Reference Manual

MT-SICS Interface Commands

for Moisture Analyzers HE

METTLER TOLEDO

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1 Introduction

To enable you to integrate Moisture Analyzers in your system in a simple manner and utilize their capabilities to the full, most Moisture Analyzer functions are also available as appropriate commands via the data interface.

Standardization of the commands

All new METTLER TOLEDO balances and Moisture Analyzers 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 equipment:

MT-SICS level 0:	Basic Command set, e.g. weighing cell.
MT-SICS level 1:	Elementary command set, i.e. weigh modules or balances without integrated applications.
MT-SICS level 2:	Extended command set specific for a family.
MT-SICS level 3:	Application-specific command set, e.g. MT-SICS for Moisture Analyzer.

A particular distinguishing feature of this concept is that the commands combined in MTSICS level 0 and 1 are identical for all balances and instruments. Both the simplest weighing balance and a Moisture Analyzer recognize the commands of MT-SICS level 0.

What do the commands of MT-SICS level 0 and 1 offer?

You can use the commands of MT-SICS level 0 and 1 to perform the following operations via the interface:

- Request weighing results (raw data).
- Zero the balance.
- Identify MT-SICS implementation (version number).
- Identify the Moisture Analyzer (serial number).
- Reset the Moisture Analyzer.
- Control the display.

The commands of MT-SICS level 2 and 3

All additional higher level functions for the Moisture Analyzer are collected in the commands of MT-SICS level 2 and 3. When creating your software application, please note that the commands of MT-SICS level 3 apply to your application and can not be supported by every METTLER TOLEDO balance or instrument.

Version number of the MT-SICS

Each level of the MT-SICS has its own version number which can be requested with the command [I1 ▸ Page 32] from level 0.

You can use the command [I1 ▸ Page 32] via the interface to request the MT-SICS level and MT-SICS versions implemented on your Moisture Analyzer.

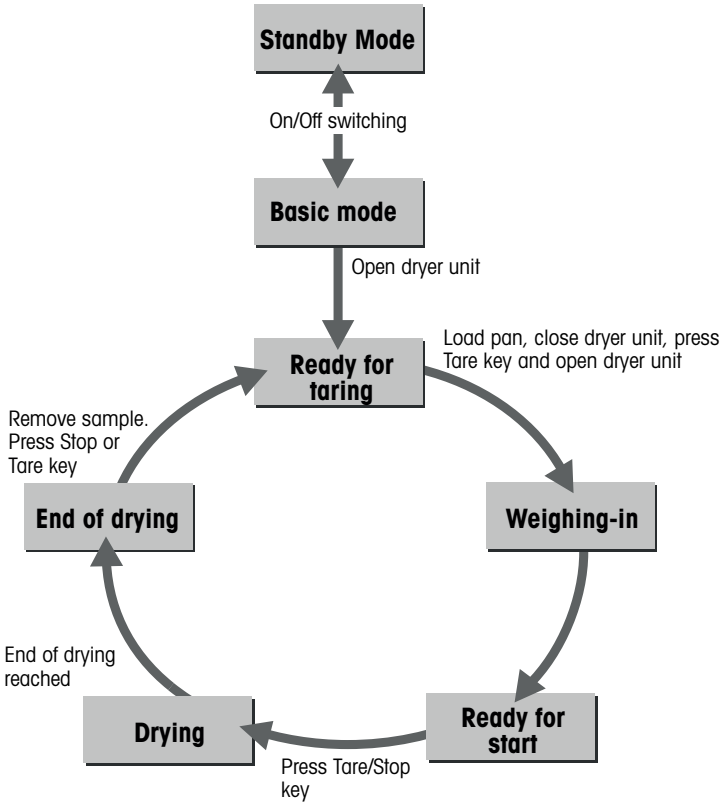
Additional documentation on data interface

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

How the Moisture Analyzer operates

Your Moisture Analyzer is used to determine the moisture content of virtually any substance. The instrument operates according to the thermogravimetric principle: At the start of the measurement the Moisture Analyzer determines the weight of the sample, the sample is then rapidly heated with the built-in halogen dryer unit and the moisture vaporizes. During the drying, the instrument continuously records the weight of the sample and shows the decrease in the moisture. On completion of the drying, the final result of the moisture or dry substance content of your sample is displayed.

During drying the Moisture Analyzer passes through the following instrument statuses:



The following instrument statuses also exist:

- Entry status
- Taring
- Weight adjustment
- Temperature adjustment

You will find detailed information on the functions of the Moisture Analyzer in the Operating Instructions.

