses

SM_*_<WeightValue>_<Unit>	Transfer of the result completed successfully. Weight value corresponds to the result of the measurement cycle. The unit corresponds to the current weight unit in the display. Further results follow when the start condition is fulfilled again.
SM_+	Abort, overload during the measurement cycle.
SM_-	Abort, underload during the measurement cycle.
SM_I	The dynamic weighing has been aborted.

Parameters

Name	Type	Values	Meaning
SM_*	String	S	Identification for dynamic weighing value
<WeightValue>	Float		Weight value in display unit
<Unit>	String		Weight unit

Comments

- Prerequisite: The currently running task has **Capture mode** set to **Dynamic**.
- Prerequisite: Setting **Automatic result** is set to **Activated**.
- The threshold for the minimum load can be defined in the **Methods** settings.
- The recurring establishment of the start standby is cancelled by the [SM0 ▶ Page 56], [SM1 ▶ Page 57], [SM2 ▶ Page 58] and [@ ▶ Page 12] commands.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to chapter Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	SM3	Start dynamic weighing when weight drops below and afterwards above the defined minimum load, transfer the result and repeat the process.
↑	SM3_A	Command understood, results follow.
↑	SM_*_____25.83_g	Result of the 1 st dynamic weighing is 25.83 g.
↑	SM_*_____22.91_g	Result of the 2 nd dynamic weighing is 22.91 g.
↑	SM_*_____24.05_g	Result of the 3 rd dynamic weighing is 24.05 g.

SM4 – Dynamic weighing: Time interval

Description

Use **SM4** to query the time interval for a dynamic weighing method or the current time setting.

Syntax

Commands

SM4	Query of the time interval for the dynamic weighing application.
SM4_<DynWeighTimeInterval>	Time interval. Only works if value already set.

Responses

SM4_A_<DynWeighTimeInterval>	Current time interval for the data acquisition of the dynamic weighing.
SM4_A	Command understood and executed successfully; time interval set.
SM4_I	Command understood but currently not executable (balance is currently executing another command).
SM4_L	Command understood but not executable (parameter is incorrect).

Parameter

Name	Type	Values	Meaning
<DynWeighTimeInterval>	Integer	3 ... 120	Time interval in seconds

Comments

- Prerequisite: The currently running task has **Capture mode** set to **Dynamic**.
- SM4 is read only. The time interval can be set in the **Methods** settings.

Example

↓	SM4	Query the time interval.
↑	SM4_A_10	Current time interval is set to 10 seconds.

See also

📖 @ – Cancel ► Page 12

📖 SMO – Dynamic weighing: Cancel all SMx commands ► Page 56

SNR – Send stable weight value and repeat on stable weight change

Description

Request the current stable weight value in host unit followed by stable weight values after predefined minimum weight changes until the command is stopped.

Syntax

Commands

SNR	Send the current stable weight value and repeat after each deflection (see comment).
SNR_<PresetValue>_<Unit>	Send the current stable weight value and repeat after each deflection greater or equal to the preset value (see comment).

Responses

S_S_<WeightValue>_<Unit> S_S_<WeightValue>_<Unit> ...	Current stable weight value (1 st value). Next stable weight value after preset deflection (2 nd value). ...
S_I	Command understood but currently not executable (balance is currently executing another command, e.g. taring, or timeout as stability was not reached).
S_L	Command understood but not executable (incorrect parameter).
S_+	Balance in overload range.
S_-	Balance in underload range.

