Reference Manual
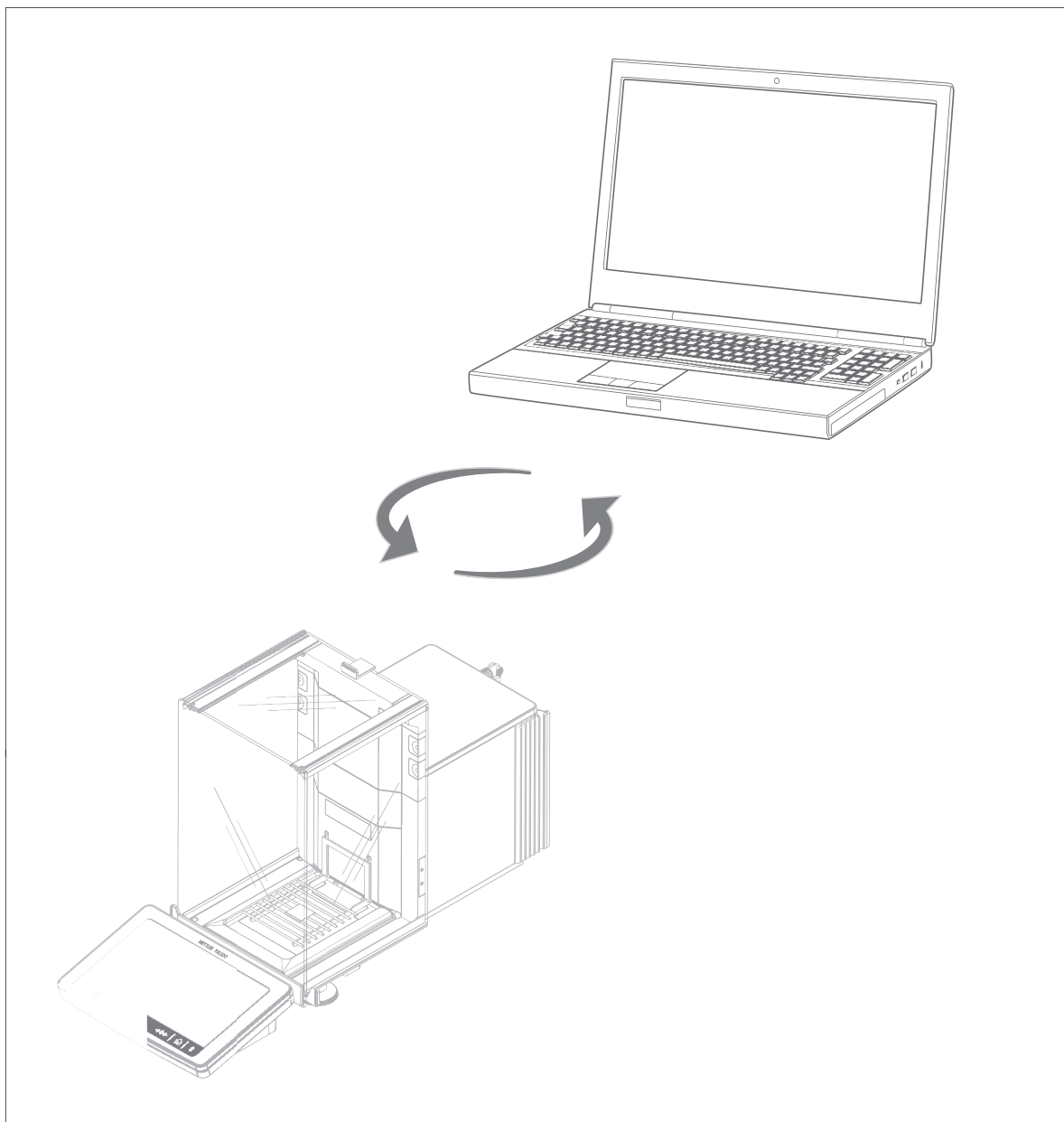
MT-SICS Interface Commands

XPR and XPR Essential Balances

METTLER TOLEDO

Table of Contents

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 are described in the Reference Manual of the instrument in question.

▶ www.mt.com/XPR-micro-RM

▶ www.mt.com/XPR-Essential-micro-RM

▶ www.mt.com/XPR-analytical-RM

▶ www.mt.com/XPR-Essential-analytical-RM

▶ www.mt.com/XPR-micro-analytical-RM

▶ www.mt.com/XPR-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 23] command.