1.1 Command formats

Commands sent to the Moisture Analyzer comprise one or more characters of the ASCII character set. Here, the following must be noted:

	Enter commands in uppercase or lowercase letters.
␣	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 instrument.

Example

Command to Moisture Analyzer which writes Hello into the 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.

1.1.1 Response formats

All responses sent by the Moisture Analyzere to the transmitter (e.g. computer) to acknowledge the received command have one of the following formats:

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

1.1.1.1 Format of responses with weight value

Syntax

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

<ID>	␣	<Status>	␣	<WeightValue>	␣	<Unit>	C_R	L_F
1-2 characters		1 character		10 characters		1-5 characters		

Parameters

Name	Type	Values	Meaning
<ID>	String		Response identification, refers to the invoking command
␣	Blank		Space (ASCII 32 dec.)
<Status>	Character	S	**S**table weight value
<WeightValue>	Float		Weighing result; shown as a number with 10 characters (after a blank/space!), including decimal point, and minus sign (–) directly in front of the first digit if the value is negative. The weight value appears right aligned. Preceding zeros are not shown except for the zero to the left of the decimal point.
<Unit>	String		Weight unit as actually set under host unit
C_R	Byte		Carriage return (ASCII 13 dec.)
L_F	Byte		Line feed (ASCII 10 dec.)

Examples

Response with stable weight value of 0.256 g:

↓	S	Request a stable weight value
↑	S␣S␣␣␣␣0.256␣g	

1.1.1.2 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.)

Example

↓	D␣"Hallo"	Write "Hallo" into the display
↑	D␣A	The full text Hallo appears in the display

1.1.2 Error messages

1.1.2.1 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	+	Instrument is in overload range (weighing range exceeded)
		-	Instrument 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

1.1.2.2 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 Instrument has not recognized the received command or the command is not allowed
		ET	Transmission error: The Instrument has received a "faulty" command, e.g. owing to a parity error or interface break
		EL	Logical error: The Instrument 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 update rate to 20 weight values per second:

↓	dat␣30␣10␣2012	DAT accidentally written in lowercase
↑	ES	Syntax error; upd not recognized as a command

1.1.3 Tips for programmers

Overview of command of specific models

This reference manual covers the MT-SICS commands for Moisture Analyzers. As the Moisture Analyzers can differ based on model and software version, not all the MT-SICS level 2 and 3 commands are usable on every model. We therefore recommend using the [I0 ▸ Page 31] command to get an overview of all commands that are supported by a particular balance.

Planning the use of MT-SICS commands

Investigations of various applications have shown that the vast majority of all system solutions can be handled with the commands of MT-SICS level 0 and 1. This means for you: if you restrict yourself to the commands of MT-SICS level 0 and 1, you can expand your system with additional instruments from METTLER TOLEDO without having to change your application programs.

Command and response

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

Cancel

To be able to start from a determined state, when establishing the communication between Moisture Analyzer and system, you should send a cancel command **see** [@ ▸ Page 9] to the Moisture Analyzer. When the instrument is switched on or off, faulty characters can be received or sent.

Parameter values after switching the instrument on/off

The commands of the standard command are saved on the permanent memory of the Moisture Analyzer. This means that all values changed via the interface are saved when the Moisture Analyzer is switched off.

Several commands in succession

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

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

Nevertheless, all commands have to 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!

2 Commands and Responses

@ – Cancel

Description

@ can be used to achieve the same effect as disconnecting and reconnecting the power supply, which empties the volatile memories. The purpose of this command is to initiate a command sequence.

Syntax

Command

@	Resets the instrument to the condition found after switching on, but without a zero setting being performed.

Response

I4␣A␣"<SNR>"	Serial number is emitted; the instrument is ready for operation.

Comments

- All commands awaiting responses are cancelled.
- The cancel command is always executed.
- The emitted serial number corresponds to the serial number of the terminal (if one is present), **see** [I4 ▶ Page 35].

Example

↓	@	Cancel
↑	I4␣A␣"B021002593"	Instrument is "reset", its serial number is B021002593

See also

I4 – Serial number ▶ Page 35

C2 – Start adjustment with external weight

Description

You can use C2 to start an external adjustment procedure.

Syntax

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␣"<Weight>"␣<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.

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 9] to abort a running adjustment.

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

D – Write text to display

Description

Use D to write text to the balance display.

Syntax

Command

D␣"<DisplayText>"	Write text into the balance display.

Parameter

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

Comments

Examples

↓	D␣"HELLO"	Write "HELLO" into the balance display
↑	D␣A	The full text HELLO appears in the balance display

See also

Tips for programmers ▸ Page 8

DW – Show weight

Description

Writes the current weight value to the balance display using the set unit. This command is used to reset the display after using the [D ▸ Page 11] command.