Parameters

Name	Type	Values	Meaning
<PresetValue>	Float	1 digit ... capacity	Preset minimum deflection load
<Unit>	String		Currently displayed unit

Comments

- The preset value is optional. If no value is defined, the deflection depends on balance readability as follows:

Readability	Min. deflection
0.001 mg	0.001 g
0.01 mg	0.01 g
0.1 mg	0.1 g
0.001 g	1 g
0.01 g	1 g
0.1 g	1 g
1 g	5 g

- SNR is overwritten by the commands [S ▶ Page 51], [SI ▶ Page 52], [SIR ▶ Page 53], [@ ▶ Page 12] and hardware break and hence cancelled.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to chapter Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	SNR_50_g	Send the current stable weight value and repeat after each deflection greater or equal to the preset value of 50 g.
↑	S_S_12.34_g	1 st weight value is 12.34 g.
↑	S_S_67.89_g	2 nd weight value is 67.89 g.

SNRU – Send stable weight value with currently displayed unit and repeat on stable weight change

Description

Request the current stable weight value in display unit followed by stable weight values after predefined minimum weight changes until the command is stopped.

Syntax

Commands

SNRU	Send the current stable weight value with the currently displayed unit and repeat after each deflection (see comment).
SNRU_<PresetValue>_<Unit>	Send the current stable weight value with the currently displayed unit and repeat after each deflection greater or equal to the preset value (see comment).

Responses

S_S_<WeightValue>_<Unit> S_S_<WeightValue>_<Unit> ...	Current stable weight value (1 st value). Next stable weight value after preset deflection (2 nd value). ...
S_I	Command understood but currently not executable (balance is currently executing another command, e.g. taring, or timeout as stability was not reached).
S_L	Command understood but not executable (incorrect parameter).
S_+	Balance in overload range.
S_-	Balance in underload range.

Parameters

Name	Type	Values	Meaning
<PresetValue>	Float	1 digit ... capacity	Preset minimum deflection load
<Unit>	String		Currently displayed unit

Comments

- The preset value is optional. If no value is defined, the deflection depends on balance readability as follows:

Readability	Min. deflection
0.001 mg	0.001 g
0.01 mg	0.01 g
0.1 mg	0.1 g
0.001 g	1 g
0.01 g	1 g
0.1 g	1 g
1 g	5 g

- As the [SNR ► Page 63] command, but with current displayed unit.
- SNRU is overwritten by the commands [S ► Page 51], [SI ► Page 52], [SIR ► Page 53], [@ ► Page 12] and hardware break and hence cancelled.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to chapter Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	SNRU_50_g	Send the current stable weight value with the currently displayed unit and repeat after each deflection greater or equal to the preset value of 50 g.
↑	S_S_12.34_g	1 st weight value is 12.34 g.
↑	S_S_67.89_g	2 nd weight value is 67.89 g.

SR – Send stable weight value and repeat on any weight change

Description

Request the current stable weight value in host unit followed by weight values after predefined minimum weight changes until the command is stopped.

Syntax

Commands

SR	Send the current stable weight value and then continuously after every weight change If no preset value is entered, the weight change must be at least 12.5% of the last stable weight value, minimum = 30 digit.
SR_<PresetValue>_<Unit>	Send the current stable weight value and then continuously after every weight change greater or equal to the preset value a non-stable (dynamic) value followed by the next stable value, range = 1 digit to maximal capacity.

Responses

S_S_<WeightValue>_<Unit>	Current, stable weight value in unit actually set as host unit, 1 st weight change.
S_D_<WeightValue>_<Unit>	Dynamic weight value in unit actually set as host unit.
S_S_<WeightValue>_<Unit>	Next stable weight value in unit actually set as host unit.
S_I	Command understood but currently not executable (balance is currently executing another command, e.g. zero setting, or timeout as stability was not reached).
S_L	Command understood but not executable (incorrect parameter).
S_+	Balance in overload range.
S_-	Balance in underload range.

