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Reference manual
KERN Communications Protocol (KCP)

KERN KCP

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GB

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GB

KERN KCP

Manual version 1.2

Reference manual

KERN Communications Protocol (KCP)

English

Table of contents

1 Brief outline

The KERN Communications Protocol (KCP) is a standardized interface command set for KERN balances and other instruments, which allows retrieving and controlling all relevant functions and functions of the device. KERN instruments featuring KCP are thus easily integrated with computers, industrial controllers and other digital systems.

This section gives an overview over the general command and response structure and lists the few basic commands required to handle the vast majority of applications.

1.1 Default interface communication parameters

By default, each KCP device comes preset to the following communication parameters. The applicable parameters depend on the type of communication interface:

Interfaces	**Parameters**			
RS-232 / RS-485 / Bluetooth SPP	Baud rate:	9600 baud/s	Data bits:	8 bits
	Parity:	none	Stop bits:	1 bit

1.2 Basic command and response format

KCP is based on simple ASCII-encoded text commands and responses. Every interaction consists of a command, possibly with arguments separated by spaces (symbol ␣) and terminated by Windows-style newline characters (*<CR><LF>*):

Command		**Arguments**						**Terminator**	
<cmd>	␣	*<arg1>*	␣	*<arg2>*	␣	*<arg3>*	…	*<CR>*	*<LF>*

Correctly formatted commands are answered with a response containing the requested data including or following a confirmation of the following form:

Response		**Status**		**Data**	**Terminator**	
<cmd>	␣	A = accepted / acknowledge L = logical error / invalid parameter I = internal / technical error	␣	*command specific*	*<CR>*	*<LF>*
ES		Erroneous syntax or unknown command			*<CR>*	*<LF>*

Example: Command **“**Set indication unit to grams (g)” with response “accepted”

Command:	**U**	**␣**	**g**	*<CR>*	*<LF>*	➔	**Response:**	**U**	**␣**	**A**	*<CR>*	*<LF>*
dec:	85	32	103	13	10		dec:	85	32	65	13	10
hex:	55	20	67	0D	0A		hex:	55	20	41	0D	0A

Example: Command **“**Set indication unit to invalid unit” with response “logical error”

Command:	**U**	**␣**	**X**	*<CR>*	*<LF>*	➔	**Response:**	**U**	**␣**	**L**	*<CR>*	*<LF>*
dec:	85	32	88	13	10		dec:	85	32	76	13	10
hex:	55	20	58	0D	0A		hex:	55	20	4C	0D	0A

Example: Invalid command

Command:	**U**	**␣**	**g**	*<CR>*	*<LF>*	➔	**Response:**	**ES**	*<CR>*	*<LF>*
dec:	85	32	103	13	10		dec:	69 83	13	10
hex:	55	20	67	0D	0A		hex:	45 53	0D	0A

1.3 Language conventions

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

␣	Space symbol (dec 32, hex 20)
🡻	Commands sent to the balance / measurement device.
🡹	Responses of the balance / measurement device

English

1.4 Overview of basic commands

	Request stable indication (weighing or measured value) in the host unit (by default the current indication unit). Waits until indication fulfills the “stable” condition or until configured timeout is reached.	
↓	S	
↑	S␣S␣␣␣␣100.00␣g	Indication value is right aligned, 10 characters. Decimal sign is a point. The minus sign immediately precedes the numerical value – without leading zero. On multi-range devices, hidden trailing decimals are shown as spaces. Status “S” = current indication is stable Status “D” = current indication is unstable / dynamic
	S␣S␣␣␣-100.00␣g	
	S␣S␣␣␣1152.05␣kg	
	S␣I	In menu, currently executing another command or timeout reached.
	S␣+ *or* S␣-	Overload or underload

	Request immediate indication in the host unit (by default the current indication unit) Immediately sends the current indication without waiting for stable conditions.	
↓	SI	
↑	SI␣S␣␣␣␣100.00␣g	*see description of command “S”*
	SI␣D␣␣␣␣99.98␣g	
	SI␣I	In menu, currently executing another command or timeout reached.
	SI␣+ *or* S␣-	Overload or underload