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 11] 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 11

E01 – Query of 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␣"BATTERY␣BACKUP␣LOST-␣CHECK␣DATE␣TIME␣SETTINGS"	The last device error is "BATTERY BACKUP LOST - CHECK DATE TIME SETTINGS".

HA01 – Reset application / escape

Description

Use HA01 to execute a reset / escape.

Syntax

Command

HA01	Reset application / escape.

Response

HA01␣A	Application reset.

Comment

- It terminates all current commands and activities.

HA02 – Set factory settings

Description

Set the factory settings,

Syntax

Command

HA02	Set factory setting of the menu and method parameters.

Response

HA02␣A	Menu and method parameters set to factory setting.

Comment

- This command terminates a drying.

HA03 – Switch keypad on/off

Description

Swich the keypad on or off,

Syntax

Command

HA03␣<On/Off>	Switch keypad on or off.

Responses

HA03␣A	Command executed.
HA03␣L	Command understood but not executable (incorrect parameter e.g. number, value range).

Parameters

Name	Type	Values	Meaning
<On/Off>	Integer	0	Keypad switched off
		1	Keypad switched on (factory setting)

Example

↓	HA03␣0	Switch keypad off
↑	HA03␣A	Command executed

HA05 – Start / stop drying

Description

Start or stop the drying,

Syntax

Command

HA05␣<Status>	Start or stop drying.

Responses

HA05␣A	Command executed.
HA05␣L	Command understood but not executable (incorrect parameter e.g. number, value range).

Parameters

Name	Type	Values	Meaning
<Status>	Integer	0	Stop drying (will be aborted)
		1	Start drying

Comment

- Terminate current drying: with the command [HA01 ▸ Page 14].

Example

↓	HA05␣1	Start the drying
↑	HA05␣A	Command executed

HA06 – Trigger audio signal

Description

Trigger the audio signal.

Syntax

Command

HA06	Trigger audio signal, e.g. at end of drying.

Response

HA06␣A	Command understood and executed successfully.

HA07 – Report instrument status change

Description

Activate or deactivate device status change reporting.

Syntax

Commands

HA07	Report instrument status change.
HA07␣<OnOff>	Set the instrument status change.

Responses

HA07␣A	Command executed.
HA07␣A␣<Status>	Change of status (repeatingly).
HA07␣L	Command understood but not executable (incorrect parameter e.g. number, value range).

Comment

- Also active in standby.

Parameter

Name	Type	Values	Meaning
<OnOff>	Integer	0	Switch off
		1	Switch on
<Status>	Integer	1	Basic mode
		2	Load pan and tare
		3	Weighing-in
		4	Ready for start
		5	Drying
		6	End of drying
		7	Entry
		11	Taring
		12	Weight adjustment or Test
		13	Temperatur adjustment or Test

Example

↓	HA07␣1	Switch instrument status change on
↑	HA07␣A	Command executed

From now on, a response is sent with every status change.

↑	HA07␣A␣Status	

↑	HA07␣A␣Status …	

HA08 – Request printer records

Description

Request the printer records.

Syntax

Commands

HA08	Request printer records.
HA08␣<Status>	Set the printer records.

Responses

HA08␣A	Command executed.
HA08␣L	Command understood but not executable (incorrect parameter e.g. number, value range).

Parameters

Name	Type	Values	Meaning
<Status>	Integer	0	Do not send printer records
		1	Send printer records

Comments

- The printer records use the 8-bit ASCII IBM table 4.
- The print interval is also effective on the host channel if the internal printer is switched off.

Example

↓	HA08␣1	Request the printer records
↑	HA08␣A	Command executed

HA20 – Query of instrument status

Description

Query of current instrument status.

Syntax

Command

HA20	Query instrument status.

Response

HA20␣A␣<Status>	Current instrument status.

Parameters

Name	Type	Values	Meaning
<Status>	Integer	0	Standby
		1	Basic mode
		2	Ready for taring
		3	Weighing-in
		4	Ready for start
		5	Drying
		6	End of drying
		7	Entry
		10	Startup
		11	Taring
		12	Weight adjustment or Test
		13	Temperatur adjustment or Test
		101	Error 1
		102	Error 2
		10n	Error n

Comment

- With the message HA20␣A␣6 instrument status "End of drying", it is not apparent whether drying was ended correctly or terminated. This is possible only via the command [HA25 ▸ Page 23].