Parameters

Name	Type	Values	Meaning
<WeightValue>	Float		Weight value
<Unit>	String		Unit, only available units permitted

Comments

- SR is overwritten by the commands [S ▶ Page 51], [SI ▶ Page 52], [SIR ▶ Page 53], [@ ▶ Page 12] and hardware break and hence cancelled.
- In contrast to SR, [SNR ▶ Page 63] only sends stable weight values.
- If, following a non-stable (dynamic) weight value, stability has not been reached within the timeout interval, the response S_I is sent and then a non-stable weight value. Timeout then starts again from the beginning.
- The preset value can be entered in any by the balance accepted unit.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to chapter Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	SR_10.00_g	Send the current stable weight value followed by every load change of 10 g.
↑	S_S_100.00_g	Balance stable.
↑	S_D_115.23_g	100.00 g loaded.
↑	S_S_200.00_g	Balance again stable.

See also

- 📄 S – Stable weight value ► Page 51
- 📄 SI – Weight value immediately ► Page 52
- 📄 SIR – Weight value immediately and repeat ► Page 53
- 📄 SNR – Send stable weight value and repeat on stable weight change ► Page 63

SRU – Send stable weight value with currently displayed unit and repeat on any weight change

Description

Request the current weight values in display unit and repeat sending responses after a predefined minimum weight change until the command is stopped.

Syntax

Commands

SRU	Send the current stable weight value with the currently displayed unit and then continuously after every weight change. If no preset value is entered, the weight change must be at least 12.5% of the last stable weight value, minimum = 30 digit.
SRU_<WeightValue>_<Unit>	Send the current stable weight value with the currently displayed unit and then continuously after every weight change greater or equal to the preset value a non-stable (dynamic) value followed by the next stable value, range = 1 digit to maximal capacity.

Responses

S_S_<WeightValue>_<Unit>	Current, stable weight value with the currently displayed unit until 1 st weight change.
S_D_<WeightValue>_<Unit>	Non-stable (dynamic) weight value with the currently displayed unit.
S_I	Command understood but currently not executable (balance is currently executing another command, e.g. taring).
S_L	Command understood but not executable (incorrect parameter).
S_+	Balance in overload range.
S_-	Balance in underload range.

Parameters

Name	Type	Values	Meaning
<WeightValue>	Float		Weight value
<Unit>	String		Unit, only available units permitted

Comments

- As the [SR ▶ Page 67] command, but with currently displayed unit.
- SRU is overwritten by the commands [S ▶ Page 51], [SI ▶ Page 52], [SIR ▶ Page 53], [@ ▶ Page 12] and hardware break and hence cancelled.
- In contrast to [SR ▶ Page 67], [SNRU ▶ Page 65] only sends stable weight values.
- If, following a non-stable (dynamic) weight value, stability has not been reached within the timeout interval, the response S_I is sent and then a non-stable weight value. Timeout then starts again from the beginning.
- The preset value can be entered in any by the balance accepted unit.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to chapter Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	SRU	Send the current stable weight value followed by every default load change with current display unit.
↑	S_S_____12.34_lb	1 st weight value is stable and 12.34 lb.
↑	S_D_____13.88_lb	2 nd weight value is non-stable and 13.88 lb.
↑	S_S_____15.01_lb	3 rd weight value is stable and 15.01 lb.

ST – Stable weight value on pressing the (transfer) key

Description

Use **ST** to receive the current stable weight value when the button **Add to protocol** is pressed. The value is sent, along with the currently displayed unit, from the balance to the connected communication partner via the interface.

Syntax

Commands

ST	Query the current status transfer function.
ST_1	Sent the current stable net weight value with display unit each time when the button Add to protocol is pressed.
ST_0	Stop sending weight values.

Responses

ST_A_0	Function inactive, no weight value is sent when the button Add to protocol is pressed.
ST_A_1	Function active, weight value is sent each time when the button Add to protocol is pressed.
ST_A	Command understood and executed successfully.
ST_I	Command understood but currently not executable (balance is currently executing another command).
ST_L	Command understood but not executable (incorrect parameter).

Comments

- ST_0 is the factory setting (default value).
- ST function is not active after switching on and after reset command.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to chapter Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	ST_1	Activate ST function.
↑	ST_A	Command executed.
↑	S_S_____123.456_g	When the button Add to protocol pressed: current net weight is 123.456 g.