See also

🔗 IO – Currently available MT-SICS commands ▶ Page 23

🔗 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_RL_F (ASCII 13 dec., 10 dec.). The characters C_RL_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
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 23] 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 [@ – Abort ▸ Page 12].
↑	`I0␣B␣1␣"D"`	command [D – Write text to display ▸ Page 20].
↑	`I0␣B…`	…
↑	`I0␣A␣3␣"SM4"`	command `SM4`.

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.

@ – Abort

When using MT-SICS for integration, send an Abort command before starting a sequence of commands.

To be able to start from a determined state, when establishing the communication between balance and system, send an Abort command to the balance. Otherwise, when the balance or system is switched on or off, faulty characters can be received or sent.

Sending commands without waiting for responses

Do not send multiple commands to the instrument without waiting for the corresponding responses.

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

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.

Example

Value: 0.00100 g
Set 100d
→ 0.001␣␣␣g

Carriage Return, Line Feed

Depending on the platform, $C_R L_F$ 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 $C_R L_F$ (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

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

@ – Abort

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

↓	@	Abort
↑	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) Up to 3 ID numbers are 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) Up to 3 ID numbers are 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 18].
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	Built-in 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 18]
<"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 18] 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 18

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 16].

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

C3 – Start adjustment with built-in weight

Description

You can use C3 to start an internal adjustment procedure.

Syntax

Command

C3	Start the internal adjustment.

First Responses

C3␣B	The adjustment procedure has been started. Wait for second response.
C3␣I	Adjustment cannot be performed at present as another operation is taking place, or the adjustment strategy is not configured correctly. No second response follows.
C3␣L	Adjustment operation not possible (e.g., no internal weight). No second response follows.

Further Responses

C3␣A	Adjustment has been completed successfully.
C3␣I	The adjustment was aborted as, e.g., stability not attained or the procedure was aborted with the Cancel button on the terminal.

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.
- Adjustment cannot be performed if 'External adjustment' or 'No adjustment' is configured on the instrument. Set the adjustment strategy to 'Internal adjustment'.

Example

↓	C3	Start the internal adjustment.
↑	C3␣B	Adjustment operation started.
↑	C3␣A	Adjustment completed successfully.

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].
- Use the DW command to switch the main display to 'show weight' mode.

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. "|". |

See also

🔗 DW – Show weight ▶ Page 22

🔗 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	1970 … 2099	Year The accepted range of years is depending on platform/ product

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

Resets the display after using the D command. Then the deivice display shows the current weight value and unit.

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 20] 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 20

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

I0	Send list of all implemented MT-SICS commands.

Responses

I0␣B␣<Level>␣<"Command"> I0␣B␣<Level>␣<"Command"> I0␣B … I0␣A␣<Level>␣<"Command">	Number of the MT-SICS level where the command belongs to 2nd (next) command implemented. … Last command implemented.
I0␣I	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

↓	I0	Requests a list of commands.
↑	I0␣B␣0␣"I0"	command I0.
↑	I0␣B…	…
↑	I0␣B␣0␣"@"	command [@ – Abort ▸ Page 12].
↑	I0␣B␣1␣"D"	command [D – Write text to display ▸ Page 20].
↑	I0␣B…	…
↑	I0␣A␣3␣"SM4"	command SM4.

See also

🔗 @ – Abort ▸ Page 12

🔗 SM4 – Dynamic weighing: Time interval ▸ Page 62

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"> … <"V"3">	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.

ⓘ Note

The idea behind the MT-SICS level was the standardization of the commands for all METTLER TOLEDO devices. With the MT-SICS levels a simple identification was created to identify a certain set of MT-SICS command (and the functionality behind); see below.

With years of experience and with MT-SICS commands and devices becoming more and more complexes it is no longer possible to maintain the levels and the command behind in the original way. Thus we decided no longer to support the levels in the MT-SICS manuals. Consequently the level version for level 0, 1 and 2 needs to be fixed to a version, version of level 3 has to remain product specific.

- Level 0 fixed to version 2.30
- Level 1 fixed to version 2.22
- Level 2 fixed to version 2.33
- Level 3 is product specific and must be defined by the according product team
  For Rainbow examples, Level 3 is fixed to version 2.20

Usually all defined commands at the level of 0…1 were implemented in the devices. This is no longer the case. Therefore, do not expect anymore that all commands of a certain level are implemented.

