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Additional description interfaces

KERN KIB-TM

Version 1.3
2019-03
GB

KIB-TM-ZB-e-1913

GB

KERN KIB-TM

Version 1.3 2019-03

Additional description interfaces

Contents

English

1 RS 232 (standard)

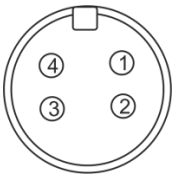
You can print weighing data automatically via the RS 232C interface or manually by pressing PRINT via the interface according to the setting in the menu.

This data exchange is asynchronous using ASCII - Code.

The following conditions must be met to provide successful communication between the weighing system and the printer.

- Use a suitable cable to connect the display unit to the interface of the printer. Faultless operation requires an adequate KERN interface cable.
- Communication parameters (baud rate, bits and parity) of display unit and printer must match. For a detailed description of interface parameters, please refer to chapter 8, Menu block “P2 COM“

1.1 Technical data

Connection	4 pin d-subminiature bushing			
		Pin1	RX	Input
		Pin2	TX	Output
		Pin3	GND	Signal ground
		Pin4	N/C	Not connected
Baud rate	Optional 600/1200/2400/4800/9600			
Parity	8 bits, no parity / 7 bits, even parity / 7 bits, odd parity			

English

1.2 Printer operation / sample logs (KERN YKB-01N)

- **Weighing**

  1. Continuous data output
     (menu setting P2 Com ➡ Mode ➡ Com ➡ S0 on)

Menu setting P2 Com ➡ LAb 0 / Prt 0:

```
****************************
 ST, GS          53.2 kg
****************************
```

```
****************************
 US, GS          53.2 kg
****************************
```

  2. Data output after pressing of PRINT C
     (menu settings: P2 Com ➡ Mode ➡ Pr1,
     Changes to the menu settings Lab and Prt do not affect the layout of the sample log)

Menu setting P2 Com ➡ LAb 0 / Prt 0~3 or LAb 3 / Prt 4~7:

```
****************************
 ST, GS          53.2 kg
****************************
```

```
****************************
 ST, NT :        52.6 kg
****************************
```

- **Counting**

```
****************************
PCS                 100
****************************
```

English

- **Totalization**

3. Data output after pressing of M+ CAL
   (menu setting P2 Com ➡ Mode ➡ Pr2)

P2 Com ➡LAb 3 / Prt 4~7:

```
**********
No.:       1
NT:    2.006kg
TW:    0.501kg
GW:    2.507kg
Total:    2.006kg
**********

**********
No.:       2
NT:    0.993kg
TW:    0.501kg
GW:    1.494kg
Total:    2.999kg
**********

**********
No.:       3
NT:    3.008kg
TW:    0.501kg
GW:    3.509kg
Total:    6.007kg
**********

**********
    Total
No.:       3
Total:    6.007kg
**********
```

P2 Com ➡LAb 0/Prt 0:

```
**********
GS:    1.003kg
**********

**********
GS:    2.005kg
**********

**********
GS:    3.008kg
**********

**********
    Total
No.:       3
Total:    6.016kg
**********
```

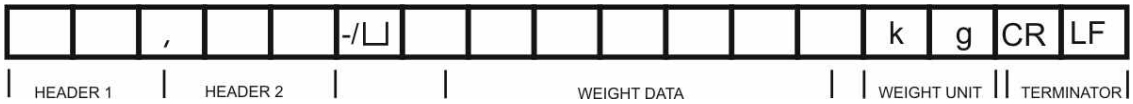
Symbols:

ST	Stable value
US	Instable value
GS / GW	Gross weight
NT	Net weight
TW	Tare weight
NO	Number weighing processes
TOTAL	Total of all individual weighings
<lf>	Space line
<lf>	Space line

English

1.3 Output log (continuous output)

- Weighing



HEADER1: ST=STABLE， US=UNSTABLE

HEADER2: NT=NET， GS=GROSS

- Menu setting P2 Com ➡ PTYPE ➡ tPUP or LP50

English

1.4 KERN Communications Protocol (KERN Interface Protocol)

KCP (KERN communication protocol) contains the commands that are used to control the KERN balances via the interface.

- Menu setting P2 Com ➡ Mode ➡ ASK
- Menu setting P2 Com ➡ PTYPE ➡ KCP
- Finish commands with CR/LF character.
- Consult the KCP manual for more information, available on our KERN website (**www.kern-sohn.com**).