SU – Stable weight value in display unit

Description

Use **SU** to query the stable weight value in display unit.

Syntax

Command

SU	Query the stable weight value with the currently displayed unit.
----	--

Responses

S_S_<WeightValue>_<Unit>	Current stable weight value with the currently displayed unit.
S_I	Command understood but currently not executable (balance is currently executing another command, e.g. taring, or timeout as stability was not reached).
S_L	Command understood but not executable (incorrect parameter).
S_+	Balance in overload range.
S_-	Balance in underload range.

Responses

S_S_<WeightValue>_<Unit>	Current stable weight value with the currently displayed unit.
S_I	Command understood but currently not executable (balance is currently executing another command, e.g. taring, or timeout as stability was not reached).
S_+	Balance in overload range.
S_-	Balance in underload range.

Parameters

Name	Type	Values	Meaning
<WeightValue>	Float		Weight value
<Unit>	String		Currently displayed unit

Comments

- As the [S ▶ Page 51] command, but with currently displayed unit.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to chapter Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	SU	Query the stable weight value with the currently displayed unit.
↑	S_S_12.34_lb	The current, stable weight value is 12.34 lb.

T – Tare

Description

Use **T** to tare the balance. The next stable weight value will be saved in the tare memory.

Syntax

Command

T	Tare, i.e. store the next stable weight value as a new tare weight value.
---	---

Responses

T_S_<TareValue>_<Unit>	Taring successfully performed. The tare weight value returned corresponds to the weight change on the balance in the unit actually set under host unit since the last zero setting.
T_I	Command understood but currently not executable (balance is currently executing another command, e.g. zero setting, or timeout as stability was not reached).
T_L	Command understood but not executable (incorrect parameter).
T_+	Upper limit of taring range exceeded.
T_-	Lower limit of taring range exceeded.

Parameters

Name	Type	Values	Meaning
<TareValue>	Float		Weight value
<Unit>	String		Currently displayed unit

Comments

- The tare memory is overwritten by the new tare weight value.
- The duration of the timeout depends on the balance type.
- Clearing tare memory: **see** [TAC ► Page 75].
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	T	Tare.
↑	T_S_100.00_g	The balance is tared and has a value of 100.00 g in the tare memory.

See also

📖 TAC – Clear tare weight value ► Page 75

TA – Tare weight value

Description

Use **TA** to query the current tare value or preset a known tare value.

Syntax

Commands

TA	Query of the current tare weight value.
TA_<TarePresetValue>_<Unit>	Preset of a tare value.

Responses

TA_A_<TareWeightValue>_<Unit>	Query current tare weight value in tare memory, in unit actually set under host unit.
TA_I	Command understood but currently not executable (balance is currently executing another command, e.g. zero setting, or timeout as stability was not reached).
TA_L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<TareWeightValue>	Float		Tare Weight value
<Unit>	String		Currently displayed unit

Comments

- The tare memory will be overwritten by the preset tare weight value.
- The inputted tare value will be automatically rounded by the balance to the current readability.
- The taring range is specified to the balance type.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to chapter Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.

Example

↓	TA_100.00_g	Preset a tare weight of 100 g.
↑	TA_A_100.00_g	The balance has a value of 100.00 g in the tare memory.

See also

📖 TAC – Clear tare weight value ► Page 75

TAC – Clear tare weight value

Description

Use TAC to clear the tare memory.

Syntax

Command

TAC	Clear tare value.
-----	-------------------

Responses

TAC_A	Tare value cleared, 0 is in the tare memory.
TAC_I	Command understood but currently not executable (balance is currently executing another command, e.g. zero setting).
T_L	Command understood but not executable (incorrect parameter).

Example

↓	TAC	Clear tare value.
↑	TAC_A	Tare value cleared, 0 is in the tare memory.

