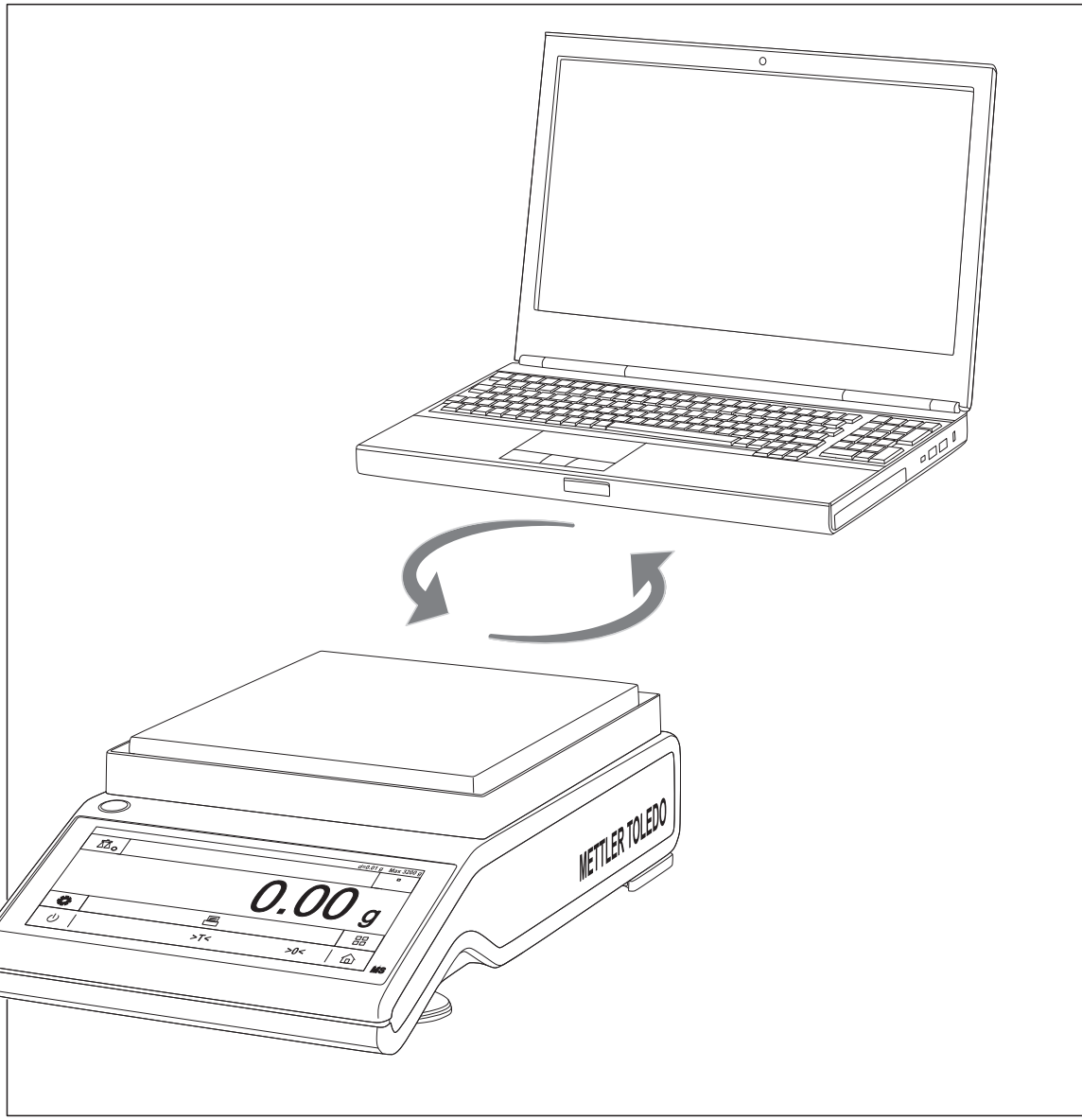
Reference Manual

MT-SICS Interface Commands

Standard and Advanced Laboratory 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. This document is valid for all Standard Level and Advanced Level Laboratory Balances and Jewelry Balances.

Additional documentation on data interface

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

▶ www.mt.com/ms-ts-RM

▶ www.mt.com/ml-t-RM

▶ www.mt.com/me-t-RM

▶ www.mt.com/ms-semi-RM

▶ www.mt.com/jp-semi-RM

▶ www.mt.com/ms-l-RM

▶ www.mt.com/me-RM

▶ www.mt.com/je-RM

▶ www.mt.com/jp-g-RM

▶ www.mt.com/jp-js-RM

▶ www.mt.com/jl-ge-OI

▶ www.mt.com/pl-e-OI

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 [I0 ▸ Page 32] command.

See also

Tips for programmers ▸ Page 11

2 Command Formats

Commands sent to the weigh module/balance comprise one or more characters of the ASCII character set. Here, the following must be noted:

	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 weigh module/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

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	+	Weigh module or balance is in overload range (weighing range exceeded)
		–	Weigh module or 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.)

Example

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 32] command to get a list of all commands that are supported by your particular balance.

Example

↓	I0	Send list of commands.
↑	I0␣B␣0␣"I0"	Level 0 command I0 implemented.
↑	I0␣B…	…
↑	I0␣B␣0␣"@"	Level 0 command [@ ▸ Page 13] (cancel) implemented.
↑	I0␣B␣1␣"D"	Level 1 command D implemented.
↑	I0␣B…	…
↑	I0␣A␣3␣"SM4"	Level 3 command [SM4 ▸ Page 167] implemented.

If you need a list of commands including the version of a command, use [I1 ▸ Page 33].

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 13] or [C ▸ Page 18] 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.

METTLER TOLEDO DeltaRange balances

If the fine range of DeltaRange balances has been exceeded at the time of transmission, the balance sends a weight value as balance response in which the tenth character is a 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_RL_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!

A digit refers to the smallest numerical increment a balance can display – this is also referred to as the balance's readability. E.g. a XPR6U has four decimal places; its digit is 0.01 mg. The digit is sometimes used as a generic unit.

See also

- S – Stable weight value ▸ Page 151
- SI – Weight value immediately ▸ Page 152
- SIR – Weight value immediately and repeat ▸ Page 153
- SIRU – Weight value in display unit immediately and repeat ▸ Page 155
- SIU – Weight value in display unit immediately ▸ Page 158
- SR – Send stable weight value and repeat on any weight change ▸ Page 174
- ST – Stable weight value on pressing (Transfer) key ▸ Page 178
- SU – Stable weight value in display unit ▸ Page 179
- T – Tare ▸ Page 181
- TA – Tare weight value ▸ Page 182
- TI – Tare immediately ▸ Page 184
- Z – Zero ▸ Page 194
- ZI – Zero immediately ▸ Page 195

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

Terminates processes such as zero, tare, calibration and testing etc.. If the device is in standby mode, it is turned on.

Syntax

Command

@	Resets the weigh module/balance to the condition found after switching on, but without a zero setting being performed.

Response

I4␣A␣"<SNR>"	Serial number is emitted; the weigh module/balance is ready for operation.

Comments

- All commands awaiting responses are cancelled.
- Key control is set to the default setting K␣1.
- The tare memory is not reset to zero.
- If the balance is on standby, it is switched on.
- 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 37].

Example

↓	@	Cancel
↑	I4␣A␣"B021002593"	Weigh module or balance is "reset", its serial number is B021002593.

See also

I4 – Serial number ▸ Page 37

A02 – Sample identification for samples in weighing application

Description

Use A02 to set or query an identification of a sample in weighing application.

Note

This command is deprecated. If your device supports the A35 command, use this command.

Syntax

Commands

A02	Query the identifications of a sample of the weighing application.
A02␣<Index>	Query the sample number of the weighing application.
A02␣<Index>␣<"Identification">	Set the sample number and identification of the weighing application.

Responses

A02␣B␣<Index>␣<"Identification"> A02␣B… A02␣A␣<Index>␣<"Identification">	Query the identifications of a sample of the weighing application.
A02␣A	Command understood and executed successfully.
A02␣I	Command understood but currently not executable.
A02␣L	Command understood but not executable (e.g. weighing application is not active or parameter is incorrect).

Parameters

Name	Type	Values	Meaning
<Index>	Integer	1 … n	Sample number (n is product dependent)
<"Identification">	String	Max 60 chars	Identification of the sample

Comment

- This command only applies to the "Weighing" application. For details on available applications and how the activate them, see [M25 ▸ Page 94] and [M26 ▸ Page 96].

Examples

↓	A02	Query the identifications of a sample of the weighing application.
↑	A02␣B␣1␣"12345"	The identification of sample 1 is "12345".
↑	A02␣B␣2␣"AAA-67890"	The identification of sample 2 is "AAA-67890".
↑	A02␣A␣3␣""	No identification for sample 3 (empty string).

↓	A02␣1␣"98765"	Set the identification 1 to "98765".
↑	A02␣A	The identification 1 is set to "98765".

A35 – Identification label and value

Description

Use A35 to set or query the identification label, value, auto increment and input prompt to a specified application.

Syntax

Commands

A35	Query the identification label, value, auto increment and input prompt of the application.
A35␣<ApplicationID>	Query the application ID of the application.
A35␣<ApplicationID>␣<IDNumber>	Query the application ID and ID number of the application.
A35␣<ApplicationID>␣<IDNumber>␣ <"Label">␣<"Value">␣<AutoIncrement>␣ <InputPrompt>	Set the identification label, value, auto increment and input prompt of the application.

Responses

A35␣B␣<ApplicationID>␣<IDNumber>␣ <"Label">␣<"Value">␣ AutoIncrement␣ InputPrompt A35␣B… A35␣A␣<ApplicationID>␣<IDNumber>␣ <"Label">␣<"Value">␣<AutoIncrement>␣ <InputPrompt>	Current identification label, value, auto increment and input prompt of the application.
A35␣A	Command understood and executed successfully.
A35␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<ApplicationID>	Integer	0 … max. appl.	Application identification
		0	Weighing
		1	Counting
		2	Percent
		3	Formulation
		4	Dynamic weighing A
		5	Dynamic weighing M
		6	Textile
		7	Density
		8	MinWeigh
		9	DiffWeigh
		10	PipetteCheck
		11	+/-Weighing
		12	Free factor f x w
		13	Free factor f / w
		14	Open zero
		15	Enhanced displ. resolution
		16	Weigh recall
		17	Routine test
		18	Statistic
		19	Totaling
<IDNumber>	Integer	1 … 4	Identification number within the application
<Label>	String	15 - 60 chars	Label of the identification (number of characters is model-dependent). E.g., ML-T only supports 12 and MS-T only 16 characters. The rest is cut off without warning
<Value>	String	15 - 60 chars	Value of the identification
<AutoIncrement>	Boolean	0 = disabled	Automatic increment is disabled
		1 = enabled	Automatic increment is enabled
<InputPrompt>	Boolean	0 = disabled	Input prompt is disabled
		1 = enabled	Input prompt is enabled

Comment

- Input prompt means that every time the ID is printed, the user is prompted to enter the value of the ID first.

Examples

↓	A35	Query the identification label, value, auto increment and input prompt of the application.
↑	A35␣B␣0␣1␣"Batch"␣"A7␣45-6"␣0␣1	Application weighing, ID number 1, label "Batch", value "A7 45-6", auto increment disabled and input prompt enabled are set.

↑	A35␣B␣0␣2␣"Lot"␣"CH␣78-3/424"␣0␣1	Application weighing, ID number 2, label "Lot", value "CH 78-3/424", auto increment disabled and input prompt enabled are set.
↑	A35␣B␣1␣1␣"Lab"␣"Singapore␣44-2"␣0␣0	Application piece counting, ID number 1, label "Lab", value "Singapore 44-2", auto increment disabled and input prompt disabled are set.
↑	A35␣B␣1␣2␣""␣""␣0␣0	Application piece counting, ID number 2, no label, no value, auto increment disabled and input prompt disabled are set.
↑	A35␣B␣17␣1␣"User"␣"Test2"␣0␣1	Application routine test, ID number 1, label "User", value "Test2", auto increment disabled and input prompt enabled are set.
↑	A35␣B␣17␣2␣""␣""␣0␣0	Application routine test, ID number 2, no label, no value, auto increment disabled and input prompt disabled are set.
↑	A35␣B␣18␣1␣"User"␣"Test2"␣0␣1	Application statistic, ID number 1, label "User", value "Test2", auto increment disabled and input prompt enabled are set.
↑	A35␣A␣18␣2␣""␣""␣0␣0	Statistic application, ID number 2, no label, no value, auto increment disabled and input prompt disabled are set.

↓	A35␣0	Query the identification label, value, auto increment and input prompt of the weighing application.
↑	A35␣B␣0␣1␣"Batch"␣"A7␣45-6"␣0␣1	Application weighing, ID number 1, label "Batch", value "A7 45-6", auto increment disabled and input prompt enabled are set.
↑	A35␣B␣0␣2␣"Lot"␣"CH␣78-3/424"␣0␣1	Application weighing, ID number 2, label "Lot", value "CH 78-3/424", auto increment disabled and input prompt enabled are set.
↑	A35␣B␣0␣3␣"Lab"␣"Singapore␣44-2"␣0␣0	Application weighing, ID number 3, label "Lab", value "Singapore 44-2", auto increment disabled and input prompt disabled are set.
↑	A35␣A␣0␣4␣"User"␣"Pnabun Kinuk"␣0␣1	Weighing application, ID number 4, label "User", value "Pnabun Kinuk", auto increment disabled and input prompt enabled are set.

↓	A35␣1␣2	Query the identification 2 label, value, auto increment and input prompt of the piece counting application.
↑	A35␣A␣1␣2␣"Screws"␣"M4"␣0␣0	Piece counting application, ID number 2, label "Screws", value "M4", auto increment disabled and input prompt disabled are set.

↓	A35␣1␣2␣"Pearls"␣"C6"␣0␣0	Set the identification label to "Pearls" and the value to "C6", no auto increment and no input prompt for the ID number 2 in the piece counting application.
↑	A35␣A	The identification label and value are set.

C – Cancel all commands

Description

Cancel all running commands.

Syntax

Command

C	Cancel running commands.

Responses

C␣B	The cancel running command has been started.
C␣A	Command understood and executed successfully.

Comments

- This command has a similar functionality as the command [@ ▶ Page 13] but responds with a well defined answer and does not fully reset the device.
- This command is executed always immediately.
- This command cancels all active and pending interface commands correctly and in a safe way on the interface where cancel was requested. This command does not cancel any commands or procedures that are not triggered by a SICS command.
- The command C responses with C␣A after all active and pending interface commands have been terminated.
- This command is typically used for repeating commands such as [SIR ▶ Page 153] and for adjustment commands triggering a procedure.
- New procedures/command requests can be initiated right after a C␣A.

Example

↓	C	Cancel running commands.
↑	C␣B	Cancel running started.
↑	C␣A	Command understood and executed successfully.

Command-specific error responses

Response

C␣E␣<Error>	Current error code.

Parameter of command-specific error

Name	Type	Values	Meaning
<Error>	Integer	0	Error while canceling

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 21]. The unit corresponds to the factory setting of display unit, e.g., gram (g) with standard balances or carat (ct) with carat balances respectively. With internal adjustment, neither weight value nor unit appears.
C0␣I	Command understood but currently not executable (balance is currently executing another command, e.g., taring).
C0␣A	Adjustment setting set successfully.
C0␣L	Command understood but not executable (incorrect parameter; certified version of the balance).

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 calibration procedure
		1	Mode = Auto, status display 2AutoCal" or "Cal" not activated When a considerable change in the ambient conditions is determined, the status display "AutoCal" or "Cal" will be activated; this means the balance will ask for adjustment
		2	Mode = Auto, status display "AutoCal" or "Cal" flashes The sensors built into the balance have determined a considerable change in the ambient conditions. The balance requests an adjustment or at least a test, see [TST ▶ Page 186] x commands
<WeightType>	Integer	0	Built-in weight
		1	External weight
<"WeightValue">	String		Weight values specify the value of the weight for an external calibration requested from the user via the display or interface, see [C1 ▶ Page 21]
<"Unit">	String		The unit corresponds to the factory setting of display unit, e.g., gram (g)

Comments

- Setting <Mode> = 1 and <Weight> = 0 corresponds to the menu setting "ProFACT" / "FACT" under "Adjust/Test". <Mode> = 2 can not be set.
- [C2 ▸ Page 23] is independent of C0.
- The value of the external weight can be changed in the menu of the balance under "Adjust/Test ", see Reference Manual or with [M19 ▸ Page 87].
- Use [C1 ▸ Page 21] to start an adjustment defined with C0.
- C0 must be reset manually; [@ ▸ Page 13] has no effect.

Examples

↓	C0	Query of the current status and setting of the adjustment.
↑	C0 A 2 1 " 100.000 g"	Current setting of mode is "Auto". The ambient conditions of the balance have changed so much that the balance requests an adjustment (<Mode> = 2) with the external weight (<Weight> = 1). The adjustment is initiated with the command [C1 ▸ Page 21] and requires a weight of 100.000 g.

↓	C0 0 1	Set adjustment setting to manual and external.
↑	C0 A	Adjustment setting set.

See also

- M19 – Adjustment weight ▸ Page 87
- C2 – Start adjustment with external weight ▸ Page 23
- TST0 – Query/set test function settings ▸ Page 186
- TST1 – Test according to current settings ▸ Page 187

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 19].

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 with the C key.

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 13] or [C ▸ Page 18] to abort a running adjustment.
- The value of the external adjustment weight needed for adjustment must be set accordingly by an [M19 ▸ Page 87] command.

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

- @ – Cancel ▸ Page 13
- C0 – Adjustment setting ▸ Page 19
- M19 – Adjustment weight ▸ Page 87
- TST1 – Test according to current settings ▸ Page 187

C2 – Start adjustment with external weight

Description

Regardless of the [C0 ▸ Page 19] setting, C2 carries out external adjustment with the reference weight defined in [M19 ▸ Page 87].

Syntax

Command

C2	Start the external adjustment. Query of the current weight used by means of the [M19 ▸ Page 87] command.

First Responses

C2␣B	The adjustment procedure has been started.
C2␣I	Command understood but currently not executable (balance is currently executing another command). No second response follows.
C2␣L	Command understood but not executable (e.g. adjustment with an external weight is not admissible, certified version of the balance). No second response follows.

Further Responses

C2␣<"WeightValue>␣<Unit">	Prompt to unload or load the balance.
C2␣A	Command understood and executed successfully.
C2␣I	The adjustment was aborted as, e.g. stability not attained or the procedure was aborted with the C key.

Parameters

Name	Type	Values	Meaning
<"WeightValue">	Float		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 13] or [C ▸ Page 18] to abort a running adjustment.
- The value of the external adjustment weight needed for adjustment must be set accordingly by an [M19 ▸ Page 87] command.

Example

↓	C2	Start the external adjustment.
↑	C2␣B	Adjustment operation started.
↑	C2␣"␣␣␣␣␣␣0.00␣g"	Prompt to unload the balance.
↑	C2␣"␣␣␣␣2000.00␣g"	Prompt to load adjustment weight 2000.00 g.
↑	C2␣"␣␣␣␣␣␣0.00␣g"	Prompt to unload the balance.
↑	C2␣A	Adjustment completed successfully.

See also

- M19 – Adjustment weight ▶ Page 87
- TST1 – Test according to current settings ▶ Page 187
- @ – Cancel ▶ Page 13
- C – Cancel all commands ▶ Page 18

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 can not be performed at present as another operation is taking place. 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 C key.

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 13] or [C ▸ Page 18] to abort a running adjustment.

Example

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

See also

- @ – Cancel ▸ Page 13
- C – Cancel all commands ▸ Page 18
- TST3 – Test with built-in weight ▸ Page 191

C7 – Customer standard calibration

Start the adjustment of the customer standard calibration which defines the exact weight value of the built-in weights.

Syntax

Commands

C7	Request the whole list of entries.
C7␣<Method>␣<Load>	Start the customer standard calibration.

Responses

C7␣B␣<Method> ... C7␣A␣<Method>	First available method. Last available method.
C7␣B C7␣B␣<Index>␣<State>␣<WgtState>␣ <"LoadInstruction">␣<"WeightValue">␣ <Unit> C7␣B␣<Index>␣<State>␣<WgtState>␣ <"LoadInstruction">␣<"WeightValue">␣ <Unit> … C7␣A	The standard calibration has been started. Weight capture and request information. Standard calibration adjustment finished.
C7␣I	Command understood but currently not executable (balance is currently executing another command). No second response follows.
C7␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Method>	Integer	0 … 1	List of available methods (model dependent)
		0	Use default method of the adjustment
		1	Determining the exact value of the external reference weight
<Load>	Float		Exact value of the external reference weight
<Index>	Integer		Step number of the procedure
<State>	Char	R	Requesting external weight
		D	Waiting for stability
<WgtState>	Char	+	Load is above tolerances
		–	Load is below tolerances
		o	Load is within tolerances
<"LoadInstruction">	String	0	Do not place the load
		1	Place load 1
<"WeightValue">	String		Weight value
<Unit>	String		MT-SICS unit

Comments

- The standard calibration determines the exact weight of the internal load. Therefore the external calibration load must be known exactly.
- If step control is enabled, the states which require external loads must be confirmed, the others are running automatically.
- The parameter <Load> and also the load value corrected with step control are tested against range definitions. A logic error (L) is returned for values violating the range definitions.
- Use [@ ▸ Page 13] or [C ▸ Page 18] to abort a running adjustment.

Examples

↓	C7	Request the whole list of available methods.
↑	C7␣B␣0	Method 0 is available.
↑	C7␣A␣1	Method 1 is available.

↓	C7␣400	Start the customer standard calibration procedure (method 1), without step control (automatic recognition of placed weights).
↑	C7␣B	Standard calibration adjustment is started.
↑	C7␣B␣0␣R␣-␣"0"␣"0.00␣g"	Request weight for first step (ext. & int. unload).
↑	C7␣B␣0␣D␣o␣"0"␣"␣"	Capture weight of first step.
↑	C7␣B␣1␣D␣o␣"␣"␣"␣"	Capture weight of second step (int. push).
↑	C7␣B␣2␣D␣o␣"␣"␣"␣"	Capture weight of third step (int. unload).
↑	C7␣B␣3␣R␣-␣"1"␣"400.00␣g"	Request weight for fourth step (ext. load L1).
↑	C7␣B␣3␣D␣o␣"1"␣"␣"	Capture weight of fourth step.
↑	C7␣B␣4␣R␣+␣"0"␣"0.00␣g"	Request weight for fifth step (ext. unload).
↑	C7␣B␣4␣D␣o␣"0"␣"␣"	Capture weight of fifth step.
↑	C7␣B␣5␣D␣o␣"␣"␣"␣"	Capture weight of sixth step (int. load).
↑	C7␣B␣6␣D␣o␣"␣"␣"␣"	Capture weight of seventh step (int. unload).
↑	C7␣A	Standard calibration adjustment finished.