	Zero indication	**Tare indication**	
↓	Z	T	
↑	Z␣A	T␣A	Zeroing/taring successful.
	Z␣I	T␣I	In menu, currently executing another command or timeout reached.
	Z␣+ *or* Z␣-	T␣+ *or* T␣-	Overload or underload; or zero range exceeded

	Query or set display and host unit			
↓	U	Query current display unit		
↑	U␣A␣*<unit>*	Current display unit is *<unit>*		
↓	U␣*<unit>*	Set current display and host unit.	**Units:**	g,kg,mg, lb,pcs,%, N,kN,TF,KLBF,…
↑	U␣A	Unit successfully set		
	U␣I	Invalid unit.		

	Set mode of indication (Peak or track mode)
↓	SIM	Query current mode of indication
↑	SIM␣A␣*<mode>*	Current mode of indication is *<mode>*
↓	SIM␣*<mode>*	Set current mode of indication and reset the current peak value. *<mode>* is one of the following: • T = Track mode (indicate the current measurand) • P = Peak mode (only indicate the largest value +/-) • P+ = Peak positive mode (only indicate the largest pos. value) • P- = Peak negative mode (only indicate the largest neg. value)
↑	SIM␣A	Mode successfully set, current peak value is zero.
	SIM␣I	Invalid *<mode>*

	Read measurement memory / reports Sends all available recorded data in a unspecified tabular form (separated by spaces)	
↓	SMEM	
↑	SMEM_A_START	Command understood, next lines will be the data in tabular form
	<header line> *<data line 1>* *<data line 2>* *<data line 3>*	Number Date Time Mode Indication 1 2016-01-13 12:34:56 T 12.3456 N 2 2016-02-22 12:37:15 P+ 12.3456 kN 3 2016-03-31 12:39:41 P- -1234.56 N
	SMEM_A_END	End of data

2 General

2.1 KCP Version

The KCP protocol is continuously being improved. With each new version, the KCP protocol version number is incremented. The number of the KCP version implemented in your particular device can be requested using the **`I1`** command.

Please make sure that you use the correct version of the KCP manual description (this document) for your device. If a command is only available in certain KCP versions, this will be mentioned in the section of the respective command.

2.2 KCP Command Levels

The KCP protocol commands are grouped in multiple levels. While Level 0 and Level 1 are available for all KCP devices, other levels may only be available with certain devices. Please refer to the individual chapter of each level for further details.

It is advised that you try to limit yourself to the lowest level of commands, that you can achieve your goals with. This allows you to connect a larger variety of KCP devices to your software without modifications.

2.3 Conventions in this manual

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

`␣`	Space symbol (dec 32, hex 20)
🡻	Commands sent to the balance / measurement device.
🡹	Responses of the balance / measurement device
«param»	Parameter name, the brackets (*« and »*) are not to be sent
[ ]	Optional parameter / expression

2.4 Default communication parameters

By default, each KCP device comes preset to certain communication parameters. The applicable parameters depend on the type of communication interface and are listed in the following paragraphs.

2.4.1 RS-232 / RS-485

Baud rate: 9600 baud/s

Data bits: 8 bits

Parity: none

Stop bits: 1 bit

English

2.5 Protocol structure

KCP is based on simple ASCII-encoded text commands and responses.

2.5.1 Encoding

All characters and digits are encoded in ASCII – if not specified otherwise.

2.5.2 Commands

Every interaction consists of a command, possibly with arguments separated by spaces (symbol ␣) and terminated by Windows-style newline characters (*<CR><LF>*):

Command		**Arguments**						**Terminator**	
<cmd>	␣	*<arg1>*	␣	*<arg2>*	␣	*<arg3>*	…	*<CR>*	*<LF>*

Commands should only be sent in uppercase letters.

2.5.3 Responses

Correctly formatted commands are answered with a response containing the requested data including or following a confirmation of the following form:

Response		**Status**		**Data**	**Terminator**	
<cmd>	␣	A = accepted / acknowledge L = logical error / invalid parameter I = internal / technical error	␣	*command specific*	*<CR>*	*<LF>*
ES		Erroneous syntax or unknown command			*<CR>*	*<LF>*

For commands that only execute actions on the device and do not return information required in your application, you can ignore the responses. However, to increase the reliability of your software, it is a good practice to read and evaluate the responses and act accordingly upon errors.

