sartorius
mechatronics

Syntax Description

Sartorius

SICS Interface

98646-003-43

Contents

1. Intended Use

SICS (Standard Interface Common Set) consists of commands that are used to control Cubis MSA and MSU balances through interfaces.
The command scope covers functions for reading measurement data and triggering weighing commands (e.g., tare), and functions for remote access to the user interface (writing text in displays, activating keys, reading out key functions).
Use a program such as the SartoTerminal from Sartorius to communicate with the balance.

The Following Commands Are Available:

▶ Level 0, Version 2.3x

@ – Reset all SICS commands
I0 – List all available commands
I1 – Send information about the level and its versions
I2 – Query balance model
I3 – Query software version of balance (BAC)
I4 – Query balance serial number
I5 – Query software version of display (APC)
S – Send weight value at stability
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SIR – Send automatic weight values at and without stability
Z – Zero the balance at stability
ZI – Zero the balance without stability

▶ Level 1, Version 2.2x

T – Tare the balance at stability
TI – Tare the balance without stability
D – Write text in display
DW – Delete text from display
K – Key control
TA – Query and allocate tare memory
TAC – Delete tare memory
SR – Send weight value if there is a weight change

▶ Level 2

SU – Send weight value at stability with current weight unit (with motorized draft shield)
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P100 - Send text line to printer
C1 - Execute calibration/adjustment (as set in menu)

▶ Remote Control

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P114 – Overwrite task or user names
P120 – Turn off bar graph in checkweigher
P121 – Turn on bar graph in checkweigher
RM20 – Activate/deactivate user input
RM30 – Assign new function to softkeys
RM32 – Assign new order to softkeys
RM34 - Create a dynamic parameter
RM35 – Immediately change softkey designations
RM36 – Assign/query function for multiple softkey lines
RM37 – Prepare preset softkey designations for display
RM38 – Activate RM36-assigned softkey lines
RM39 – Activate/deactivate RM30-assigned softkey functions
RM44 - Query/set input with barcode scanner
RM48 - Change order of standard keys
RM49 - Activate/deactivate info text
RM51 - Activate/deactivate selection window
RM52 - Define properties for a window with info text
RM53 - Activate/deactivate window with info text
RM54 - Activate/deactivate window with info

▶ Additional Sartorius Commands

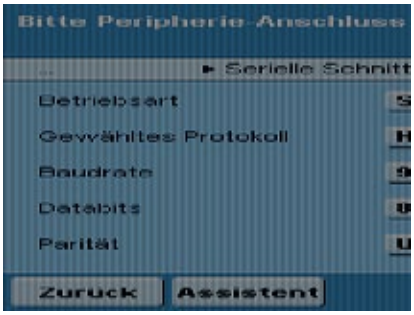
SA – Send weight value at stability and store in Alibi memory (with optional ID)
CMD – Execute application command
PAR – Query parameter
MN36 – Assign a function to several menus
MN38 – Display or hide MN36-assigned menus
TX36 – Assign text to several text pages
TX37 – Overwrite a line on a text page
TX38 – Activate/deactivate TX38-assigned text pages

2. Settings for Cubis MSA and MSU Balances

SICS Commands Can Be Used via the Following Interfaces:

- Serial (RS-232)
- USB
- Bluetooth
- Ethernet

Go to Menu > Device parameters > Configure ports. The interface must be set to "SICS" mode:



Additional Settings:

- Handshake:
  - No handshake
  - Software handshake: XON/OFF
  - Hardware handshake: RTS/CTS
- Baud rate:
  - 300 baud
  - 600 baud
  - 1200 baud
  - 2400 baud
  - 4800 baud
  - 9600 baud
  - 19200 baud
  - 38400 baud
  - 57600 baud
  - 115200 baud
- Data bits:
  - 7 data bits
  - 8 data bits
- Parity:
  - No
  - Odd
  - Even
- Stop bits:
  - 1 stop bit
  - 2 stop bits
- Log data:
  - Switch off
  - Switch on

3. Syntax of SICS Commands

An SICS command consists of an identifier (ID) and optional parameters.

ID [Parameter$_1$] [Parameter$_2$] [Parameter$_3$] ...[Parameter$_n$] <CR><LF>

The identifiers (IDs) consist of ASCII characters and are written only in capital letters. The parameters must be separated with a space. If a text parameter contains at least one space, this parameter must be put in quotation marks. Each command must end with a carriage return and line feed (#0D#0A or <CR><LF>).

Example: Write text in the third line of the display

P112 3 "Place the second component on the balance"<CR><LF>

4. Syntax of SICS Responses

The balance sends a response to each SICS command.
The responses may contain one or more weight values and/or text.

ID Status [Parameter$_1$] [Parameter$_2$] [Parameter$_3$] ... [Parameter$_n$] <CR><LF>

"ID" corresponds to the command identifier that was sent to the balance (exceptions: S instead of SI, SIR, SR, and I4 instead of @)
"Status" provides feedback on how the command was executed:

- A – Command executed; no further response will be sent
- B – Command executed; a further response will be sent
  (example: I0 - List all commands)
- C – Key pressed, function was not executed, and response sent (e.g., K 3)
- D – Weight value without stability
- I – Command could not be executed (e.g., because balance is already tared)
- L – Command has a syntax error and could not be executed
- S – Weight value at stability
- + – Weight value too high
- – – Weight value too low

The return parameters are weight values with corresponding weight units, numerical parameters, or text.

5. Description of SICS Commands

Level 0 Version 2.3x

@ – Reset all SICS commands

The @ command cancels all active SICS commands.
The execution of the following commands is terminated: SR, SIR, D, K, P112, P114, P121, RM20, RM30, RM32, RM34, RM35, RM36, RM37, RM39, MN36, MN38, TX36, TX37, TX38, M07, and M24.
Tare memories are deleted, and the serial number of the balance is sent in the response. If the balance is in standby mode, it is turned on.

Syntax:
Command: @<CR><LF>
Response: I4 A "P_1"<CR><LF>

P_1: Balance serial number

Example:
Command: @
Response: I4 A "23201202"

I0 – List all available commands

Syntax:
Command: I0<CR><LF>
Response: I0 B "P_1" "P_2"<CR><LF>
.
.
.
I0 A "P_1" "P"<CR><LF>
or
I0 I<CR><LF>

B: Further commands are listed
P_1: SICS level to which the command belongs; if command has no level, "4" is sent in the response
P_2: Command identifier (ID)
A: The last command in this list
I: Command cannot currently be executed

Example:
Command: I0
Response: I0 B 0 "I2" Command "I2" from Level 0 available
I0 B 0 "I0"
I0 B 2 "M13"
I0 B 1 "DW"
I0 B 4 "CMD"
I0 B 1 "TAC"
I0 B 0 "@"
I0 B 0 "S"

.
.
I0 A 0 "ZI" This is the last command in the list (status = A)

I1 – Send information about the level and its versions

Syntax:
Command: I1<CR><LF>
Response: I1 A "P_1" "P_2" "P_3" "P_4" "P_5"<CR><LF>

P_1: "01" SICS Level 0 and SICS Level 1 available
P_2: Version from Level 0
P_3: Version from Level 1
P_4 and P_5: Empty, as Level 2 and Level 3 are not available

or

I1 I<CR><LF> I: Command cannot currently be executed

Example:
Command: I1
Response: I1 A "01" "2.30" "2.20" "" ""

I2 – Query balance model

Syntax:
Command: I2<CR><LF>
Response: I2 A "P_1"<CR><LF> P_1: Balance model description

or

I2 I<CR><LF> I: Command cannot currently be executed

Example:
Command: I2
Response: I2 A "MSA3203P"

I3 – Query software version of balance (BAC)

Syntax:
Command: I3<CR><LF>
Response: I3 A "P_1"<CR><LF> P_1: Software version of balance

or

I3 I<CR><LF> I: Command cannot currently be executed

Example:
Command: I3
Response: I3 A "00-39-05"

I4 – Query balance serial number

Syntax:
Command: I4<CR><LF>
Response: I4 A "P_1"<CR><LF> P_1: Balance serial number

or

I4 I<CR><LF> I: Command cannot currently be executed

Example:
Command: I4
Response: I4 A "23201202"

I5 – Query software version of display (APC)

Syntax:
Command: I5<CR><LF>
Response: I5 A "P_1"<CR><LF> — P_1: Software version of display
or
I5 I<CR><LF> — I: Command cannot currently be executed

Example:
Command: I5
Response: I5 A "01-60-04"

S – Send weight value at stability

If the balance has a motorized draft shield and is set to automatic draft shield, the draft shield is shut first and then the weight value is sent at stability. The draft shield may open after this command is executed, depending on the motorized draft shield setting (see command M07).