MT-SICS Levels

Since the 1980s, products launched on the market support the standardized command set "METTLER TOLEDO Standard Interface Command Set" (MT-SICS), which is divided into 4 levels, depending on the functionality of the device:

MT-SICS level 0:	Basic command set, e.g., weighing cell.
MT-SICS level 1:	Elementary command set, i.e. balances without integrated applications.
MT-SICS level 2:	Extended command, maybe set specific for a device family, e.g., for the Excellence balance line.
MT-SICS level 3:	Application-specific command set, e.g., MT-SICS for piece counting or percent weighing, dynamic weighing, etc.

Commands of MT-SICS Level 0

The following commands are assigned to MT-SICS Level 0:

	@ – Cancel
	I0 – Implemented MT-SICS commands
	I1 – MT-SICS level and level versions
	I2 – Device data
	I3 – Software version and type
	I4 – Serial number
	I5 – Software material number
	S – Stable weight value
	SI – Weight value immediately
	SIR – Weight value immediately and repeat
	Z – Zero
	ZI – Zero Immediately

Commands of MT-SICS Level 1

The following commands are assigned to MT-SICS Level 1:

	D – Write text to display
	DW – Show weight
	K – Key control
	SR – Send stable weight value and repeat on any weight change
	T – Tare
	TA – Tare weight value
	TAC – Clear tare weight value
	TI – Tare immediately

Commands of MT-SICS Level 2

Commands extend the basic and elementary function, but not application specific, e.g.,:

C…, E…, COM, DAT, DATI, ECHO, I…, M…, P…, PWR, R…, SI…, SN…, SM…, SU…, TIM, TS…, UPD, WS, ZS

Commands of MT-SICS Level 3

Application-specific command set, e.g., MT-SICS for piece counting or percent weighing

A…, LX…, PW, SM…

See also

I2 – Device data (Type and capacity)

Description

Use `I2` to query the device data (type), 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

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

🔗 @ – Abort ▶ 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	0 … 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 abort 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`	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>`
		`<...>`	Additional information on balance options or accessories

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

K␣<Mode>	Set configuration.

Responses

K␣A[␣<FunctionID>]	Command understood and executed successfully. Mode 4: Function with <FunctionID> was invoked by pressing the corresponding key and executed successfully.
K␣I[␣<FunctionID>]	Command understood but currently not executable (balance is actually in menu or input mode). Mode 4: Function with <FunctionID> 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).
K␣L	Command understood but not executable (incorrect or no parameter).

Additional Responses in Mode 3:

K␣<EventID>␣<KeyID>	Key <KeyID> has issued an <EventID>.

Additional Responses in Mode 4:

K␣B␣<FunctionID>	Function with <FunctionID> was invoked and started; the execution needs time to complete.

Parameters

Name	Type	Values	Meaning
<Mode>	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
<EventID>	Char	R	Key was pressed and held around 2 seconds
		C	Key was released (after being pressed shortly or for 2 seconds)
<FunctionID>	Integer	0	Adjustment
		1	Tare
		2	Zero
		3 … 6	Reserved
		7	Test
<KeyID>	Integer		Indicator for pressed key

<KeyID>	Integer	1	⌂/⌂	Home
		2 ... 4	reserved	
		5	→0←	Zero
		6	reserved	
		7	+ Add to protocol	Transfer to protocol
		8 ... 9	reserved	
		10	→T← ⏻	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:

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.

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).

Parameters

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

Comment

- Not all balances offer the complete range of settings. If a setting is made that is not supported by the balance, an error massage 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 and the only way to reset the default value will be via MT-SICS or by means of a balance user reset, see M38.

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 to 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 16

🔗 C1 – Start adjustment according to current settings ▸ Page 18

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>`
`M21␣B…`
`M21␣A␣<Channel>␣<Unit>`
	Current first 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	Available as host unit / display unit / info unit
<Unit>	Integer				All
		0	Gram	g	
		1	Kilogram	kg	All
		2	Ton	t	All
		3	Milligram	mg	All
		4	Microgram	µg	All
		5	Carat	ct	All
		7	Pound avdp	lb	All
		8	Ounce avdp	oz	All
		9	Ounce troy	ozt	All
		10	Grain	GN	All
		11	Pennyweight	dwt	All
		12	Momme	mom	All
		13	Mesghal	msg	All
		14	Tael Hongkong	tlh	All
		15	Tael Singapore	tls	All
		16	Tael Taiwan	tlt	All
		18	Tola	tola	All
		19	Baht	baht	All
		28	Custom unit	cu1	All
					A custom unit is only selectable if the custom unit was defined in the method (for special method types).