Command-specific error responses

Response

C7␣E␣<Error>	Current error code.

Parameters of command-specific errors

Name	Type	Values	Meaning
<Error>	Integer	0 … 2	List of available error codes
		0	Timeout
		1	Cancel
		2	Built-in weight not supported

See also

C – Cancel all commands ▸ Page 18

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 left-aligned in the balance display marked by a symbol, e.g., *.
D␣I	Command understood but currently not executable.
D␣L	Command understood but not executable (incorrect parameter or balance with no display).

Parameter

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

Comments

- A symbol in the display, e.g., * indicates that the balance is not displaying a weight value.
- 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 [1.1.3 ▸ Page 12].
- 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 30
- Tips for programmers ▸ Page 12

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 185

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 the main display to weight mode.

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 28] command.

Example

↓	DW	Switch the main display to weight mode.
↑	DW␣A	Main display shows the current weight value.

See also

D – Write text to display ▸ Page 28

E01 – Current system error state

Description

This command queries severe and fatal system errors.

Syntax

Command

E01	Query of the current system error state.

Responses

E01␣<ErrorCode>␣<"ErrorMessage">	Current error code and message.
E01␣I	Command understood but currently not executable.

Parameters

Name	Type	Values	Meaning
<ErrorCode>	Integer	0	No error
		4	EEPROM error
		5	Wrong cell data
		6	No standard calibration
		7	Program memory defect
		9	Temperature sensor defect
		16	Wrong load cell brand
		17	Wrong type data set
		100	Memory full
		101	Battery backup lost
<"ErrorMessage">	String	128 chars	Error text message in UTF-8

Comments

- The error code and message will change as soon as the device detects an other state i.e. after a restart or reset.
- If the device is able to detect multiple error s in parallel then only the most critical error (lowest error number) is stated.

Example

↓	E01	Query of the current system error state.
↑	E01␣101␣"БАТАРЕЯ␣СЕЛА␣- ␣ПРОВЕРЬ␣ДАТУ␣И␣ВРЕМЯ"	The last device error is "BATTERY BACKUP LOST - CHECK DATE TIME SETTINGS". The selected language is Russian.

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 (Application specific command set)
<"Command">	String		MT-SICS command

Comments

- If a terminal and a weigh module, weighing platform are being used, the command list of the terminal is output. If only a weigh module, platform is being used, the command list of the weigh module, platform is shown.
- If I0 lists commands that cannot be found in the manual, these are reserved commands "for internal use" or "for future use", and should not be used or altered in any way.

Example

↓	I0	Send list of commands.
↑	I0 B 0 "I0"	Level 0 command I0 implemented.
↑	I0 B…	…
↑	I0 B 0 "@"	Level 0 command [@ ▸ Page 13] (cancel) implemented.
↑	I0 B 1 "D"	Level 1 command D implemented.
↑	I0 B…	…
↑	I0 A 3 "SM4"	Level 3 command [SM4 ▸ Page 167] implemented.

See also

- @ – Cancel ▸ Page 13
- C – Cancel all commands ▸ Page 18

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)

Comment

- The command I14 provides more comprehensive and detailed information.

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, Moisture Analyzer.

Commands of MT-SICS Level 0

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

	@ – Cancel
	C – Cancel all commands
	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, Moisture Analyzer etc.

A…, LX…, PW, SM…

See also

I14 – Device information ▶ Page 41

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␣<"text">	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 or weigh module
<"Capacity">	String		Capacity of balance or weigh module
<"Unit">	String		Weight unit

Comments

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

Example

↓	I2	Query of the balance data.
↑	I2␣A␣"MS204S␣220.0090␣g"	Balance type and capacity.

See also

I14 – Device information ▸ Page 41

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 41].

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 41

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 agrees with that on the model plate and is different for every 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 13].
- More detailed information is available with [I14 ▸ Page 41].
- Only the serial number of the terminal is issued.
- If no terminal is present, the serial number of the bridge is issued instead.

Example

↓	`I4`	Query of the serial number.
↑	`I4␣A␣"B021002593"`	The serial number is "B021002593".

See also

- @ – Cancel ▸ Page 13
- I14 – Device information ▸ Page 41

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

Comments

- The SW-ID is unique for every Software. It consists of a 8 digit number and an alphabetic character as an index
- More detailed information is available with [I14 ▶ Page 41].
- Only the SW-ID of the terminal is issued.
- If no terminal is present, the SW-ID of the bridge is issued instead.

Example

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

See also

I14 – Device information ▶ Page 41

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 13].

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␣"MS204S"	The balance is an "MS204S".

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-identification 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>
		<Option>	Balance option information corresponding to <No>
		<Balance>	Balance information corresponding to <No>
		<Printer>	Printer information corresponding to <No>
		<Second Display>	Second Display information corresponding to <No>

Comments

- The response to the query of instrument configuration can comprise one or more lines (compact balances, bridges with/without terminal etc.)
- The description of an option is the language-independent product name, e.g. "RS232-Option".
- If there are several modules of the same kind, the descriptions have an appendix, comprising of a hyphen and a number. Examples: <Option-1>, <Option-2>.

Examples

↓	I14␣0	Query of the current balance information.
↑	I14␣A␣0␣1␣"Balance"	"Balance".

↓	I14␣1	Query of the current instrument descriptions.
↑	I14␣A␣1␣1␣"MS6002SDR/A01"	Balance is a "MS6002SDR/A01".

↓	I14␣2	Query of the current software identification numbers.
↑	I14␣A␣2␣1␣"12121304A"	Software identification number of the balance is "12121304AA".

↓	I14␣3	Query of the current software versions.
↑	I14␣A␣3␣1␣"1.55"	Version of the balance software is "1.55".

↓	I14␣4	Query of the serial numbers.
↑	I14␣A␣4␣1␣"1123121443"	Serial number of the balance is "1123121443".

↓	I14␣5	Query of the type definition numbers.
↑	I14␣A␣5␣1␣"23.28.3.1534.776"	Type definition number of the balance is "23.28.3.1534.776".

↓	I14	Query of the current instrument descriptions.
↑	I14␣B␣0␣1␣"Balance"	"Balance".
↑	I14␣B␣1␣1␣"PB203DR"	Balance is a "PB203DR".
↑	I14␣B␣2␣1␣"11670123"	Software identification number of the balance is "11670123".
↑	I14␣B␣3␣1␣"1.23"	Version of the balance software is "1.23".
↑	I14␣B␣4␣1␣"1234567890"	Serial number of the balance is "1234567890".
↑	I14␣A␣5␣1␣"1.2.3.4.5"	TDNR of the terminal is "1.2.3.4.5".

I17 – MinWeigh: Next test date

Description

You can use `I17` to query the date when the balance's next MinWeigh test is due to be performed.

Syntax

Command

`I17`	Query of the current next date of MinWeigh test.

Responses

`I17␣A␣<Day>␣<Month>␣<Year>`	Current next date of MinWeigh test.
`I17␣I`	Next date of MinWeigh test can not be transferred at present as another operation is taking place.

Parameters

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

Comments

- MinWeigh can only be activated by a service technician.
- For additional information on MinWeigh (Minimum weight), see the Reference Manual of the balance.

Example

↓	`I17`	Query of the current next date of MinWeigh test.
↑	`I17␣A␣19␣07␣2011`	Date of next MinWeigh test is July 19, 2011.

I18 – MinWeigh: Methods designation and test parameters

Description

You can use `I18` to query the MinWeigh methods, designation and test parameters.

Syntax

Command

`I18`	Query the MinWeigh methods, designation and test parameters.
`I18␣<Method>`	Query the MinWeigh method number.

Responses

`I18␣B␣<Method>␣<"Name">␣ <"TestParameter">`
`I18␣B…`
`I18␣A␣<Method>␣<"Name">␣ <"TestParameter">`
	Current set the MinWeigh methods, designation and test parameters.

`I18␣I`	MinWeigh method can not be transferred at present as another operation is taking place.

Parameters

Name	Type	Values	Meaning
`<Method>`	Integer	`1 … 5`	Method number (available methods are product dependent)
`<"Name">`	String	`5 … 20 chars`	Method designation
`<"TestParameter">`	String	`5 … 20 chars`	Test parameter

Comments

- MinWeigh can only be activated by a service technician.
- For additional information on MinWeigh (Minimum weight), see the Reference Manual of the balance.

Examples

↓	`I18`	Query the MinWeigh methods, designation and test parameters.
↑	`I18␣B␣1␣"USP"␣"3sd,␣0.1%"`	1st method is a USP-method with 3 x sd and ≤ 0.1% error.
↑	`I18␣B␣2␣"SOP"␣"2sd,␣1%"`	2nd method is a SOP-method with 2 x sd and ≤1% error.
↑	`I18␣A␣3␣""␣""`	3rd method is not defined.

↓	`I18␣2`	Query the MinWeigh designation.
↑	`I18␣A␣2␣"SOP"␣"2sd,␣1%"`	The 2nd method is a SOP-method with 2 x sd and ≤1% error.

I19 – MinWeigh: Limits

Description

Use `I19` to query the MinWeigh limits. Per method up to 3 pairs of limits, for tare and minimum initial weight, can be defined.

Syntax

Command

`I19`	Query of the current MinWeigh limits.
`I19␣<Method>`	Query the MinWeigh method number.
`I19␣<Method>␣<Number>`	Query the MinWeigh method number and pair of limits.

Responses

`I19␣B␣<Method>␣<Number>␣<MinimalWeight>␣<Tare>`
`I19␣B…`
`I19␣A␣<Method>␣<Number>␣<MinimalWeight>␣<Tare>`
	Current MinWeigh limits.

`I19␣I`	MinWeigh limits can not be transferred at present as another operation is taking place.

Parameters

Name	Type	Values	Meaning
`<Method>`	Integer	`1 … 5`	Method number (available methods are product dependent)
`<Number>`	Integer	`0 … 2`	Pair number of limits by tare and minimal initial weight
`<MinimalWeight>`	Float	`0 … max.`	Minimum initial weight in definition unit
`<Tare>`	Float	`0 … max.`	Tare value in definition unit

Comments

- MinWeigh can only be activated by a service technician.
- For additional information on MinWeigh (Minimum weight), see the Reference Manual of the balance.

Examples

↓	I19	Query of the current MinWeigh Limits.
↑	I19␣B␣1␣0␣0.0100␣50.0000	Method 1, value pair 0, MinWeigh is 10 mg with tare 50 g.
↑	I19␣B␣1␣1␣0.0200␣120.0000	Method 1, value pair 1, MinWeigh is 20 mg with tare120 g.
↑	I19␣B␣1␣2␣0.1000␣500.0000	Method 1, value pair 2, MinWeigh is 100 mg with tare 500 g.
↑	I19␣B␣2␣0␣0.0110␣51.0000	Method 2, value pair 0, MinWeigh is 11 mg with tare 51 g.
↑	I19␣B␣2␣1␣0.0210␣121.0000	Method 2, value pair 1, MinWeigh is 21 mg with tare 121 g.
↑	I19␣B␣2␣2␣0.1010␣501.0000	Method 2, value pair 2, MinWeigh is 101 mg with tare 501 g.
↑	I19␣B␣3␣0␣0.0120␣52.0000	Method 3, value pair 0, MinWeigh is 12 mg with tare 52 g.
↑	I19␣B␣3␣1␣0.0220␣122.0000	Method 3, value pair 1, MinWeigh is 22 mg with tare122 g.
↑	I19␣A␣3␣2␣0.1020␣502.0000	Method 3, value pair 2, MinWeigh is 102 mg with tare 502 g.

↓	I19␣2	Query of MinWeigh limits of method 2.
↑	I19␣B␣2␣0␣0.0110␣51.0000	Value pair 0, MinWeigh is 11 mg with tare 51 g.
↑	I19␣B␣2␣0␣0.0210␣121.0000	Value pair 1, MinWeigh is 21 mg with tare 121 g.
↑	I19␣A␣2␣2␣0.1010␣501.0000	Value pair 2, MinWeigh is 101 mg with tare 501 g.

↓	I19␣3␣1	Query of MinWeigh limits of method 3 and pair number 1.
↑	I19␣A␣3␣1␣0.220␣122.0000	MinWeigh is 22 mg with tare122 g.

I20 – MinWeigh: Parameter

Description

Use `I20` to query the MinWeigh parameters.

Syntax

Command

`I20`	Query of the current MinWeigh parameters.
`I20␣<Method>`	Query the MinWeigh method number.
`I20␣<Method>␣<Attitude>`	Query the MinWeigh method number and attitude information.

Responses

`I20␣B␣<Method>␣<Attitude>␣<Option>`
`I20␣B…`
`I20␣A␣<Method>␣<Attitude>␣<Option>`
	Current MinWeigh parameters.

`I20␣I`	MinWeigh parameters can not be transferred at present as another operation is taking place.

Parameters

Name	Type	Values	Meaning
`<Method>`	Integer	`0 … 5`	Method number (available methods are product dependent)
`<Attitude>`	Integer	`0`	Weighing mode, see [M01 ▸ Page 76]
		`1`	Environment, see [M02 ▸ Page 77]
		`2`	Weighing value release, see [M29 ▸ Page 98]
		`3`	Auto zero, see [M03 ▸ Page 78]
`<Option>`	Integer		Selected option of the appropriate weighing attitude

Comments

- The parameters correspond to the values provided for the corresponding MT-SICS commands:
  Weighing mode, see [M01 ▸ Page 76].
  Environment, see [M02 ▸ Page 77].
  Weighing value release, see [M29 ▸ Page 98].
  Auto zero, see [M03 ▸ Page 78].

Examples

↓	I20	Query of the current MinWeigh parameters.
↑	I20␣B␣1␣0␣0	Method 1, weighing mode is universal.
↑	I20␣B␣1␣1␣2	Method 1, environment is standard.
↑	I20␣B␣1␣2␣1	Method 1, measured value release is quick.
↑	I20␣B␣1␣3␣1	Method 1, auto zero is on.
↑	I20␣B␣2␣0␣1	Method 2, weighing mode is dispensing.
↑	I20␣B␣2␣1␣3	Method 2, environment is unstable.
↑	I20␣B␣2␣2␣0	Method 2, measured value release is very quick.
↑	I20␣A␣2␣3␣0	Method 2 and auto zero is off.

↓	I20␣1	Query of method 1.
↑	I20␣B␣1␣0␣0	Method 1 with universal weighing mode.
↑	I20␣B␣1␣1␣2	Method 1 with standard environment.
↑	I20␣B␣1␣2␣1	Method 1 with quick measured value release.
↑	I20␣A␣1␣3␣1	Method 1, auto zero is on.

↓	I20␣2␣1	Query of method 2 and attitude 1.
↑	I20␣A␣2␣1␣3	Method 2, environment is unstable.

I26 – Operating mode after restart

Description

Use `I26` to query the operating mode.

Syntax

Command

`I26`	Query of the operating mode.

Responses

`I26␣A␣<Mode>`	Operating mode.
`I26␣I`	Operating mode can not be transferred at present as another operation is taking place.

Parameter

Name	Type	Values	Meaning
`<Mode>`	Integer	`0`	User mode
		`1`	Production mode
		`2`	Service mode
		`3`	Diagnostic mode

Example

↓	`I26`	Query of the operating mode.
↑	`I26␣A␣0`	Operation mode is: user mode.

I27 – Change history from parameter settings

Description

Use `I27` to query the change history from the parameter settings.

Syntax

Command

`I27`	Query the change history.

Responses

`I27␣B␣<No>␣<Day>␣<Mon-`
`th>␣<Year>␣<Hour>␣<Min-`
`ute>␣<"Name">␣<"ID">␣<"What">␣`
`<"Old">␣<"New">`
`I27␣B…`
`I27␣A␣<No>␣<Day>␣<Month>␣<Year>␣<Hour>␣`
`<Minute>␣<"Name">␣<"ID">␣<"What">␣<"Old"`
`>␣`
`<"New">`
	Get change history.

`I27␣A`	No data, empty change history.
`I27␣I`	Command understood but currently not executable.

Parameters

Name	Type	Values	Meaning
`<No>`	Integer	`1 … n`	Change number (n is product dependent)
`<Day>`	Integer	`1 … 31`	Day on which the parameter has been changed
`<Month>`	Integer	`1 … 12`	Month on which the parameter has been changed
`<Year>`	Integer	`2000 … 2099`	Year on which the parameter has been changed
`<Hour>`	Integer	`0 … 23`	Hour on which the parameter has been changed
`<Minute>`	String	`0 … 59`	Minute on which the parameter has been changed
`<"Name">`	String		User name
`<"ID">`	String		Identification
`<"What">`	String		Title of changed parameter
`<"Old">`	String		Old value
`<"New">`	String		New value

Example

↓	`I27`	Query change history.

↑	`I27␣B␣1␣12␣12␣2009␣12␣00␣"User␣1"␣`
	`"1"␣"Number␣of␣users"␣"User␣6␣Off"␣`
	`"User␣6␣On"`
		Last change: Number of users -> User 6 from off to on.

↑	`I27␣A␣2␣01␣12␣2009␣10␣22␣"User␣1"␣`
	`"1"␣"Passw.␣Change␣Date"␣"Off"␣`
	`"On"`
		Password change date from off to on.

I33 – Approval seal break counter

Description

I33 returns the service counter without breaking the approval seal. The service counter is increased after a successful service calibration or service linearization.

Syntax

Command

I33	Query of the service counter.

Responses

I33␣A␣Counter	Current service counter.
I33␣I	Command understood but currently not executable.

Parameter

Name	Type	Values	Meaning
<Counter>	Integer		Status of service counter

Example

↓	I33	Query of the service counter.
↑	I33␣A␣37	The actual service counter is 37.

I38 – Type label range definitions

Description

Use I38 to returns a set of information for each range/interval. All values are given in definition unit.

Syntax

Commands

I38	Query the information for each range/interval.
I38␣Range	Query the range/interval.

Responses

I38␣B␣Range␣Min_N␣Max_N␣D␣E␣Class␣Unit I38␣B… I38␣A␣Range␣Min_N␣Max_N␣D␣E␣Class␣Unit	Set the information for each range/interval.

Parameters

Name	Type	Values	Meaning
<Range>	Integer		Range/interval numbering according to OIML R76 and NTEP/NIST Handbook 44
		1	1st range of device (range with smallest capacity)
		2	2nd range of device range/interval
<Min_N>	String		Minimum load for this range according to OIML R76 and NTEP/NIST Handbook 44
<Max_N>	String		Nominal maximum weight for this range
<D>	String		Display step for this range
<E>	String		Approved step for this range
<Class>	String	0 … 5	Accuracy class 0 = not approved 1 = Accuracy class I 2 = Accuracy class II 3 = Accuracy class III 4 = Accuracy class IIII 5 = Accuracy class III L only for NTEP/NIST Handbook 44 (20, section 2.20)
<Unit>	String		The unit used for this command is the definition unit

Comment

- All formatted values have the same number of decimal places as the smallest display step d.

Examples

↓	I38	Query the current information for multi range device class III and definition unit in g.
↑	I38␣B␣1␣␣␣␣␣␣20.0␣␣␣␣␣␣300.0␣␣␣␣␣␣␣ 0.1␣␣␣␣␣␣␣1.0␣0␣g	Range 1: 0 g to 300 g d = 0.1 g e = 1 g, not approved.
↑	I38␣B␣2␣␣␣␣␣␣20.0␣␣␣␣3000.0␣␣␣␣␣␣␣ 1.0␣␣␣␣␣␣␣1.0␣0␣g	Range 2: 0 g to 3000 g d = 1 g e = 1 g, not approved.
↑	I38␣A␣3␣␣␣␣␣␣40.0␣␣␣␣6000.0␣␣␣␣␣␣␣ 2.0␣␣␣␣␣␣␣2.0␣0␣g	Range 3: 0 g to 6000 g d = 2 g e = 2 g, not approved.

↓	I38	Query the current information for multi interval device class III and definition unit in kg.
↑	I38␣B␣1␣␣␣␣␣␣␣2.0␣␣␣␣␣␣␣60.0␣␣␣␣␣␣␣ 0.02␣␣␣␣␣␣␣0.10␣1␣kg	Range 1: 0 kg to 60 kg d = 0.02 kg e = 0.1 kg, accuracy class I.
↑	I38␣B␣2␣␣␣␣␣␣␣60.0␣␣␣␣␣␣300.0␣␣␣␣␣␣␣ 0.10␣␣␣␣␣␣␣0.10␣1␣kg	Range 2: 60 kg to 300 kg d = 0.1 kg e = 0.1 kg, accuracy class I.
↑	I38␣A␣3␣␣␣␣␣␣300.0␣␣␣␣␣␣600.0␣␣␣␣␣␣ 0.20␣␣␣␣␣␣␣0.20␣1␣kg	Range 3: 300 kg to 600 kg d = 0.2 kg e = 0.2 kg, accuracy class I.

↓	I38	Query the current information for multi interval device class II and definition unit in g.
↑	I38␣B- ␣1␣␣␣␣0.0200␣␣␣␣20.0000␣0.0002␣␣␣␣␣ 0.0010␣2␣g	Range 1: 0 g to 20 g d = 0.0002 g e = 0.001 g, accuracy class II.
↑	I38␣B␣2␣␣␣␣20.0000␣␣␣␣50.0000␣␣␣␣␣ 0.0005␣␣␣␣␣0.0010␣2␣g	Range 2: 20 g to 50 g d = 0.0005 g e = 0.001 g, accuracy class II.
↑	I38␣A␣3␣␣␣␣50.0000␣␣␣100.0000␣␣␣␣␣ 0.0010␣␣␣␣␣0.0010␣2␣g	Range 3: 50 g to 100 g d = 0.001 g e = 0.001 g, accuracy class II.

↓	I38	Query the current information for dual range device class III and definition unit in g.
↑	I38␣B␣1␣␣␣␣␣␣␣20␣␣␣␣␣␣3000␣␣␣␣␣␣␣␣␣ 1␣1␣3␣g	Range 1: 0 g to 3000 g d = 1 g e = 1 g, accuracy class III.
↑	I38␣A␣2␣␣␣␣␣␣40␣␣␣␣␣60000␣␣␣␣␣␣␣␣␣ 2␣2␣3␣g	Range 3: 0 g to 6000 g d = 2 g e = 2 g, accuracy class III.