The following commands are supported:

@	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
I4␣A␣“xxxxxxxx“	Set serial number (default value is K123456)
I5	Query SW-Identification number
S	Send stable weight value
SI	Send weight value immediately
SIR	Send weight value immediately and repeat
Z	Zero
ZI	Zero immediately
D	Display: Write text to display
D␣“␣“	Clear Display (after D-Command)
K	Keys: Set configuration
SR	Send weight value on weight change (send and repeat)
T	Tare
MM	Query/preset tare weight value
TAC	Clear tare value
TI	Tare immediately

Polling-Intervall

- The time between periodic inquiries or when sending requests (queries) by the interface must be longer than 100 ms.

English

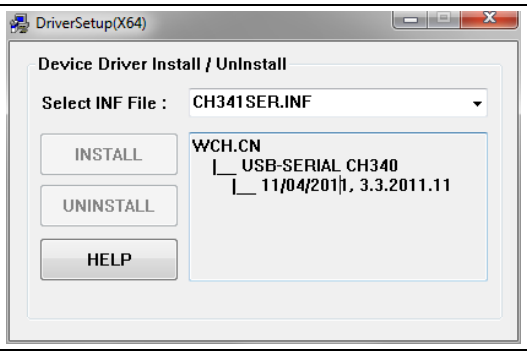
2 USB interface (KIB-A03) (optional)

Set the following menu items (see chap. 8)

- ⇨ Menu item "**P9 Prt**" ⇨ "**oPt**" ⇨"**intF**" ⇨"**USB**"
- ⇨ Menu item "**P9 Prt**" ⇨ "**oPt**" ⇨"**ModE**" ⇨"**CoUnt**"

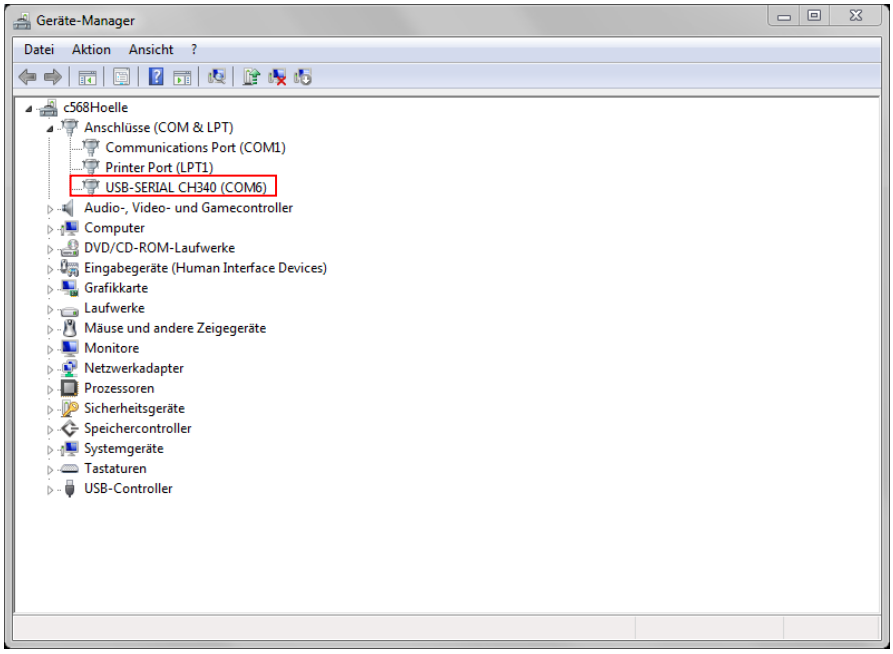
Several programs are available for data transmission on the balance to a PC. The description below refers to "Kern Balance Connection".

- A 10-day free trial of the KERN Balance Connection test version is available for download under www.kern-sohn.com/Downloads/Software.