See also

- 📄 T – Tare ► Page 73
- 📄 TI – Tare immediately ► Page 76
- 📄 TA – Tare weight value ► Page 74

TI – Tare immediately

Description

Use **TI** to tare the balance immediately and independently of balance stability.

Syntax

Command

TI	Tare immediately, i.e. store the current weight value, which can be stable or non stable (dynamic), as tare weight value.
----	---

Responses

TI_S_<WeightValue>_<Unit>	Taring performed, stable tare value. The new tare value corresponds to the weight change on the balance since the last zero setting.
TI_D_<WeightValue>_<Unit>	Taring performed, non-stable (dynamic) tare value.
TI_I	Command understood but currently not executable (balance is currently executing another command, e.g. zero setting).
TI_L	Command understood but not executable (e.g. approved version of the balance).
TI_+	Upper limit of taring range exceeded.
TI_-	Lower limit of taring range exceeded.

Parameters

Name	Type	Values	Meaning
<WeightValue>	Float		Tare weight value
<Unit>	String		Currently displayed unit

Comments

- This command is not supported by approved balances.
- The tare memory will be overwritten by the new tare weight value.
- After a non-stable (dynamic) stored tare weight value, a stable weight value can be determined. However, the absolute value of the stable weight value determined in this manner is not accurate.
- The taring range is specific to the balance type.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point. For details, please refer to Format of responses with weight value.
- If the weight value requires more than 10 characters, the weight value is returned with up to 12 characters.
- The stored tare weight value is sent in the unit actually set under host unit.

Example

↓	TI	Tare immediately.
↑	TI_D_117.57_g	The tare memory holds a non-stable (dynamic) weight value.

See also

📖 TAC – Clear tare weight value ► Page 75

TIM – Time

Description

Set the system time of the balance or query the current time.

Syntax

Commands

TIM	Query of the current time of the balance.
TIM_<Hour>_<Minute>_<Second>	Set the time of the balance.

Responses

TIM_A_<Hour>_<Minute>_<Second>	Current time of the balance.
TIM_A	Command understood and executed successfully.
TIM_I	Command understood but currently not executable (balance is currently executing another command).
TIM_L	Command understood but not executable (incorrect parameter, e.g. 22_67_25) or no clock is built in.

Parameters

Name	Type	Values	Meaning
<Hour>	Integer	00 ... 23	Hours
<Minute>	Integer	00 ... 59	Minutes
<Second>	Integer	00 ... 59	Seconds

Example

↓	TIM	Query of the current time of the balance.
↑	TIM_A_09_56_11	The current time of the balance is 9 hours, 56 minutes and 11 seconds.

See also

📖 DAT – Date ► Page 22

TST3 – Test with internal weight

Description

Use TST3 to start the sensitivity test function using internal test weights.

Syntax

Command

TST3	Start sensitivity test function with internal weight.
------	---

Responses

TST3_B	The test procedure has been started. Wait for next response, see Comments.
TST3_A_<"DeviationValue">	Test procedure completed successfully. Weight value corresponds to the deviation from the specified value displayed after the test.
TST3_I	Command understood but currently not executable (balance is currently executing another command). No second response follows. The test procedure has been aborted as, e.g. stability was not attained or wrong weights were loaded.
TST3_L	Command understood but not executable (incorrect parameter). No second response follows.

Parameter

Name	Type	Values	Meaning
<"DeviationValue">	String		Current difference (deviation value is output without unit)

Comments

- The commands received immediately after the first response are not processed and responded to in the appropriate manner until after the second response.
- Use [@ ▶ Page 12] to abort a running test.
- For additional information on testing the adjustment, **see** the Reference Manual of the balance.
- The unit is fixed to definition unit, no unit is output since the internal weight is used.