I45 – Selectable environment filter settings

Description

This command returns the selectable environment filter settings for use in the device menu. The device application must know which items are selectable in order to display them correctly.

Syntax

Command

I45	Query the environment filter settings.

Responses

I45␣A␣<Environments>␣<ActEnvt>␣<Factory>	Selectable environment filter settings.
I45␣I	Command understood but currently not executable.
I45␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Environments>	Integer		List of supported environmental conditions. Sum value of selectable units, calculated in accordance with the following formula $Environments = \sum_{SelectableEnvironmentIndexes} 2^{EnvironmentIndex}$ Environment Index: in accordance with the table defined under comments
<ActEnvt>	Integer	1 … 5	Actual environment setting. This parameter is read from M02
<Factory>	Integer	1 … 5	Environment factory setting

Comment

- Available environment parameters are given in the table below:

ID	Environmental condition
0	Very stable
1	Stable
2	Standard
3	Unstable
4	Very unstable
5	Automatic

Examples

↓	I45	Query the environment filter settings.
↑	I45␣A␣14␣1␣2	Available environment modes: Stable, Standard and Unstable ($14 = 2^1 + 2^2 + 2^3$) Actual value: Stable (1) Factory preset: Standard (2).

↓	I45	Query the selectable units for host unit.
↑	I45␣A␣4␣2␣2	Available environment modes: Standard ($4 = 2^2$) Actual value: Standard (2) Factory preset: Standard (2).

See also

M02 – Environment condition ▶ Page 77

I46 – Selectable weighing modes

Description

This command returns the selectable weighing modes for use in the device menu. The device application must know which items are selectable in order to display them correctly.

Syntax

Command

I46	Query the weighing mode settings.

Responses

I46␣A␣<Modes>␣<ActMode>␣<Factory>	Current selectable weighing mode settings.
I46␣I	Command understood but currently not executable.
I46␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Modes>	Integer		Sum value of weighing modes. The sum calculated in accordance with the following formula: $Modes = \sum_{SelectableWeighingModes} 2^{Weighing\ mode}$ Mode index: in accordance with the table defined under comments
<ActMode>	Integer	0	Normal weighing mode
		1	Dosing mode
<Factory>	Integer	0	Normal weighing mode
		1	Dosing mode

Comments

- Available weighing mode parameters are given in the table below:

ID	Environmental condition
0	Normal weighing
1	Dosing
2	Fixed filter
3	Absolute weighing
4	Dynamic weighing

Example

↓	I46	Query the weighing mode settings.
↑	I46␣A␣3␣1␣0	Only normal weighing and dosing ($3 = 2^0 + 2^1$) can be selected in the menu. The current setting is dosing (1) and factory setting is normal weighing (0).

See also

M01 – Weighing mode ▸ Page 76

I51 – Power-on time

Description

Delivers the power-on time; the period during which the device is powered including short interruptions (e.g., power, restart etc.) with negligible impact on thermal model of the device.

Syntax

Command

I51	Query of the power-on time.

Responses

I51␣A␣<Days>␣<Houre>␣<Minutes>␣<Seconds>	Power-on time data.
I51␣I	Command understood but currently not executable.

Parameters

Name	Type	Values	Meaning
<Days>	Integer	0 … 65535	Power-on time days
<Houre>	Integer	0 … 23	Power-on time hours
<Minutes>	Integer	0 … 59	Power-on time minutes
<Seconds>	Integer	0 … 59	Power-on time seconds

Comment

- The power-on time is counted as long as the device is powered and during interruptions (e.g., power, restart etc.) up to a product specific duration (typically a value in the range of 30 … 60 seconds, product dependent). The duration is defined according various effects, e.g., the thermal model of the device. Interruptions longer than this time results in a reset of the power-on time to the initial values. Please note that there is a certain inherent variability, because the switch-off time will be recorded only every n seconds (typically 5 seconds, product dependent).
- The power-on time is not touched by a restart or reset of the device (in contrast to the run time, see I15).

Example

↓	I51	Query the power-on time data.
↑	I51␣A␣1456␣17␣3␣37	The power-on time is 1456 days 17 hours 3 minutes and 37 seconds.

I53 – Ipv4 runtime network configuration information

Description

This command will return information entries for each Ipv4 based network interface that is configured in the system. The command is similar to the "ipconfig" command on Windows. The information is based on the settings that are currently operational in the network stack.

Syntax

Commands

I53	Query the runtime network configuration information.
I53␣<Index>	Query the network interface index.

Responses

I53␣B␣<Index>␣<"Name">␣<State>␣<"MAC">␣<DHCP>␣<AutoIP>␣<"Host">␣<"Netmask">␣<"DefaultGateway">␣<"DNSServer"> … I53␣B␣<Index>␣<"Name">␣<State>␣<"MAC">␣<DHCP>␣<AutoIP>␣<"Host">␣<"Netmask">␣<"DefaultGateway">␣<"DNSServer"> I53␣A␣<Index>␣<"Name">␣<State>␣<"MAC">␣<DHCP>␣<AutoIP>␣<"Host">␣<"Netmask">␣<"DefaultGateway">␣<"DNSServer">	Current runtime network configuration information.
I53␣A	Command understood and executed successfully.
I53␣I	Command understood but currently not executable (no network interfaces present in the system).
I53␣L	Command understood but not executable (no network interfaces with index "1" present in the system).

Parameters

Name	Type	Values	Meaning
<Index>	Integer	0 or n	Network interface index
		0	1st network interface
		n	n +1th network interface
<"Name">	String		Name of the network interface
<State>	Integer	0 … 2	State of the network interface
		0	Disabled (down)
		1	Enabled but media disconnected
		2	Enabled and connected
<"MAC">	String	Max 17 chars	MAC address of the network interface. Must be in format "00:00:00:00:00:00"
<DHCP>	Boolean	0 … 1	DHCP enabled or disabled
		0	DHCP disabled
		1	DHCP enabled
<AutoIP>	Boolean	0 … 1	AutoIP enabled or disabled
		0	AutoIP disabled
		1	AutoIP enabled
<"Host">	String	Max 15 chars	Ipv4 address (dot-decimal notation) of the device on the given network interface
<"Netmask">	String	Max 15 chars	Ipv4 netmask (dot-decimal notation) on the given network interface

Name	Type	Values	Meaning
<"DefaultGateway">	String	Max 15 chars	Ipv4 default gateway (default router) address (dot-decimal notation) on the given network interface
<"DNSServer">	String	Max 15 chars	Ipv4 address (dot-decimal notation) of the DNS (Domain Name Service) server on the given network interface

Comment

- The settings that are currently operational in the network stack either correspond to the static configuration ([M70 ▸ Page 110], [M71 ▸ Page 112], M72) or dynamic step (given by DHCP). The selection depends on the configuration mode ([M69 ▸ Page 108]).
- Before setting an IP configuration on a device (manually or by setting a fallback IP configuration in the DHCP case), the responsible person (e.g., from the IT department) for the network where the device will be connected to has to be contacted to work out a valid IP configuration for the device.

Examples

↓	I53	Query the runtime network configuration information.
↑	I53␣B␣0␣"eth0"␣2␣ "11:22:33:44:55:66"␣1␣1␣"10.0.0.2"␣ "255.255.255.0"␣"10.0.0.1"␣ "10.0.0.1" I53␣B␣1␣"eth1"␣1␣ "aa:bb:cc:dd:ee:ff"␣1␣1␣ "192.168.0.2"␣"255.255.255.0"␣ "0.0.0.0"␣"192.168.0.1" I53␣A␣2␣"wifi0"␣0␣ "aa:00:cc:11:ee:22"␣1␣1␣ "172.24.225.100"␣"255.255.254.0"␣ "172.24.225.1"␣"172.24.225.2"	The network interface "eth0" is fully configured and operational. The network interface "eth1" is disconnected from the cable and no default gateway is configured. The network interface "wifi0" is currently disabled. All network interfaces do have DHCP and AutoIP enabled.

↓	I53␣1␣0	Query the settings from network interfaces 1.
↑	I53␣B␣1␣"eth1"␣1␣ "aa:bb:cc:dd:ee:ff"␣1␣1␣ "192.168.0.2"␣"255.255.255.0"␣ "0.0.0.0"␣"192.168.0.1"	The network interface 1 "eth1" is disconnected from the cable and no default gateway is configured.

See also

- M69 – Ipv4 network configuration mode ▸ Page 108
- M70 – Ipv4 host address and netmask for static configuration ▸ Page 110
- M71 – Ipv4 default gateway address ▸ Page 112

I54 – Adjustment loads

Description

This command queries the weight increment for external adjustments. If the increment is bigger than 0, the weighing device can be adjusted by a defined range of external adjustment weights. This is called VariCal.

Syntax

Command

I54	Query the weight increment for external adjustments.

Responses

I54␣A␣<Min>␣<Max>␣<Increment>	Adjustment loads.
I54␣I	Command understood but currently not executable.
I54␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Min>	Float		Smallest load in the definition unit
<Max>	Float		Biggest load in the definition unit
<Increment>	Float		Load increment in the definition unit. Starting with the smallest load, the intermediate loads are defined in increments of the Increment parameter

Example

↓	I54	Query the weight increment for external adjustments.
↑	I54␣A␣1000.0␣3000.0␣750.0	In the case of external adjustment, the loads for selection are 1000 g, 1750 g, 2500 g and 3000 g.

See also

M19 – Adjustment weight ▶ Page 87

I55 – Menu version

Description

This command queries the menu version of the device SW.

Syntax

Commands

I55	Query the menu version.
I55␣A	Set the menu version.

Responses

I55␣A␣<Version>	Current menu version.
I55␣I	Command understood but currently not executable.
I55␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Version>	Integer	0 … n	Menu version (n is product dependent)

Comments

- The menu structure consists of menu item, menu item value range and menu item level.
- The menu version is model dependent.

Example

↓	I55	Query the menu version.
↑	I55␣A␣3	The menu version is 3.

I59 – Get initial zero information

Description

If a weighing device is starting up it is supposed to perform an initial zero operation before any weight values can be obtained from the device. If someone wants to obtain weight values before the initial zero operation has been successfully performed the device refuses to send weight values. In order to successfully perform the initial zero operation the load on the weight receptor must be within the switch on range limits. In the case where the initial zero operation can't be performed successfully the user gets no information if the switch on range limits are exceeded or not. This command is used to determine if currently an initial zero operation is in progress and if the switch on range limits are exceeded or not.

Syntax

Command

I59	Query the initial zero information.

Response

I59␣A␣<InitZero>␣<LoadState>	Current Initial information.

Parameters

Name	Type	Values	Meaning
<InitZero>	Integer	0 … 2	Indicates whether an initial zero operation is in progress or not
		0	Undefined e.g. If initial zero operation not started
		1	Initial zero operation in progress
		2	Initial zero operation done
<LoadState>	Integer	+	Load above upper switch on range limit
		-	Load below lower switch on range limit
		S	Load within switch on range limits and stable
		D	Load within switch on range limits and unstable
		0	Undefined – If the parameter "InitZero" equals to 0 or 2 the parameter "LoadState" always equals to undefined

Comment

- If a zero value and an initial zero value have been saved with the M35 command the initial zero value is restored from the saved initial zero value. The answer in this case will be I59␣A␣2␣0.

Examples

↓	I59	Query the initial zero information.
↑	I59␣A␣1␣+	The initial zero operation is in progress and the load is above the upper switch on range limit.

↓	I59	Query the initial zero information.
↑	I59␣A␣1␣-	The initial zero operation is in progress and the load is below the lower switch on range limit.

↓	I59	Query the initial zero information.
↑	I59␣A␣1␣D	The initial zero operation is in progress, the load is within the switch on range limits and unstable.

↓	I59	Query the initial zero information.
↑	I59␣A␣0␣0	The initial zero state is undefined.

↓	I59	Query the initial zero information.
↑	I59␣A␣2␣0	The initial zero operation has been successfully performed.

I63 – Total number of key presses

Description

This command reads the device total number of key presses. Every key press in all modes is counted.

Syntax

Command

I63	Query of total number of key presses.

Responses

I63␣A␣<KeyPresses>	Current key presses.
I63␣I	Command understood but currently not executable.

Parameter

Name	Type	Values	Meaning
<KeyPresses>	Integer		Number of key presses

Example

↓	I63	Query of total number of key presses.
↑	I63␣A␣12345678	The total number of key presses is 12345678.

I64 – Total number of built-in weight movements

Description

This command reads the device total number of built-in weight movements. Every built-in weight movements in all modes are counted.

Syntax

Command

I64	Query of total number of built-in weight movements.

Responses

I64␣A␣<WeightMove>	Current built-in weight movements.
I64␣I	Command understood but currently not executable.

Parameter

Name	Type	Values	Meaning
<WeightMove>	Integer		Number of built-in weight movements

Example

↓	I64	Query of total number of built-in weight movements.
↑	I64␣A␣1234	The total number of built-in weight movements is 1234.

I65 – Total operating time

Description

This command reads the device total operation time.

Syntax

Command

I65	Query of total operating time.

Responses

I65␣A␣<Day>␣<Hour>	Current operating time.
I65␣I	Command understood but currently not executable.

Parameters

Name	Type	Values	Meaning
<Day>	Integer		Operating time days
<Hour>	Integer	0 … 23	Operating time hours

Comment

- Every full minute the microprocessor is running will be counted as operating time. This is also done during standby.

Example

↓	I65	Query of total operating time.
↑	I65␣A␣456␣3	Device has been in operation for 456 days and 3 hours.

I66 – Total load weighed

Description

This command reads the device total load weighed. Every weight in all modes is counted.

Syntax

Command

I66	Query of total load weighed.

Responses

I66␣A␣<TotalWeight>␣<Unit>	Current total load weighed.
I66␣I	Command understood but currently not executable.

Parameters

Name	Type	Values	Meaning
<TotalWeight>	Float		Total of all loads weighed in the definition unit
<Unit>	String		Definition unit

Comments

- The total load is increased every time an active MT-SICS [SNR ▶ Page 170] command with no preset value would send a stable weight.
- All values are added as absolute values.

Example

↓	I66	Query of total load weighed.
↑	I66␣A␣4455.41592␣g	The total load weighed is 4455.41592 g.

See also

I67 – Total number of weighings ▶ Page 68

I67 – Total number of weighings

Description

This command reads the device total number of weighings. Every weighing in all modes is counted.

Syntax

Command

I67	Query of total number of weighings.

Responses

I67␣A␣<WeighingNo>	Current number of weighings.
I67␣I	Command understood but currently not executable.

Parameter

Name	Type	Values	Meaning
<WeighingNo>	Integer		Number of weighings

Comment

- The total number of weighings is increased every time an active MT-SICS [SNR ▸ Page 170] command with no preset value would send a stable weight.

Example

↓	I67	Query of total number of weighings.
↑	I67␣A␣1234	The total number of weighing is 1234.

See also

I66 – Total load weighed ▸ Page 67

I68 – Total backlight operating time

Description

This command reads the device total backlight operation time. Every backlight operating time in all modes is counted.

Syntax

Command

I68	Query of total backlight operating time.

Responses

I68␣A␣<Day>␣<Hour>	Current operating time.
I68␣I	Command understood but currently not executable.

Parameters

Name	Type	Values	Meaning
<Day>	Integer		Backlight operating time days
<Hour>	Integer	0 … 23	Backlight operating time hours

Example

↓	I68	Query of total backlight operating time.
↑	I68␣A␣456␣3	Backlight has been in operation for 456 days and 3 hours.

I69 – Service provider address ASCII

Description

Address and phone number of service provider. Only printable ASCII characters are admissible.

Syntax

Commands

I69	Query the address and phone number of service provider.
I69␣<Line>␣<"Text">	Query the text from line.

Responses

I69␣B␣0␣<"Text">	Current text of line 0.
I69␣B␣1␣<"Text">	Current text of line 1.
I69␣B␣2␣<"Text">	Current text of line 2.
I69␣B␣3␣<"Text">	Current text of line 3.
I69␣B␣4␣<"Text">	Current text of line 4.
I69␣B␣5␣<"Text">	Current text of line 5.
I69␣B␣6␣<"Text">	Current text of line 6.
I69␣A␣7␣<"Text">	Current text of line 7.
I69␣A␣No␣<"Text">	Current text of line No.
I69␣I	Command understood but currently not executable.

Parameters

Name	Type	Values	Meaning
<Line>	Integer	0 … 7	Text line number
<"Text">	String	Max 40 chars	Service provider address information

Examples

↓	I69	Query the address and phone number of service provider.
↑	I69␣B␣0␣"Mettler-Toledo␣GmbH"	The text of line 0 is "Mettler-Toledo GmbH".
↑	I69␣B␣1␣"Im␣Langacher␣44"	The text of line 1 is "Im Langacher".
↑	I69␣B␣2␣"8606␣Greifensee"	The text of line 2 is "8606 Greifensee".
↑	I69␣B␣3␣"044␣944␣45␣45"	The text of line 3 is "044 944 45 45".
↑	I69␣B␣4␣""	The text of line 4 is not defined.
↑	I69␣B␣5␣""	The text of line 5 is not defined.
↑	I69␣B␣6␣""	The text of line 6 is not defined.
↑	I69␣A␣7␣""	The text of line 7 is not defined.

↓	I69␣2	Query the text from line 2.
↑	I69␣A␣2␣"8606␣Greifensee"	The text of line 2 is "8606 Greifensee".

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 or double clicked
		C	Key was released (after being pressed shortly or for 2 seconds)

Name	Type	Values	Meaning
<FunctionID>	Integer	0	Adjustment
		2	Tare/re-zero
		3	Data transfer to printing device
		4	Enter menu
		5	Quit menu and save parameters
		6	Quit menu without saving
		9	Standby (instrument can be switched on with reset command)
		10	Switch weight unit
		12	Set factory setting
<KeyID>	Integer		Indicator for pressed key

<KeyID>	Integer	1		Switches the balance on or off
		2	→T←	Tares the balance
		3	→0←	Zeros the balance
		4		Returns from any menu level, or other window to the application home screen

MS/MS-S/MS-L Balances

<KeyID>	Integer	1	On/Off	Turn on or off the balance
		2		Move one step backward or to activate the "Weighing" application
		3	 F1	Move one step forward or to activate the assigned application
		4	→0/T←	Zero or tare the balance
		5	 F2	Scroll through a list of values or to activate the assigned application
		6	 F3	Enter a value or to activate the assigned application
		7	C	Cancel running processes or setups etc.
		8		Activate printing
		9		Activate adjustment
		10		Activate the menu
		11		Change the display resolution

ML Balances

<KeyID>	Integer	1		Change the display resolution
		2		Move one step backward or to activate the "Weighing" application
		3		Move one step forward or to activate the assigned application
		4	On/Off	Turn on or off the balance
		5	→0/T←	Zero or tare the balance
		6	C	Cancel a running procedure or function
		7		Scroll through a list of values or to activate adjustment
		8		Enter a value or to activate the menu
		9		Activate printing

ME Balances

<KeyID>	Integer	1	C	Cancel or leave menu without saving or move one step back in the menu Select the simple weighing application or exit application
		2	F	Print display value or transmit data Navigate backward in the menu or menu selection Decrease parameters in menu or applications Open the application list for selecting an application
		3	→0/T← ⏻	Zero or tare the balance Switches the balance on or off
		4	Cal	Scroll through a list of values or to activate adjustment Navigate forward in the menu or menu selection Increase parameters in menu or applications
		5	Menu	Enter a value or to activate the menu Accept numeric inputs in applications

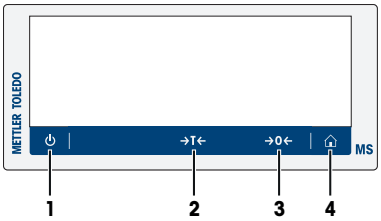
PL-E Balances

<KeyID>	Integer	1	/F	Print display value or transmit data Navigate backwards in the menu or menu selection Decrease parameters in menu or applications Open the application list for selecting an application Exits an active application and returns to the selection for weighing mode
		2	→0← C	Zero the balance Cancel and leave menu without saving or move one step back in the menu Cancel or leave application setting
		3	→T←	Tare the balance Switches the balance on or off
		4	Cal	Scroll through a list of values or to activate adjustment Navigate forward in the menu or menu selection Increase parameters in menu or applications
		5	Menu	Enter a value or to activate the menu Accept numeric inputs in applications

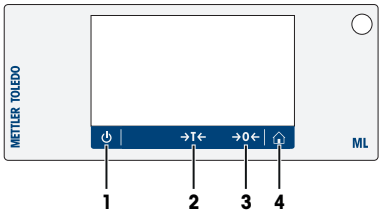
Comments

- K␣1 is the factory setting (default value).
- K␣1 active after balance switched on and after the cancel command [@ ▸ Page 13].
- Only one K mode is active at one time.
- The mapping of the key numbers on the different terminals are displayed below:

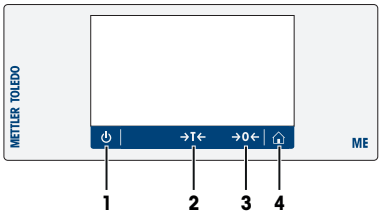
MS-TS Balances



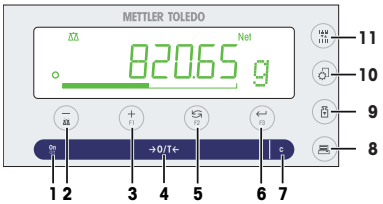
ML-T Balances



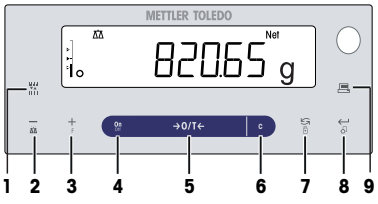
ME-T Balances



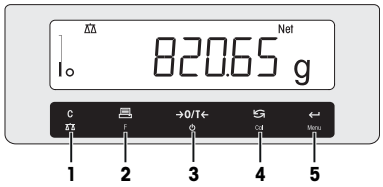
MS/MS-S/MS-L Balances



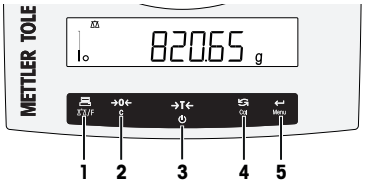
ML Balances



ME Balances



PL-E 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␣2	The taring function has been started → taring active.
↑	K␣A␣2	Taring completed successfully.
↑	K␣B␣2	The taring function has been started → taring active.
↑	K␣I␣2	Taring not completed successfully, taring aborted (e.g. tried to tare a negative value).