Syntax:
Command: S<CR><LF>
Response: S S w_1 u_1<CR><LF> — S: Weight value at stability; w_1: Weight value; u_1: Unit of weight
S +<CR><LF> — +: Balance overload
S -<CR><LF> — –: Balance underload
or
S I<CR><LF> — I: Command cannot currently be executed

Example:
Command: S
Response: S S 99.528 g — Current weight value at stability is 99.528 g

SI – Send weight value without stability

Syntax:
Command: SI<CR><LF>
Response: S S w_1 u_1<CR><LF> — S: Weight value at stability
S D w_1 u_1<CR><LF> — D: Weight value without stability; w_1: Weight value; u_1: Unit of weight
S +<CR><LF> — +: Balance overload
S -<CR><LF> — –: Balance underload
or
S I<CR><LF> — I: Command cannot currently be executed

Example:
Command: SI
Response: S S 99.528 g — Current weight value at stability is 99.528 g
S D 362.359 g — Current weight value without stability is 362.359 g

SIR – Send automatic weight values at and without stability

The SIR command is used by the balance to query weight values cyclically.
The frequency for weight value queries is set as part of the task ("Print Settings" menu, with parameter "Interval For Automatic Printout"): once, twice, five times, or ten times per second.
If no task is activated, set this parameter in Menu > Configure device > Configure data output
SIR is terminated with the commands @, S, SI, and SR or by turning the balance off.

Syntax:
Command: SIR<CR><LF>

Response:	S S w_1 u_1<CR><LF>	S: Weight value at stability
	S D w_1 u_1<CR><LF>	D: Weight value without stability
		w_1: Weight value
		u_1: Unit of weight
	S +<CR><LF>	+: Balance overload
	S -<CR><LF>	–: Balance underload
	or	
	S I<CR><LF>	I: Command cannot currently be executed

Example:
Command: SIR
Response: S D 594.821 g
S D 228.896 g
S D 228.885 g
S S 228.890 g

Z – Zero the balance at stability

If the Z command is sent to the balance, the balance waits for stability to be achieved and is then zeroed.

Syntax:
Command: Z<CR><LF>

Response:	Z A<CR><LF>	A: Balance zeroed
	or	
	Z I<CR><LF>	I: Command cannot currently be executed

Example:
Command: Z
Response: Z A Balance zeroed

ZI – Zero the balance without stability

If the ZI command is sent to the balance, the balance is zeroed immediately (even without stability).

Syntax:
Command: ZI<CR><LF>
Response: ZI D<CR><LF> D: Balance zeroed without stability
or
ZI I<CR><LF> I: Command cannot currently be executed

Example:
Command: ZI
Response: ZI D Balance zeroed

Level 1 Version 2.2x

T – Tare the balance at stability

If the T command is sent to the balance, the balance waits for stability to be achieved and is then tared. The tare memory is overwritten with the new tare value. If the current weight value is less than zero, the balance cannot be tared (but can be zeroed). If the "Second tare" application is active, tare memory T1 is overwritten with this command. If the "Second tare" application is not active, the balance tare memory is overwritten with this command. In this case, it is not possible to preset the balance tare memory with an entered (non-weighed) weight value.

Syntax:
Command: T<CR><LF>
Response: T S w_1 u_1<CR><LF> — S: Balance tared at stability; w_1: Weight value; u_1: Unit of weight

or

T I<CR><LF> — I: Command cannot currently be executed

Example:
Command: T
Response: T S 29.817 g — Balance tared, and weight value 29.817 g recorded in the tare memory

TI – Tare the balance even without stability

The balance is tared immediately. The tare memory is overwritten with the new tare value. If the current weight value is less than zero, the balance cannot be tared (but can be zeroed).
If the "Second tare" application is active, tare memory T1 is overwritten with this command.
If the "Second tare" application is not active, the balance tare memory is overwritten with this command.

Syntax:
Command: TI<CR><LF>
Response: TI D w_1 u_1<CR><LF> — D: Balance tared without stability; w_1: Weight value; u_1: Unit of weight

or

TI I<CR><LF> — I: Command cannot currently be executed

Example:
Command: TI
Response: TI D 29.817 g — Balance tared, and weight value 29.817 g recorded in the tare memory

D – Write text in display

Text is written in the working environment; the weight value is not overwritten. If the text is too long and cannot be shown entirely in one line, it is cut off at the end of the line.

Syntax:
Command: D "Text"<CR><LF>

Response:	D A<CR><LF>	A:	Text appears in the working environment
	or		
	D I<CR><LF>	I:	Command cannot currently be executed
	D L<CR><LF>	L:	Syntax error (check if the text is in quotation marks and that there is a space between D and "Text")

Example:
Command: D "Place the third component on the balance"
Response: D A — The text "Place the third component on the balance" appears in the working environment

DW – Delete text from display

Text written in the working environment with the D command is deleted again. The original text — the corresponding task — appears again in the working environment.

Syntax:
Command: DW<CR><LF>

Response:	DW A<CR><LF>	A:	Text in the working environment deleted
	or		
	D I<CR><LF>	I:	Command cannot currently be executed

Example:
Command: DW
Response: DW A — Text deleted, and original text displayed again

K – Key control

The K command can be used to lock the keys and/or query which key was pressed on the balance.
Key control can be reset with commands "K 1," "@," or by turning the balance off and on again.

The return parameters for the keys (keycodes) for Cubis MSU and MSA balances are:

- Softkey 5 = 1
- Softkey 4 = 2
- Softkey 3 = 3
- Softkey 2 = 4
- Softkey 1 = 5
- TASK = 6
- USER = 7
- TARE = 8
- PRINT = 9

Syntax:

Command:	K 1<CR><LF>	1:	Balance keys and softkeys released; keycodes not sent in the response. – Press the keys and softkeys to execute the corresponding function (normal mode).

	K 2<CR><LF>	2: Balance keys and softkeys locked; keycodes not sent in the response. – Pressing the keys and softkeys does not execute the corresponding function and does not send a response about which key or softkey was pressed. Softkeys are not displayed.
	K 3<CR><LF>	3: Balance keys and softkeys locked; keycodes sent in the response. – Pressing the keys and softkeys does not execute the corresponding function, but does send a response about which key or softkey was pressed. The softkeys are overwritten in the balance display field with "EXTERNAL 1" to "EXTERNAL 5."
	K 4<CR><LF>	4: Balance keys and softkeys released; keycodes sent in response. – Pressing the keys and softkeys executes the corresponding function and sends a response about which key or softkey was pressed.
Response:	K A<CR><LF>	Command executed
	or	
	K I<CR><LF>	I: Command cannot currently be executed
	K L<CR><LF>	L: Syntax error — command cannot be executed

Example 1:

Command:	K 3	
Response:	K A	Command executed
	K C 8	User pressed key 8 (TARE)
	K C 6	User pressed key 6 (TASK)

Example 2:

Command:	K 4	
Response:	K A	Command executed
	K A 9	User pressed key 9 (PRINT); printout executed
	K A 2	User pressed key 2 (softkey 2); function executed

TA – Query and allocate tare memory

The TA command is used to read out the content of the tare memory. If a weight value is appended to the TA command as w_1 and the "Second tare" application is active, tare memory T1 is overwritten with this value. Tare memory T on the balance can only be read out (if the "Second tare" application is not active), not overwritten.
The optional parameter u_2 indicates the unit of weight. If this parameter is not added, the weight unit set on the balance is used.

Syntax:

Command:	TA w_1 u_1<CR><LF>	w_1: Weight value (optional) u_1: Weight unit (optional)
Response:	TA A w_1 u_1<CR><LF>	w_1: Weight value u_1: Unit of weight
	or	
	TA I<CR><LF>	I: Command cannot currently be executed

Example 1:

Command:	TA	
Response:	TA A 129.336 g	The tare memory records a weight value of 129.336 g

Example 2:

Command:	TA 130.56 g	"Second tare" application is active; tare memory T1 will record value 130.56 g
Response:	TA A 130.560 g	Weight value 130.56 g is recorded in the tare memory

TAC – Delete tare memory

If the "Second tare" application is active, tare memory T1 is deleted, otherwise tare memory T is deleted.