Comments

- The units depend on the allowed unit in the Tolerance profile and on the balance model.
- Display unit and info unit cannot be changed if a method with templates is running.
- 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 persists.
- 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.

See also

🔗 SU – Stable weight value in display unit ▸ Page 72

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.

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 massage 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 80]

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 80]

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

`PWR␣<OnOff>`	Switch the balance on or off.

Responses

`PWR␣A`	Balance has been switched off successfully.
`PWR␣A␣` `I4␣A␣<"SNR">`	Balance with the serial number "SNR" has been switched on successfully see [I4 ▸ Page 28].
`PWR␣I`	Command understood but currently not executable (balance is currently executing another command, e.g., taring, or application is not in Home screen).
`PWR␣L`	Command understood but not executable.

Parameter

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

Comments

- The balance response to [I4 ▸ Page 28] appears unsolicited after switching the balance on.
- In case of cable power driven devices, the switch off command set the device in the standby state.
- In case of cable power and battery driven devices:
  - If the device is cable powered, the switch off command `PWR␣0` set the device in the standby state.
  - If the device is battery powered, the switch off command `PWR␣0` set the device in the off state.

Example

↓	`PWR␣1`	Switch the balance on.
↑	`PWR␣A`	The balance has been switched on successfully.
↑	`I4␣A␣"0123456789"`	The serial number is shown.

See also

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

S	Send the current stable net weight value.

Responses

S␣S␣<WeightValue>␣<Unit>	Current stable 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, 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		Currently displayed unit

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

↓	S	Send a stable weight value.
↑	S␣S␣␣␣␣␣100.00␣g	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.

Parameters

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

Comments

- The balance response to the command SI with the last built-in 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 (about 10 values/sec.).

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.

Parameters

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

Comments

- This command is cancelled by the [@ ▸ Page 12], [S ▸ Page 51], [SI ▸ Page 52], [SIRU ▸ Page 54], [SIU ▸ Page 55], [SNR ▸ Page 63], [SNRU ▸ Page 65], [SR ▸ Page 67] and [SRU ▸ Page 69] commands.
- 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␣...	

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.

Parameters

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

Comments

- This command is cancelled by the [@ ▸ Page 12], [S ▸ Page 51], [SI ▸ Page 52], [SIRU ▸ Page 54], [SIU ▸ Page 55], [SNR ▸ Page 63], [SNRU ▸ Page 65], [SR ▸ Page 67] and [SRU ▸ Page 69] commands.
- As the [SIR ▸ Page 53] command, but with currently displayed unit.
- 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.

Parameters

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

Comments

- As the [SI ▸ Page 52] command, but with currently displayed unit.
- 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 Weight capture mode set to Dynamic.

Example

↓	SM0	Cancel all SMx commands except [SM4 ▶ Page 62].
↑	SM0␣A␣3	Any SMx commands are canceled.

See also

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 Weight 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.
- 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 Weight 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.
- 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 Weight 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.
- 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 1st dynamic weighing is 25.83 g.
↑	`SM␣*␣␣␣␣␣␣22.91␣g`	Result of the 2nd dynamic weighing is 22.91 g.
↑	`SM␣*␣␣␣␣␣␣24.05␣g`	Result of the 3rd 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 Weight 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

🔗 @ – Abort ▸ Page 12

🔗 SM0 – 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 (1st value). Next stable weight value after preset deflection (2nd 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

- In contrast to SNR, [SR ▸ Page 67] sends also dynamic weight values.

- This command is cancelled by the [@ ▸ Page 12],[S ▸ Page 51], [SI ▸ Page 52], [SIR ▸ Page 53], [SIU ▸ Page 55], [SIRU ▸ Page 54], [SNRU ▸ Page 65], [SR ▸ Page 67] and [SRU ▸ Page 69] commands.