2.5.4 Examples

The following examples show some very basic interactions using the KCP protocol.

Example: Command **“**Set indication unit to grams (g)” with response “accepted”

Command:	**U**	␣	**g**	*<CR>*	*<LF>*
dec:	85	32	103	13	10
hex:	55	20	67	0D	0A

➔

Response:	**U**	␣	**A**	*<CR>*	*<LF>*
dec:	85	32	65	13	10
hex:	55	20	41	0D	0A

Example: Command **“**Set indication unit to invalid unit” with response “logical error”

Command:	**U**	␣	**X**	*<CR>*	*<LF>*
dec:	85	32	88	13	10
hex:	55	20	58	0D	0A

➔

Response:	**U**	␣	**L**	*<CR>*	*<LF>*
dec:	85	32	76	13	10
hex:	55	20	4C	0D	0A

Example: Invalid command

Command:	**U**	␣	**g**	*<CR>*	*<LF>*
dec:	85	32	103	13	10
hex:	55	20	67	0D	0A

➔

Response:	**ES**		*<CR>*	*<LF>*
dec:	69	83	13	10
hex:	45	53	0D	0A

3 KCP commands - Level 0 (core commands)

The commands from Level 0 offer the very basic functions available for *every* KCP device.

@	Cancel
I0	List all implemented KCP commands
I1	Query KCP level and KCP versions
I2	Query device information (type, capacity)
I3	Query device software version
I4	Query serial number
I5	Query SW-Identification number
S	Send stable indication (weight value / measured value)
SI	Send current indication immediately
SIR	Send current indication immediately and repeat
Z	Zero
ZI	Zero immediately

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

Responses

I4␣A␣"«*SNR*»"	Serial number is emitted; the device is ready for operation.

Comments

- All commands awaiting responses are cancelled.
- If the device is on standby, it is switched on.
- The cancel command is always executed.
- The emitted serial number corresponds to the serial number of the terminal (if one is present), see [I4].

Examples

🡻	@	Cancel
🡹	I4␣A␣"B021002593"	Device is "reset", its serial number is B021002593

See also

➔	**I4** – Query serial number

I0 – List all implemented KCP 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 KCP commands.

Responses

I0␣B␣*«Level»*␣*"«Command»"* I0␣B␣*«Level»*␣*"«Command»"* I0␣B... I0␣A␣*«Level»*␣*"«Command»"*	1st command implemented. 2nd (next) command implemented. ... Last command implemented.
I0␣I	Command understood but currently not executable (device is currently executing another command).

Parameters / Return values

Name	Type	Values	Meaning
Level	integer	Number of the KCP level where the command belongs to:	
		0	KCP level 0
		1	KCP level 1
		2	KCP level 2
		…	…
Command	string		KCP command

Comments

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

Examples

🡻	I0	Send list of commands
🡹	I0␣B␣0␣"I0"	Level 0 command **I0** implemented
🡹	I0␣B...	...
🡹	I0␣B␣0␣"@"	Level 0 command @ (cancel) implemented
🡹	I0␣B␣1␣"D"	Level 0 command **D** implemented
🡹	I0␣B...	...
🡹	I0␣A␣3␣"SM4"	Level 3 command **SM4** implemented

See also

➔	@ - cancel

English

I1 – Query KCP level and KCP versions

Description

Query KCP level and versions.

Syntax

Command

I1	Query KCP level and KCP versions.

Responses

I1␣A␣”*«Level»*”␣”*«V0»*”␣”*«V1»*”␣”*«V2»*”␣”*«V3»*”	Current KCP level and KCP versions
I1␣I	Command understood but currently not executable

Parameters / Return values

Name	Type	Values	Meaning
Level	string	0	KCP level 0
		01	KCP level 0 and 1
		03	KCP level 0 and 3
		013	KCP level 0, 1 and 3
		…	…
V0..V3	string		KCP versions of the related level (0 to 3)

Examples

🡻	I1	Query the current KCP level and version
🡹	I1␣A␣”123”␣”2.00”␣”2.20”␣”1.00”␣”1.50”	Level 0-3 is implemented and the according version numbers are shown

I2 – Query device information (type, capacity)

Description

Use **I2** to query information about the device (e.g. type and weighing capacity). The response is output as a whole string.