Syntax:

Command:	TAC<CR><LF>	
Response:	TAC A<CR><LF>	A: Tare memory deleted
or		
	TAC I<CR><LF>	I: Command cannot currently be executed

Example:

Command:	TAC	
Response:	TAC A	If the "Second tare" application is active, tare memory T1 is deleted, otherwise tare memory T is deleted

SR – Send weight value if there is a weight change

The SR command is used to monitor weight values and check that they are in a certain range. If the current weight value (at or without stability) changes by the preset deviation (w_1) at least, a weight value is sent in the response (at or without stability). The new weight value is taken as the target value for the next measurements. If no weight value is specified (SR without w_1), 12.5% of the current weight value is taken as the monitoring limit instead. The weight unit is not currently used; instead the specified weight value is taken to be in the current weight unit used by the balance.

Syntax:

Command:	SR w_1<CR><LF>	w_1: Deviation
Response:	S S w_2 u_1<CR><LF>	w_2: Current weight value is taken as target value. The monitoring limits [weight value – deviation, weight value + deviation] are calculated
		u_1: Unit of weight
	S +<CR><LF>	+: Balance overload
	S -<CR><LF>	–: Balance underload
	or	
	S I<CR><LF>	I: Command cannot currently be executed

Example 1:

Command:	SR 100.00	
Response:	S S 199.528 g	The target weight value is 199.528 g. As long as the weight values remain within the range of ±100.00 g from the target value [99.528 g, 299.528 g], no further weight value will be sent in the response
	S D 362.359 g	The current weight value without stability is 362.359 g. The range limit was therefore exceeded and the weight value was sent in the response
	S S 362.358 g	Once stability is reached again, the corresponding weight value is sent in the response and taken as the target value for new measurements. The range limits are now set at 362.358 g ±100.00 g [262.358 g, 462.358 g]

Example 2:

Command:	SR	
Response:	S S 199.528 g	The target weight value is 199.528 g. As long as the weight values remain within the range of ±12.5% from the target value [174.587 g, 224.469 g], no further weight value will be sent in the response
	S D 232.359 g	The current weight value without stability is 232.359 g. The range limit was therefore exceeded and the weight value was sent in the response
	S S 234.247 g	Once stability is reached again, the corresponding weight value is sent in the response and taken as the target value for new measurements. The range limits are now set at 232.247 g ±12.5% [204.966 g, 263.528 g]

Level 2

SU – Send weight value at stability with current weight unit (with motorized draft shield)

If the balance has a motorized draft shield and is set to automatic draft shield, the draft shield is shut first and then the weight value is sent at stability. The draft shield may open after this command is executed, depending on the motorized draft shield setting (see command M07).

Syntax:

Command:	SU<CR><LF>		
Response:	S S w_1 u_1<CR><LF>	S:	Weight value at stability
		w_1:	Weight value
		u_1:	Unit of weight
	S +<CR><LF>	+:	Balance overload
	S -<CR><LF>	-:	Balance underload
or			
	S I<CR><LF>	I:	Command cannot currently be executed

Example:

Command:	S		
Response:	S S	28 pcs	Current value at stability is 28 pcs

WS – Query door position of motorized draft shield; open or close door

Command WS queries and sets the position of the left, right, and upper doors of the draft shield.
This command only functions if the balance has a motorized draft shield and is set to automatic draft shield.

Syntax:

Command:	WS n_1<CR><LF>	n_1:	0 to 11: Door combination (optional parameter) 0 = Close all doors 1 = Open right door 2 = Open left door 3 = Open top door 4 = Open left and right doors 5 = Open left and upper doors 6 = Open right and upper doors 7 = Open all doors 10 = Left draft shield button 11 = Right draft shield button
Response:	WS n_2<CR><LF>	n_2:	0 to 9: Door position 0 = All doors closed 1 = Right door open 2 = Left door open 3 = Upper door open 4 = Left and right doors open 5 = Left and upper doors open 6 = Right and upper doors open 7 = All doors open 8 = An error has occurred 9 = Doors partially open
	or		
	WS A<CR><LF>	A:	Command executed

	WS I<CR><LF>	I: Command cannot currently be executed

Example:

Command:	WS 2<CR><LF>	Open right draft shield door
Response:	WS A<CR><LF>	Right draft shield door opened
Command:	WS<CR><LF>	Query draft shield door position
Response:	WS 2<CR><LF>	Right draft shield door open

PWR – Turn balance on/off (standby)

This command puts the balance in standby mode or turns it back on.

Syntax:

Command:	PWR 1<CR><LF>	1: Turn balance on
	PWR 0<CR><LF>	0: Turn balance off (standby)
Response:	PWR A<CR><LF>	A: Command executed
	or	
	PWR I<CR><LF>	I: Command cannot currently be executed

Example:

Command:	PWR 1	
Response:	PWR A	Balance is on again

I10 – Query/set the balance ID

Command I10 queries and sets the balance ID.
This ID is retained even after the balance is switched off or after command @ has been executed.

Syntax:

Command:	I10 "$Text_1$"<CR><LF>	$Text_1$: Text for ID (optional)
Response:	I10 A<CR><LF>	A: Command executed; ID saved
	or	
	I10 A "$Text_1$"<CR><LF>	A: Command executed; ID queried
	I10 I<CR><LF>	I: Command cannot currently be executed
	I10 L<CR><LF>	L: Syntax error; command cannot be executed

Example 1:

Command:	I10 "My new ID"<CR><LF>	
Response:	I10 A<CR><LF>	"My new ID" saved to balance

Example 2:

Command:	I10<CR><LF>	Query ID
Response:	I10 A "My new ID"<CR><LF>	ID displayed

I11 – Query balance type

This command is used to query the balance type.

Syntax:		
Command:	I11<CR><LF>	
Response:	I11 A "MSA623S"<CR><LF>	A: Command executed; balance type queried
	I11 I<CR><LF>	I: Command cannot currently be executed
	I11 L<CR><LF>	L: Syntax error; command cannot be executed

I14 – Query balance components

This command is used to query detailed information about balance components (weighing platform, display, optional data output, and draft shield).

Syntax:		
Command:	I14 n_1<CR><LF>	n_1: Desired information 0 = Components 1 = Description of components 2 = Software ID number 3 = Software version 4 = Serial number 5 = IP number
Response:	I14 A n1 Index Info<CR><LF>	A: Command executed; information queried
	I14 I<CR><LF>	I: Command cannot currently be executed
	I141 L<CR><LF>	L: Syntax error; command cannot be executed
Example 1:		
Command:	I14 0<CR><LF>	
Response:	I14 B 1 "Display"<CR><LF>	
	I14 B 3 "Optional"<CR><LF>	
	I14 A 4 "Draft shield"<CR><LF>	
Example 2:		
Command:	I14 1<CR><LF>	
Response:	I14 B 1 1 "MSA"<CR><LF>	
	I14 A 1 2 "623S"<CR><LF>	
Example 3:		
Command:	I14 2<CR><LF>	
Response:	I14 B 2 1 "1C26 4482"<CR><LF>	
	I14 A 2 2 "00-39-74"<CR><LF>	
Example 4:		
Command:	I14 3<CR><LF>	
Response:	I14 B 3 1 "01-60-06"<CR><LF>	
	I14 B 3 2 "00-39-74"<CR><LF>	
	I14 A 3 3 "04-10-03 DO_DB25"<CR><LF>	

Example 5:
Command: I14 4<CR><LF>
Response: I14 B 4 1 "327925844"<CR><LF>
I14 A 4 2 "12345678"<CR><LF>
Example 5:
Command: I14 5<CR><LF>
Response: I14 A 5 1 "175.16.253.177"<CR><LF>

M01 - Query/set application filter

This command is used to query or set the application filter.

Syntax:

Command:	M01 n_1<CR><LF>	n_1: Application filter (optional) 0 = Final readout 1 = Filling mode 2 = Without filtering 3 = Low filtering
Response:	M01 A<CR><LF>	A: Command executed; value saved
	or	
	M01 A n_1<CR><LF>	A: Command executed; application filter queried
	M01 I<CR><LF>	I: Command cannot currently be executed
	M01 L<CR><LF>	L: Syntax error; command cannot be executed

Example 1:

Command:	M01 2<CR><LF>	Set application filter to "Low filtering"
Response:	M01 A<CR><LF>	Application filter parameter set

Example 2:

Command:	M01<CR><LF>	Query application filter
Response:	M01 A 2<CR><LF>	Value of application filter parameter displayed

M02 - Query/set filter adjustment

This command is used to query and adjust the filter for standard weighing on the balance. This setting is retained even after the balance is switched off or after command @ has been executed.