Example

↓	TST3	Start sensitivity test with internal weight.
↑	TST3_B	The test procedure has been started.
↑	TST3_A_"_____0.0002"	Test with internal weight completed successfully. The difference to the specified value is 0.0002 (= 2 digits from a weigh module/balance with an increment of 0.1 mg).

WS – Draft shield doors

Description

Use `WS` to query the position of the draft shield doors, or open/close the draft shield doors.

Syntax

Commands

<code>WS</code>	Query the position of the draft shield doors.
<code>WS_<Door></code>	Open or close draft shield door(s).

Responses

<code>WS_<Status></code>	
<code>WS_A</code>	Command understood open/close starts.
<code>WS_I</code>	Command understood but currently not executable (balance is currently executing another command).
<code>WS_L</code>	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Status>	Integer		Identification of the status of the draft shield doors' positions. (Supported values are product dependent)
		0	All draft shield doors closed
		1	All or right draft shield door(s) opened (see notes "single drive mechanism")
		2	Left draft shield door(s) opened
		3	Top draft shield door opened
		4	Right and left draft shield doors opened
		5	Right, left and top draft shield doors opened
		6	Right and top draft shield doors opened
		7	Left and top draft shield doors opened
		8	Error
		9	Intermediate
<Door>	Integer		Identification of the draft shield door(s). (Supported values are product dependent)
		0	Close all draft shield doors
		1	Open all or the right draft shield door(s) (see notes "single drive mechanism")
		2	Open all or the left draft shield door(s) (see notes "single drive mechanism")
		3	Open the top draft shield door(s)
		4	Open the right and left draft shield doors
		5	Open the right, left and top draft shield doors
		6	Open the right and top draft shield doors
		7	Open the left and top draft shield doors

Comments

- The `WS` command is not blocking and can return `WS_A` before the door has reached the target position (see examples). Therefore, after executing `WS_Door` the user should verify the success by request the position of the draft shield doors.

- If the doors are blocked when closing, they will return to their original position and the command does not return the error status (8).
- If the device has an additional inner draft shield and the position is queried the "interim" position is output until both the inner and outer draft shields are in the requested end position. The left or right pair of inner and outer draft shield doors cannot be opened or closed independently.
- The definition of "open" can be set to 25%, 50%, 75% and 100% for inner and outer draft shield doors independently using M37 and M40. The definition of "open" for the top draft shield door is fixed to 100%.

Command-specific error responses

Commands

WS_3	Open the top draft shield door.
------	---------------------------------

Responses

WS_L	Command understood but not executable (the balance have not a top draft shield door).
------	---

Examples

↓	WS_1	Open the draft shield door(s).
↑	WS_A	Draft shield door(s) opened.
↓	WS	Query the position of the draft shield doors.
↑	WS_9	Draft shield has not opened yet, because too little time has passed.
↓	WS	Query the position of the draft shield doors.
↑	WS_1	Draft shield door(s) successfully opened.
↓	WS_0	Close all draft shield doors.
↑	WS_A	All draft shield door(s) are closed.
↓	WS	Query the position of the draft shield doors.
↑	WS_0	Draft shield doors successfully closed.

See also

- 📖 M37 – Draft shield door opening width ► Page 48
- 📖 M40 – Inner draft shield door opening width ► Page 49

Z – Zero

Description

Use **z** to set a new zero; all weight values (including the tare weight) will be measured relative to this zero. After zeroing has taken place, the following values apply: tare weight = 0; net weight (= gross weight) = 0.

Syntax

Command

z	Zero the balance.
---	-------------------

Responses

z_A	Zero setting successfully performed. Gross, net and tare = 0.
z_I	Command understood but currently not executable (balance is currently executing another command, e.g. taring, or timeout as stability was not reached).
z_+	Upper limit of zero setting range exceeded.
z_-	Lower limit of zero setting range exceeded.

Comments

- The zero point determined during switching on is not influenced by this command, the measurement ranges remain unchanged.
- The duration of the timeout depends on the balance type.