M01 – Weighing mode

Description

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

Syntax

Commands

M01	Query of the current weighing mode.
M01␣<WeighingMode>	Set the weighing mode.

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 mode
		1	Dosing mode

Comment

- Please check possible settings with product specific Reference Manual.

Example

↓	M01	Query of the current weighing mode.
↑	M01␣A␣1	Dosing mode is set.

See also

I46 – Selectable weighing modes ▸ Page 56

M02 – Environment condition

Description

Use M02 to adjust the balance so that it is optimized for the local ambient conditions, or to query the current value.

Syntax

Commands

M02	Query of the current environment.
M02␣<Environment>	Set the environment.

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
		5	Automatic

Example

↓	M02␣3	Set the environment to unstable.
↑	M02␣A	Environment is set.

See also

I45 – Selectable environment filter settings ▸ Page 54

M03 – Auto zero function

Description

Use M03 to switch the auto zero function on or off and query its current status.

Syntax

Commands

M03	Query of the current auto zero function.
M03␣<AutoZero>	Set the auto zero function.

Responses

M03␣A␣<AutoZero>	Current auto zero function
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
<AutoZero>	Integer	0	Auto zero is switched off (is not supported by approved balances)
		1	Auto zero is switched on

Example

↓	M03␣1	Switch on the auto zero function.
↑	M03␣A	Auto zero function is activated.

M04 – SmartSens functions

Description

You can use M04 to assign functions to the external sensors available as an option (ErgoSens, model-dependet), or to call up the function settings.

Syntax

Commands

M04	Query of the current sensor.
M04␣<SmartSens>␣<Function>	Set the sensor.

Responses

M04␣B␣<SmartSens>␣<Function> M04␣B… M04␣A␣<SmartSens>␣<Function>	Current setting of the first sensor. … Current setting of the last sensor.
M04␣A	Command understood and executed successfully.
M04␣I	Command understood but currently not executable.
M04␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<SmartSens>	Integer	2	ErgoSens 1 (Aux 1)
<Function>	Integer	0	Off
		4	Zero
		5	Tare
		6	Print

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 ▸ Page 101].

Examples

↓	M04	Query of the current sensor settings.
↑	M04␣B␣0␣0	Left SmartSens: No function (model-dependet).
↑	M04␣B␣1␣4	Right SmartSens: Zero (model-dependet).
↑	M04␣B␣2␣0	ErgoSens Aux 1: No function (model-dependet).
↑	M04␣A␣3␣0	ErgoSens Aux 2: No function (model-dependet).

↓	M04␣2␣5	Set the ErgoSens to tare.
↑	M04␣A	Function is set.

M08 – Display brightness

Description

You can use M08 to set the brightness of the terminal display or query the current setting.

Syntax

Commands

M08	Query of the current display brightness.
M08␣<Brightness>	Set the display brightness.

Responses

M08␣A␣<Brightness>	Current display brightness.
M08␣A	Command understood and executed successfully.
M08␣I	Command understood but currently not executable.
M08␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Brightness>	Integer	0 … 100	Display brightness 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 ▶ Page 101].

Examples

↓	M08	Query of the current display brightness.
↑	M08␣A␣60	The display brightness is 60%.

↓	M08␣55	Set the display brightness to 55%.
↑	M08␣A	The display brightness is set to 55%.

M09 – Display contrast

Description

You can use M09 to set the contrast of the terminal display or query the current setting.

Syntax

Commands

M09	Query of the current display contrast.
M09␣<Contrast>	Set the display contrast.

Responses

M09␣A␣<Contrast>	Current display contrast.
M09␣A	Command understood and executed successfully.
M09␣I	Command understood but currently not executable.
M09␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Contrast>	Integer	0 … 100	Display contrast 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 ▸ Page 101].

Examples

↓	M09	Query of the current display contrast.
↑	M09␣A␣60	The display contrast is 60%.

↓	M09␣60	Set the display contrast to 60%.
↑	M09␣A	The display contrast is set to 60%.

M11 – Key beeper volume

Description

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

Syntax

Commands

M11	Query of the current beeper volume.
M11␣<BeeperVolume>	Set the beeper volume.

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 ▸ Page 101].

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%.

M14 – Available languages

Description

This command is used to output all available languages on the device with language identification and language name.

Syntax

Command

M14	Query of the available languages.

Responses

M14␣B␣<ID>␣<"Language"> M14␣B… M14␣A␣<ID>␣<"Language">	First language. … Last language.
M14␣I	Command understood but currently not executable.
M14␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<ID>	Integer	0 … max	Language number
<"Language">	Integer	0	English
		1	German
		2	French
		3	Spanish
		4	Italian
		5	Russian
		6	Japanese simplified (Katakana only)
		7	English (United States)
		8	Polish
		9	Reserved
		10	Czech
		11	Hungarian
		12	Slovak
		13	Slovene
		14	Dutch
		15	Portuguese
		16	Chinese
		17	Japanese (Nihongo)
		18	Korean
		19	Portuguese (Brazil)
		20	Danish
		21	Turkish

Example

↓	M14	Query of the available languages.
↑	M14␣B␣0␣"English"	No 0 language is English.
↑	M14␣B␣1␣"Deutsch"	No 1 language is Deutsch.
↑	M14␣B␣2␣"Français"	No 2 language is Français.
↑	M14␣B␣3␣"Español"	No 3 language is Español.
↑	M14␣B␣4␣"Italiano"	No 4 language is Italiano.
↑	M14␣B␣5␣"Russian"	No 5 language is Russian.
↑	M14␣B␣6␣"Katakana"	No 6 language is Katakana.
↑	M14␣B␣8␣"Polski"	No 8 language is Polski.
↑	M14␣B␣10␣"Cestina"	No 10 language is Cestina.
↑	M14␣B␣11␣"Magyar"	No 11 language is Magyar.
↑	M14␣B␣16␣"Chinese"	No 16 language is Chinese.
↑	M14␣A␣17␣"Japanese"	No 17 language is Japanese.

See also

M15 – Language ▸ Page 85

M15 – Language

Description

Use M15 to set the language of the balance or to query the current set language.

Syntax

Commands

M15	Query of the current language.
M15␣<ID>	Set the language.

Responses

M15␣A␣<ID>	Current language.
M15␣A	Command understood and executed successfully.
M15␣I	Command understood but currently not executable.

Parameter

Name	Type	Values	Meaning
<ID>	Integer	0 … max. languages	Language number

Comment

- Language number: Number of the language according to the available languages, see [M14 ▶ Page 83].

Examples

↓	M15	Query of the current language.
↑	M15␣A␣0	Language is set to English (ID = 0)

↓	M15␣3	Set the language to Spanish (ID = 3)
↑	M15␣A	Language is set to Spanish (ID = 3)

See also

M14 – Available languages ▶ Page 83

M17 – ProFACT: Single time criteria

Description

Use M17 to set the time and days when a ProFACT adjustment should be executed automatically, or to query the current setting.

Note The settings ProFACT/FACT and days are model dependent.

Syntax

Commands

M17	Query of the current ProFACT time criteria.
M17␣<Hour>␣<Minute>␣<Second>␣<Days>	Set the ProFACT time criteria.

Responses

M17␣A␣<Hour>␣<Minute>␣<Second>␣<Days>	Current ProFACT time criteria.
M17␣A	Command understood and executed successfully.
M17␣I	Command understood but currently not executable.
M17␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Hour>	Integer	00 … 23	Hours
<Minute>	Integer	00 … 59	Minutes
<Second>	Integer	00	Seconds
<Days>	Integer	127	Every day (127 = 1111111 binary)

Comment

- Only one time valid for every day can be set using M17.

Examples

↓	M17␣12␣00␣00␣127	Set the FACT time criteria to every day at 12:00 h.
↑	M17␣A	FACT time criteria is set.

↓	M17	Query of the current FACT time criteria.
↑	M17␣A␣12␣00␣00␣127	The balance will currently be adjusted every day (127) at 12:00 h.

See also

M93 – FACT mode ▸ Page 139

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

Comments

- The adjustment weight must be entered in the defined unit of the balance. This unit can be found by entering a query command M19 without arguments.
- The taring range is specified to the balance type.
- The lower limit of the adjustment weight set with M19 is the lowest possible adjustment weight (I54␣Min).
- Use [C2 ▸ Page 23] to begin the adjustment procedure with the set weight.
- Before a custom unit can be selected with M21, it must be set with M22.

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 19
- C1 – Start adjustment according to current settings ▸ Page 21
- C2 – Start adjustment with external weight ▸ Page 23
- C7 – Customer standard calibration ▸ Page 26

M20 – Test weight

Description

You can use M20 to define your external test weight or query the currently weight setting.

Syntax

Commands

M20	Query of the current external test weight.
M20␣<TestWeight>␣<Unit>	Set the external test weight.

Responses

M20␣A␣<TestWeight>␣<Unit>	Current external test weight.
M20␣A	Command understood and executed successfully.
M20␣I	Command understood but currently not executable.
M20␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<TestWeight>	Float		Value of the external test weight
<Unit>	String		Weight unit of the external test weight = defined unit of the balance

Comments

- The test weight must be entered in the defined unit of the balance. This unit can be found by entering a query command M20 without arguments.
- Use [TST2 ▸ Page 189] to begin the test procedure with the set weight.
- The lower limit of the test weight set with M20 is the lowest possible adjustment weight (I54␣Min).

Examples

↓	M20	Query of the current external test weight.
↑	M20␣A␣100.123␣g	The external test weight is 100.123 g.

↓	M20␣500.015␣g	Set the external test weight to 500.015 g.
↑	M20␣A	The external test weight is set to 500.015 g.

See also

- TST1 – Test according to current settings ▸ Page 187
- TST2 – Test with external weight ▸ Page 189

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	MT-SICS unit
		1	Display unit
		2	Info unit

Name	Type	Values	Meaning		
<Unit>	Integer	0	Gram	g	Applicable for definition unit
		1	Kilogram	kg	Applicable for definition unit
		2	Ton	t	Applicable for definition unit
		3	Milligram	mg	Applicable for definition unit
		4	Microgram	µg	Applicable for definition unit
		5	Carat	ct	Applicable for definition unit
		6	Newton	N	Applicable for definition unit
		7	Pound avdp	lb	Applicable for definition unit
		8	Ounce avdp	oz	Applicable for definition unit
		9	Ounce troy	ozt	Applicable for definition unit
		10	Grain	GN	Applicable for definition unit
		11	Pennyweight	dwt	Applicable for definition unit
		12	Momme	mom	Applicable for definition unit
		13	Mesghal	msg	Applicable for definition unit
		14	Tael Hongkong	tlh	Applicable for definition unit
		15	Tael Singapore	tls	Applicable for definition unit
		16	Tael Taiwan	tlt	Applicable for definition unit
		17	Tical	tcl	Applicable for definition unit
		18	Tola	tola	Applicable for definition unit
		19	Baht	baht	Applicable for definition unit
		20	lb	oz	Applicable for definition unit
		21	Ton (short ton = 2000 lb)	ton	Applicable for definition unit
		25	no unit	--	
		26	Piece	PCS	available with application "Counting"
		27	Percent	%	available with application "Percent"
		28	Custom unit 1	cu1	available if custom unit 1 is switched on [M22 ▸ Page 92]
		29	Custom unit 2	cu2	available if custom unit 2 is switched on [M22 ▸ Page 92]
		30	Currency unit 1		available if currency unit 1 is switched on [M22 ▸ Page 92]
		31	Currency unit 2		available if currency unit 2 is switched on [M22 ▸ Page 92]

Comments

- All S commands (except SU) are given in Host unit according to the definition of the MT-SICS. Only weight units are accepted as host unit, see table above, in column applicable for definition unit marked with 'yes'.
- In the event of a power failure or restart, the display unit and info unit settings are reconfigured according to the menu settings.
- At startup the MT-SICS unit and the display unit are set according to the display unit menu setting.
- It is not possible to use "no unit" for the displayed unit.

Examples

↓	M21	Query of the current unit.
↑	M21␣B␣0␣0 M21␣B␣1␣0 M21␣B␣2␣0 M21␣A␣3␣0	Current MT-SICS unit is g. Current display unit is g. Current display unit is g. Current info unit is g.

↓	M21␣0␣1	Set the unit to 1 kg.
↑	M21␣A	The unit is set to 1 kg.

M22 – Custom unit definitions

Description

You can use M22 to set your own custom unit or query the currently defined custom unit.

Syntax

Commands

M22	Query of the current custom unit definitions.
M22␣<No>␣<Formula>␣<Factor>␣<Unit>␣<Rounding>	Set the custom unit(s).

Responses

M22␣B␣<No>␣<Formula>␣<Factor>␣<Unit>␣<Rounding> M22␣B… M22␣A␣<No>␣<Formula>␣<Factor>␣<Unit>␣<Rounding>	Current first custom unit. … Current last custom unit.
M22␣A	Command understood and executed successfully.
M22␣I	Command understood but currently not executable.
M22␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<No>	Integer	1 … 2	Custom display unit .. info unit
<Formula>	Integer	0	(net weight) x factor
		1	factor/(net weight)
<Factor>	Float		Factor
<Unit>	String	""	Unit name
<Rounding>	Float		Rounding step

Comments

- The lower limit of the adjustment weight set with M19 is the lowest possible adjustment weight (I54␣Min).
- Use [C2 ▸ Page 23] to begin the adjustment procedure with the set weight.
- Before a custom unit can be selected with M21, it must be set with M22.

Example

↓	M22	Query of the current custom unit definitions.
↑	M22␣A␣1␣0␣15.5␣""␣0.05	The custom unit is (net weight) x 15.5, rounded to 0.05.

See also

M21 – Unit ▸ Page 89

M23 – Readability, 1d/xd

Description

Use M23 to set how many digits of the weighing result should be displayed or output and whether the value should be rounded, or to query the current value setting.

Syntax

Commands

M23	Query of the current readability.
M23␣<Readability>	Set the readability.

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

Comments

- It is the balance model that determines which parameters can be changed.
- The custom unit [M22 ▸ Page 92] will not be changed with the M23 command.
- M23 has no influence of the stability criteria for the [taring ▸ Page 181] and [zeroing ▸ Page 194] commands.
- The readability is specified in digits [d] – this is the smallest increment a balance may display.
- The parameter setting will be saved and the only way to set the default behavior is sent MT-SICS command M23␣0 not [@ ▸ Page 13].
- If the resulting display step has an unusual value it is changed to the nearest normal display step (1, 2, 5 etc.).
  Example: d = 0.02 g, readability = 2d, the resulting display step would be 0.04 g which is changed to 0.05 g.
- The readability reduction is applied to the display step of the finest range. The steps of the coarser ranges are only adapted if they would be smaller than the step of the finest range. Example:

	1d	5d	10d
Fine range resolution	0.1 g	0.5 g	1 g
Coarse range resolution	0.5 g	0.5 g	1 g

Example

↓	M23	Query the readability.
↑	M23␣A␣4	The readability is 2d.

↓	M23␣1	Set the readability to 10d.
↑	M23␣A	The readability is set to 10d.

M25 – List applications

Description

Use M25 to list all the applications available on the balance.

Syntax

Command

M25	Query of the available applications.

Responses

M25␣B␣<ApplicationID>␣<"Name"> M25␣B… M25␣A␣<ApplicationID>␣<"Name">	First application. … Last application.
M25␣I	Command understood but currently not executable.
M25␣L	Command understood but not executable.

Parameters

Name	Type	Values	Meaning
<ApplicationID>	Integer	0 … max. appl.	Application number
		0	Normal weighing
		1	Piece counting
		2	Percent weighing
		3	Formula weighing
		4	Dynamic weighing automatic
		5	Dynamic weighing manual
		6	Textile application
		7	Density
		8	Minimum weight
		9	Differential weighing
		10	Single channel pipette test
		11	+/- Weighing
		12	Free factor f * w
		13	Free factor f/w
		14	Open zero
		15	Enhanced display resolution
		16	Weigh recall
		17	Routine test
		18	Statistic weighing
		19	Totaling
		26	Back weighing
<"Name">	String		Application name

Comment

- It is the balance model that determines which parameters can be used.

Example

↓	M25	Query of the available applications.
↑	M25␣B␣0␣"Weighing"	Default application is Weighing.
↑	M25␣B␣1␣"Piececounting"	Application 1 is Counting.
↑	M25␣B␣2␣"Percent"	Application 2 is Percent.
↑	M25␣B␣3␣"Formulation"	Application 3 is Formulation.
↑	M25␣B␣7␣"Density"	Application 7 is Density.
↑	M25␣B␣12␣"Free factor f*w"	Application 12 is Free factor f*w.
↑	M25␣B␣13␣"Free factor f/w"	Application 13 is Free factor f/w.
↑	M25␣B␣16␣"Weight recall"	Application 16 is Weight recall.
↑	M25␣B␣17␣"Routine Test"	Application 17 is Routine Test.
↑	M25␣B␣18␣"Statistic weighing"	Application 18 is Statistic weighing.
↑	M25␣A␣19␣"Totaling"	Application 19 is Totaling.

See also

M26 – Current application ▶ Page 96

M26 – Current application

Description

Use M26 to select the required application or query the current selection.

Syntax

Commands

M26	Query of the current application selection.
M26␣<ApplicationID>	Set the application number.

Responses

M26␣A␣<ApplicationID>	Current application selection.
M26␣A	Command understood and executed successfully.
M26␣I	Command understood but currently not executable.
M26␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<ApplicationID>	Integer	0 … max. appl.	Application number

Comment

- Application number: Number of the application according to the application list, see [M25 ▶ Page 94].

Examples

↓	M26	Query of the current application.
↑	M26␣A␣2	The application is Percent.

↓	M26␣3	Set the application number 3.
↑	M26␣A	Application 3 is set.

See also

M25 – List applications ▶ Page 94

M27 – Adjustment history

Description

Use M27 to call up the adjustment history.

Syntax

Command

M27	Query of the adjustment history.

Responses

M27␣B␣<No>␣<Day>␣<Month>␣<Year>␣ <Hour>␣<Minute>␣<Mode>␣<"Wgt"> M27␣B… M27␣A␣<No>␣<Day>␣<Month>␣<Year>␣ <Hour>␣<Minute>␣<Mode>␣<"Wgt">	1st adjustment entry. … last adjustment entry.
M27␣I	Command understood but currently not executable.
M27␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<No>	Integer	1 … n	Number of the adjustment entry (n is product dependent)
<Day>	Integer	1 … 31	Date, day
<Month>	Integer	1 … 12	Date, month
<Year>	Integer	1970 … 2099	Date, year The accepted range of years is depending on platform/ product
<Hour>	Integer	0 … 23	Time, hour
<Minute>	Integer	0 … 59	Time, minute
<Mode>	Integer	0	Built-in adjustment
		1	External adjustment
<"Wgt">	String		Weight of the adjustment weight used

Example

↓	M27	Query of the adjustment history.
↑	M27␣B␣1␣1␣1␣2011␣08␣26␣0␣""	1st adjustment, performed at 1.1.2011, 08:26 h, internal adjustment.
↑	M27␣B␣2␣14␣12␣2010␣14␣30␣1␣ "200.1234␣g"	2nd adjustment, performed at 14.12.2010, 14.30 h, external adjustment, weight 200.1234 g.
↑	M27␣A␣3␣14␣12␣2010␣8␣26␣1␣ "200.1234␣g"	3rd adjustment, performed at 14.12.2010, 08:26 h, external adjustment, weight 200.1234 g.

M29 – Weighing value release

Description

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

Syntax

Commands

M29	Query of the current value release setting.
M29␣<ValueRelease>	Set the value release.

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

- 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␣3	Set the value release to reliable.
↑	M29␣A	The value release is set to reliable.

M30 – Check weighing definition

Description

Use M30 to set the check weighing definition with nominal and tolerance.

Syntax

Commands

M30	Query of check weighing parameters.
M30␣<Nom>␣<Unit>␣<Tol>	Set check weighing parameters.

Responses

M30␣A␣<Nom>␣<Unit>␣<Tol>	Check weighing parameters.
M30␣A	Command understood and executed successfully.
M30␣I	Command understood but currently not executable.
M30␣L	Command understood but not executable (incorrect parameter, value range, ...).

Parameters

Name	Type	Values	Meaning
<Nom>	Integer	1 digit - max. load	Nominal weight
<Unit>	String		Unit of nominal weight
<Tol>	Integer		+/- tolerance in % (of nominal weight)

Examples

↓	M30	Query of check weighing parameters.
↑	M30␣12.5␣g␣2.5	Check weighing with nominal weight 12.5 g and a tolerance of 2.5% set.

↓	M30␣175.2␣g␣4.0	Set the check weighing definition to 175.2 g and a tolerance of 4.0%.
↑	M30␣A	Check weighing definition to 175.2 g and tolerance of 4.0% is set.

M34 – MinWeigh: Method

Description

Use M34 to select the MinWeigh method you wish to work with, or query the currently set MinWeigh method.

Syntax

Commands

M34	Query of the current MinWeigh method.
M34␣<Method>	Set the MinWeigh method.

Responses

M34␣A␣<Method>	Current MinWeigh method.
M34␣A	Command understood and executed successfully.
M34␣I	Command understood but currently not executable.
M34␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Method>	Integer	0	MinWeigh deactivated
		1	Method 1 activated
		2	Method 2 activated
		3	Method 3 activated
		4	Method 4 activated
		5	Method 5 activated

Comments

- MinWeigh can only be activated by a service technician.
- For additional information on mnimum weight (MinWeigh), **see** the Reference Manual of the balance.

Examples

↓	M34	Query of the current MinWeigh method.
↑	M34␣A␣3	The MinWeigh method is 3.

↓	M34␣1	Set the MinWeigh method to 1.
↑	M34␣A	MinWeigh method 1 is set.

M38 – Selective parameter reset

Description

Use M38 to execute a reset of selected parameters.

Syntax

Command

M38␣<ResetMode>	Execute reset

Responses

M38␣I	Command understood but currently not executable.
M38␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<ResetMode>	Integer	0	Actions, reset, clear window
		1	Applications reset
		2	User reset
		3	Master reset

Comments

- After user- and master reset the module performs a complete restart similar to startup after power up.
- <ResetMode> 0, 1 and 3 not yet implemented.

Example

↓	M38␣2	Execute a user reset.
↑	I4␣A␣"…"	Command understood and executed successfully.