Syntax:

Command:	M02 n_1<CR><LF>	n_1: Filter adjustment (optional) 0 = Very stable 1 or 2 = Stable 3 = Unstable 4 = Very unstable
Response:	M02 A<CR><LF>	A: Command executed; value saved

	or	
	M02 A n_1<CR><LF>	A: Command executed; filter adjustment queried
	M02 I<CR><LF>	I: Command cannot currently be executed
	M02 L<CR><LF>	L: Syntax error; command cannot be executed

Example 1:

Command:	M02 3<CR><LF>	Set filter adjustment to “Unstable”
Response:	M02 A<CR><LF>	Application filter parameter set

Example 2:

Command:	M02<CR><LF>	Query filter adjustment
Response:	M02 A 3<CR><LF>	Value of filter adjustment parameter displayed

M03 - Query/set automatic zeroing

This command is used to query and adjust automatic zeroing for standard weighing on the balance. This setting is retained even after the balance is switched off or after command @ has been executed.

Syntax:

Command:	M03 n_1<CR><LF>	n_1: Automatic zeroing (optional) 0 = Deactivate 1 = Activate
Response:	M03 A<CR><LF>	A: Command executed; value saved
	or	
	M03 A n_1<CR><LF>	A: Command executed; value queried
	M03 I<CR><LF>	I: Command cannot currently be executed
	M03 L<CR><LF>	L: Syntax error; command cannot be executed

Example 1:

Command:	M03 1<CR><LF>	Activate automatic zeroing
Response:	M03 A<CR><LF>	Automatic zeroing parameter set

Example 2:

Command:	M03<CR><LF>	Query automatic zeroing
Response:	M03 A 1<CR><LF>	Parameter value displayed

M04 - Query/set I/O inputs

This command is used to allocate I/O inputs with specific functions. When parameters n_1 and n_2 are omitted from the command, the assignment is queried. To use the I/O inputs, first configure the appropriate settings in Menu > Configure devices > Configure interfaces > Control inputs/outputs > Peripheral port or Available ports (for example, choose "Control inputs" to allocate all five inputs for a port). This setting is retained even after the balance is switched off or after command @ has been executed.

Syntax:		
Command:	M04 n_1 n_2<CR><LF>	n_1: Input 0, 1 = Not integrated in Cubis 2 = Standard data input 1 3 = Standard data input 2 4 = Standard data input 3 5 = Standard data input 4 6 = Standard data input 5 7 = Optional data input 1 8 = Optional data input 2 9 = Optional data input 3 10 = Optional data input 4 11 = Optional data input 5 n_2: Function 0 = Off 1,3 = Right door of draft shield 2 = Left door of draft shield 4 = Zero 5 = Tare 6 = Print 27 = Ionizer 31 = Calibrate/adjust
Response:	M04<CR><LF>	A: Command executed; setting saved
	or	
	M04 A n_1 n_2<CR><LF>	A: Command executed; setting queried
	M04 I<CR><LF>	I: Command cannot currently be executed
	M04 L<CR><LF>	L: Syntax error; command cannot be executed
Example 1:		
Command:	M04<CR><LF>	Query settings
Response:	M04 B 0 0<CR><LF>	Settings displayed
	M04 B 1 0<CR><LF>	
	M04 B 2 2<CR><LF>	
	M04 B 3 6<CR><LF>	
	M04 B 4 0<CR><LF>	
	M04 B 5 0<CR><LF>	
	...	
	M04 A 11 0<CR><LF>	
Example 2:		
Command:	M04 2 5<CR><LF>	Set first standard data input to "Tare"
Response:	M04 A<CR><LF>	Parameter value saved on the balance

M07 – Query/activate/deactivate automatic draft shield

If the balance has a motorized draft shield, this command can be used to query the automatic draft shield settings. The motorized draft shield can be activated or deactivated.
Command @ is used to disable this command.

Syntax:

Command:	M07 n_1<CR><LF>	n_1: Automatic draft shield function (optional parameter) 0 = Deactivated 1 = Activated (close -> function -> open) 2 = Activated (close -> execute function)
Response:	M07 n_1<CR><LF>	
or		
	M07 A<CR><LF>	A: Command executed
	M07 I<CR><LF>	I: Command cannot currently be executed

Example 1:

Command:	M07<CR><LF>	
Response:	M07 1<CR><LF>	Automatic draft shield switched on with function "Close –> function –> open"

Example 2:

Command:	M07 0<CR><LF>	Deactivate automatic draft shield
Response:	M07 A<CR><LF>	Command executed

M12 – Acoustic signal (beep)

This command triggers an acoustic signal.

Syntax:

Command:	M12 n_1<CR><LF>	n_1: Tone pitch 0 = Medium 1 = High 2 = Low
Response:	M12 A<CR><LF>	A: Command executed
	or	
	M12 I<CR><LF>	I: Command cannot currently be executed
	M12 L<CR><LF>	L: Syntax error; command cannot be executed

Example 1:

Command:	M12 0<CR><LF>	Trigger acoustic signal
Response:	M12 A<CR><LF>	Acoustic signal triggered

M13 – Activate/deactivate touchscreen softkeys

Command M13 locks or releases the touchscreen softkeys.

Syntax:

Command:	M13 1<CR><LF>	1: Softkeys released
	M13 0<CR><LF>	0: Softkeys locked
Response:	M13 A<CR><LF>	A: Command executed
	or	
	M13 I<CR><LF>	I: Command cannot currently be executed

Example:

Command:	M13 0	
Response:	M13 A	Touchscreen softkeys locked

M21 - Query/set unit of weight

This command sets or queries the current unit of weight.

Syntax:

Command:	M21<CR><LF>	Query unit of weight
Command:	M21 n_1 n_2<CR><LF>	n_1: Display unit 0,1,2 = Display (does not matter which of the three numbers is chosen) n_2: Unit of weight 0 = Gram g 1 = Kilogram kg 2 = Not assigned 3 = Milligram mg 4 = Microgram µg 5 = Carat ct 6 = Not assigned 7 = Pound lb 8 = Ounce oz 9 = Troy ounce ozt 10 = Grain GN 11 = Pennyweight dwt 12 = Momme mom 13 = Mesghal msg 14 = Hong Kong tael tlh 15 = Singapore tael tls 16 = Taiwanese tael tlt 17 = Not assigned 18 = Tola tola 19 = Baht baht 25 = No unit -- 26 = Piece pcs 27 = Percent % 28 = User-defined unit 1 free1 29 = User-defined unit 2 free2

Response:	M21 A<CR><LF>	A: Command executed
	or	
	M21 I<CR><LF>	I: Command cannot currently be executed
	M21 L<CR><LF>	L: Syntax error; command cannot be executed
Example 1:		
Command:	M21 1 3<CR><LF>	Set current unit to mg
Response:	M21 A<CR><LF>	Command executed
Example 2:		
Command:	M21<CR><LF>	Query current unit
Response:	M21 B 0 3<CR><LF>	Current unit is milligram
	M21 B 1 3<CR><LF>	
	M21 B 2 3<CR><LF>	

M24 - Query/activate/deactivate "Print" key; print stable or unstable weight values

This command queries whether the "Print" key is deactivated and changes this setting if desired.
This command can also be used to specify whether weight values should be printed immediately or only once the balance has completed its work.
If the "Print" key is deactivated, this setting is only valid for the SICS interface.
Command @ is used to disable this command.

Syntax:

Command:	M24 n_1<CR><LF>	n_1: "Print" key function 0 = Print stable weight value 1 = Print weight value immediately, even if unstable 2 = Deactivate "Print" key
Response:	M24 n_1<CR><LF>	
	or	
	M24 A<CR><LF>	A: Command executed
	M24 I<CR><LF>	I: Command cannot currently be executed

Example 1:		
Command:	M24 <CR><LF>	
Response:	M24 2<CR><LF>	"Print" key deactivated
Example 2:		
Command:	M24 0<CR><LF>	Activate "Print" key and print only stable weight values
Response:	M24 A<CR><LF>	Command executed

M39 – Query/activate bar graph display in working environment

This command can only be executed with parameter 0, because Cubis cannot display bar graphs in the working environment. The bar graph is displayed in the weighing window in Cubis.