Example

↓	HA20	Query of instrument status
↑	HA20␣2	The current instrument status is: Ready for taring

HA21 – Query of heating module position

Description

Query of the heating module position.

Syntax

Command

HA21	Query heating module position.

Response

HA21␣A␣<Status>	Current heating module position.

Parameters

Name	Type	Values	Meaning
<Status>	Integer	0	Heating module closed
		1	Heating modul open

Example

↓	HA21	Query of heating module position
↑	HA21␣1	The current heating module position is: open

HA24 – Drying temperature

Description

Query of current drying temperature.

Syntax

Command

HA24	Query drying temperature.

Response

HA24␣A␣<Temperature>	Current drying temperature in °C

Parameter

Name	Type	Values	Meaning
<Temperature>	Integer		Drying temperature °C

Example

↓	HA24	Query of current drying temperature
↑	HA24␣A␣105	The drying temperature is 105 °C

HA25 – Query of drying weights

Description

Query of drying weight of the last or current drying.

Syntax

Command

HA25	Query drying weights.

Responses

HA25␣A␣<Status>␣<WetWeight>␣<CurrentWeight>␣<Time>	Current drying weights.
HA25␣A	Command understood and executed successfully.
HA25␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Status>	Integer	0	No drying exists
		1	Drying running
		2	Drying ended
		3	Drying terminated
<WetWeight>	Integer	2	Wet weight in grams
<CurrentWeight>	Integer	3	Current weight or dry weight in grams
<Time>	Integer	4	Drying time (seconds)

Comment

- Together with the command [HA07 ▶ Page 17] dryings can be shown in parallel on the host.

Examples

↓	HA25	Query of drying weights
↑	HA25␣A␣2␣12.345␣7.890␣180	Drying has been ended regularly, wet weight 12.345 g, dry weight 7.890 g, drying time 180 seconds

↓	HA25	Query of drying weights
↑	HA25␣A␣0␣0.000␣0.000␣0	No drying exists, e.g. as the battery was discharged

HA26 – Drying data

Description

Query of drying data in configurable display mode.

Syntax

Commands

HA26␣<DisplayMode>	Query drying data.

Responses

HA26␣A␣<Status>␣<UnitID>␣ <WetWeight>␣<CurrentWeight>␣ <Result>␣<Duration>	Current drying data.
HA26␣A	Command understood and executed successfully.
HA26␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Status>	Integer	0	No drying exists
		1	Drying running
		2	Drying ended
		3	Drying terminated
<UnitID>	Integer	0	Currently set display mode
		1	Grams
		2	DC (dry content)
		3	MC (moisture content), (factory setting)
		4	AM (ATRO moisture content)
		5	AD (ATRO dry content)
<WetWeight>	Integer	3	Wet weight in grams
<CurrentWeight>	Integer	4	Current weight or dry weight in grams
<Result>	Integer	5	Actual result in requested display mode
<Duration>	Integer	6	Drying duration in seconds

Comments

- If a drying is inexistent (e.g. after a RAM LOST), the parameters x3..x6 are set to 0.
- If the measuring results exceed the tolerances for ATRO result display (L-999.99 % AM or >999.99 % AD) the selected results in x2 = 4 AM or x2 = 5 AD will automatically be transferred in x2 = 3 MC or x2 = 2 DC respectively.

Examples

↓	HA26␣3	Query of drying data
↑	HA26␣A␣2␣3␣4.762␣3.066␣35.61␣497	Drying has been ended regularly, result requested in % moisture content, wet weight 4.762 g, dry weight 3.066 g, 35.61 % moisture content, drying ended at 497 seconds

↓	HA26␣2	Query of drying data
↑	HA26␣A␣1␣2␣2.672␣2.467␣92.33␣143	Drying is running, result requested in % dry content, wet weight 2.672 g, dry weight 2.467 g, 92.33 % dry content, drying for 143 seconds in progress

HA27 – Drying result

Description

Query of drying result.

Syntax

Commands

HA27␣<UnitID>	Query of drying result.

Responses

HA27␣A␣<Result>␣<UnitID>	Current drying result.
HA27␣A	Command understood and executed successfully.
HA27␣I	Command understood but currently not executable (drying in progress).
HA27␣L	Command understood but not executable (incorrect parameter e.g. number, value range).

Parameters

Name	Type	Values	Meaning
<UnitID>	Integer	0	Currently set display mode
		1	Grams
		2	DC (dry content)
		3	MC (moisture content), (factory setting)
		4	AM (ATRO moisture content)
		5	AD (ATRO dry content)
<Result>	Integer		Drying result (always 7 digit number)

Example

↓	HA27␣3	Query of drying result
↑	HA27␣A␣73.25␣%MC	Drying result 73.25 %MC

HA403 – Query/set of printer

Description

Set/query the printer on or off,

Syntax

Commands

HA403	Query of printer on or off.
HA403␣<On/Off>	Set the printer on or off.