M46 – Interval print

Description

Simulation of a print key press on a regular time base. The simulation is active as long as the interval time is not set to zero and the balance is switched on. The simulation is stopped when the interval time is set to zero. The simulation starts to count down the time interval set by this command immediately after the command has been acknowledged. The first print key press simulation is executed after the first time the interval time has elapsed. After the interval time has elapsed, the print key press is executed, the interval time is reset and the countdown restarted. Once the print interval time has been set, the countdown is also started when the balance is switched on and the balance is ready to weigh. The target is to have periodical print outs of the current weight on the pan. Therefore the simulation is stopped during the setup of the balance or application etc.

Syntax

Commands

M46	Query of the current print interval time in seconds.
M46␣<Value>	Set the current print interval time in seconds.

Responses

M46␣A␣<Value>	Current print interval time in seconds.
M46␣A	Command understood and executed successfully.
M46␣I	Command understood but currently not executable.
M46␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Value>	Integer	0 … 65535	Interval time in seconds

Examples

↓	M46	Read the currently set interval time.
↑	M46␣A␣96	The current set interval time is 96 seconds.

↓	M46␣2564	Set the interval time to 2564 seconds.
↑	M46␣A	The interval time is set to 2564 seconds.

M60 – Auto tare

Description

Use M60 to enable and disable auto tare function.

Syntax

Commands

M60	Query of the auto tare function.
M60␣<Enable>	Set the auto tare function.

Responses

M60␣A␣<Enable>	Current auto tare function.
M60␣A	Command understood and executed successfully.
M60␣I	Command understood but currently not executable.
M60␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Enable>	Boolean	0	Auto tare is disabled
		1	Auto tare is enabled

Examples

↓	M60	Query of the current auto tare function.
↑	M60␣A␣0	The auto tare function is disabled.

↓	M60␣1	Set the auto tare function to enabled.
↑	M60␣A	Auto tare function is set to enabled.

M61 – Auto tare configuration

Description

Use M61 to set or query the threshold values and the stability settings for auto tare.

Syntax

Commands

M61	Query of the threshold values and the stability settings for auto tare.
M61␣<AutoTareThresh>␣<ATTUnit>␣ <RetrigThresh>␣<ARTTUnit>␣ <AutoTareStab>␣<RetriggerStab>	Set the threshold values and the stability settings for auto tare.

Responses

M61␣A␣<AutoTareThresh>␣<ATTUnit>␣ <RetrigThresh>␣<ARTTUnit>␣ <AutoTareStab>␣<RetriggerStab>	Current threshold values and stability settings for auto tare.
M61␣A	Command understood and executed successfully.
M61␣I	Command understood but currently not executable.
M61␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<AutoTareThresh>	Float	0 … max.	Auto tare threshold in host unit
<ATTUnit>	String		Unit of the auto tare threshold
<RetrigThresh>	Float	0 … max.	The auto tare retrigger threshold in host unit
<ARTTUnit>	String		Unit of the auto retrigger tare threshold
<AutoTareStab>	Boolean	0	Stability setting deactivated, stability will not be considered
		1	Stability setting activated, stability will be considered
<RetriggerStab>	Boolean	0	Stability setting deactivated, stability will not be considered
		1	Stability setting activated, stability will be considered

Comment

- The auto tare retrigger threshold value should be less than the auto tare threshold value.

Examples

↓	M61	Query of the current threshold values and the stability settings for auto tare.
↑	M61␣A␣100␣g␣80␣g␣0␣0	The auto tare threshold is 100 g, the auto tare retrigger threshold is 80 g and the stability settings are deactivated.

↓	M61	Query of the current threshold values and the stability settings for auto tare.
↑	M61␣A␣200␣g␣175␣g␣0␣0	The auto tare threshold is 200 g, the auto tare retrigger threshold is 175 g. The auto tare stability setting is activated and the auto tare retrigger stability setting is deactivated.

↓	M61␣0.12␣kg␣0.09␣kg␣1␣1	Set the auto tare threshold to 0.12 kg, the auto tare retrigger threshold to 0.09 kg and activate the both stability settings.
↑	M61␣A	Auto tare threshold is set to 0.12 kg and auto tare retrigger threshold is set to 0.09 kg. Both stability settings are activated.

M62 – Auto clear tare

Description

Use M62 to enable and disable the auto clear tare function.

Syntax

Commands

M62	Query of the auto clear tare function.
M62␣<Mode>	Set the auto clear tare function.

Responses

M62␣<Mode>	Current auto clear tare function.
M62␣A	Command understood and executed successfully.
M62␣I	Command understood but currently not executable.
M62␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Mode>	Integer	0	Auto clear tare function is disabled
		1	Auto clear tare function is enabled

Examples

↓	M62	Query of the current auto clear tare function.
↑	M62␣A␣0	The auto clear tare function is disabled.

↓	M62␣1	Set the auto clear tare function to enabled.
↑	M62␣A	Auto clear tare function is set to enabled.

See also

M63 – Auto clear tare configuration ▶ Page 107

M63 – Auto clear tare configuration

Description

Use M63 to set or query the threshold values and the stability settings for auto clear tare behavior.

Syntax

Commands

M63	Query of the threshold values and the stability settings for auto clear tare behavior.
M63␣<Threshold>␣<Unit>␣<Stability>	Set the threshold values and the stability settings for auto tare.

Responses

M63␣A␣<Threshold>␣<Unit>␣<Stability>	Current threshold values and stability settings for auto clear tare behavior.
M63␣A	Command understood and executed successfully.
M63␣I	Command understood but currently not executable.
M63␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Threshold>	Float	0 … max.	Auto clear tare threshold in host unit
<Unit>	String		Unit of the auto clear tare threshold
<Stability>	Boolean	0	Stability setting deactivated, stability will not be considered
		1	Stability setting activated, stability will be considered

Examples

↓	M63	Query of the current threshold values and the stability settings for auto clear tare.
↑	M63␣A␣100␣g␣0	The auto clear tare threshold is 100 g and the stability setting is deactivated.

↓	M63	Query of the current threshold values and the stability settings for auto clear tare.
↑	M63␣A␣200␣g␣1	The auto clear tare threshold is 200 g and the stability settings is activated.

↓	M63␣0.12␣kg␣0	Set the auto clear tare threshold to 0.12 kg and deactivate the stability setting.
↑	M63␣A	Auto clear tare threshold is set to 0.12 kg and stability setting is deactivated.

M69 – Ipv4 network configuration mode

Description

General introduction: see [I53 – Ipv4 runtime network configuration information ▶ Page 58]. This specific command will set the mode of how the device will obtain an IP configuration. In case of the mode "Use DHCP, set fallback IP configuration manually", the IP settings made via the M70 command will be used in case of problems with the DHCP server.

Use M69 to set or query the configuration but does not apply the setting immediately and does not check whether the network stack can support the selected setting. The behavior if the supplied configuration cannot be supported by the network stack is product specific. Example: If DHCP is activated by M69 although DHCP is not supported by the network stack: use a well-known hard-coded IP address.

Syntax

Commands

M69	Query the network configuration mode.
M69␣<Index>	Query the network interface index.
M69␣<Index>␣<Mode>	Set the IP configuration mode for a given network interface.

Responses

M69␣B␣<Index>␣<Mode> M69␣B… M69␣A␣<Index>␣<Mode>	Current network configuration mode.
M69␣A	Command understood and executed successfully.
M69␣I	Command understood but currently not executable (no network interfaces present in the system).
M69␣L	Command understood but not executable (no network interfaces with index 0 present in the system).

Parameters

Name	Type	Values	Meaning
<Index>	Integer	0 or n	Network interface index
		0	1st network interface
		n	n +1th network interface
<Mode>	Integer	0 … 3	Mode of the IP configuration
		0	Static IP configuration
		1	Use DHCP, obtain fallback IP configuration with AutoIP
		2	Use DHCP, set fallback IP configuration manually
		3	IP networking disabled, no communication possible

Examples

↓	M69	Query the network configuration mode.
↑	M69␣B␣0␣0 M69␣B␣1␣1 M69␣A␣2␣2	The network interface at index 0 is manually configured. The network interface at index 1 is configured for DHCP/AutoIP. The network interface at index 2 is configured for DHCP/Manual.

↓	M69␣1	Query the mode of network interface index 1.
↑	M69␣A␣1␣1	The network interface at index 1 is configured for DHCP/AutoIP.

↓	M69␣0␣0	Set IP configuration mode of network interface index 0 to manual.
↑	M69␣A	The IP configuration mode at index 0 is configured for manual.

↓	M69␣0␣1	Set IP configuration of network interface index 0 to DHCP/AutoIP.
↑	M69␣A	The IP configuration mode at index 0 is configured for DHCP/AutoIP.

↓	M69␣0␣2	Set IP configuration of network interface index 0 to DHCP/Manual.
↑	M69␣A	The IP configuration at index 0 is configured for DHCP/Manual.

↓	M69␣0␣3	Set IP configuration of network interface index 0 to not configured.
↑	M69␣A	The IP configuration at index 0 is not configured.

See also

M70 – Ipv4 host address and netmask for static configuration ▸ Page 110

M70 – Ipv4 host address and netmask for static configuration

Description

General Introduction: see [I53 – Ipv4 runtime network configuration information ▶ Page 58]. This specific command will set a basic IP configuration composed of IPv4 host address and IPv4 netmask address. This configuration will be used by a network device if either the configuration mode M69 is set to manual or the configuration mode is set to DHCP with manual fallback IP configuration.

Syntax

Commands

M70	Query the host address and netmask.
M70␣<Index>	Query the host address and netmask of network interface index.
M70␣<Index>␣<"Host">␣<"Netmask">	Set the host address and netmask for a given network interface.

Responses

M70␣B␣<Index>␣<"Host">␣"Netmask" M70␣B␣… M70␣A␣<Index>␣<"Host">␣"Netmask"	Current host address and netmask.
M70␣A	Command understood and executed successfully.
M70␣I	Command understood but currently not executable (no network interfaces present in the system).
M70␣L	Command understood but not executable (no network interfaces with index 0 present in the system).

Parameters

Name	Type	Values	Meaning
<Index>	Integer	0 or n	Network interface index
		0	1st network interface
		n	n +1th network interface
<"Host">	String	Max 15 chars	Ipv4 address (dot-decimal notation) of the device on the given network interface
<"Netmask">	String	Max 15 chars	Ipv4 netmask (dot-decimal notation) on the given network interface

Comments

- If the mode of the IP configuration is set to "DHCP/Manual" M69, the setting of this command only takes effect in the network stack if DHCP fails.
- If the mode of the IP configuration is set to "DHCP/AutoIP" or "not configured" M69, this setting does not take effect in the network stack.
- Use [I53 ▶ Page 58] to read the settings that are effectively operational in the network stack. I53 will either return the configured static settings or the dynamic settings given by DHCP.

Examples

↓	M70	Query the host address and netmask.
↑	M70␣B␣0␣"10.0.0.3"␣"255.255.255.0" M70␣B␣1␣"192.168.0.11"␣"255.254.0" M70␣A␣2␣"10.0.1.100"␣"255.255.255.0"	The host address at index 0 is "10.0.0.3" and the netmask is "255.255.255.0". The host address at index 1 is "192.168.0.11" and the netmask is "255.254.0". The host address at index 2 is set to "10.0.1.100" and the netmask is set to "255.255.255.0".

↓	M70␣1	Query the host address and netmask of network interface index 1.
↑	M70␣A␣1␣"192.168.0.11"␣"255.255.255.0"	The host address at index 1 is "192.168.0.11" and the netmask is "255.255.255.0".

See also

- I53 – Ipv4 runtime network configuration information ▶ Page 58
- M69 – Ipv4 network configuration mode ▶ Page 108

M71 – Ipv4 default gateway address

Description

This specific command will set a default gateway address for a specific network device. This configuration will be used by a network device if either the configuration mode `M69` is set to manual or the configuration mode is set to to DHCP with manual fallback IP configuration.

Syntax

Commands

`M71`	Query the default gateway address.
`M71␣<Index>`	Query the default gateway address of network interface index.
`M71␣<Index>␣<"DefaultGateway">`	Set the default gateway address for a given network interface.

Responses

`M71␣B␣<Index>␣<"DefaultGateway">`
`M71␣B␣…`
`M71␣A␣<Index>␣<"DefaultGateway">`
	Current default gateway address.

`M71␣A`	Command understood and executed successfully.
`M71␣I`	Command understood but currently not executable (no network interfaces present in the system).
`M71␣L`	Command understood but not executable (no network interfaces with index 0 present in the system).

Parameters

Name	Type	Values	Meaning
`<Index>`	Integer	`0 or n`	Network interface index
		`0`	1st network interface
		`n`	n +1th network interface
`<"DefaultGateway">`	String	`Max 15 chars`	Ipv4 default gateway address (dot-decimal notation) on the given network interface

Comments

- If the mode of the IP configuration is set to "DHCP/Manual" `M69`, the setting of this command only takes effect in the network stack if DHCP fails.
- If the mode of the IP configuration is set to "DHCP/AutoIP" or "not configured" `M69`, this setting does not take effect in the network stack.
- Use I53 to read the settings that are effectively operational in the network stack. `I53` will either return the configured static settings or the dynamic settings given by DHCP.

Examples

↓	`M71`	Query the default gateway address.

↑	`M71␣B␣0␣"10.0.0.1"`
	`M71␣B␣1␣"192.168.0.1"`
	`M71␣A␣2␣"10.0.1.1"`
		The default gateway address at index 0 is "10.0.0.1".
		The default gateway address at index 1 is "192.168.0.1".
		The default gateway address at index 2 is "10.0.1.1".

↓	`M71␣1`	Query the default gateway address of network interface index 1.
↑	`M71␣A␣1␣"192.168.0.1"`	The default gateway address at index 1 is "192.168.0.1".

↓	M71␣0␣"10.0.0.1"	Set the default gateway address of network interface index 0 to "10.0.0.1".
↑	M71␣A	The default gateway address at index 0 is set to "10.0.0.1".

See also

- M69 – Ipv4 network configuration mode ▶ Page 108
- M70 – Ipv4 host address and netmask for static configuration ▶ Page 110

M73 – Calibration key behavior

Description

This command queries and sets the calibration key behavior.

Syntax

Commands

M73	Query the calibration key behavior.
M73␣<Mode>␣<WeightType>	Set the calibration key behavior.

Responses

M73␣A␣<Mode>␣<WeightType>␣<"WeightValue␣Unit">	Current calibration key behavior.
M73␣A	Command understood and executed successfully.
M73␣I	Command understood but currently not executable.
M73␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Mode>	Integer	0	Manual (the adjustment can be triggered manually)
		1	Off (the adjustment can not be triggered manually)
<WeightType>	Integer	0	Built-in weight (factory setting)
		1	External weight
<"WeightValue">	String	Max 12 chars	The value of the weight for an external adjustment requested from the user via the display
<"Unit">	String	Max 4 chars	The unit corresponds to the factory setting of the host unit

Comments

- Setting <Mode> = 1 corresponds to the menu setting "Off" in the "Cal" Key Settings resp. "On" in the "ADJ.LOCK" setting. <WeightType> don't work when <Mode> = 1.
- The value of the external weight can be changed in the menu of the balance under "Calibration", see Reference Manual or with [M19 ▸ Page 87].
- Use [C1 ▸ Page 21] to start the calibration defined with M73.
- M73 influences the function of the corresponded key which is used to activate calibration.

Examples

↓	M73	Query the calibration key behavior.
↑	M73␣A␣0␣1␣"100.000␣g"	The calibration key function is set to "Manual" with an "External weight" of "100.000 g".

↓	M73␣1␣0	Set the calibration key function to off.
↑	M73␣A	The calibration key function is set to off.

See also

- C0 – Adjustment setting ▸ Page 19
- M19 – Adjustment weight ▸ Page 87

M74 – Stability beep volume

Description

This command queries and sets the stability beep volume.

Syntax

Commands

M74	Query the current stability beep volume.
M74␣<BeepVolume>	Set the stability beep volume.

Responses

M74␣A␣<BeepVolume>	Current stability beep volume.
M74␣A	Command understood and executed successfully.
M74␣I	Command understood but currently not executable.
M74␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<BeepVolume>	Integer	0	Off
		1	Low
		2	Med
		3	High

Comment

- The volume in M74 is not related to volume defined by [M11 ▶ Page 82].

Examples

↓	M74	Query the current setting of stability beep volume.
↑	M74␣A␣3	Stability beep volume setting is high.

↓	M74␣1	Set the stability beep volume to low.
↑	M74␣A	The stability beep volume is set to low.

M75 – Switch on/off FACT protocol

Description

This command queries and sets whether the FACT execution information is printed or not after the FACT is executed.

Syntax

Commands

M75	Query the FACT protocol setting.
M75␣<Mode>	Set the FACT protocol setting.

Responses

M75␣A␣<Mode>	Current FACT protocol setting.
M75␣A	Command understood and executed successfully.
M75␣I	Command understood but currently not executable.
M75␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Mode>	Boolean	0	Off
		1	On

Examples

↓	M75	Query the FACT protocol setting.
↑	M75␣A␣0	The FACT protocol setting is off.

↓	M75␣1	Set the FACT protocol setting to on.
↑	M75␣A	The FACT protocol setting is set to on.

See also

M17 – ProFACT: Single time criteria ▶ Page 86

M76 – User date format

Description

This command queries and sets the user date format for display and printing.

Syntax

Commands

M76	Query the date format setting.
M76␣<Format>	Set the date format setting.

Responses

M76␣A␣<Format>	Current date format setting.
M76␣A	Command understood and executed successfully.
M76␣I	Command understood but currently not executable.
M76␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Format>	Integer	0	D.MMM YYYY
		1	MMM D YYYY
		2	DD.MM.YYYY
		3	MM/DD/YYYY
		4	YYYY-MM-DD
		5	YYYY/MM/DD

Examples

↓	M76	Query the date format setting.
↑	M76␣A␣0	The date format setting is D.MMM YYYY.

↓	M76␣1	Set the date format setting as MMM D YYYY.
↑	M76␣A	The date format setting is set to MMM D YYYY.

M77 – User time format

Description

This command queries and sets the user time format for display and printing.

Syntax

Commands

M77	Query the time format setting.
M77␣<Format>	Set the time format.

Responses

M77␣A␣<Format>	Current time format setting.
M77␣A	Command understood and executed successfully.
M77␣I	Command understood but currently not executable.
M77␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Format>	Integer	0	24:MM 24 h format
		1	12:MM 12 h format
		2	24.MM 24 h format
		3	12.MM 12 h format

Examples

↓	M77	Query the time format setting.
↑	M77␣A␣0	The time format setting is 24:MM.

↓	M77␣1	Set the time format setting as 12:MM.
↑	M77␣A	The time format setting is set to 12:MM.

M78 – Switch on/off weight recall function

Description

The command switches the weight recall function on and off.

Syntax

Commands

M78	Query the recall function setting.
M78␣<Mode>	Set the recall function mode.

Responses

M78␣A␣<Mode>	Current recall function setting.
M78␣A	Command understood and executed successfully.
M78␣I	Command understood but currently not executable.
M78␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Mode>	Integer	0	Off
		1	On

Examples

↓	M78	Query the recall function setting.
↑	M78␣A␣0	The recall function is off.

↓	M78␣1	Set the recall function to on.
↑	M78␣A	The recall function is set to on.

M79 – Device startup mode from standby

Description

This command queries and sets the startup mode from standby.

Syntax

Commands

M79	Query the startup mode.
M79␣<Mode>	Set the startup mode.

Responses

M79␣A␣<Mode>	Current startup mode.
M79␣A	Command understood and executed successfully.
M79␣I	Command understood but currently not executable.
M79␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Mode>	Integer	0	Full (display test, SW version etc., initial zero, last active application)
		1	Quick (clear tare and activate last active application)

Comment

- The startup behavior is model depend.

Examples

↓	M79	Query the startup mode.
↑	M79␣A␣0	Startup mode is full.

↓	M79␣1	Set recall function to quick.
↑	M79␣A	The startup mode is set to quick.

M80 – Automatically switch off behavior

Description

This command queries and sets the device automatically switches off after a certain time of inactivity or not switch off.

Syntax

Commands

M80	Query the device automatically switches off.
M80␣Mode␣<Time>	Set the device automatically switches off.

Responses

M80␣A␣<Mode>␣<Time>	Current device automatically switches off.
M80␣A	Command understood and executed successfully.
M80␣I	Command understood but currently not executable.
M80␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Mode>	Integer	0	Disabled (no automatic switching off)
		1	Enabled, delayed with time of inactivity
<Time>	Integer	0 … 65535 sec .	Since 0 is the default value for all parameters after an nonvolatile memory erase, **Time = 0** will be read when reading the first time. For symmetry, it is permissible to also write **Time = 0**. In case of **Disabled**, this parameter has no effect anyway. In case of **Enabled**, writing **Time = 0** results in the **Disabled** behavior.

Comments

- In case of cable power driven devices, the switch off command PWR␣0 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.

Examples

↓	M80	Query the device automatically switches off.
↑	M80␣A␣0␣900	The device automatically switches off is disabled. The 900 seconds parameter has no effect.

↓	M80␣1␣50	Set the device automatically switches off as enabled and the time of inactivity to 50 seconds.
↑	M80␣A	The inactivity time is set to 50 seconds.

M81 – Backlight switch-off time

This command queries and sets the backlight auto switch-off mode and time.

Syntax

Commands

M81	Query the backlight auto switch-off time.
M81␣<Mode>␣<Time>	Set the backlight auto switch-off time.

Responses

M81␣A␣<Mode>␣<Time>	Current backlight auto switch-off time.
M81␣A	Command understood and executed successfully.
M81␣I	Command understood but currently not executable.
M81␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Mode>	Integer	0	Always off depends on display type
		1	Always on
		2	Timed out
<Time>	Integer	0 … 65535	Since 0 is the default value for all parameters after an nonvolataile memory erase, **Time = 0** will be read when read the first time. For symmetry, it is permissible to also write **Time = 0**. In case of **Always off/on**, this parameter has no effect anyway. In case of **Timed out**, writing **Time = 0** results in **Always on**.

Examples

↓	M81	Query the backlight auto switch-off mode.
↑	M81␣A␣1␣30	The backlight auto switch-off mode is set to always on. The time parameter 30 has no effect.

↓	M81␣2␣120	Set the backlight auto switch-off mode to timed out and the time to 120 seconds.
↑	M81␣A	The backlight will be switched off if the balance is not touched for 120 seconds.