Syntax:		
Command:	M39 n_1<CR><LF>	n_1: Type of bar graph in working environment 0 = No bar graph 1,2,3 = Not implemented (response: M39 I)
Response:	M39 A<CR><LF>	A: Command executed
	or	
	M39 I<CR><LF>	I: Command cannot currently be executed
	M39 L<CR><LF>	L: Syntax error; command cannot be executed
Example:		
Command:	M39<CR><LF>	Query bar graph display in working environment
Response:	M39 A 0<CR><LF>	No bar graph displayed in working environment

P100 – Send text line to printer

This command is used to send a text line to the printer and then print it out. The printer must be configured, connected, and switched on. The text line can contain 20 characters.

Syntax:		
Command:	P100 "$Text_1$"<CR><LF>	$Text_1$: Text to be printed (max. 20 characters)
Response:	P100 A<CR><LF>	A: Command executed
	or	
	P100 I<CR><LF>	I: Command cannot currently be executed
	P100 L<CR><LF>	L: Syntax error; command cannot be executed
Example 1:		
Command:	P100 "Batch No. 8125"<CR><LF>	
Response:	P100 A<CR><LF>	Text sent to printer

C1 – Execute calibration/adjustment (as set in menu)

Command C1 is used to trigger calibration and adjustment via the interface. The calibration/adjustment key must be set to "Fixed function" in Menu > Configure calibration/adjustment > Define calibration/adjustment functions (so that calibration and adjustment take place in one step without interruption). Set the "Fixed calibration/adjustment function" to the desired function in the same menu (for example, "Internal calibration/adjustment" or "External calibration/adjustment with standard weight"). The balance must be unloaded before command C1 is executed. Command @ can be used to cancel this command while it is being executed.

Syntax:

Command:	C1<CR><LF>	
Response:	C1 B<CR><LF>	B: Command started
	or	
	C1 " 0.00 g"<CR><LF>	Prompt to unload the balance
	C1 " 500.00 g"<CR><LF>	Prompt to load the balance
	C1 A<CR><LF>	A: Command executed
	C1 I<CR><LF>	I: Command cannot currently be executed
	C1 L<CR><LF>	L: Syntax error; command cannot be executed

Example 1 ("Internal calibration/adjustment" has been set in the menu):

Command:	C1<CR><LF>	
Responses:	C1 B<CR><LF>	Calibration/adjustment started
	C1 A<CR><LF>	Calibration/adjustment complete

Example 2 ("External calibration/adjustment with standard weight" has been set in the menu):

Command:	C1<CR><LF>	
Responses:	C1 B<CR><LF>	Calibration/adjustment started
	C1 " 0.00 g"<CR><LF>	Prompt to unload the balance
	C1 " 500.00 g"<CR><LF>	Prompt to load the balance with 500 g
	C1 A<CR><LF>	Calibration/adjustment complete

Remote Control

P112 – Write text in selected line in display

A specific text is written in the selected line in the display. The number of lines is currently unlimited (recommendation: use max. 20 lines). If the text has more than 50 characters, it will be cut off at the end of the line. The "" parameter is used to write an empty line in the display and thus hide any existing text (from the active application).

Syntax:

Command:	P112 n "Text"<CR><LF>	n: Line number Text: The text to appear in the display
Response:	P112 A<CR><LF>	A: Command executed
	or	
	P112 I<CR><LF>	I: Command cannot currently be executed

Example 1:

Command:	P112 3 "Tare the balance."
Response:	P112 A Text written in the 3rd line of the display

Example 2:
Command: P112 5 “”
Response: P112 A — Text in the 5th line is hidden in the active application, as it is covered by an empty line

P113 – Delete text from selected line in display

The P113 command deletes any text from the display that was previously written in with the P112 command. If text in the active application was hidden with the P112 command, it now reappears.

Syntax:
Command: P113 n<CR><LF> — n: Line number (“1” to “20”) from which text is to be deleted. Line number “0” deletes the entire display in the working environment.
Response: P113 A<CR><LF> — A: Command executed
or
P113 I<CR><LF> — I: Command cannot currently be executed
Example:
Command: P113 3
Response: P113 A — Text from 3rd line deleted

P114 – Overwrite task or user names

Use this command to overwrite task names or user names in the display. “<SPACE>” overwrites the entire name, and “” displays the original name again.

Syntax:
Command: P114 1 “Text”<CR><LF> — 1: Change task name
P114 2 “Text”<CR><LF> — 2: Change user name
Text: New task or user name
Response: P114 A<CR><LF> — A: Command executed
or
P114 I<CR><LF> — I: Command cannot currently be executed
Example 1:
Command: P114 1 “Counting Art. 2531”
Response: P114 A — Name of the current task overwritten with “Counting Art. 2531”

Example 2:
Command: P114 1 “”
Response: P114 A — Original name displayed again

P120 – Turn off bar graph in checkweigher

If the “Checkweighing” application is active, this command turns off the bar graph so that the checkweighing limits can be changed with command 121.

Syntax:
Command: P120<CR><LF>
Response: P120 A<CR><LF> — A: Command executed
or
P120 I<CR><LF> — I: Command cannot currently be executed

P121 – Turn on bar graph in checkweigher

If the "Checkweighing" application is active, this command can change the SetP, max., and min. checkweighing limits and turn on the bar graph. The checkweighing limits are used in the unit set on the balance.

Syntax:
Command: P121 SetP Max Min<CR><LF>

		SetP: Target value
		Max: Maximum deviation
		Min: Minimum deviation
Response:	P121 A<CR><LF>	A: Command executed
	or	
	P121 I<CR><LF>	I: Command cannot currently be executed

Example:
Command: P121 123.44 g 7.37 g 6.43 g

Response: P121 A — Limits for target value = 123.44, maximum = 123.44 + 7.37 = 130.81, and minimum = 123.44 – 6.43 = 117.01 set, and bar graph displayed again

RM20 – Activate/deactivate user input

This command opens an edit box in the balance display so that the user can input data.

Syntax:
Command: RM20 n "$Text_1$" "$Text_2$" "$Text_3$"<CR><LF>

		n = 1: Floating-point numbers (real)
		n = 2: Floating-point numbers (real)
		n = 8: Alphanumeric input field
		n = 13: Delete edit box and return to current display
		$Text_1$: Input field title (max. 20 characters)
		$Text_2$: Default for input field (for floating-point numbers, the number of decimal places is taken from the default)
		$Text_3$: Weight unit or comment
Response:	RM20 A "P_1" <CR><LF>	P_1: User input
		A: Command executed
	or	
	RM20 C<CR><LF>	C: "C" key pressed
	RM20 I<CR><LF>	I: Command cannot currently be executed
	RM20 L<CR><LF>	L: Syntax error; command cannot be executed

Example 1:
Command: RM20 1 "Reference weight" "15.000" "g"
Open edit box with numeric input field
Response: RM20 A "22.250" — User input executed and input value sent back in the response

Example 2:
Command: RM20 8 "User name" "Name" "max. 50 characters"
Open edit box with alphanumeric input field
Response: RM20 A "Tom Smith"
User input executed and user name sent back in the response

Example 3:
Command: RM20 13 — Delete edit box again
Response: RM20 A — Command executed; current task appears on the balance display

RM30 – Assign new function to softkeys

The RM30 command assigns new functions to the softkeys (maximum 15 keys), which are displayed with the R39 command.

Syntax:

Command:	RM30 "$Text_1$" " $Text_2$" " $Text_3$" ... "$Text_{15}$"<CR><LF>		
		$Text_1$:	Text for softkey 1 (max. 8 characters)
		$Text_2$:	Text for softkey 2 (max. 8 characters)
		$Text_3$:	Text for softkey 3 (max. 8 characters)
		...	
		$Text_{15}$:	Text for softkey 15 (max. 8 characters)
Response:	RM30 B<CR><LF>	A:	Command executed
	or		
	RM30 I<CR><LF>	I:	Command cannot currently be executed
	RM30 L<CR><LF>	L:	Syntax error; command cannot be executed

Example:

Command:	RM30 "Result" "Min" "Max" ... "wRef"	
Response:	RM30 B	Command executed, but not displayed yet

RM32 – Assign new order to softkeys

Command RM32 can be used to display the softkey assignment, previously defined with command RM32, in another order. Command @ is used to disable this command.

Syntax:

Command:	RM32 n_1 n_2 n_3 ... n_{15}<CR><LF>	n_1: First softkey to be displayed n_2: Second softkey to be displayed n_3: Third softkey to be displayed ..... n_{15}: 15th softkey to be displayed
Response:	RM32 A<CR><LF>	A: Command executed
	or	
	RM32 I<CR><LF>	I: Command cannot currently be executed
	RM32 L<CR><LF>	L: Syntax error; command cannot be executed

Example:

Command:	RM30 "Result" "Min" "Max" "wRef"<CR><LF>	
Command:	RM32 3 1 2 4<CR><LF>	
Response:	RM32 A	Softkeys displayed in the following order: "Max," "Result," "Min," and "wRef"

RM34 – Create a dynamic parameter

Command RM34 is used to display a dynamic parameter in the working environment. The parameter is calculated as follows: value = n_3 * (current weight value + n_2). Command @ is used to disable this command.