Responses

HA403␣A␣<Status>	Command understood but not executable (incorrect parameter e.g. number, value range).
HA403␣A	Command executed.

Parameters

Name	Type	Values	Meaning
<Status>	Integer	0	Internal printer switched off
		1	Internal printer switched on

Comment

- Setting the menu parameters terminates a drying.

Example

↓	HA403␣0	Switch printer off
↑	HA403␣A	Command executed

HA61 – Method parameters: Unit, switch-off criteria, temperature profile

Description

Method parameters of current measurement regarding unit, switch-off criteria and drying program.

Syntax

Commands

HA61␣1	Current method parameter.
HA61␣2	Method A (only HE73)
HA61␣3	Method B (only HE73)

Responses

HA61␣A␣<Method>␣<UnitID>␣ <SwitchOff>␣<Timer>␣ <Program>␣<Temperature>	Current setting of the method parameters.
HA61␣A	Command understood and executed successfully.
HA61␣I	Command understood but currently not executable (no method defined).
HA61␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Method>	Integer	1	Current method
		2	Method A (only HE73)
		3	Method B (only HE73)
<UnitID>	Integer	1	Grams
		2	DC (dry content)
		3	MC (moisture content), (factory setting)
		4	AM (ATRO moisture content)
		5	AD (ATRO dry content)
<SwitchOff>	Integer	1	Switch off via timer
		2	Switch-off criterion auto (weight loss per time) (factory setting)
		3	Free switch-off criterion
<Timer>	Integer	60 … 7200	Set time in seconds
<Program>	Integer	1	Standard drying (factory setting)
		2	Rapid drying
<Temperature>	Integer	50 … 160	Set temperature in °C (factory setting: 105 °C) for HE53
		50 … 200	Set temperature in °C (factory setting: 105 °C) for HE73

Example

↓	HA61␣1	Query method parameters for method 1
↑	HA61␣A␣1␣1␣300␣1␣160␣0␣0␣0␣0␣0␣0	Method parameters set: current method, display mode grams, switch-off criterion time, timer 300 seconds, standard drying, set temperature 160 °C

HA63 – Query of method parameters

Note

This command is only available for the HE73 Moisture Analyzer.

Description

Query of method parameters regarding display mode, switch-off criteria and drying program.

Syntax

Commands

HA63␣1	Current method parameter.
HA63␣2	Method A
HA63␣3	Method B

Responses

HA63␣A␣<Method>␣<DisplayMode>␣<SwitchOffCriteria>␣<Timer>␣<DryingProgram>␣<DryingTemperature>␣<StartMode>	Current setting of the method parameters.
HA63␣A	Command understood and executed successfully.
HA63␣I	Command understood but currently not executable (no method defined).
HA63␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<Method>	Integer	1	Current method
		2	Method A
		3	Method B
<DisplayMode>	Integer	1	Grams
		2	DC (dry content)
		3	MC (moisture content), (factory setting)
		4	AM (ATRO moisture content)
		5	AD (ATRO dry content)
<SwitchOffCriteria>	Integer	2	Switch off via timer
		9	Free switch-off criterion
		10	Switch-off criterion auto (weight loss per time) (factory setting)
<Timer>	Integer	60 … 7200	Set time in seconds
<DryingProgram>	Integer	1	Standard drying (factory setting)
		2	Rapid drying
<DryingTemperature>	Integer	50 … 200	Set temperature in °C (factory setting: 105 °C)
<StartMode>	Integer	0	Automatic
		1	Manual

Example

↓	HA63␣1	Query method parameters for method 1

↑	HA63␣A␣1␣1␣300␣1␣160␣0␣0␣0␣0␣0␣0	Method parameters set: current method, display mode grams, switch-off criterion time, timer 300 seconds, standard drying, set temperature 160 °C

I0 – Currently available MT-SICS commands

Description

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

All level 0 commands are listed in alphabetical order before all commands of level 1 etc.

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

Example

↓	`I0`	Send list of commands
↑	`I0␣B␣0␣"I0"`	Level 0 command `I0` implemented
↑	`I0␣B...`	…
↑	`I0␣B␣0␣"@"`	Level 0 command [@ ▸ Page 9] (cancel) implemented
↑	`I0␣B␣1␣"D"`	Level 1 command D implemented
↑	`I0␣B...`	…

See also

@ – Cancel ▸ Page 9

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	Application device with MT-SICS level 3
<V0>..<V3>	String		MT-SICS versions of the related level (0 to 3)

Comment

- The command [I14 ▶ Page 38] 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

See also

I14 – Device information ▶ Page 38

I2 – Device data (Type and capacity)

Description

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

Syntax

Command

`I2`	Query of the balance data.