Syntax

Command

I2	Query of the device .

Responses

I2␣A␣"*«Type»*␣*«Capacity»*␣*«Unit»*"	Device/instrument type and capacity.
I2␣I	Command understood but currently not executable (device is currently executing another command, e.g. taring).

Parameters / Return values

Name	Type	Values	Meaning
Type	string		Type of device / instrument
Capacity	string		Capacity of device / instrument
Unit	string		Weight unit

Comments

- With multi-range devices, the last decimal place is available only in the finer ranges.
- The number of characters of "text" depends on the device type and capacity.

Examples

🡻	I2	Query of the device data
🡹	I2␣A␣"GAT␣6K-4␣6000.00␣g"	Device type and capacity

English

I3 – Query device software version

Description

Provides the device software version.

Syntax

Command

I3	Query of the device software version.

Responses

I3␣A␣"*«Software»*␣*«TNR»*"	Device software version and type number.
I3␣I	Command understood but currently not executable (device is currently executing another command, e.g. taring).

Parameters / Return values

Name	Type	Values	Meaning
Software	string		Software (Firmware) version
TNR	string		Type number

Comments

- Only the software version of the terminal software is issued.
- If no terminal is present, the bridge software is issued instead.

Examples

🡻	I3	Query of the Software version number(s) and type definition number
🡹	I3␣A␣"4.10␣10.142"	4 .10: Software version number 10.142: Type number

I4 – Query serial number

Description

Use **I4** to query the serial number of the device. In the case of devices, 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 (device is currently executing another command, e.g. initial zero setting).

Parameters / Return values

Name	Type	Values	Meaning
SNR	string		Serial number

Comments

- The serial number agrees with that on the model plate and is different for every device.
- The serial number can be used, for example, as a device address in a network solution.
- The device response to **I4** appears unsolicited after switching on and after the cancel command @.
- Only the serial number of the terminal is issued.
- If no terminal is present, the serial number of the bridge is issued instead.

Examples

🡻	I4	Query of serial number
🡹	I4␣A␣"WX1712345"	The serial number is: WX1712345

See also

➔	@ - cancel

I5 – Query SW-Identification number

Description

Use **I5** to query the software identification 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 (device is currently executing another command, e.g. taring).

Parameters / Return values

Name	Type	Values	Meaning
SWID	string		SW-Identification number with index.

Comments

- The SW-Identification number is unique for every software. It consists of an 8 digit number and an alphabetic character as an index.
- Only the software identification number of the terminal is issued.
- If no terminal is present, the software identification number of the bridge is issued instead.

Examples

🡻	I5	Query of the SW-identification number
🡹	I5␣A␣"V1.02"	V1.02: SW-identification number with index

S – Send stable weight value

Description

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

Syntax

Command

S	Send the current stable net weight value.

Responses

S␣S␣*«WeightValue»*␣*«Unit»*	Current stable weight value in unit set.
S␣I	Command understood but currently not executable (device 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␣+	Device in overload range.
S␣-	Device in underload range.
S␣S␣*«ErrorCode»*	Code of error occurred

Parameters / Return values

Name	Type	Values	Meaning
WeightValue	float		Weight value
Unit	string		Currently displayed unit
ErrorCode	string		Code of error occurred

Comments

- The duration of the timeout depends on the device type.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point.

Examples

↓	S	Send a stable weight value
↑	S␣S␣␣␣␣100.00␣g	The current, stable ("S") weight value is 100.00 g

English

SI – Send weight value immediately

Description

Use **SI** to immediately send the current weight value, along with the unit.