M82 – Actual zero/tare key zero range setting

Description

This command queries and sets the actual upper limit of the combined zero/tare key zero range. Up and including the upper limit, the combined zero/tare key performs a zero. Above the upper limit the zero/tare key performs a tare.

Syntax

Commands

M82	Query the upper limit of the zero/tare key zero range.
M82␣<Max>	Set the upper limit of the zero/tare key zero range.

Responses

M82␣A␣<Max>	Current upper limit of the zero/tare key zero range.
M82␣A	Command understood and executed successfully.
M82␣I	Command understood but currently not executable.
M82␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Max>	Float		Upper limit in the definition unit

Comment

- The zero range is relatively to the effective switching on zero point defined.

Examples

↓	M82	Query the upper limit of the zero/tare key zero range.
↑	M82␣A␣1000.00	The upper limit of the zero/tare key zero range is 1000 times the definition unit.

↓	M82␣100	Set the upper limit of the zero/tare key zero range to 100 times the definition unit.
↑	M82␣A	The upper limit of the zero/tare key zero range is set to 100 times.

M83 – Active application per function key

Description

This command queries and sets the active application of Fx function keys.

Syntax

Commands

M83	Query the active application of Fx function keys.
M83␣<Key>␣<ApplicationID>	Set the active application of specific function key.

Responses

M83␣B␣<Key>␣<ApplicationID> M83␣B… M83␣A␣<Key>␣<ApplicationID>	Current active application of the first function key. Current active application of the last function key.
M83␣A	Command understood and executed successfully.
M83␣I	Command understood but currently not executable.
M83␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Key>	Integer		Key index (Key code dependent on model), see [K ▸ Page 71] command
<ApplicationID>	Integer		Application index (Selectable applications dependent on model), see [M25 ▸ Page 94]

Examples

↓	M83	Query the active application of Fx function keys.
↑	M83␣B␣4␣2	F1 key is set as "Percent weighing".
↑	M83␣B␣5␣11	F2 key is set as "Check weighing".
↑	M83␣A␣6␣1	F3 key is set as "Piece counting".

↓	M83␣1␣1	Set F1 key as "Piece counting".
↑	M83␣A	Command understood and executed successfully.

M84 – Service reminder mode

Description

This command queries and sets the service reminder mode.

Syntax

Commands

M84	Query the service reminder mode.
M84␣<Mode>	Set the service reminder mode.

Responses

M84␣A␣<Mode>	Current service reminder mode.
M84␣A	Command understood and executed successfully.
M84␣I	Command understood but currently not executable.
M84␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Mode>	Boolean	0	Off
		1	On

Comments

- If the service reminder mode is activated (switched on), the service reminder icon will be displayed after the next service date according or other conditions (i.e. 8000 operating hours) are reached.
- If the service reminder mode is deactivated (switched off), the service reminder icon will not be displayed after the next service date according or other conditions are reached.

Examples

↓	M84	Query the service reminder mode.
↑	M84␣A␣0	Service reminder mode is set to "Off".

↓	M84␣1	Set service reminder mode to "On".
↑	M84␣A	Command understood and executed successfully.

M85 – Printing format

Description

This command queries and sets the printing format including header, weight value information, signature line and line feed.

Syntax

Commands

M85	Query the printing format.
M85␣<Header>␣<WeightInfo>␣<SignLine>␣<LineFeed>	Set the printing format.

Responses

M85␣A␣<Header>␣<WeightInfo>␣<SignLine>␣<LineFeed>	Current printing format.
M85␣A	Command understood and executed successfully.
M85␣I	Command understood but currently not executable.
M85␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Header>	Integer	0	No print header
		1	Header with date and time
		2	Header with date, time and balance ID
<WeightInfo>	Integer	0	Net
		1	Gross/Tare/Net (model dependent)
<SignLine>	Boolean	0	Off
		1	On
<LineFeed>	Integer		Setting the numbers of empty lines need to be printed in the end of printing result (model dependent)

Examples

↓	M85	Query the printing format.
↑	M85␣A␣1␣1␣1␣2	The printing result has a header with date/time, weight value would be in the format of Gross/Tare/Net each line respectively, the signature line will be printed, and there are 2 empty lines added at the end.

↓	M85␣0␣0␣0␣5	Set the printing result without header, net weight value only, no signature line and with 5 empty lines in the end.
↑	M85␣A	Command understood and executed successfully.

M86 – Menu protection mode

Description

This command queries and sets the menu protection mode.

Syntax

Commands

M86	Query the menu protection mode.
M86␣<Mode>	Set the menu protection mode.

Responses

M86␣A␣<Mode>	Current menu protection mode.
M86␣A	Command understood and executed successfully.
M86␣I	Command understood but currently not executable.
M86␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Mode>	Boolean	0	Menu protection mode is switched off (model dependent)
		1	Menu protection mode is switched on All menu items except submenu "PROTECT" are hidden. There is no way for the user to change menu settings unless the protection mode is set to off again (model dependent)

Examples

↓	M86	Query the menu protection mode.
↑	M86␣A␣0	Menu protection mode is "off".

↓	M86␣1	Set menu protection mode to "on".
↑	M86␣A	Command understood and executed successfully.

M87 – Mode and logical device type for serial interfaces

Description

This command queries and sets the logical device type and mode of the physical serial interfaces.

Syntax

Commands

M87	Query the send modes of all logical channels.
M87␣<Interface>	Query of the specific logical channel.
M87␣<Interface>␣<LogicalDevice>␣<Mode>	Set the send mode of specific logical channel.

Responses

M87␣B␣<Interface>␣<LogicalDevice>␣<Mode> M87␣B… M87␣A␣<Interface>␣<LogicalDevice>␣<Mode>	Current send mode of the first logical channel. Current send mode of the last logical channel.
M87␣A	Command understood and executed successfully.
M87␣I	Command understood but currently not executable.
M87␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Interface>	Integer	0	Serial interface 1 (model dependent)
		1	Serial interface 2 (model dependent)
		2	USB device (model dependent)
<LogicalDevice>	Integer	0	Host (model dependent)
		1	Printer 24 (model dependent)
		2	Secondary display (model dependent)
		3	PC-Direct (model dependent)
		4	Reader (e.g., barcode reader COM)
<Mode>	Integer	0	Send off
		1	Send stable weigh value [S ▸ Page 151] / Print stable weight value
		2	Send continuous [SIR ▸ Page 153]
		3	Send and repeat [SR ▸ Page 174] / Print auto
		4	Send immediate [SI ▸ Page 152] / Print all

Comments

- This command is product dependent.
- Send/Print: The send modes are valid for the host only. The print modes are valid for the printer and PC-Direct. The behavior of the modes is basically the same but the format is different. The host uses MT-SICS; the printer uses the print format and PC-Direct just sends the weight value without the unit in a format fitted to Excel.
- The `Mode` of the printer and PC-Direct is limited to "Print stable weight value", "Print auto" and "Print all".
- The `LogicalDevice` of the USB device is fixed to "MT-SICS Host".
- The `Mode` of the secondary display is fixed to "Send off".
- The below table is the detail map information between mode and logical devices.

	Send off	Send stable	Print stable	Send continuous	Send auto	Print auto	Send all	Print all
Host	✓	✓	–	✓	✓	–	✓	–
Printer 24	–	–	✓	–	–	✓	–	✓
2nd display	✓	–	–	–	–	–	–	–
PC-Direct	–	–	✓	–	–	✓	–	✓
Reader	✓	–	–	–	–	–	–	–

Examples

↓	`M87`	Query the send modes of all logical channels.
↑	`M87␣B␣0␣1␣1`	Serial interface "Serial interface 1" is set to "Printer 24" with the mode set to "Print stable weight value".
↑	`M87␣B␣1␣2␣0`	Serial interface "Serial interface 2" is set to "Secondary display" with the mode set to "Send off".
↑	`M87␣A␣2␣0␣3`	Serial interface "USB device" is set to "Host" with the mode set to "Send and repeat".

↓	`M87␣1`	Query the logical channel and mode of the serial interface "Serial interface 2".
↑	`M87␣A␣1␣2␣0`	Serial interface "Serial interface 2" is set to "Secondary display" with the mode set to "Send off".

↓	`M87␣1␣1␣4`	Set serial interface "Serial interface 2" to printer with the mode "Print all".
↑	`M87␣A`	Command understood and executed successfully.

M88 – Printing zero values in the auto print mode

Description

This command queries and sets the setting of printing zero values in the auto print mode.

Syntax

Commands

M88	Query all serial interfaces settings of printing zero values in the auto print mode.
M88␣<Interface>	Query specific interface setting of printing zero values in the auto print mode.
M88␣<Interface>␣<Mode>	Set the specific interface setting of printing zero values in the auto print mode.

Responses

M88␣B␣<Interface>␣<Mode> M88␣B… M88␣A␣<Interface>␣<Mode>	Current of the first interface setting of printing zero values in the auto print mode. Current of the last interface setting of printing zero values in the auto print mode.
M88␣A	Command understood and executed successfully.
M88␣I	Command understood but currently not executable.
M88␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Interface>	Integer	0	Serial interface 1
		1	Serial interface 2 (model dependent)
		2	USB device (model dependent)
<Mode>	Boolean	0	Off
		1	On

Examples

↓	M88	Query all serial interfaces settings of printing zero values in the auto print mode.
↑	M88␣B␣0␣0	Do not print zero values in the auto print mode on the serial interface 1.
↑	M88␣A␣1␣1	Print zero values in the auto print mode on the serial interface 2.

↓	M88␣1	Query the serial interface 2 setting of printing zero values in the auto print mode.
↑	M88␣A␣1␣0	Do not print zero values in the auto print mode on the serial interface 2.

↓	M88␣1␣1	Set the serial interface 2 to print zero values in the auto print on.
↑	M88␣A	Command understood and executed successfully.

See also

M87 – Mode and logical device type for serial interfaces ▶ Page 128

M89 – Interface command set

Description

This command queries and sets the interface command set.

Syntax

Commands

M89	Query the command set of all available interfaces.
M89␣<Interface>	Query specific interface command set.
M89␣<Interface>␣<CmdSet>	Set the specific command set of interface.

Responses

M89␣B␣<Interface>␣<CmdSet> M89␣B… M89␣A␣<Interface>␣<CmdSet>	Current command set of the first available interface. Current command set of the last available interface.
M89␣A	Command understood and executed successfully.
M89␣I	Command understood but currently not executable.
M89␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Interface>	Integer	0	Serial interface 1
		1	Serial interface 2 (model dependent)
		2	USB device (model dependent)
<CmdSet>	Integer	0	MT-SICS
		1	MT-PM
		2	Sartorius 22 character output format
		3	Sartorius 16 character output format

Comments

- New command set type settings are active after a maximum of 100 ms. No commands must be sent during this period.
- The MT-PM and Sartorius commands shall only be used for compatibility/exchangeability with respective devices, but MT-SICS shall be the major command set.

Examples

↓	M89	Query the command set of all available interfaces.
↑	M89␣B␣0␣0	The serial interface 1 uses the MT-SICS command set.
↑	M89␣A␣2␣1	The serial interface use the MT-PM command set. The balance does not have a serial interface 2.

↓	M89␣1␣2	Set the serial interface 2 to use the Sartorius command set.
↑	M89␣A	The serial Interface 2 uses the Sartorius command set.

See also

M87 – Mode and logical device type for serial interfaces ▶ Page 128

M90 – Connection parameters of serial interfaces for logical devices

Description

This command queries and sets the connection parameters for logical devices.

Syntax

Commands

M90	Query the connection parameters of all available logical devices.
M90␣<Interface>	Query settings of a single logical devices.
M90␣<Interface>␣<LogicalDevice>␣<Baud>␣<DataBit>␣<Parity>␣<Stopbit>␣<DataFlow>	Set the settings for a specified serial interface with device index.

Responses

M90␣B␣<Interface>␣<LogicalDevice>␣<Baud>␣<DataBit>␣<Parity>␣<Stopbit>␣<DataFlow> M90␣B… M90␣A␣<Interface>␣<LogicalDevice>␣<Baud>␣<DataBit>␣<Parity>␣<Stopbit>␣<DataFlow>	Current connection parameters of the first available logical devices. Current connection parameters of the last available logical devices.
M90␣A	Command understood and executed successfully.
M90␣I	Command understood but currently not executable.
M90␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Interface>	Integer	0	Serial interface 1
		1	Serial interface 2
<LogicalDevice>	Integer	0	Host
		1	Printer 24
		2	Secondary display
		3	PC-Direct
		4	Reader (e.g., barcode reader COM)
<Baud>	Integer	0	150 baud
		1	300 baud
		2	600 baud
		3	1200 baud
		4	2400 baud
		5	4800 baud
		6	9600 baud
		7	19200 baud
		8	38400 baud
		9	57600 baud
		10	115200 baud
<DataBit>	Integer	0	7 data bits
		1	8 data bits

Name	Type	Values	Meaning
<Parity>	Integer	0	No parity
		1	Even parity
		2	Odd parity
		3	Mark
		4	Space
<Stopbit>	Integer	0	1 stop bit
		1	2 stop bits
<DataFlow>	Integer	0	No data flow control
		1	Software (Xon / Xoff)
		2	Hardware (RTS / CTS)

Comment

- New interface settings are active after a maximum of 100 ms. No commands must be sent during this period.

Examples

↓	M90	Query the connection parameters of all available logical devices.
↑	M90␣B␣0␣0␣6␣1␣0␣0␣1	Serial Interface 1; Host: 9600 bd, 8 bits, no parity, 1 stop bits, software handshake.
↑	M90␣B␣0␣1␣4␣0␣1␣1␣1	Serial Interface 1; Printer 24: 2400 bd, 7 bit, even parity, 2 stop bits, software handshake.
↑	M90␣B␣0␣2␣6␣1␣0␣0␣1	Serial Interface 1; 2nd display: 9600 bd, 8 bits, no parity, 1 stop bits, software handshake.
↑	M90␣B␣0␣3␣1␣1␣0␣0␣0	Serial Interface 1; PC-Direct: 300 bd, 8 bits, no parity, 1 stop bits, no handshake.
↑	M90␣B␣1␣0␣4␣0␣1␣1␣1	Serial Interface 2; Host: 2400 bd, 7 bit, even parity, 2 stop bits, software handshake.
↑	M90␣B␣1␣1␣6␣1␣0␣0␣1	Serial Interface 2; Printer 24: 9600 bd, 8 bits, no parity, 1 stop bits, software handshake.
↑	M90␣B␣1␣2␣6␣1␣0␣0␣1	Serial Interface 2; 2nd display: 9600 bd, 8 bits, no parity, 1 stop bits, software handshake.
↑	M90␣A␣1␣3␣4␣0␣1␣1␣1	Serial Interface 2; PC-Direct: 2400 bd, 7 bit, even parity, 2 stop bits, software handshake.

↓	M90␣0␣1␣3␣1␣0␣0␣1	Set the printer device on serial interface 1 to 1200 baud, 8 data bits, No parity, 1 stop bit, Software (Xon / Xoff).
↑	M90␣A	Printer device on serial interface 1 is set to 1200 bd, 8 bits, no parity, 1 stop bit, software handshake.

See also

M87 – Mode and logical device type for serial interfaces ▸ Page 128

M91 – End of line settings for logical devices

Description

This command queries and sets end of line settings of logical devices.

Syntax

Commands

M91	Query the end of line settings of all logical devices.
M91␣<Interface>	Query of the specific logical devices.
M91␣<Interface>␣<LogicalDevice>␣<EOL>	Set the settings for a specified serial interface with given device index.

Responses

M91␣B␣<Interface>␣<LogicalDevice>␣<EOL> M91␣B… M91␣A␣<Interface>␣<LogicalDevice>␣<EOL>	Current the end of line setting of the first logical device. Current the end of line setting of the last logical device.
M91␣A	Command understood and executed successfully.
M91␣I	Command understood but currently not executable.
M91␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Interface>	Integer	0	Serial interface 1
		1	Serial interface 2
		2	USB device
<LogicalDevice>	Integer	0	Host
		1	Printer 24
		2	Secondary display
		3	PC-Direct
		4	Reader (e.g., barcode reader COM)
<EOL>	Integer	0	<CR LF> carriage return, line feed
		1	<CR> carriage return
		2	<LF> line feed
		3	<TAB> tabulator

Examples

↓	M91	Query the end of line settings of all logical devices.
↑	M91␣B␣0␣0␣0	Serial interface 1; Host: <CR LF>.
↑	M91␣B␣0␣1␣0	Serial interface 1; Printer 24: <CR LF>.
↑	M91␣B␣0␣2␣0	Serial interface 1; 2nd display: <CR LF>.
↑	M91␣B␣0␣3␣0	Serial interface 1; PC-Direct: <CR LF>.
↑	M91␣B␣1␣0␣0	Serial interface 2; Host: <CR LF>.
↑	M91␣B␣1␣1␣0	Serial interface 2; Printer 24: <CR LF>.
↑	M91␣B␣1␣2␣0	Serial interface 2; 2nd display: <CR LF>.
↑	M91␣B␣1␣3␣0	Serial interface 2; PC-Direct: <CR LF>.
↑	M91␣B␣2␣0␣0	USB device; Host: <CR LF>.
↑	M91␣B␣2␣1␣0	USB device; Printer 24: <CR LF>.
↑	M91␣B␣2␣2␣0	USB device; 2nd display: <CR LF>.
↑	M91␣A␣2␣3␣0	USB device; PC-Direct: <CR LF>.

↓	M91␣1	Query the end of line settings of all specific logical devices.
↑	M91␣B␣1␣0␣0	Serial interface 2; Host: <CR LF>.
↑	M91␣B␣1␣1␣0	Serial interface 2; Printer 24: <CR LF>.
↑	M91␣B␣1␣2␣0	Serial interface 2; 2nd display: <CR LF>.
↑	M91␣A␣1␣3␣0	RS interface 2; PC-Direct: <CR LF>.

↓	M91␣0␣1␣0	Set the printer device on serial interface 1 to <CR LF>.
↑	M91␣A	Printer device on serial interface 1 is set to <CR LF>.

See also

M87 – Mode and logical device type for serial interfaces ▸ Page 128

M92 – Character encodings for logical devices

Description

This command queries and sets the character encodings of logical devices.

Syntax

Commands

M92	Query the character encodings of all logical devices.
M92␣<Interface>	Query of the specific logical devices.
M92␣<Interface>␣<LogicalDevice>␣<Encoding>	Set the settings of a specified serial interface with given device index.

Responses

M92␣B␣<Interface>␣<LogicalDevice>␣<Encoding> M92␣B… M92␣A␣<Interface>␣<LogicalDevice>␣<Encoding>	Current the character encoding of the first logical device. Current the character encoding of the last logical device.
M92␣A	Command understood and executed successfully.
M92␣I	Command understood but currently not executable.
M92␣L	Command understood but not executable (incorrect parameter).

Parameters

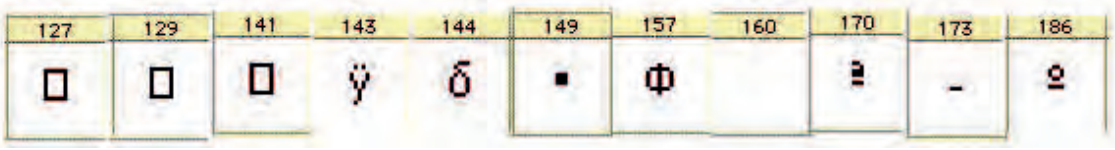
Name	Type	Values	Meaning
<Interface>	Integer	0	Serial interface 1
		1	Serial interface 2
		2	USB device
<LogicalDevice>	Integer	0	Host
		1	Printer 24
		2	Secondary display
		3	PC-Direct
<Encoding>	Integer	0	IBM/DOS (Code page 437 + MT specific special characters)
		1	ANSI/WIN (Windows-1252 + MT specific special characters)
		2	UTF-8

Comments

- It is possible that a device with more then one physical serial interface supports several logical devices of the same type at the same time. The encoding of those logical devices might be different.
  Example: serial interface 1 and serial interface 2 are both connected to a host. The encoding of the host on serial interface1 is set to IBM/DOS and the encoding of the host on serial interface 2 is set to ANSI/WIN.
- IBM/DOS is based on CP437. ANSI/WIN is based on CP1252. But there are some special characters in device. The following tables list the special characters.

MT specific special characters in IBM/DOS:

MT specific special characters in ANSI/WIN:



Examples

↓	M92	Query the character encodings of all logical devices.
↑	M92␣B␣0␣0␣0	Serial Interface 1; Host: IBM/DOS.
↑	M92␣B␣0␣1␣0	Serial Interface 1; Printer 24: IBM/DOS.
↑	M92␣B␣0␣2␣0	Serial Interface 1; 2nd display: IBM/DOS.
↑	M92␣B␣0␣3␣0	Serial Interface 1; PC-Direct: IBM/DOS.
↑	M92␣B␣1␣0␣0	Serial Interface 2; Host: IBM/DOS.
↑	M92␣B␣1␣1␣0	Printer 24: IBM/DOS.
↑	M92␣B␣1␣2␣0	2nd display: IBM/DOS.
↑	M92␣A␣1␣3␣0	PC-Direct: IBM/DOS.
↑	M92␣B␣2␣0␣0	USB device; Host: IBM/DOS.
↑	M92␣B␣2␣1␣0	USB device; Printer 24: IBM/DOS.
↑	M92␣B␣2␣2␣0	USB device; 2nd display: IBM/DOS.
↑	M92␣A␣2␣3␣0	USB device; PC-Direct: IBM/DOS.

↓	M92␣1	Query the end of line settings of all specific logical devices.
↑	M92␣B␣1␣0␣0	Serial interface 2; Host: <CR LF>.
↑	M92␣B␣1␣1␣0	Serial interface 2; Printer 24: <CR LF>.
↑	M92␣B␣1␣2␣0	Serial interface 2; 2nd display: <CR LF>.
↑	M92␣A␣1␣3␣0	Serial interface 2; PC-Direct: <CR LF>.

↓	M92␣0␣1␣1	Set the printer device on serial interface 1 to ANSI/WIN.
↑	M92␣A	Printer device on serial interface 1 is set to ANSI/WIN.

See also

M87 – Mode and logical device type for serial interfaces ▸ Page 128

M93 – FACT mode

Description

This command queries and sets FACT mode.

Syntax

Commands

M93	Query the FACT mode.
M93␣<Mode>	Set the FACT mode.