Responses

`I2␣A␣"<Type>␣<Capacity>␣<Unit>"`	Balance type and capacity.
`I2␣I`	Command understood but currently not executable (balance is currently executing another command, e.g. taring) .

Parameters

Name	Type	Values	Meaning
`<Type>`	String		Type of balance or weigh module
`<Capacity>`	String		Capacity of balance or weigh module
`<Unit>`	String		Weight unit

Comments

- With DeltaRange balances, the last decimal place is available only in the fine range.
- The number of characters of "text" depends on the balance type and capacity.

Example

See also

I14 – Device information ▸ Page 38

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>	String		Software (Firmware) version
<TDNR>	String		TDNR = Type Definition Number

Comments

- More detailed information is available with [I14 ▶ Page 38].

Example

↓	I3	Query of the Software version number(s) and type definition number
↑	I3␣A␣"4.10␣10.28.0.493.142"	4.10: Software version number 10.28.0.493.142: Type definition number

See also

I14 – Device information ▶ Page 38

I4 – Serial number

Description

Use `I4` to query the serial number of the balance. In the case of balances, the serial number of the terminal is output.

Syntax

Command

`I4`	Query of the serial number.

Responses

`I4␣A␣"<SNR>"`	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
`<SNR>`	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 unsolicited after switching on and after the cancel command [@ ▸ Page 9].
- More detailed information is available with [I14 ▸ Page 38].

Example

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

See also

- @ – Cancel ▸ Page 9
- I14 – Device information ▸ Page 38

I5 – Software material number

Description

Use `I5` to query the software material number.

Syntax

Command

`I5`	Query of the SW-identification number.

Responses

`I5␣A␣"<SWID>"`	SW-identification number with index.
`I5␣I`	Command understood but currently not executable (balance is currently executing another command, e.g. taring).

Parameter

Name	Type	Values	Meaning
`<SWID>`	String		SW-Identification number with index

Comments

- The SW-Identification number 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 38].

Example

↓	`I5`	Query of the SW-identification number
↑	`I5␣A␣"12121306C"`	12121306C: SW-identification number with index

See also

I14 – Device information ▶ Page 38

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		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␣"He73"	The balance is an HE73

I14 – Device information

Description

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

Syntax

Command

I14␣<No>	Query of the current balance information.

Responses

I14␣A␣<No>␣<Index>␣"<Info>"	Current balance information.
I14␣I	Command understood but currently not executable.
I14␣L	Command understood but not executable (incorrect parameter).

Parameters

Name	Type	Values	Meaning
<No>	Integer	0	Instrument configuration
		1	Instrument description
		2	SW-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␣B␣0␣1␣"Bridge"	Bridge
↑	I14␣B␣0␣2␣"Terminal"	Terminal
↑	I14␣A␣0␣3␣"Option"	Option

↓	I14␣1	Query of the current instrument descriptions
↑	I14␣B␣1␣1␣"X205T"	Bridge is a X205T
↑	I14␣B␣1␣2␣"PAT"	Excellence Plus Terminal
↑	I14␣A␣1␣3␣"RS232␣Option"	RS232 Option

↓	I14␣2	Query of the current SW-identification numbers
↑	I14␣B␣2␣1␣"11670123A"	SW-identification number of the bridge is 11680123A
↑	I14␣B␣2␣2␣"11670456B"	SW-identification number of the terminal is 11680456B
↑	I14␣A␣2␣3␣"11670789B"	SW-identification number of the option is 11680789B

↓	I14␣3	Query of the current software versions
↑	I14␣B␣3␣1␣"4.23"	Version of the bridge software is 4.23
↑	I14␣B␣3␣2␣"4.10"	Version of the terminal software is 4.10
↑	I14␣A␣3␣3␣"1.01"	Version of the RS232 option software is 1.01

↓	I14␣4	Query of the serial numbers
↑	I14␣B␣4␣1␣"0123456789"	Serial number of the bridge
↑	I14␣B␣4␣2␣"1234567890"	Serial number of the terminal
↑	I14␣A␣4␣3␣"2345678901"	Serial number of the RS232 option

↓	I14␣5	Query of the type definition numbers
↑	I14␣B␣5␣1␣"1.2.3.4.5"	type definition number of the bridge
↑	I14␣B␣5␣2␣"1.2.3.4.5"	type definition number of the terminal
↑	I14␣A␣5␣3␣"1.2.3.4.5"	type definition number of the RS232 option

I33 – Get service 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

I51 – Power up time

Description

This command is a read only command that delivers the power up time of the microprocessor. The availability and the response of this command depend on the timing function of the microprocessor. If no timing function is available this command is also not available. If the timing function is not running this command will always respond with the initial values. If the timing function is halted, the response of this command is the last timing information.