How to install a USB driver (In menu "Downloads/Operating Instructions, Single Projects, Conformity Declarations, Driver" on the KERN Homepage (www.kern-sohn.com)	
Select driver CH341	
Connect USB interface KIB-A03 of balance with PC	

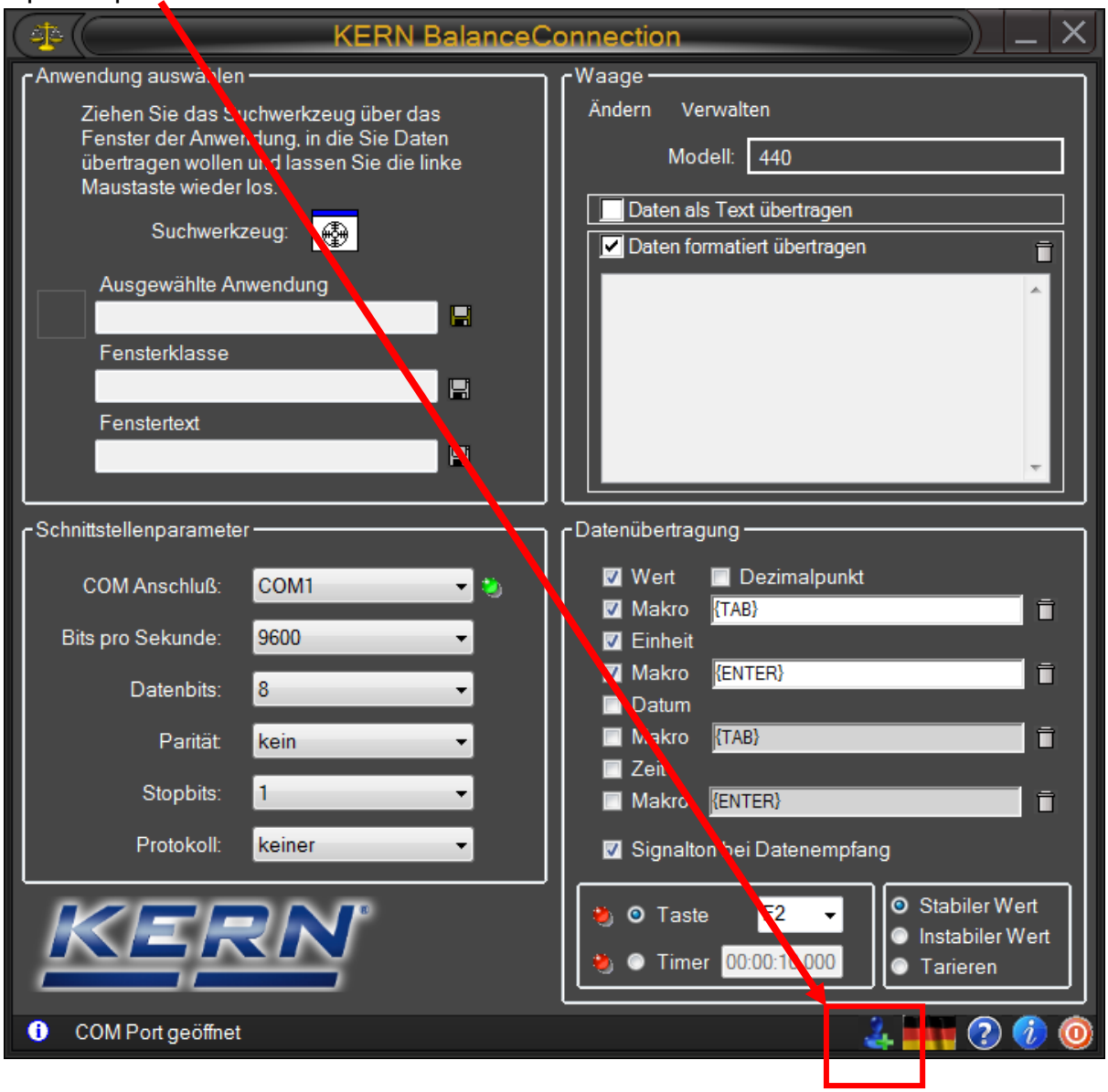
English

Go to device manager of PC and search for "USB Serial CH340 (COM6).
(This COM Port will later be entered in Balance Connection.)