- 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`	1st weight value is 12.34 g.
↑	`S⌴S⌴⌴⌴⌴⌴⌴67.89⌴g`	2nd 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 (1st value). Next stable weight value after preset deflection (2nd 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

- In contrast to SNR, [SR ▶ Page 67] sends also dynamic weight values.
- This command is cancelled by the [@ ▶ Page 12],[S ▶ Page 51], [SI ▶ Page 52], [SIR ▶ Page 53], [SIU ▶ Page 55], [SIRU ▶ Page 54], [SNRU ▶ Page 65], [SR ▶ Page 67] and [SRU ▶ Page 69] commands.
- 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`	1st weight value is 12.34 g.
↑	`S␣S␣␣␣␣␣␣67.89␣g`	2nd weight value is 67.89 g.

See also

🔗 SNR – Send stable weight value and repeat on stable weight change ▸ Page 63

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, 1st 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

- This command is cancelled by the [@ ▸ Page 12],[S ▸ Page 51], [SI ▸ Page 52], [SIR ▸ Page 53], [SIU ▸ Page 55], [SIRU ▸ Page 54], [SNRU ▸ Page 65], [SR ▸ Page 67] and [SRU ▸ Page 69] commands.
- 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.
- 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

🔗 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 1st 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.
- This command is cancelled by the [@ ▶ Page 12],[S ▶ Page 51], [SI ▶ Page 52], [SIR ▶ Page 53], [SIU ▶ Page 55], [SIRU ▶ Page 54], [SNRU ▶ Page 65], [SR ▶ Page 67] and [SRU ▶ Page 69] commands.
- 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.
- 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`	1ˢᵗ weight value is stable and 12.34 lb.
↑	`S␣D␣␣␣␣␣␣13.88␣lb`	2ⁿᵈ weight value is non-stable and 13.88 lb.
↑	`S␣S␣␣␣␣␣␣15.01␣lb`	3ʳᵈ 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 result 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 result is pressed.
ST␣0	Stop sending weight values.

Responses

ST␣A␣0	Function inactive, no weight value is sent when the button Add result is pressed.
ST␣A␣1	Function active, weight value is sent each time when the button Add result 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 result 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.

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.
- 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 in host unit
<Unit>	String		Weight 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

🔗 TA – Tare weight value ▶ Page 74

🔗 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 in host unit
`<Unit>`	String		Weight 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. This value is shown in the response.
- The taring range is specified to the balance type.
- 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

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, o 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 in host unit
`<Unit>`	String		Weight 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.

Example

↓	`TI`	Tare immediately.
↑	`TI␣D␣␣␣␣␣117.57␣g`	The tare memory holds a non-stable (dynamic) weight value.

See also

🔗 T – Tare ▶ Page 73

🔗 TA – Tare weight value ▶ Page 74

🔗 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 21

TST3 – Test with built-in weight

Description

Use `TST3` to start the sensitivity test function using built-in test weight.

Syntax

Command

`TST3`	Start sensitivity test function with built-in test 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

- Use [@ ▶ Page 12] to abort a running adjustment.
- 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 built-in weight is used.

Example

↓	`TST3`	Start sensitivity test with built-in 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).

Unsupported balances

The command is not supported for the following balances.

XPR26	XPR36	XPR204S
XPR26DR	XPR36DR	XPR303S
XPR26C	XPR36C	XPR303SN
XPR105	XPR106DUH	XPR603S
		XPR603SN
		XPR603SDR
		XPR603SNDR
		XPR1202S
		XPR2002S

See also

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

`WS`	Query the position of the draft shield doors.
`WS␣<Door>`	Open or close draft shield door(s).

Responses

`WS␣<Status>`	
`WS␣A`	Command understood open/close starts.
`WS␣I`	Command understood but currently not executable (balance is currently executing another command).
`WS␣L`	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.

See also

🔗 ZI – Zero immediately ▸ Page 83

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

ZI	Zero the balance immediately regardless the stability of balance.

Responses

ZI␣D	Re-zero performed under non-stable (dynamic) conditions.
ZI␣S	Re-zero performed under stable conditions.
ZI␣I	Command understood but currently not executable (balance is currently executing another command, e.g. taring).
ZI␣+	Upper limit of zero setting range exceeded.
ZI␣-	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

␣	ZI	Zero immediately.
␣	ZI␣D	Re-zero performed under non-stable (dynamic) conditions.

See also

🔗 Z – Zero ▸ Page 82

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 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.

See also

🔗 I4 – Serial number ▶ Page 28

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