Syntax

Command

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

Responses

S␣S␣*«WeightValue»*␣*«Unit»*	Stable weight value in unit set
S␣D␣*«WeightValue»*␣*«Unit»*	Non-stable (dynamic) weight value in unit set
S␣I	Command understood but currently not executable (device is currently executing another command, e.g. taring).
S␣L	Command understood but not executable (incorrect parameter).
S␣+	Device in overload range.
S␣-	Device in underload range.
S␣S␣*«ErrorCode»*	Code of error occurred

Parameters / Return values

Name	Type	Values	Meaning
WeightValue	float		Weight value
Unit	string		Currently displayed unit
ErrorCode	string		Code of error occurred

Comments

- The device response to the command **SI** is the last internal weight value (stable or dynamic) before receipt of the command **SI**.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point.

Examples

↓	SI	Send current weight value
↑	S␣D␣␣␣␣129.07␣g	The weight value is unstable (dynamic, "D") and is currently 129.07 g

SIR – Send weight value immediately and repeat

Description

Use **SIR** to immediately send the current weight value, along with the unit, on a continuous basis.

Syntax

Command

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

Responses

S␣S␣*«WeightValue»*␣*«Unit»*	Stable weight value in unit set
S␣D␣*«WeightValue»*␣*«Unit»*	Non-stable (dynamic) weight value in unit set
S␣I	Command understood but currently not executable (device is currently executing another command, e.g. taring).
S␣L	Command understood but not executable (incorrect parameter).
S␣+	Device in overload range.
S␣-	Device in underload range.
S␣S␣*«ErrorCode»*	Code of error occurred

Parameters / Return values

Name	Type	Values	Meaning
WeightValue	float		Weight value
Unit	string		Currently displayed unit
ErrorCode	string		Code of error occurred

Comments

- **SIR** is overwritten by the commands **S**, **SI**, @ and hardware break and hence cancelled.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point.

Examples

🡻	SIR	Send current weight values at intervals
🡹	S␣D␣␣␣␣129.07␣g	The device sends stable ("S") or unstable ("D") weight values at intervals
🡹	S␣D␣␣␣␣129.08␣g	
🡹	S␣S␣␣␣␣129.09␣g	
🡹	S␣S␣␣␣␣129.09␣g	
🡹	S␣D␣␣␣␣129.87␣g	
🡹	S␣...	

English

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 device.

Responses

Z␣A	Zero setting successfully performed. Gross, net and tare = 0.
Z␣I	Command understood but currently not executable (device 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 tare memory is cleared after zero setting.
- 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 device type.

Examples

↓	Z	Zero
↑	Z␣A	Zero setting performed

ZI – Zero immediately

Description

Use **ZI** to set a new zero immediately, regardless of device 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 device immediately regardless the stability of device..

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 (device 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

- The tare memory is cleared after zero setting.
- This command is not supported by approved devices.
- The zero point determined during switching on is not influenced by this command, the measurement ranges remain unchanged.

Examples

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

English

4 KCP commands - Level 1 (basic measurement)

The commands from Level 1 are available for all basic weighing instruments.

D Display: Write text to display

DW Display: Show weight

K Keys: Set configuration

SR Send weight value on weight change (send and repeat)

T Tare

TA Query/preset tare weight value

TAC Clear tare value

TI Tare immediately

D – Display: Write text to display

Description

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

Syntax

Command

D␣*"«DisplayText»"*	Write text into the device display.

Responses

D␣A	Command understood and executed successfully: Text appears left-aligned in the device display marked by a symbol, e.g. *.
D␣I	Command understood but currently not executable.
D␣L	Command understood but not executable (incorrect parameter or device with no display).

Parameters / Return values

Name	Type	Values	Meaning
DisplayText	string		Text on the device display

Comments

- A symbol in the display, e.g. * indicates that the device is not displaying a weight value.
- The maximum number of characters of "text" visible in the display depends on the device type. If the maximum number of characters is exceeded, the text disappears on the right side.
- Quotation marks can be displayed as indicated in chapter **[2.5.1]**

Examples

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

↓	D␣" "	Clear the device display
↑	D␣A	Device display cleared, marked by a symbol, e. g. *

See also

→	**DW** – Display: Show weight

English

DW – Display: Show weight

Description

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

Comments

- DW resets the device display following a [D] command.