Syntax

Command

I51	Query of the power up time.

Responses

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

Parameters

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

Comments

- The power up time is counted up as long as the microprocessor has power. The power up time is zero after a power loss. The power up time is not touched by a restart or reset of the microprocessor. To handle the restart or reset effects, the time information is stored immediately before the restart or reset function is executed.

Example

↓	I51	Request the power up time data
↑	I51␣A␣1456␣17␣3␣37	The power up time is 1456 days 17 hours 3 minutes and 37 seconds

I55 – Query 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		Menu version.

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

M31 – Operating mode after restart

Use M31 to set the operating mode of the device following restart.

Description

Syntax

Commands

M31	Query of the current operating mode following restart.
M31␣<Mode>	Set the operating mode following restart.

Responses

M31␣A␣<Mode>	Current settings of operating mode following restart.
M31␣A	Command understood and executed successfully.
M31␣L	Command understood but not executable (not permitted).

Parameter

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

Comment

- Customer can only use the User- and Diagnose mode. All other settings will give a M31␣L response.

Example

↓	M31	Query of the current operating mode following restart
↑	M31␣A␣0	The current operating mode following restart is: Usermode

M46 – Query/set 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	Interval off
		30	Interval time 30 seconds
		60	Interval time 60 seconds
		120	Interval time 120 seconds
		300	Interval time 300 seconds

Examples

↓	M46	Read the currently set interval time
↑	M46␣A␣60	The current set interval time is 60 seconds

↓	M46␣120	Set the interval time
↑	M46␣A	The interval time has been set to 120 seconds

M90 – Query/set logical channels

Description

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

Syntax

Commands

M90	Query the connection parameters of all available logical channels.
M90␣No	Query settings of a single logical channel.
M90␣No␣LogicalDevice␣Baud␣DataBit␣ Parity␣Stopbit␣DataFlow	Set the settings for a specified serial interface with device index.

Responses

M90␣B␣No␣LogicalDevice␣Baud␣DataBit␣ Parity␣Stopbit␣DataFlow … M90␣A␣No␣LogicalDevice␣Baud␣DataBit␣ Parity␣Stopbit␣DataFlow	Current connection parameters of the first available logical channel. Current connection parameters of the last available logical channel.
M90␣A␣No␣LogicalDevice␣Baud␣DataBit␣ Parity␣Stopbit␣DataFlow	Current connections parameters of a single available logical channel.
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
<No>	Integer	0	RS interface 1
<LogicalDevice>	Integer	0	Printer 24
<Baud>	Integer	0	1200 baud
		1	2400 baud
		2	4800 baud
		3	9600 baud
		4	19200 baud
		5	38400 baud
<DataBit>	Integer	0	7 data bits
		1	8 data bits
<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)

Examples

↓	M90	Query the connection parameters of all available logical channels
↑	M90␣B␣0␣0␣3␣1␣0␣0␣1	RS Interface 1; Printer 24: 9600 bd, 8 bits, no parity, 1 stop bits, software handshake
↑	M90␣B␣0␣0␣1␣0␣1␣1␣1␣0	RS Interface 1; Printer 24: 2400 bd, 7 bit, even parity, 2 stop bits, software handshake

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

M91 – Query/set end of line settings for logical channels

Description

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

Syntax

Commands

M91	Query the end of line settings of all logical channels.
M91␣No	Query of the specific logical channels.
M91␣No␣LogicalDevice␣EOL	Set the settings for a specified serial interface with given device index.

Responses

M91␣B␣No␣LogicalDevice␣EOL … M91␣A␣No␣LogicalDevice␣EOL	Current the end of line setting of the first logical channel. Current the end of line setting of the last logical channel.
M91␣A␣No␣LogicalDevice␣EOL	Current the end of line setting of the specific logical channel.
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
<No>	Integer	0	RS interface 1
<LogicalDevice>	Integer	0	Printer 24
<EOL>	Integer	0	<CR LF> carriage return, line feed
		1	<CR> carriage return
		2	<LF> line feed

Comment

- All parameter settings are dependent on model.