Syntax:

Command: RM34 n_1 n_2 n_3 n_4 n_5 "$Text_1$" "$Text_2$"<CR><LF>

n_1= Lines in the working environment in which the parameter will be displayed (1 to 15)
If n_1 = 0: Delete all dynamic parameters from the display
If n_1 = -1: Delete dynamic parameters from the first line
...
If n_1 = -15: Delete dynamic parameters from the 15th line
n_2 = Constants to be added to or subtracted from the parameter
n_3 = Factor to be multiplied by the parameter
n_4 = Number of decimal places (0 to 9)
n_5 = Rounding factor (1, 2, 5, 10, 20, 50, 100)
$Text_1$: Name of dynamic parameter (up to 20 characters)
$Text_2$: Unit of weight for dynamic parameter (up to 6 characters)

Response:	RM34 A<CR><LF>	A: Command executed
	or	
	RM34 I<CR><LF>	I: Command cannot currently be executed
	RM34 L<CR><LF>	L: Syntax error; command cannot be executed

Example:

Command:	RM34 1 2.1 3 2 5 "text1" "g"<CR><LF>	Show parameter in first line
Response:	RM34 A<CR><LF>	Command executed

RM35 – Immediately change softkey designations

Command RM35 is used to change softkey designations immediately. Only softkeys which have been defined using command RM30 (and displayed using command RM39) are changed. The character " cannot be used in the text. Command @ is used to disable this command.

Syntax:

Command: RM35 n_1 "$Text_1$" n_2 "$Text_2$" ... n_{15} "$Text_{15}$"<CR><LF>

n_1 = Position of first softkey to be changed
$Text_1$: Text for first softkey to be changed (max. 8 characters)
n_2 = Position of second softkey to be changed
$Text_2$: Text for second softkey to be changed (max. 8 characters)
.....
n_{15} = Position of 15th softkey to be changed
$Text_{15}$: Text for 15th softkey to be changed (max. 8 characters)

Response:	RM35 A<CR><LF>	A: Command executed
	or	
	RM35 I<CR><LF>	I: Command cannot currently be executed
	RM35 L<CR><LF>	L: Syntax error; command cannot be executed

Example:

Command:	RM30 “Result” “Min“ “Max“ “wRef“<CR><LF>	
Command:	RM35 2 “nRef“ 4 “Set“ 5 “Next“<CR><LF>	
Response:	RM35 A	Softkeys displayed in the following order: “Result,” “nRef,” “Min,” “Set,” and “Next”

RM36 – Assign/query function for multiple softkey lines

The command RM36 assigns or queries functions for up to 30 softkey allocations (up to a maximum of 15 keys). This is activated on the balance with the R38 command.

Syntax:

Command: RM36 n_1 “$Text_1$” “ $Text_2$” “ $Text_3$” ... “$Text_{15}$”<CR><LF>

n_1 = 0: Display all allocations
n_1 = 1 to 30: Number of softkey allocation
$Text_1$: Text for softkey 1 (max. 8 characters)
$Text_2$: Text for softkey 2 (max. 8 characters)
$Text_3$: Text for softkey 3 (max. 8 characters)
...
$Text_{15}$: Text for softkey 15 (max. 8 characters)

Response:	RM36 A<CR><LF>	A:	Command executed
	or		
	RM36 I<CR><LF>	I:	Command cannot currently be executed
	RM36 L<CR><LF>	L:	Syntax error; command cannot be executed

Example 1:

Command:	RM36 3 “Result” “Min” “Max” ”wRef”	
		Assign 3rd softkey allocation
Response:	RM36 A	Third softkey allocation assigned, but not displayed yet

Example 2:

Command:	RM36 3	Query third softkey allocation
Response:	RM36 3 “Result” “Min” “Max” ”wRef”	
		Third softkey allocation sent back in the response

RM37 – Prepare preset softkey designations for display

Command RM37 is used to copy a softkey allocation, which has previously been defined using command RM36, to command RM30. This allocation can be activated with “RM39 1” on the balance. It is even easier (without command RM37) to display allocations defined with command RM36 using command RM38. Command @ is used to disable this command.

Syntax:

Command:	RM37 n_1<CR><LF>	n_1 = Softkey allocation previously defined using command RM36
Response:	RM37 A<CR><LF>	A: Command executed
	or	
	RM37 I<CR><LF>	I: Command cannot currently be executed
	RM37 L<CR><LF>	L: Syntax error; command cannot be executed

Example 1:

Commands:	RM36 3 “Result” “Min” “Max” "wRef"	Assign third softkey allocation
	RM36 3	Assign third softkey allocation to RM30, but do not display yet
	RM39 1	Display this softkey allocation
Responses:	RM36 A	
	RM37 A	
	RM39 A	

Example 2: Example 1 can also be carried out as follows:

Commands:	RM36 3 “Result” “Min” “Max” "wRef"	Assign third softkey allocation
	RM38 3	Display third softkey allocation
Responses:	RM36 A	
	RM38 A	

RM38 – Activate RM36-assigned softkey lines

The RM38 command activates the assigned softkey allocations (assigned using the RM36 command) or assigns a new sequence to them.

Syntax:

Command:	RM38 n1 P1<CR><LF>	n1: Allocation number (1 to 30) P1: Optional parameter that can be used to change the sequence (alphabetical order: ABC...MNO) for the softkeys Example 1: Where there are five softkey allocations, key 1 should be swapped with key 3 — enter “CBADE” as the parameter Example 2: With eight softkeys, swap key 2 with key 5 and key 4 with key 8 — the parameter is then “AECHBFGD“
Response:	RM38 A<CR><LF>	A: Command executed
	or	
	RM38 I<CR><LF>	I: Command cannot currently be executed
	RM38 L<CR><LF>	L: Syntax error; command cannot be executed

Example 1:

Command:	RM38 3	Important! RM36 command must be executed beforehand!
Response:	RM38 A	Softkeys now have new functions that were previously defined with the M36 command for the third allocation

Example 2:

Command:	RM38 2 EACBD	Important! RM36 command must be executed beforehand!
Response:	RM38 A	Softkeys now have new functions that were previously defined with the M36 command for the second allocation, but with a changed sequence: “$Text_5$” “$Text_1$” “$Text_3$” “$Text_2$” “$Text_4$”

RM39 – Activate/deactivate RM30-assigned softkey functions

The RM39 command activates and deactivates or deletes the functions assigned to softkeys (with the RM30 command).

Syntax:		
Command:	RM39 P_1<CR><LF>	P_1 = 0: Previous allocation of keys is deleted. P_1 = 1: Softkeys are overwritten with new functions P_1 = 2: Softkeys are overwritten with functions for the current task
Response:	RM39 A<CR><LF>	A: Command executed
	or	
	RM39 I<CR><LF>	I: Command cannot currently be executed
Example:		
Command:	RM39 1	Important! RM30 command must be executed beforehand!
Response:	RM39 A	The softkeys overwritten from left to right with the assigned functions (based on the RM30 command). If more than five functions were entered, the fifth softkey is labeled "More." Pressing the fifth softkey displays the other softkeys (5 up to a maximum of 15) in a pop-up window.

RM44 – Query/set input with barcode scanner

Barcode scanners (or keypad input) cannot be locked in Cubis.

Syntax:		
Command:	RM44 n_1<CR><LF>	Change input n_1 = Index for locking barcode scanner input 0: Barcode scanner input only activated with command RM20 1: Barcode scanner always active
	RM44<CR><LF>	Query
Response:	RM44 A n_1<CR><LF>	A: Command executed
	or	
	RM44 I<CR><LF>	I: Command cannot currently be executed
	RM44 L<CR><LF>	L: Syntax error; command cannot be executed
Example 1:		
Command:	RM44 1<CR><LF>	
Response:	RM44 A<CR><LF>	
Example 1:		
Command:	RM44<CR><LF>	
Response:	RM44 A 1<CR><LF>	

RM48 – Change order of standard keys

Command RM48 is used to display several standard softkeys in any order. Command @ is used to disable this command.