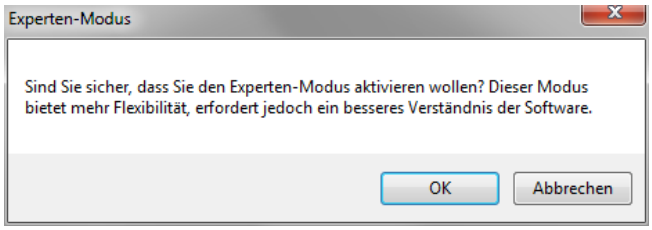


English

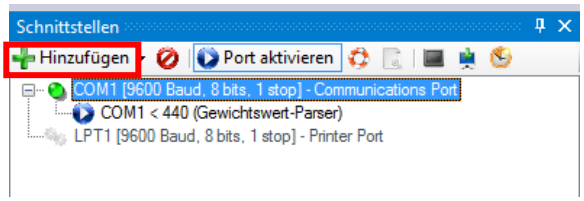
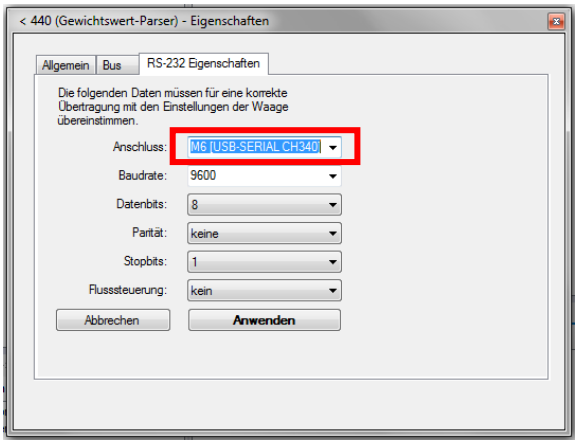
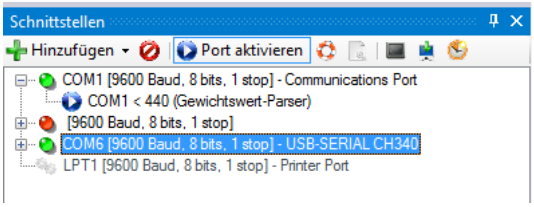
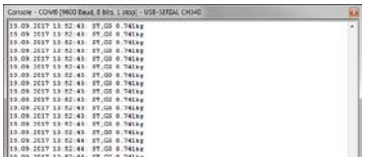
Open expert mode:



Click on OK



English

Add interface: - Click on "Add" - Click on "RS-232 Port (manual)" - Tab "RS-232 properties"	
In Balance Connection select the selected COM Port of the PC and set the interface parameters (baud, data bit, stop bit etc.). Click Apply, close window.	
Right-click to enable COM 6 or click on "Enable Port"	
Ensure that balance is switched on.	
Right-click on COM 6→Open Console→ and data will be transferred	

- Now you can set all the other output methods in Balance Connection.
- If data transmission is not happening, check the settings described above and re-enter as required.

English

3 Ethernet (optional)

The Ethernet allows you to transmit data via cable to devices (such as computers, printers etc.) that are interconnected in a local network. No direct connection between KIB-TM and PC is necessary.

Set the following menu items in **KIB-TM** (See chap. 8)

- ⇨ Menu item "**P9 Prt**" ⇨ "**oPt**" ⇨ "**intF**" ⇨ "**EnEt**" (Enable output Ethernet)
- ⇨ Menu item "**P9 Prt**" ⇨ "**oPt**" ⇨ "**ModE**" ⇨ " **Count**" (Output mode cont. data output)
- ⇨ Menu item "**P9Prt**" ⇨ "**oPt**" ⇨ "**iP1-4**" Set IP address KIB-TM as follows: Enter IP address not yet allocated in network:

Example: **10.0.1.104**
It is always necessary to enter three numbers following scheme below:

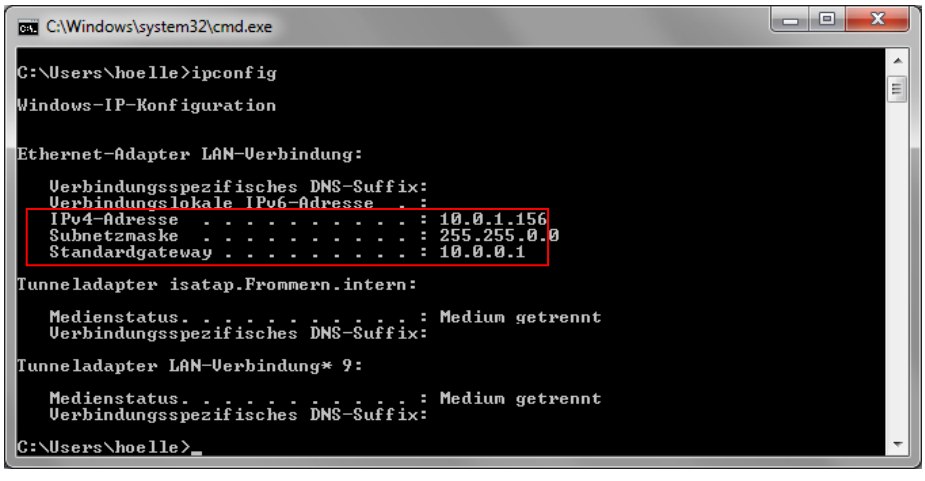
10.	**0.**	**1**	**104**	**IP-address**
010	000	001	104	Entry sequence in KIB-TM
IP1	IP2	IP3	IP4	