Examples

🡻	DW	Switch the main display to weight mode
🡹	DW␣A	Main display shows the current weight value

See also

➔	**D** – Display: Write text to display

K – Keys: Set configuration

Description

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

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

Syntax

Command

K␣*«Mode»*	Set configuration.

Responses

K␣A[␣*«FunctionID»*]	Command understood and executed successfully. Mode 4: Function with *«FunctionID»* was invoked by pressing the corresponding key and executed successfully.
K␣I[␣*«FunctionID»*]	Command understood but currently not executable (device is actually in menu or input mode). Mode 4: Function with *«FunctionID»* by pressing the corresponding key, but it could not be successfully executed (e.g. calibration was aborted by user or a negative value was tared).
K␣L	Command understood but not executable (incorrect or no parameter).

Additional Responses in Mode 3:

K␣*«EventID»*␣*«KeyID»*	Key *«KeyID»* has issued an *«EventID»*.

Additional Responses in Mode 4:

K␣B␣*«FunctionID»*	Function with *«FunctionID»* was invoked and started; the execution needs time to complete.

Parameters / Return values

Name	Type	Values	Meaning
Mode	integer	1	Functions are executed, no indications are sent (factory setting)
		2	Functions are not executed, no indications are sent
		3	Functions are not executed, indications are sent
		4	Functions are executed, indications are sent
EventID	char	R	Key was pressed and held around 2 seconds
		C	Key was released(after being pressed shortly or for 2 second)
FunctionID	integer	0	Adjustment
		1	Tare
		2	Zero
		3	Data transfer to printing device
		4 ... 6	Reserved for future use
		7	Test
KeyID	integer	1	Home
		2	User profile
		3	Settings
		5	Zero
		7	Transfer
		8	Configure actual applications
		9	Applications

English

Comments

- K␣1 is the factory setting (default value).
- K␣1 active after device switched on and after the cancel command [@].
- Only one K mode is active at one time.

Examples

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

🡻	K␣4	Set mode 4: when a key is pressed, execute the corresponding function and send the function number as a response
🡹	K␣A	Command executed successfully
🡹	K␣B␣1	The taring function has been started → taring active
🡹	K␣A␣1	Taring completed successfully
🡹	K␣B␣1	The taring function has been started → taring active
🡹	K␣I␣1	Taring not completed successfully, taring aborted (e.g. tried to tare a negative value)

English

SR – Send weight value on weight change (send and repeat)

Description

Use **SR** to send the current weight values following a predefined minimum change in weight and on a continuous basis. The weight value is sent, along with the unit.

Command

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

Responses

S␣S␣*«WeightValue»*␣*«Unit»*	Current, stable weight value in unit set, 1st weight change.
S␣D␣*«WeightValue»*␣*«Unit»*	Dynamic weight value in unit set.
S␣S␣*«WeightValue»*␣*«Unit»*	Next stable weight value in unit set.
S␣I	Command understood but currently not executable (device is currently executing another command, e.g. zero setting, or timeout as stability was not reached).
S␣L	Command understood but not executable (incorrect parameter).
S␣+	Device in overload range.
S␣-	Device in underload range.
S␣S␣*«ErrorCode»*	Code of error occurred

Parameters / Return values

Name	Type	Values	Meaning
WeightValue	float		Weight value
Unit	string		Unit, only available units permitted
ErrorCode	string		Code of error occurred

Comments

- **SR** is overwritten by the commands **S**, **SI**, **@** and hardware break and hence cancelled.
- If, following a non-stable (dynamic) weight value, stability has not been reached within the timeout interval, the response S␣I is sent and then a non-stable weight value. Timeout then starts again from the beginning.
- The preset value can be entered in any by the device accepted unit.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point.