Syntax:		
Command:	RM48 n_1 n_2 n_3 n_4 n_5 n_6 n_7 n_8<CR><LF>	n_1: Allocation number n_2: Position of "Internal adjustment" key n_3: Position of "External adjustment" key n_4: Position of "Internal calibration" key n_5: Position of "External calibration" key n_6: Position of key 1/10d n_7: Not implemented n_8: Not implemented
Response:	RM48 A<CR><LF>	A: Command executed
	or	
	RM48 I<CR><LF>	I: Command cannot currently be executed
	RM48 L<CR><LF>	L: Syntax error; command cannot be executed
Example 1:		
Command:	RM48 1 1 5 2 4 3 0 0<CR><LF>	Display standard softkeys
Response:	RM48 A<CR><LF>	
Example 2:		
Command:	RM48 0 0 0 0 0 0 0 0<CR><LF>	Hide standard softkeys
Response:	RM48 A<CR><LF>	

RM49 – Activate/deactivate info text

Command RM49 displays informational text. When the text is empty ("") the info text is not shown. Use "\x09" to add a tab to the text, and "\x0D" to add a line break. Command @ is used to disable this command.

Syntax:

Command:	RM49 n_1 n_2 "Text"<CR><LF>	Display info text n_1 = Displayed keys in window 1: Window without keys 2: Window with OK key 3: Window with C key 4: Window with OK and C key n_2 = Additional information about the text 1: Info 2: Alert 3: Stop 4: Question 5: X-mark 6: Date/time 7: Sound 8: Alphabetic 9: Numeric 10: Hourglass Text = Info text to be displayed in the window
	or	
	RM49 0<CR><LF>	Hide info text
Response:	RM49 B<CR><LF>	B: Info text displayed
	or	
	RM49 A 1<CR><LF>	A 1: "OK" key pressed. Info text no longer displayed
	RM49 A 2<CR><LF>	A: "C" key pressed. Info text no longer displayed
	RM49 I<CR><LF>	I: Command cannot currently be executed
	RM49 L<CR><LF>	L: Syntax error; command cannot be executed
Example 1:		
Command:	RM49 2 3 "Weight is too heavy!"<CR><LF>	Display info text and "OK" key
Response:	RM49 B<CR><LF>	
Example 2:		
Command:	RM49 0<CR><LF>	Hide info text
Response:	RM49 A<CR><LF>	
Example 3:		
Command:	RM49 2 3 ""<CR><LF>	Hide info text
Response:	RM49 A<CR><LF>	

RM51 – Activate/deactivate selection window

Command RM51 is used to define a list to be displayed together with the desired keys and additional information on the display as a selection. Use "\x09" to add a tab to the text. Command @ is used to disable this command.

Syntax:

Command: RM51 n_1 n_2 n_3 n_4 n_5 "$Text_1$" "$Text_2$" ... "$Text_{17}$"<CR><LF>

n_1 = Number of selected entry (n_1 = 1 to 15)
If n_1 = 0 or n_1 = 20: No entry is selected
If n_1 = 21 to 25: Entry n_1 = 20 is selected
n_2 = Additional information
0: Hidden
1: Displayed
n_3 and n_4 were not implemented in Cubis, because scrolling with the slider is possible
n_5 = How additional information ($Text_2$) should be displayed
0: Additional information in text form
1: Additional information in softkey form
$Text_1$: Info
$Text_2$: Additional information in text or function key form
$Text_3$: First entry on the list
$Text_4$: Second entry on the list
...
$Text_{17}$: 15th entry on the list

Command:	RM51<CR><LF>	Close window
Command:	RM51 0<CR><LF>	Close window
Response:	RM51 B<CR><LF>	B: Command executed. System is waiting for user selection
	or	
	RM51 F n<CR><LF>	Line n from the list selected by user
	RM51 A C<CR><LF>	"Cancel" key pressed
	RM51 A K<CR><LF>	Function key pressed
	RM51 A P<CR><LF>	P: "Prev" key pressed
	RM51 A N<CR><LF>	N: "Next" key pressed
	RM51 I<CR><LF>	I: Command cannot currently be executed
	RM51 L<CR><LF>	L: Syntax error; command cannot be executed

Example 1:

Command: RM51 3 1 1 1 1 "Fruit selection" "All" "Apple" "Orange" "Kiwi" "Banana" "Strawberry" "Peach"<CR><LF>

Response 1:	RM51 B<CR><LF>	Command executed. System is waiting for user selection
Response 2:	RM51 F 3<CR><LF>	User has selected the third entry ("Kiwi")

Example 2:

Command:	RM51<CR><LF>	
Response:	RM51 B<CR><LF>	Command executed. Window closed

RM52 – Define properties for a window with info text

Command RM52 is used to define a window with or without keys and with info text, to which additional text can be added using command RM53. Command @ is used to disable this command.

Syntax:		
Command:	RM52 n_1 n_2 "Text1"<CR><LF>	n_1 = Window type 0: Window with softkey 1: Window without softkey n_2 = Info text (as described under command RM49) $Text_1$: Label for softkey
Response:	RM52 A<CR><LF>	A: Command executed
	RM52 I<CR><LF>	I: Command cannot currently be executed
	RM52 L<CR><LF>	L: Syntax error; command cannot be executed
Example 1:		
Command:	RM52 1 1 "Cancel"<CR><LF>	Window with "Cancel" key and info text "Info" defined
Response 1:	RM52 A<CR><LF>	Command executed

RM53 – Display/close window with info text or add text

Command RM53 is used to insert text in a window and display or close the window. The window should first be defined using command RM52 (key, info text). Use "\x09" to add a tab to the text. Command @ is used to disable this command.

Syntax:		
Command:	RM53 n1 "Text1"<CR><LF>	n1 = Activate/deactivate window 0: Window should not be displayed 1: Window should be displayed Text1: Text to be displayed in the window
Command:	RM53<CR><LF>	Close window
Response:	RM53 B<CR><LF>	Command executed. Window displayed
	RM52 A 1<CR><LF>	"OK" key pressed. Window closed
	RM52 A 3<CR><LF>	User-defined key pressed. Window closed
	RM53 I<CR><LF>	I: Command cannot currently be executed
	RM53 L<CR><LF>	L: Syntax error; command cannot be executed
Example 1:		
Command:	RM53 0 "Gross \x0923.4 g"<CR><LF>	Add line with the text "Gross 23.4 g"
Response:	RM53 A<CR><LF>	Command executed. Text added to window content. Window not displayed yet
Example 2:		
Command:	RM53 1 "Net \x0910.4 g"<CR><LF>	Add line with the text "Net 10.4 g"
Response:	RM53 B<CR><LF>	Command executed. Text added to window content. Window displayed

RM54 – Activate/deactivate window with info

Command RM54 is used to define and activate/deactivate windows using an info list. Use "\x09" to add a tab to the text, and "\x0D" to add a line break. Command @ is used to disable this command.

Syntax:

Command:	RM54 n_1 n_2 "$Text_1$" "$Text_2$"<CR><LF>	n_1 = Keys 1: No keys in window 2: "OK" key only 3: "C" key only 4: User-defined key only 5: "OK" and "C" keys 6: "OK" and user-defined keys 7: "C" and user-defined keys 8: "OK," "C," and user-defined keys n_2 = Number of additional text (defined using command RM49) $Text_1$: Label for user-defined key $Text_2$: Text for info window
Command:	RM54<CR><LF>	Close window
Response:	RM54 B<CR><LF>	Command executed. Window displayed
	RM54 A 1<CR><LF>	"OK" key pressed. Window closed
	RM54 A 2<CR><LF>	"C" key pressed. Window closed
	RM54 A 3<CR><LF>	User-defined key pressed. Window closed
	RM54 I<CR><LF>	Command cannot currently be executed
	RM54 L<CR><LF>	Syntax error; command cannot be executed

Example:

Command:	RM54 8 1 "Next" "Gross \x0923.4 g\x0DSerial number is 1234567."<CR><LF>	
		Add two lines of text: "Gross 23.4 g" and "Serial number is 1234567." Display all three keys and info text "Info"
Response:	RM54 A<CR><LF>	Command executed

Additional Sartorius Commands

SA – Send weight value at stability and store in Alibi memory

The SA command calls up a weight value at stability and stores it in the Alibi memory. As an option, a label can be assigned when the weight value is stored in the Alibi memory.
If the balance has a motorized draft shield and is set to automatic draft shield, the draft shield is shut first and then the weight value is sent at stability. The draft shield may open after this command is executed, depending on the motorized draft shield setting (see command M07).