Responses

M93␣A␣<Mode>	Current FACT mode.
M93␣A	Command understood and executed successfully.
M93␣I	Command understood but currently not executable.
M93␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Mode>	Boolean	0	Off
		1	On

Comments

- The command shares the same memory as C0, see nonvolatile memory below.
- FACT mode 0 relates to C0␣0 <Weight>.
- FACT mode0 will switch off FACT completely. This includes power on, temperature and time FACT.
- FACT mode 1 will switch all previously activated FACT back on. This includes power on, temperature and time FACT. The previously FACT modes that were set to OFF are not touched. Previously refers to the FACT state that was active before the M93 mode was set to OFF.

Examples

↓	M93	Query the FACT mode.
↑	M93␣A␣0	FACT is "Off".

↓	M93␣1	Set the FACT mode to "On".
↑	M93␣A	Command understood and executed successfully.

See also

- C0 – Adjustment setting ▸ Page 19
- M17 – ProFACT: Single time criteria ▸ Page 86

M100 – Leaving standby mode via dynamic weight change

Description

Activate or deactivate leaving standby mode via weight change.

Syntax

Commands

M100	Query the standby mode.
M100␣<State>	Set the standby mode.

Responses

M100␣A␣<State>	Current standby mode.
M100␣A	Command understood and executed successfully.
M100␣I	Command understood but currently not executable.
M100␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<State>	Boolean	0	Disabled
		1	Enabled

Comments

- This command only takes effect in user mode.
- This command is required to fulfill customers need to activate/deactivate dynamic weight change leaving standby mode feature.
- In case of Basic Weighing devices, this command only takes effect when quick startup mode, see M79 is active.
- For approved devices, this command and the corresponding menu setting is unavailable due to the absence of quick startup mode.

Examples

↓	M100	Query the standby mode.
↑	M100␣A␣0	Standby mode is disabled.

↓	M100␣1	Set the standby mode to "Enabled".
↑	M100␣A	Standby mode is set to "Enabled".

See also

M79 – Device startup mode from standby ▶ Page 120

M101 – USB device identification mode

Description

Queries or sets the USB device identification mode. Mode 1 and 2 allow the replacing of a device on a PC, without redefining the COM port on the PC.

Syntax

Commands

M101	Query the USB device identification mode.
M101␣<Mode>	Set the USB device identification mode.

Responses

M101␣A␣<Mode>	Current USB device identification mode.
M101␣A	Command understood and executed successfully.
M101␣I	Command understood but currently not executable.
M101␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Mode>	Integer	0	With serial number (Vendor ID, Product ID, "<serial number>")
		1	Without serial number (Vendor ID and Product ID)
		2	With Identification (Vendor ID, Product ID, "<identification>")

Examples

↓	M101	Query the USB device identification mode.
↑	M101␣A␣0	Vendor ID (VID) and Product ID (PID) are used as USB device identification.

↓	M101␣1	Set the USB device identification mode to 2.
↑	M101␣A	USB device identification mode is set to 2.

See also

M102 – USB device identification ▸ Page 142

M102 – USB device identification

Description

Queries or sets the USB device identification.

Syntax

Commands

M102	Query the USB device identification.
M102␣<"Identification">	Set the USB device identification.

Responses

M102␣A␣<"Identification">	Current USB device identification.
M102␣A	Command understood and executed successfully.
M102␣I	Command understood but currently not executable.
M102␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<"Identification">	String	Max 20 chars	Designation for USB device identification

Examples

↓	M102	Query the USB device identification.
↑	M102␣A␣"SwissPost"	The USB device identification is set to "SwissPost".

↓	M102␣"Novartis"	Set the USB device identification to Novartis.
↑	M102␣A	USB device identification mode is set to "Novartis".

See also

M101 – USB device identification mode ▸ Page 141

M104 – Workflow beep volume

Description

Queries or sets the workflow beep volume.

Syntax

Commands

M104	Query the workflow beep volume.
M104␣<BeepVolume>	Set the workflow beep volume.

Responses

M104␣A␣<BeepVolume>	Current workflow beep volume.
M104␣A	Command understood and executed successfully.
M104␣I	Command understood but currently not executable.
M104␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<BeepVolume>	Integer	0	Off
		1	On
		2	Med
		3	High

Comments

- The volume is not related to volume defined by M11 and M74.
- The workflow beep is different to the stability and the touch beep. It notifies the user when the zero or tare bar are not available, provides additional feedback in case of input errors and is used for messages and status notifications.
- The volume is set separately since the stability beep and the touch beep are usually not set as loud as the workflow beep.
- Only volume or number of beeps can differ.

Examples

↓	M104	Query the workflow beep volume.
↑	M104␣A␣3	The workflow beeper volume is set to 'High'.

↓	M104␣1	Set the workflow beep to 'Low'.
↑	M104␣A	Workflow beep is set to 'Low'.

M105 – Touch sensitivity

Description

Queries or sets the touch sensitivity of the touch screen. If the touch sensitivity is set to 1 then the touch function of the touch screen has a higher sensitivity to enable the operation of the balance with gloves.

Syntax

Commands

M105	Query the touch sensitivity.
M105␣<Sensitivity>	Set the touch sensitivity.

Responses

M105␣A␣<Sensitivity>	Current touch sensitivity.
M105␣A	Command understood and executed successfully.
M105␣I	Command understood but currently not executable.
M105␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<Sensitivity>	Integer	0	Normal
		1	Glove mode

Examples

↓	M105	Query the touch sensitivity.
↑	M105␣A␣0	The touch sensitivity is normal.

↓	M105␣1	Set the touch sensitivity to glove mode.
↑	M105␣A	Touch sensitivity is set to glove mode.

M106 – Workflow report print mode

Description

Queries or sets the workflow report print mode.

Syntax

Commands

M106	Query the workflow report print mode.
M106␣<PrintMode>	Set the workflow report print mode.

Responses

M106␣A␣<PrintMode>	Current workflow report print mode.
M106␣A	Command understood and executed successfully.
M106␣I	Command understood but currently not executable.
M106␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<PrintMode>	Integer	0	Automatic printing according to the work flow of the application
		1	Manual printing only

Comments

- Automatic print mode disables manual printing.
- This command only relates to the printing of workflows and not to "normal" printing.

Examples

↓	M106	Query the workflow report print mode.
↑	M106␣A␣0	The workflow report print mode is set to automatic.

↓	M106␣1	Set the workflow report print mode to manual.
↑	M106␣A	Workflow report print mode is set to manual.

M108 – MinWeigh: Parameters

Description

Queries or sets the MinWeigh parameters..

Syntax

Commands

M108	Query the MinWeigh parameters.
M108␣<Method>	Query the MinWeigh method.
M108␣<Method>␣<Attitude>␣<Option>	Set the MinWeigh parameters.

Responses

M108␣B␣<Method>␣<Attitude>␣<Option> M108␣B… M108␣A␣<Method>␣<Attitude>␣<Option>	Current MinWeigh parameters.
M108␣A	Command understood and executed successfully.
M108␣I	Command understood but currently not executable.
M108␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Method>	Integer	1 … 5	Method number (available methods are product dependent)
<Attitude>	Integer	0	Weighing mode
		1	Environment
		2	Weighing value release
		3	Auto zero
<Option>	Integer		Selected option of the appropriate weighing attitude For meaning and range of option, see the following commands
		0	I46 – Selectable weighing modes
		1	I45 – Selectable environment filter settings
		2	M29 – Weighing value release
		3	M03 – Auto zero function

Comments

- If MinWeigh is activated the actual option value of the attitude can be inquired by the following commands:
  Weighing mode, see [M01 ▸ Page 76].
  Environment, see [M02 ▸ Page 77].
  Weighing value release, see [M29 ▸ Page 98].
  Auto zero, see [M03 ▸ Page 78].
- Similar to I20 but with additional setting possibility.
- The number of methods and the setting possibility is device dependent.
- For additional information on minimum weight (MinWeigh), see the Reference Manual of the device.
- MS-TS, ML-T, ME-T offers a customizable minimal weight option as well as an OIML minimal weight option for approved balances:
  – Method 4 is the OIML MinWeigh and writable.
  – Method 5 is the customized MinWeigh and writable.

Examples

↓	M108	Query of the current MinWeigh parameters.
↑	M108␣B␣1␣0␣0	Method 1, weighing mode is universal.
↑	M108␣B␣1␣1␣2	Method 1, environment is standard.
↑	M108␣B␣1␣2␣1	Method 1, measured value release is quick.
↑	M108␣B␣1␣3␣1	Method 1, auto zero is on.
↑	M108␣B␣2␣0␣1	Method 2, weighing mode is dispensing.
↑	M108␣B␣2␣1␣3	Method 2, environment is unstable.
↑	M108␣B␣2␣2␣0	Method 2, measured value release is very quick.
↑	M108␣A␣2␣3␣0	Method 2 and auto zero is off.

↓	M108␣2	Query of method 2.
↑	M108␣B␣2␣0␣1	Method 2, weighing mode is dispensing.
↑	M108␣B␣2␣1␣3	Method 2, environment is unstable.
↑	M108␣B␣2␣2␣0	Method 2, measured value release is very quick.
↑	M108␣A␣2␣3␣0	Method 2 and auto zero is off.

↓	M108␣5␣1␣3	Set the MinWeigh parameter of method 5.
↑	M108␣A	MinWeigh parameter is set to method 5.

See also

- M01 – Weighing mode ▶ Page 76
- M02 – Environment condition ▶ Page 77
- M29 – Weighing value release ▶ Page 98
- M03 – Auto zero function ▶ Page 78
- I20 – MinWeigh: Parameter ▶ Page 47
- I46 – Selectable weighing modes ▶ Page 56

PW – Piece counting: Piece weight

Description

Use PW to set the reference weight of 1 piece, which you can then use for the piece counting application.

Syntax

Commands

PW	Query of the piece weight for the piece counting application.
PW␣<SinglePiece>␣<Unit>	Set the piece weight for the according value. The unit should correspond to the unit actually set under display unit.

Responses

PW␣A␣<SinglePiece>␣<Unit>	Current piece weight value in unit actually set under display unit.
PW␣A	Command understood and executed successfully.
PW␣I	Command understood but currently not executable (e.g., piece counting application is not active or balance is currently executing another command).
PW␣L	Command understood but not executable (parameter is incorrect).

Comments

- By setting a reference weight, the display unit is automatically switched to unit "PCS".
- On the interface the unit is not changed. However, the piece counting value can be requested by using the [S ▸ Page 151] commands in display unit such as [SU ▸ Page 179], [SIU ▸ Page 158], after the piece weight reference has been set by PW.
- To change the unit of the interface to pieces, use the command [M21 ▸ Page 89].

Example

↓	PW␣20.00␣g	Set the piece weight of the piece counting application to 20.00 g.
↑	PW␣A	Piece weight value is set.

See also

- M21 – Unit ▸ Page 89
- SU – Stable weight value in display unit ▸ Page 179
- SIU – Weight value in display unit immediately ▸ Page 158

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 37].
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 37] 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

I4 – Serial number ▸ Page 37

R01 – Restart device

Description

Restarts the device. This is a warm start.

Syntax

Command

R01	Restart the device.

Response

I4␣A␣<"SerialNumber"> (or equivalent startup response)	Startup response of the device.

Parameter

Name	Type	Values	Meaning
I4␣A␣<"SerialNumber">			Startup response after the device has restarted

Comments

- If the mapping of the serial interface is 'MT-SICS Printer 24': Command R01 response ---- METTLER TOLEDO ---- the software has been restarted.
- This command must not be confused with [M38 ▸ Page 101]. [M38 ▸ Page 101] modifies parameters whereas R01 does not.

Example

↓	R01	Restart the device.
↑	I4␣A␣"B001000001"	The software has been restarted. The serial number of the device is B001000001.

See also

M38 – Selective parameter reset ▸ Page 101

S – Stable weight value

Description

Use S to send a stable weight value, along with the display 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 display 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.

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 set display 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.
- To send the stable weight value in actually displayed unit, see [SU ▸ Page 179].

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 display 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.

Responses

S␣S␣<WeightValue>␣<Unit>	Stable weight value in unit actually set under display unit.
S␣D␣<WeightValue>␣<Unit>	Non-stable (dynamic) weight value in unit actually set under display unit.
S␣I	Command understood but currently not executable (balance is currently executing another command, e.g., taring).
S␣+	Balance in overload range.
S␣-	Balance in underload range.

Parameters

Name	Type	Values	Meaning
<WeightValue>	Float		Weight value
<Unit>	String		Currently set display 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.
- To send weight value immediately in actually displayed unit, see [SIU ▸ Page 158].
- 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.

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

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

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.

Responses

S␣S␣<WeightValue>␣<Unit>	Stable weight value in unit actually set under display unit.
S␣D␣<WeightValue>␣<Unit>	Non-stable (dynamic) weight value in unit actually set under display unit.
S␣I	Command understood but currently not executable (balance is currently executing another command, e.g., taring).
S␣+	Balance in overload range.
S␣-	Balance in underload range.

Parameters

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

Comments

- The number of weight values per second can be configured using [UPD ▸ Page 193].
- SIR is overwritten by the commands [S ▸ Page 151], [SI ▸ Page 152], [SR ▸ Page 174], [@ ▸ Page 13] and hardware break and hence cancelled.
- To send weight value in actually displayed unit, see [SIRU ▸ Page 155].
- This command is cancelled by the [@ ▸ Page 13], [S ▸ Page 151], [SI ▸ Page 152], [SIRU ▸ Page 155], [SIU ▸ Page 158], [SNR ▸ Page 170], [SNRU ▸ Page 172], [SR ▸ Page 174] and [SRU ▸ Page 176] commands.

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

UPD – Update rate of SIR and SIRU output on the host interface ▶ Page 193

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.

Responses

S␣S␣<WeightValue>␣<Unit>	Stable weight value in unit actually set under display unit.
S␣D␣<WeightValue>␣<Unit>	Non-stable (dynamic) weight value in unit actually set under display unit.
S␣I	Command understood but currently not executable (balance is currently executing another command, e.g., taring).
S␣+	Balance in overload range.
S␣-	Balance in underload range.

Parameters

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

Comments

- As the [SIR ▸ Page 153] command, but with currently displayed unit.
- The number of weight values per second can be configured using [UPD ▸ Page 193].
- This command is cancelled by the [@ ▸ Page 13], [S ▸ Page 151], [SI ▸ Page 152], [SIRU ▸ Page 155], [SIU ▸ Page 158], [SNR ▸ Page 170], [SNRU ▸ Page 172], [SR ▸ Page 174] and [SRU ▸ Page 176] commands.

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 153
- UPD – Update rate of SIR and SIRU output on the host interface ▸ Page 193

SIUM – Weight value in display unit and MinWeigh information immediately

Description

Use SIUM to immediately send the current weight value, along with the displayed unit and MinWeigh information, from the balance to the connected communication partner via the interface.

Syntax

Command

SIUM	Send the current net weight value with currently displayed unit and MinWeigh Information, irrespective of balance stability.

Responses

S␣<Status>␣<WeightValue>␣<Unit>	Weight value in 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
<Status>	Char	S	Stable, net >= MinWeigh limit
		D	Dynamic, net >= MW limit
		M	Stable, net < MinWeigh limit
		N	Dynamic, net < MW limit
<WeightValue>	Float		Weight value
<Unit>	String		Currently displayed unit

Comments

- As the [SI ▸ Page 152] command, but with currently displayed unit and MinWeigh information.
- If the MinWeigh function is switched off, or is not available on the balance, it corresponds to the command [SIU ▸ Page 158].

Examples

↓	SIUM	Query of the current weight value with currently displayed unit.
↑	S␣D␣␣␣␣123.34␣mg	Dynamic net weight displayed, greater than MinWeigh limit.

↓	SIUM	Query of the current weight value with currently displayed unit.
↑	S␣M␣␣␣␣123.34␣mg	Stable net weight displayed, less than MinWeigh limit.

↓	SIUM	Query of the current weight value with currently displayed unit.
↑	S␣N␣␣␣␣123.34␣mg	Dynamic net weight displayed, less than MinWeigh limit.

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.

Responses

S␣S␣<WeightValue>␣<Unit>	Stable weight value in unit actually set under display unit.
S␣D␣<WeightValue>␣<Unit>	Non-stable (dynamic) weight value in unit actually set under display unit.
S␣I	Command understood but currently not executable (balance is currently executing another command, e.g., taring).
S␣+	Balance in overload range.
S␣-	Balance in underload range.

Parameters

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

Comments

- As the [SI ▸ Page 152] command, but with currently displayed unit.

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.

SIX1 – Current gross, net, tare values

Description

This command is intended to provide complete weighing information for a variety of applications. To provide complete weight information to the terminal or host software, several status flags are provided beside gross, net and tare value.

Syntax

Command

SIX1	Query the weighing information.

Responses

SIX1␣A␣<Sts>␣<MinW>␣<CoZ>␣<Rep>␣<Calc>␣<PosE>␣<StepE>␣<MarkE>␣<Range>␣<TM>␣<G>␣<N>␣<T>␣<Unit>	Current weighing information.
SIX1␣I	The request could not be served because the state of the device did not allow it.

Parameters

Name	Type	Values	Meaning
<Sts>	Char		Status of the weighing, linked to the net value
		S	Stable weight
		D	Dynamic weight (unstable, not accurate)
		+	Overload
		-	Underload
		I	Invalid value
<MinW>	Integer		MinWeigh status
		0	MinWeigh function is inactive
		1	Below MinWeigh limit. Relative accuracy is bad
		2	Above MinWeigh limit. Minimum relative accuracy is guaranteed
<CoZ>	Char		Center of zero status
		Z	+/- ¼ e around gross zero
		N	Outside the limits of +/- ¼ e around gross zero
<Rep>	Char		Repeating indicator
		R	Repeated value (was already sent once or more times)
		N	New weight update (new computed weight value)
<Calc>	Char		Calculation method indicator
		R	Net, tare and gross values are rounded separately
		C	Gross is calculated based on rounded net and rounded tare

Name	Type	Values	Meaning
<PosE>	Integer		Position of the approved digit e relative to base resolution (smallest digit d). Blanked digits (at the end) are counted. This parameter can be used on terminals to set the approval brackets at the correct position
		0	Not approved
		1	Approved, last digit is approved (no brackets)
		2	Approved, second last digit is approved
		3	Approved, third last digit is approved
		4	approved, fourth last digit is approved
		5	Approved, fifth last digit is approved
<StepE>	Integer		Step of the approved digit
		0	Not approved
		1	Step of e is 1
		2	Step of e is 2
		5	Step of e is 5
<MarkE>	Integer		This flag indicates whether the weight value has to be marked as "not approved". A possible indication could be an asterisk
		0	No special indication needed
		1	Special indication (e.g. asterisk) has to be displayed
<Range>	Integer	1 … n	Range/interval number of the net value. Numbering according OIML/NIST range numbering scheme (n is product dependent, maximum 9)
		1	Single range
		1, 2, …, n	Multi range: range is linked to gross value
		1, 2, …, n	Multi interval: range is linked to net value
<TM>	Char		Tare mode (no tare, manual tare, measured tare)
		N	No tare
		M	Measured tare
		P	Preset tare
<G>	String		Gross value
<N>	String		Net value rounded for actual range step
<T>	String		Tare value rounded for actual range step
<Unit>	String		The unit used for this command is the definition host unit The unit can be selected by using the [M21 ▸ Page 89] command.

Examples

↓	SIX1	Query the current information for multi interval (see OIML R76-1 2006), device class II and gross is calculated (G = N + T). 1. Range 0 g to 3510 g, e = 10d = 0.1 g, (e = approved, d = display). 2. Range 3510 g to 7020 g, e = d = 0.1 g. 3. Range 7020 g to 35100 g, e = d = 1 g.
↑	SIX1␣S␣0␣N␣N␣C␣2␣1␣0␣1␣M␣␣␣␣ 1496.33␣␣␣␣621.67␣␣␣␣␣874.66␣g	Reads the parameters from the device (G = 1496.324 g, N = 621.665 g, T = 874.659 g). This example shows an stable weight with a calculated gross value. The tare is measured. The displayed gross value, which is the exact sum of the rounded net and rounded tare, does not always fulfill the rounding rules. This behavior is indicated by the "C" in the flags.
↑	SIX1␣D␣0␣N␣R␣C␣2␣1␣0␣2␣P␣␣␣␣8496.36 ␣␣␣␣␣6621.7␣␣␣␣1874.66␣g	Reads the parameters from the device (G = 8496.324 g, N = 6621.665 g, T = 1874.659 g). This example shows an unstable weight with a calculated gross value. Differently to the previous example, this update was sent already over the interface. This time the tare is preset and the net weight is in range 2. This explains the missing second decimal place in net value. All the same, the gross value has 2 decimal places to be able to display the exact addition of the net and tare values. It can be shown again that the calculated gross value does not need to fulfill any rounding rules regarding the exact gross value.
↑	SIX1␣D␣0␣N␣N␣C␣3␣1␣0␣3␣M␣␣␣12496.66 ␣␣␣␣␣10622␣␣␣␣1874.66␣g	Reads the parameters from the device (G = 12496.324 g, N = 10621.665 g, T = 1874.659 g). Now the net weight is in range 3. Now no decimal place is present at the net value. As above, the calculated gross value does not need to fulfill any rounding rules.
↑	SIX1␣D␣0␣Z␣N␣C␣2␣1␣0␣1␣N␣␣␣␣␣␣␣0.00 ␣␣␣␣␣␣␣0.00␣␣␣␣␣␣␣0.00␣g	Reads the parameters from the device (G = 0.0024 g, N = 0.0024 g, T = 0.0000 g). This example shows the "center of zero" feature indicated by the "Z" in the command. It shows as well that the "center of zero" does not rely on stable values.
↑	SIX1␣S␣0␣N␣N␣C␣2␣1␣0␣1␣M␣␣␣␣1234.27 ␣␣␣␣-888.97␣␣␣␣2123.24␣g	Reads the parameters from the device (G = 1234.264 g, N = -888.971 g, T = 2123.235 g). This example shows how negative values are handled and displayed.