English

Examples

↓	SR␣10.00␣g	Send the current stable weight value followed by every load change of 10 g
↑	S␣S␣␣␣␣100.00␣g	Device stable
↑	S␣D␣␣␣␣115.23␣g	100.00 g loaded
↑	S␣S␣␣␣␣200.00␣g	Device again stable

See also

→	**S** – Send stable weight value
→	**SI** – Send weight value immediately
→	**SIR** – Send weight value immediately and repeat

T – Tare

Description

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

Command

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

Responses

T␣S␣*«TareWeightValue»*␣*«Unit»*	Taring successfully performed. The tare weight value returned corresponds to the weight change on the device in the unit set since the last zero setting.
T␣I	Command understood but currently not executable (device is currently executing another command, e.g. zero setting, or timeout as stability was not reached).
T␣L	Command understood but not executable (incorrect parameter).
T␣+	Upper limit of taring range exceeded.
T␣-	Lower limit of taring range exceeded.

Parameters / Return values

Name	Type	Values	Meaning
WeightValue	float		Weight value
Unit	string		Currently displayed unit

Comments

- The tare memory is overwritten by the new tare weight value.
- The duration of the timeout depends on the device type.
- Clearing tare memory: See **TAC**.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point.

Examples

🡻	T	Tare
🡹	T␣S␣␣␣␣100.00␣g	The device is tared and has a value of 100.00 g in the tare memory

See also

➔	**TAC** – Clear tare value

TA – Query/preset tare weight value

Description

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

Command

TA	Query of the current tare weight value.
TA␣*«TarePresentValue»*␣*«Unit»*	Preset of a tare value.

Responses

TA␣A␣*«TareWeightValue»*␣*«Unit»*	Query current tare weight value in tare memory, in unit set.
TA␣I	Command understood but currently not executable (device is currently executing another command, e.g. zero setting, or timeout as stability was not reached).
TA␣L	Command understood but not executable (incorrect parameter).

Parameters / Return values

Name	Type	Values	Meaning
TareWeightValue	float		Tare Weight value
Unit	string		Currently displayed unit

Comments

- The tare memory will be overwritten by the preset tare weight value.
- The inputted tare value will be automatically rounded by the device to the current readability.
- The taring range is specified to the device type.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point.

Examples

🡻	TA␣100.00␣g	Preset a tare weight of 100 g
🡹	TA␣A␣␣␣␣100.00␣g	The device has a value of 100.00 g in the tare memory

See also

🡺	**TAC** – Clear tare value

TAC – Clear tare value

Description

Use **TAC** to clear the tare memory.

Command

TAC	Clear tare value.

Responses

TAC␣A	Tare value cleared, 0 is in the tare memory.
TAC␣I	Command understood but currently not executable (device is currently executing another command, e.g. zero setting).
TAC␣L	Command understood but not executable (incorrect parameter).

Examples

🡻	TAC	Clear tare value
🡹	TAC␣A	are value cleared, o is in the tare memory

See also

➔	**T** – Tare
➔	**TI** – Tare immediately
➔	**TA** – Query/preset tare weight value
➔	**TC** – Tare or tare immediately after timeout

English

TI – Tare immediately

Description

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

Command

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

Responses

TI␣S␣*«TareWeightValue»*␣*«Unit»*	Taring performed, stable tare value. The new tare value corresponds to the weight change on the device since the last zero setting.
TI␣D␣*«TareWeightValue»*␣*«Unit»*	Taring performed, non-stable (dynamic) tare value.
TI␣I	Command understood but currently not executable (device is currently executing another command, e.g. zero setting).
TI␣L	Command understood but not executable (e.g. certified version of the device).
TI␣+	Upper limit of taring range exceeded.
TI␣-	Lower limit of taring range exceeded.

Parameters / Return values

Name	Type	Values	Meaning
TareWeightValue	float		Tare Weight value
Unit	string		Currently displayed unit

Comments

- The tare memory will be overwritten by the new tare weight value.
- After a non-stable (dynamic) stored tare weight value, a stable weight value can be determined. However, the absolute value of the stable weight value determined in this manner is not accurate.
- The taring range is specified to the device type.
- The weight value is formatted as a right aligned string with 10 characters including the decimal point.
- The stored tare weight value is sent in the unit set

Examples

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

See also

🡺	**TAC** – Clear tare value

5 Command index

This page lists all the page numbers, relevant information to a command can be found.

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