Example

↓	z	Zero.
↑	z_A	Zero setting performed.

ZI – Zero immediately

Description

Use `ZI` to set a new zero immediately, regardless of balance stability. All weight values (including the tare weight) will be measured relative to this zero. After zeroing has taken place, the following values apply: tare weight = 0; net weight (= gross weight) = 0.

Syntax

Command

<code>ZI</code>	Zero the balance immediately regardless the stability of balance.
-----------------	---

Responses

<code>ZI_D</code>	Re-zero performed under non-stable (dynamic) conditions.
<code>ZI_S</code>	Re-zero performed under stable conditions.
<code>ZI_I</code>	Command understood but currently not executable (balance is currently executing another command, e.g. taring).
<code>ZI_+</code>	Upper limit of zero setting range exceeded.
<code>ZI_-</code>	Lower limit of zero setting range exceeded.

Comments

- This command is not supported by approved balances.
- The zero point determined during switching on is not influenced by this command, the measurement ranges remain unchanged.

Example

<code>_</code>	<code>ZI</code>	Zero immediately.
<code>_</code>	<code>ZI_D</code>	Re-zero performed under non-stable (dynamic) conditions.

4 What if...?

Tips from actual practice if the communication between the system (computer) and the balance is not working.

Establishing the communication

Switch the balance off / on.

The balance must now send an identification string [I4 ► Page 28], e.g. `I4_A_0123456789`.

If this is not the case, check the following points.

Connection

The user needs to enable the MT-SICS service in the settings of the balance.

Interface parameters

For the transmission to function properly, the settings of the following parameters must match at both the computer and the balance (only for USB-RS232 converter):

- Baud rate (send/receive rate)
- Number of data bits
- Parity bit
- Stop bits
- Handshake

Check the settings at both devices.

Characters are not displayed correctly

In order to display ASCII characters >127 dec., ensure that 8-bit communication is taking place.

Index

A

Adjustment	
C0	18
C1	20
M19	41

B

Balance ID	
I10	30
Balance information	
I0	24
I1	25
I10	30
I11	31
I14	32
I2	26
I3	27
I4	28
I5	29
Balance settings	
M21	42
Beep signal	
M12	40

C

Cancel	
@	12
DW	23
SM0	56
Commands	9

D

Display	
D	21
DW	23
K	34
M11	39
M12	40
M23	46
PWR	50
Door	
M37	48
M40	49
WS	79
Dynamic weighing	
SM0	56

SM1	57
SM2	58
SM3	60
SM4	62

I

ID balance	
I10	30

L

List of commands	9
I0	24

S

Status	
DAT	22
I0	24
PWR	50
TIM	77

T

Taring	
T	73
TA	74
TAC	75
TI	76
TDNR	33
Terminal	
see Display	21
Test function	
TST3	78

W

Weighing	
S	51
SI	52
SIR	53
SIRU	54
SIU	55
SNR	63
SNRU	65
SR	67
SRU	69
ST	71
SU	72
Weighing application	
A36	14

A37	16
Weighing filter setup	
M01	36
M02	37
M03	38
M29	47
Weighing to a nominal value	
A10	13
Z	
<hr/>	
Zero drift compensation	
M03	38
Zeroing	
Z	81
ZI	82



Good Weighing Practice™

GWP® is the global weighing standard, ensuring consistent accuracy of weighing processes, applicable to all equipment from any manufacturer. It helps to:

- Choose the appropriate balance or scale
- Calibrate and operate your weighing equipment with security
- Comply with quality and compliance standards in laboratory and manufacturing

 www.mt.com/GWP

www.mt.com/balances

For more information

Mettler-Toledo GmbH

Im Langacher 44
8606 Greifensee, Switzerland
www.mt.com/contact

Subject to technical changes.
© Mettler-Toledo GmbH 08/2018
30324923D en



30324923