↓	SIX1	Query the current information for multi range (see OIML R76-1 2006), device class III and gross is calculated (G = N + T). 1. Range 0 g to 3000 g, e = d = 1 g, (e = approved, d = display). 2. Range 0 g to 6000 g, e = d = 2 g. 3. Range 0 g to 15100 g, e = d = 5 g.
↑	SIX1␣S␣0␣N␣N␣C␣1␣1␣0␣1␣M␣␣␣␣␣␣␣736 ␣␣␣␣␣␣␣533␣␣␣␣␣␣␣203␣g	Reads the parameters from the device (G = 735.38 g, N = 532.63 g, T = 202.75 g). This example shows an stable weight with a calculated gross value. The tare is measured. The displayed gross value, which is the exact sum of the rounded net and rounded tare, does not always fulfill the rounding rules. This behavior is indicated by the "C" in the flags. Different to the examples above, these have no decimal places and the configuration is multi range.
↑	SIX1␣D␣0␣N␣R␣C␣1␣5␣0␣3␣P␣␣␣␣␣␣7500 ␣␣␣␣␣␣5225␣␣␣␣␣␣2275␣g	Reads the parameters from the device (G = 7496.33 g, N = 5223.62 g, T = 2272.71 g). This weight update was sent before (indicated by "R") and the device is in range 3. This implies that all values have now step 5. Even so, this example demonstrates that the calculated gross value does not always conform the rounding rule. This time the tare was preset.
↑	SIX1␣D␣0␣Z␣N␣C␣1␣1␣0␣1␣N␣␣␣␣␣␣␣␣␣0 ␣␣␣␣␣␣␣␣␣0␣␣␣␣␣␣␣␣␣0␣g	Reads the parameters from the device (G = 0.24 g, N = 0.24 g, T = 0.00 g). This example shows the "center of zero" feature indicated by the "Z" in the command. It shows as well that the "center of zero" does not rely on stable values.
↑	SIX1␣S␣0␣N␣N␣C␣1␣5␣0␣3␣M␣␣␣␣␣␣4040 ␣␣␣␣␣-2405␣␣␣␣␣␣6445␣g	Reads the parameters from the device (G = 4042.53 g, N = -2402.71 g, T = 6445.24 g). This example shows how negative values are handled and displayed.
↑	SIX1␣I	The request could not be served because the state of the device did not allow it.
↑	SIX1␣+	The request could not be served because of overload.

See also

- M21 – Unit ▶ Page 89
- I38 – Type label range definitions ▶ Page 52
- T – Tare ▶ Page 181
- TA – Tare weight value ▶ Page 182

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 169].

Responses

SM0␣A	Command understood and executed successfully.
SM0␣I	Command understood but currently not executable (balance is currently executing another command or dynamic weighing application is not active or parameter is incorrect).

Comments

- This command can only be used with the application "Dynamic weighing". For details on available applications and how the activate them, see [M25 ▸ Page 94] and [M26 ▸ Page 96].
- Can only be executed if no weight is being applied respectively the "Dynamic weighing" window has disappeared.

Example

↓	SM0	Cancel all SMx commands except [SM4 ▸ Page 169].
↑	SM0␣A␣3	Any SMx commands are canceled.

See also

- SM1 – Dynamic weighing: Start immediately and send the result ▸ Page 164
- SM2 – Dynamic weighing: Start after a minimum load is exceeded send result ▸ Page 165
- SM3 – Dynamic weighing: Start after a minimum load is exceeded, send result and repeat ▸ Page 167
- SM4 – Dynamic weighing: Time interval ▸ Page 169

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.
SM1␣I	Command understood but currently not executable (balance is currently executing another command or dynamic weighing application is not active or 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

- This command can only be used with the application "Dynamic weighing". For details on available applications and how the activate them, see [M25 ▸ Page 94] and [M26 ▸ Page 96].
- Can only be executed if no weight is being applied respectively the "Dynamic weighing" window has disappeared.
- 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.

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 or dynamic weighing application is not active or 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

- This command can only be used with the application "Dynamic weighing". For details on available applications and how the activate them, see [M25 ▸ Page 94] and [M26 ▸ Page 96].
- Can only be executed if no weight is being applied respectively the "Dynamic weighing" window has disappeared.
- The single start standby can be cancelled by the [SM0 ▸ Page 163] and [@ ▸ Page 13] commands before start of the weighing.
- The minimum load is defined as 5 g.

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 or dynamic weighing application is not active or 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

- This command can only be used with the application "Dynamic weighing". For details on available applications and how the activate them, see [M25 ▸ Page 94] and [M26 ▸ Page 96].
- Can only be executed if no weight is being applied respectively the "Dynamic weighing" window has disappeared.
- The recurring establishment of the start standby is cancelled by the [SM0 ▸ Page 163], [SM1 ▸ Page 164], [SM2 ▸ Page 165] and [@ ▸ Page 13] commands.
- The minimum load is defined as 5 g.

Example

↓	SM3	Start dynamic weighing when weight drops below and afterwards above the defined minimum load, transfer the result and repeat the process.
↑	SM␣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 set the time interval for a dynamic weighing procedure, or query the current time setting.

Syntax

Commands

SM4	Query of the time interval for the dynamic weighing application.
SM4␣<DynWeighTimeInterval>	Set the time interval for the dynamic weighing application.

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 (e.g. dynamic weighing application is not active or parameter is incorrect).

Parameter

Name	Type	Values	Meaning
<DynWeighTimeInterval>	Integer	0 … 120	Time interval in seconds

Comments

- This command can only be used with the application "Dynamic weighing". For details on available applications and how the activate them, see [M25 ▸ Page 94] and [M26 ▸ Page 96].
- Can only be executed if no weight is being applied respectively the "Dynamic weighing" window has disappeared.

Example

↓	SM4␣14	Set the time interval for the data acquisition of the dynamic weighing to 14 seconds.
↑	SM4␣A	Current time interval is set to 14 seconds.

SNR – Send stable weight value 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

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 set display 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 174] sends also dynamic weight values.
- This command is cancelled by the [@ ▸ Page 13],[S ▸ Page 151], [SI ▸ Page 152], [SIR ▸ Page 153], [SIU ▸ Page 158], [SIRU ▸ Page 155], [SNRU ▸ Page 172], [SR ▸ Page 174] and [SRU ▸ Page 176] commands.

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 set display 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 174] sends also dynamic weight values.
- This command is cancelled by the [@ ▸ Page 13],[S ▸ Page 151], [SI ▸ Page 152], [SIR ▸ Page 153], [SIU ▸ Page 158], [SIRU ▸ Page 155], [SNRU ▸ Page 172], [SR ▸ Page 174] and [SRU ▸ Page 176] commands.

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 170

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

Description

Request the current stable weight value in display 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 display unit, 1st weight change.
S␣D␣<WeightValue>␣<Unit>	Dynamic weight value in unit actually set as display unit.
S␣S␣<WeightValue>␣<Unit>	Next stable weight value in unit actually set as display 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 13],[S ▸ Page 151], [SI ▸ Page 152], [SIR ▸ Page 153], [SIU ▸ Page 158], [SIRU ▸ Page 155], [SNRU ▸ Page 172], [SR ▸ Page 174] and [SRU ▸ Page 176] commands.
- In contrast to SR, [SNR ▸ Page 170] 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.

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 170

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␣+	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 174] command, but with currently displayed unit.
- This command is cancelled by the [@ ▸ Page 13],[S ▸ Page 151], [SI ▸ Page 152], [SIR ▸ Page 153], [SIU ▸ Page 158], [SIRU ▸ Page 155], [SNRU ▸ Page 172], [SR ▸ Page 174] and [SRU ▸ Page 176] commands.
- In contrast to [SR ▸ Page 174], [SNRU ▸ Page 172] 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.

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 and12.34 lb.
↑	S␣D␣␣␣␣␣13.88␣lb	2nd weight value is non-stable and13.88 lb.
↑	S␣S␣␣␣␣␣15.01␣lb	3rd weight value is stable and15.01 lb.

ST – Stable weight value on pressing (Transfer) key

Description

Use ST to send the current stable weight value when the transfer key 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 transfer key is pressed.
ST␣0	Stop sending weight value when print key is pressed.

Responses

ST␣A␣0	Function inactive, no weight value is sent when the transfer key is pressed.
ST␣A␣1	Function active, weight value is sent each time when the transfer key 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).

Parameter

Name	Type	Values	Meaning
<Status>	Boolean		Behavior of the transfer function
		0	Inactive
		1	Active

Comments

- ST␣0 is the factory setting (default value).
- ST function is not active after switching on and after reset command.

Example

↓	ST␣1	Activate ST function.
↑	ST␣A	Command executed.
↑	S␣S␣␣␣␣123.456␣g	When transfer key 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␣+	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 151] command, but with currently displayed unit.

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.

SUM – Stable weight value in display unit and MinWeigh information

Description

Use SUM to send the current stable weight value, along with the currently displayed unit and the MinWeigh information, from the balance to the connected communication partner via the interface.

Syntax

Command

SUM	Send the current stable net weight value with currently displayed unit and MinWeigh Information.

Responses

SUM␣<Status>␣<WeightValue>␣<Unit>	Weight value in 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
<Status>	Char	S	Stable, >= MinWeigh limit
		M	Stable, < MinWeigh limit
<WeightValue>	Float		Weight value
<Unit>	String		Weight unit

Comments

- As the [S ▸ Page 151] command, but with currently displayed unit and MinWeigh information.
- If a weight other than the net weight is displayed, only the "S" index and the stable weight value displayed are output on the interface.
- If the MinWeigh function is switched off or not available on the balance, the corresponding command is [SU ▸ Page 179].

Examples

↓	SUM	Query of the current weight value with currently displayed unit.
↑	S␣M␣␣␣␣123.34␣mg	Stable weight displayed, less than MinWeigh limit.

↓	SUM	Query of the current weight value with currently displayed unit.
↑	S␣S␣␣␣␣123.34␣mg	Stable weight displayed, greater than MinWeigh limit.

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 display 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 183].

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 182
- TAC – Clear tare weight value ▸ Page 183

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 display 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.

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

- T – Tare ▸ Page 181
- TAC – Clear tare weight value ▸ Page 183

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 181
- TI – Tare immediately ▸ Page 184
- TA – Tare weight value ▸ Page 182

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.

Example

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

See also

- T – Tare ▸ Page 181
- TA – Tare weight value ▸ Page 182
- TAC – Clear tare weight value ▸ Page 183

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 29

TST0 – Query/set test function settings

Description

Use TST0 to query the current setting for testing the balance, or to specify the type of testing (internal or external).

Syntax

Commands

TST0	Query of the setting for the test function.
TST0␣<Test>	Set the test configuration of the balance.

Responses

TST0␣A␣<Test>␣<"WeightValue">␣<"Unit">	Current setting for the test function.
TST0␣A	Command understood and executed successfully.
TST0␣I	Command understood but currently not executable (balance is currently executing another command).
TST0␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Test>	Integer	0	Test with built-in weight
		1	Test with external weight
<"WeightValue">	String	10 chars	Weight value in definition unit
<"Unit">	String	Max 9 chars	Weight unit. The unit corresponds to the definition unit

Comments

- With an internal test, no weight value appears.
- For additional information on testing the adjustment, see the Reference Manual of the balance.
- The value of the external weight can be set with [M20 ▸ Page 88].

Example

↓	TST0	Query of the current setting for the test and the value of the external test weight
↑	TST0␣A␣1␣"␣␣␣2000.0␣g"	The current setting corresponds to the test with an external weight. For a test initiated with the [TST2 ▸ Page 189] command, an external weight of 2000.0 g is needed.

See also

- M20 – Test weight ▸ Page 88
- TST1 – Test according to current settings ▸ Page 187
- C0 – Adjustment setting ▸ Page 19
- M20 – Test weight ▸ Page 88

TST1 – Test according to current settings

Description

Use TST1 to start the balance test function using the preset parameter settings.

Syntax

Command

TST1	Start test function in the current setting [TST0 ▸ Page 186], [M20 ▸ Page 88].

First Responses

TST1␣B	The test procedure has been started. Wait for next response, see Comment.
TST1␣A␣<"Deviation">	Test completed, current difference is mention.
TST1␣I	Command understood but currently not executable (balance is currently executing another command). No second response follows.
TST1␣L	Command understood but not executable (incorrect parameter). No second response follows.

Further Responses

TST1␣<"TestWeight">␣<"Unit">	Prompt to unload and load the balance (only with external weight).
TST1␣A␣<"TestWeight">␣<"Unit">	Test procedure completed successfully. Weight value with unit corresponds to the deviation from the specified value displayed after the test. No unit is specified if the test has been performed with the built-in weight.
TST1␣I	The test procedure has been aborted as, e.g., stability was not attained or wrong weights were loaded.

Parameters

Name	Type	Values	Meaning
<"Deviation"	String		Current difference in definition unit
<"TestWeight">	String		Value of the test weight in definition unit
<"Unit">	String		Weight unit. Fixed to definition unit

Comments

- Commands sent to the balance during the test procedure are not processed and responded to in the appropriate manner until the test procedure is at an end.
- Use [@ ▸ Page 13] or [C ▸ Page 18] to abort a running adjustment.
- For additional information on testing the adjustment, see the Reference Manual of the balance.

Example

↓	TST1	Start test function in the current setting.
↑	TST1␣B	The test procedure has been started.
↑	TST1␣"␣␣␣0.00000␣g"	Clear weighing pan.
↑	TST1␣"␣100.00000␣g"	Load 100 g external weight.
↑	TST1␣"␣␣␣0.00000␣g"	Unload weight.
↑	TST1␣A␣"␣␣␣0.00020␣g"	Test completed, current difference is 0.00020 g.

See also

- TST0 – Query/set test function settings ▸ Page 186
- M20 – Test weight ▸ Page 88
- C1 – Start adjustment according to current settings ▸ Page 21

TST2 – Test with external weight

Description

Use TST2 to start the balance test function using external test weights.

Syntax

Command

TST2	Start test function with external weight.

First Responses

TST2␣B	The test procedure has been started. Wait for next response, see Comment.
TST2␣A␣<"Deviation">	Test completed, current difference is mention.
TST2␣I	Command understood but currently not executable (balance is currently executing another command). No second response follows.
TST2␣L	Command understood but not executable (incorrect parameter). No second response follows.

Further Responses

TST2␣<"TestWeight">␣<"Unit">	Prompt to unload and load the balance.
TST2␣A␣<"TestWeight">␣<"Unit">	Test procedure completed successfully. Weight value with unit corresponds to the deviation from the specified value displayed in the top line after the test.
TST2␣I	The test procedure has been aborted as, e.g. stability was not attained or wrong weights were loaded.

Parameters

Name	Type	Values	Meaning
<"Deviation"	String		Current difference in definition unit
<"TestWeight">	String		Value of the test weight in definition unit
<"Unit">	String		Weight unit. Fixed to definition unit

Comments

- Commands sent to the balance during the test procedure are not processed and responded to in the appropriate manner until the test procedure is at an end.
- Use [@ ▸ Page 13] or [C ▸ Page 18] to abort a running adjustment.
- For additional information on testing the adjustment, see the Reference Manual of the balance.
- The value of the external weight can be set with [M20 ▸ Page 88].

Example

↓	TST2	Start test with external weight.
↑	TST2␣B	The test procedure has been started.
↑	TST2␣"␣␣␣0.00␣g"	Prompt to unload the balance.
↑	TST2␣"␣200.00␣g"	Prompt to load the test weight.
↑	TST2␣"␣␣␣0.00␣g"	Prompt to unload the balance.
↑	TST2␣A␣"␣␣␣0.01␣g"	External test completed successfully.

See also

- @ – Cancel ▸ Page 13
- C – Cancel all commands ▸ Page 18
- C2 – Start adjustment with external weight ▸ Page 23
- M20 – Test weight ▸ Page 88
- TST0 – Query/set test function settings ▸ Page 186
- M20 – Test weight ▸ Page 88

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 13] or [C ▸ Page 18] 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).

See also

- @ – Cancel ▸ Page 13
- C – Cancel all commands ▸ Page 18
- C3 – Start adjustment with built-in weight ▸ Page 25

TST4 – Repeatability test

Description

This command initializes the repeatability test with the built-in weight and gets the results of the repeatability test.

Syntax

Command

TST4␣No	Start repeatability test with no cycles.

Response

TST4␣A␣<"SDev"␣"Unit">␣<MaxTemp>␣ <MinTemp>␣<MeanTemp>␣<Hour>␣ <Minute>␣<Second>	Repeatability test completed successfully. Command understood but currently not executable (balance is currently executing another command).
TST4␣I	The test procedure has been aborted as, e.g., stability was not attained or wrong weights were loaded.

Parameters

Name	Type	Values	Meaning
<No>	Integer	5 … 100	Number of repeatability test times
<"SDev">	String	10 char	Standard deviation of tested weighing load and definition unit
<"Unit">	String		Unit of tested weighing load
<MaxTemp>	Float		Maximum temperature during test, in °C
<MinTemp>	Float		Minimum temperature during test, in °C
<MeanTemp>	Float		Average temperature during test, in °C
<Hour>	Integer	0 … 23	Hours of the total time of repeatability test
<Minute>	Integer	0 … 59	Minutes of the total time of repeatability test
<Second>	Integer	0 … 59	Seconds of the total time of repeatability test

Comments

- Use [@ ▸ Page 13] or [C ▸ Page 18] to abort a running adjustment.
- For additional information on testing the adjustment, see the Reference Manual of the balance.

Example

↓	TST4␣5	Executes repeatability test with testing number 5.
↑	TST4␣B␣0	Start repeatability test.
↑	TST4␣B␣1 … TST4␣B␣5	Start of repeatability test cycles.
↑	TST4␣A␣"0.01␣g" 25.3␣23.4␣24.5␣00␣01␣23	Test successfully. The standard deviation is 0.001 g, maximum temperature is 25.3 °C; minimum temperature is 23.4 °C; average temperature is 24.5 °C. Whole test time is 1 minute and 23 seconds.

See also

- @ – Cancel ▸ Page 13
- C – Cancel all commands ▸ Page 18

UPD – Update rate of SIR and SIRU output on the host interface

Description

Use UPD to set the update rate of the host interface or query the current setting.

Syntax

Commands

UPD	Query of the update rate of the host interface.
UPD␣<CurrentUPD>	Set the update rate of the host interface.

Responses

UPD␣A␣<CurrentUPD>	Current setting of the update rate of the host interface.
UPD␣A	Command understood and executed successfully.
UPD␣I	Command understood but currently not executable (balance is currently executing another command).
UPD␣L	Command understood but not executable (incorrect parameter).

Parameter

Name	Type	Values	Meaning
<UpdateRate>	Float	0.1 … 1000	Update rate in values per second 0.1 … 22.9

Comments

- 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 ▸ Page 101].
- The balance can not realize every arbitrary update rate. The specified update rate is therefore rounded to the next realizable update rate. Use UPD without parameter to query the actually configured update rate. The achievable update rate depends on the signal processing and baud rate used. Check the current update rate with the command query UPD. The required minimum baud rate is 220 times the actual update rate

Examples

↓	UPD	Query of the update rate of the host interface.
↑	UPD␣A␣20.2	The update rate of the interface is 20.2 values per second.

↓	UPD␣20	Set the update rate of the host interface to 20 values per second.
↑	UPD␣A	Command executed successfully.
↑	UPD	Query of the exact update rate of the host interface.
↑	UPD␣A␣18.311	The exact update rate is 18.311 values per second.

See also

- SIR – Weight value immediately and repeat ▸ Page 153
- SIRU – Weight value in display unit immediately and repeat ▸ Page 155
- M38 – Selective parameter reset ▸ Page 101

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.
- The tare memory is cleared after zero setting.

Example

↓	Z	Zero.
↑	Z␣A	Zero setting performed.

See also

ZI – Zero immediately ▶ Page 195

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.
- The tare memory is cleared after zero setting.

Example

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

See also

Z – Zero ▸ Page 194

4 What if...?

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

Establishing the communication

Switch the weigh module/balance off / on.

The balance must now send identification string [I4 ▸ Page 37], e.g. `I4␣A␣"0123456789"`.

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

Connection

For RS232 communication, at least three connecting lines are needed:

- Data line from the weigh module/balance (TxD signal).
- Data line to the weigh module/balance (RxD signal).
- Signal ground line (GNDINT).

Make sure that all these connections are in order. Check the connector pin assignment of the connection cables.

Interface parameters

For the transmission to function properly, the settings of the following parameters must match at both the computer and the balance:

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

Check the settings at both devices.

Handshake

For control of the transmission, in part separate connection lines are used (CTS/DTR). If these lines are missing or wrongly connected, the computer or balance can not send or receive data.

Check whether the weigh module/balance is prevented from transmitting by handshake lines (CTS or DTR). Set the parameter "protocol" for the weigh module/balance and the peripheral device to "No Handshake" or "none". The handshake lines now have no influence on the communication.

Characters are not displayed correctly

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

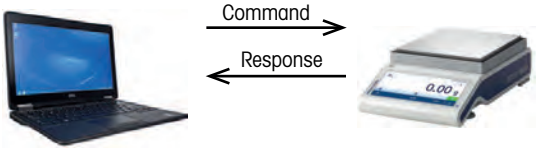
5 Examples

5.1 Formula weighing application

The following simple formula weighing application shows the data interchange between the computer with the formula weighing program and the balance.

A substance (S = 121 g) comprising components C1 = 100 g and C2 = 21 g needs to be weighed into a beaker.

If too much or too little of the first component is weighed in, the target weight of the second component should be adjusted so that the ratio of the two components remains the same. The user is guided by the balance display and acknowledges his actions with the tare key. In the end, the total weight of the substance is displayed.



↓	@	Cancel any running command
↑	I4 A "1114350697"	Balance is reset. The serial number is 1114350697
↓	K 3	Disable key function and report each keystroke
↑	K A	Command understood and executed successfully
↓	D "BEAKER"	Write "BEAKER" into the balance display to prompt loading the beaker
↑	D A	"BEAKER" appears in the balance display
↑	K C 10	Acknowledges that the tare key has been pressed
↓	T	Tare weight on the balance
↑	T S 70.0000 g	The beaker weighs 70.0000 g
↓	D "C1 100 g"	Write "C1 100 g" into the balance display to prompt adding component C1 = 100 g
↑	D A	"C1 100 g" appears in the balance display
↑	K C 10	Acknowledges that the tare key has been pressed
↓	S	Get actual weight of component 1
↑	S S 105.0000 g	Target weight of component 1 missed by 5 g → 5% to much
↓	T	Tare weight on the balance
↑	T S 175.0000 g	Contents of the tare memory, now corresponds to gross weight
↓	D "C2 22.5 g"	Write "C2 22.5 g" into the balance display to prompt adding component C2 = 21 g + 5% = 22.5 g
↑	D A	"C2 22.5 g" appears in the balance display
↑	K C 10	Acknowledges that the tare key has been pressed
↓	TA 70 g	Preset the tare weight of the beaker (70 g)
↑	TA 70.0000 g	The balance acknowledges the tare weight of 70 g
↓	DW	Switch balance display to show the weight again
↑	DW A	127.5000 g appears in the balance display

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