Examples

↓	M91	Query the end of line settings of all logical channels
↑	M91␣B␣0␣0␣0	RS Interface 1; Printer 24: <CR LF>

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

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 35].
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

Comment

- The balance response to [I4 ▸ Page 35] appears unsolicited after switching the balance on.

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 35

S – Stable weight value

Description

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

Syntax

Command

S	Send the current stable net weight value.

Responses

S␣S␣<WeightValue>␣<Unit>	Current stable weight value in unit actually set under host unit.
S␣I	Command understood but currently not executable (balance is currently executing another command, e.g. taring, or timeout as stability was not reached).
S␣L	Command understood but not executable (incorrect parameter).
S␣+	Balance in overload range.
S␣-	Balance in underload range.
S␣S␣<ErrorCode>	Error occurred, **see** Specific Error Messages on Weight Response

Parameters

Name	Type	Values	Meaning
<WeightValue>	Float		Weight value
<Unit>	String		Currently displayed unit
<ErrorCode>	String		**see** Specific Error Messages on Weight Response

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.
- The draft shield closes with this command, when the "Door function" is set on "Automatic". It opens after sending a stable weight.

Example

↓	S	Send a stable weight value
↑	S␣S␣␣␣␣50.00␣g	The current, stable ("S") weight value is 50.00 g

SI – Weight value immediately

Description

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

Syntax

Command

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

Responses

S␣S␣<WeightValue>␣<Unit>	Stable weight value in unit actually set under host unit.
S␣D␣<WeightValue>␣<Unit>	Non-stable (dynamic) weight value in unit actually set under host unit.
S␣I	Command understood but currently not executable (balance is currently executing another command, e.g. taring).
S␣L	Command understood but not executable (incorrect parameter).
S␣+	Balance in overload range.
S␣-	Balance in underload range.
S␣S␣<ErrorCode>	Error occurred, **see** Specific Error Messages on Weight Response

Parameters

Name	Type	Values	Meaning
<WeightValue>	Float		Weight value
<Unit>	String		Currently displayed unit
<ErrorCode>	String		**see** Specific Error Messages on Weight Response

Comments

- The balance response to the command SI with the last internal weight value (stable or dynamic) before receipt of the command SI.
- To send weight value immediately in actually displayed unit, **see** SIU.
- 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␣␣␣␣8.07␣g	The weight value is unstable (dynamic, "D") and is currently 8.07 g

SIR – Weight value immediately and repeat

Description

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

Syntax

Command

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

Responses

S␣S␣<WeightValue>␣<Unit>	Stable weight value in unit actually set under host unit.
S␣D␣<WeightValue>␣<Unit>	Non-stable (dynamic) weight value in unit actually set under host unit.
S␣I	Command understood but currently not executable (balance is currently executing another command, e.g. taring).
S␣L	Command understood but not executable (incorrect parameter).
S␣+	Balance in overload range.
S␣-	Balance in underload range.
S␣S␣<ErrorCode>	Error occurred, **see** Specific Error Messages on Weight Response

Parameters

Name	Type	Values	Meaning
<WeightValue>	Float		Weight value
<Unit>	String		Currently displayed unit
<ErrorCode>	String		**see** Specific Error Messages on Weight Response

Comments

- SIR is overwritten by the commands [S ▸ Page 49], [SI ▸ Page 50], SR, [@ ▸ Page 9] and hardware break and hence cancelled.
- To send weight value in actually displayed unit, **see** SIRU.
- The number of weight values per second can be configured using UPD.
- 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

↓	SIR	Send current weight values at intervals
↑	S␣D␣␣␣␣8.07␣g	The balance sends stable ("S") or unstable ("D") weight values at intervals
↑	S␣D␣␣␣␣8.08␣g	
↑	S␣S␣␣␣␣8.09␣g	
↑	S␣S␣␣␣␣8.09␣g	
↑	S␣D␣␣␣␣8.87␣g	
↑	S␣…	

See also

- S – Stable weight value ▶ Page 49
- SI – Weight value immediately ▶ Page 50
- @ – Cancel ▶ Page 9

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

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

3 What if...?

Tips from actual practice when the communication between the system (e.g. computer) and the Moisture Analyzer does not function.

Establishing the communication

Test whether the unidirectional operation is working.

Switch the Moisture Analyzer off with the "Off" key and then on again with the "On" key.

The Moisture Analyzer must now send identification string [I4 ▸ Page 35], 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 Moisture Analyzer:

- 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 Moisture Analyzer 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 Moisture Analyzer 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.

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- Calibrate and operate your weighing equipment with security
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