Syntax:

Command:	SA “Text”<CR><LF>	Text:	Label (optional)
Response:	SA A “w_1” “w_2” “w_3” “w_4” “w_5” “n_1””n_2” “ Text”<CR><LF>		
		w_1:	Net weight value
		w_2:	Balance tare memory
		w_3:	Appl. tare memory 1
		w_4:	Appl. tare memory 2
		w_5:	Gross weight value
		n_1:	Balance serial number
		n_2:	Consecutive number of data record in Alibi memory
		Text:	Label (optional), if entered
		A:	Command executed
	or		
	S I<CR><LF>	I:	Command cannot currently be executed

Example 1:

Command:	SA “Art. 23”
Response:	SA A “N2 228.86[6] g” “T 0.00[0] g” “T1 0.00[0] g”
	“T2 99.50[5] g” “G# 328.37[1] g” “Ser No. 23201202” “Mem No. 503” “Mem ID Art. 23”

Example 2:

Command:	SA
Response:	SA A “N1 173.51[1] g” “T 0.00[0] g” “PT1 125.00[0] g”
	“T2 0.00[0] g” “G# 298.51[1] g” “Ser No. 23201202” “Mem No. 504” “Mem ID“

CM – Execute application command

This command executes application commands.

Syntax:

Command:	CMD “$m_1.c_1$” P_1<CR><LF>	m1:	Application module
		. :	Separator for application module and command
		c_1:	Application command
		P_1:	Optional parameter
Response:	CMD “$m_1.c_1$” P_1 A<CR><LF>	A:	Command executed
	or		
	CMD I<CR><LF>	I:	Command cannot currently be executed

Example 1:

Command:	CMD WEIGH.DO_TARE1 1	
Response:	CMD WEIGH.DO_TARE1 1 A	Balance tared

Example 2:

Command:	CMD MESSAGE.SHOW_ERROR	"Weight is too low!"
Response:	CMD MESSAGE.SHOW_ERROR	"Weight is too low!" A Error message displayed

Example 3:

Command:	CMD MESSAGE.HIDE_ERROR	
Response:	CMD MESSAGE.HIDE_ERROR A	Error message deleted from display

Example 4:

Command:	CMD RECIPE.START	
Response:	CMD RECIPE.START A	Formulation application started

PAR – Query parameter

This command queries the values of a current valid parameter.

Syntax:

Command:	PAR "m_1.P_1"<CR><LF>	m_1: Application module . : Separator for application module and parameter P_1: Parameter from application module
Response:	PAR A h_1 v_1<CR><LF>	h_1: Header of queried parameter v_1: Value of queried parameter A: Command executed
	or PAR I<CR><LF>	I: Command cannot currently be executed

Example 1:

Command:	PAR USER.TITLE	Query name of active user
Response:	PAR A User Tom Smith	Header and name of active user sent back in the response

Example 2:

Command:	PAR CHECK.MIN	Query minimum limit for checkweighing application
Response:	PAR A 12.230 g	Minimum limit for active application is sent back in the response

Example 3:

Command:	PAR DENSITY.RHO_SAM	Query density of sample being weighed
Response:	PAR A 1.4 g/cm^3	Density of current sample is sent back in the response

Example 4:

Command:	PAR TASK.TITLE	Query name of active task
Response:	PAR A Task Determine density	Header and name of active task sent back in the response

Example 5:

Command:	PAR COUNT.WREF	Query average weight for the piece count application
Response:	PAR A 9.95010 g	Current average piece weight sent back in the response

MN36 – Assign a function to several menus

Command MN36 assigns functions for up to 30 menu allocations (up to a maximum of 30 entries). This is activated on the balance with the MN38 command.

Syntax:

Command: MN36 n_1 "$Text_1$" "$Text_2$" "$Text_3$" ... "$Text_{15}$"<CR><LF>

n_1:	1 to 30: Number of menu allocation
$Text_1$:	Text for menu entry 1 (max. 30 characters)
$Text_2$:	Text for menu entry 2 (max. 30 characters)
$Text_3$:	Text for menu entry 3 (max. 30 characters)
...	
$Text_{30}$:	Text for menu entry 30 (max. 30 characters)

To stop text from being displayed, enter \~
before the text (e.g., "\~Next")
To use the character "\" enter "\\"

Command:	MN36 A<CR><LF>	A:	Command executed
	or		
	MN36 I<CR><LF>	I:	Command cannot currently be executed
	MN36 L<CR><LF>	L:	Syntax error; command cannot be executed

Example:

Command:	MN36 3 "Select" "Next" "Previous"	
		Assign third menu allocation
Response:	MN36 A	Third menu allocation assigned, but not displayed yet

MN38 – Activate/deactivate MN36-assigned menus

The RM38 command activates the assigned menu allocations (assigned using the RM36 command), or assigns a new sequence to them or hides the display again.

Syntax:

Command:	MN38 n_1 P_1 P_2<CR><LF>	n_1: 1 to 30: Number of menu allocation
		P_1: Optional parameter which can be used to change the height of the measured value display (NO_CHANGE, NONE, SMALL, NORMAL). The smaller the measured value display, the larger the menu display.
		P_2: Optional parameter which can be used to select a menu entry
Response:	MN38 A<CR><LF>	A: Command executed
	or	
	MN38 I<CR><LF>	I: Command cannot currently be executed
	MN38 L<CR><LF>	L: Syntax error; command cannot be executed

Example 1:

Command:	MN38 3	Important! MN36 command must be executed beforehand!
Response:	MN38 A	Menu now has new functions that were previously defined with the MN36 command for the third allocation

Example 2:

Command:	MN38 0	Deactivate menu
Response:	MN38 A	

Example 3:

Command:	MN38 2 NONE 3	Important! MN36 command must be executed beforehand!
Response:	MN38 A	Menu now has new functions that were previously defined with the MN36 command for the second allocation. Menu displayed with maximum size. Third menu entry is pre-selected.

TX36 – Assign text to several text pages

Command TX36 is used to assign text to up to 30 text pages (with 15 lines of text each). This text is activated on the balance using command TX38 and can be changed using command TX37.

Syntax:

Command:	TX36 n_1 "$Text_1$" "$Text_2$" "$Text_3$" ... "$Text_{15}$"<CR><LF>	
		n_1 = 1 to 30: Number of text page
Text1:		Text for line 1 (max. 30 characters)
Text2:		Text for line 2 (max. 30 characters)
Text3:		Text for line 3 (max. 30 characters)
		...
Text15:		Text for line 15 (max. 30 characters)

Response:	TX36 A<CR><LF>	A:	Command executed
or			
	TX36 I<CR><LF>	I:	Command cannot currently be executed
	TX36 L<CR><LF>	L:	Syntax error; command cannot be executed

Example 1:

Command:	TX36 3 "Tare balance" "Place sample on balance" "Press [Next]"	
		Assign text to third text page
Response:	TX36 A	Third text page assigned, but not displayed yet

TX37 – Overwrite a line on a text page

Command TX37 is used to overwrite a selected line on a selected text page. Command TX36 must be executed for this text page beforehand. Command TX38 displays this page.

Syntax:

Response:	TX37 n_1 n_2 "Text"<CR><LF>	
		n_1= 1 to 30: Number of text page
		n_2= 1 to 15: Number of text line
		Text: Text for line n_2 (max. 30 characters)

Response:	TX37 A<CR><LF>	A: Command executed
or		
	TX37 I<CR><LF>	I: Command cannot currently be executed
	TX37 L<CR><LF>	L: Syntax error; command cannot be executed

Example 1:

Command:	TX37 3 2 "Place third sample on the balance"	
		Important! TX36 command must be executed beforehand!
Response:	TX37 A	Second line overwritten on the third page

TX38 – Activate/deactivate TX36-assigned text pages

The TX38 command activates/deactivates the assigned text pages (assigned using the TX36 command) or assigns a new sequence to them. This is a faster alternative to command P112, which writes individual text lines to the display.

Syntax:			
Command:	TX38 n_1<CR><LF>	n_1:	1 to 30: Number of text page
Response:	TX38 A<CR><LF>	A:	Command executed
or			
	TX38 I<CR><LF>	I:	Command cannot currently be executed
	TX38 L<CR><LF>	L:	Syntax error; command cannot be executed

Example 1:		
Command:	TX38 3	Important! TX36 command must be executed beforehand!
Response:	TX38 A	Working environment now has new text that was previously defined with the TX36 command for the third allocation

Example 2:		
Command:	TX38 0	Deactivate text page
Response:	TX38 A	

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