The same principle is used to configure the following settings:

- ⇨ Menu item "**P9 Prt**" ⇨ "**oPt**" ⇨ "**MASK_1-4**" (Subnet mask)
- ⇨ Menu item "**P9 Prt**" ⇨ "**oPt**" ⇨ "**GATE_1-4**" (Gateway)

Now enter the IP address for the PC on the display unit

(If unknown proceed as follows:
- ⇨ Press Windows key and "R" simultaneously
- ⇨ Enter "cmd" and press Enter to confirm
- ⇨ The entry prompt will appear
- ⇨ Enter "ipconfig" and press Enter to confirm
- ⇨ The PC‘s IP address will appear on the screen)



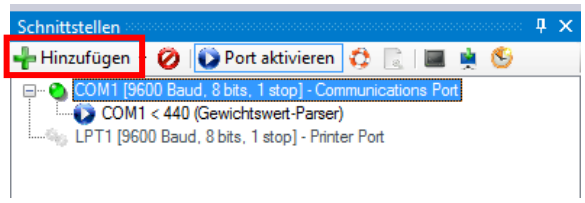
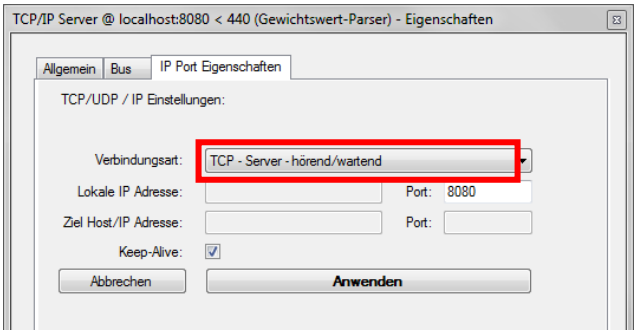
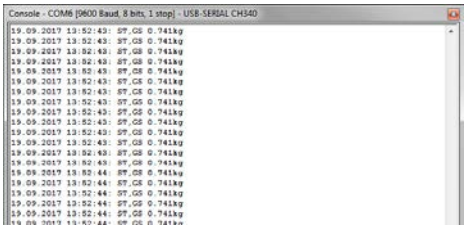
English

As the IP address is saved to the KIB-TM we recommend using a static IP address of the computer.

Now enter the IP address for the PC on the display unit:

⇨ Menu item "**P9Prt**" ⇨ "**oPt**"⇨"**riP_1-4**" (IP address PC)

⇨ Connect KIB-TM to network (router/switch).
⇨ Start Balance Connection
⇨ Start Expert mode (See chap. 2)

Adding an interface: - Click on "Add" (green +) - Click on "TCP/IP Server" - Tab "IP Port Properties"	
Set "TCP – Server listening/waiting" **Setting the port**: The settings must match the settings of the KIB-TM: „**P9Prt**“ ⇨ „**opt**“ ⇨ „**rPort**“ The port is user definable. It must not be blocked by the router. Click Apply, close window.	
Enabling the port: Right-click → Open console	
→ Data will be transferred (The console is merely used to check data transmission). All other output methods can only be set in Balance Connection.)	

- If data transmission is not happening, check the settings described above and re-enter as required.

English

4 WLAN (Optional)

Set the following menu items in **KIB-TM** (See chap. 8)

- ⇨ Menu item "**P9 Prt**" ⇨ "**oPt**" ⇨"**intF**" ⇨"**WiFi**" (Enable output mode WLAN)
- ⇨ Menu item "**P9 Prt**" ⇨ "**oPt**" ⇨ "**ModE**" ⇨ " **Count**" (Output mode cont. data output)
- ⇨ Menu item "**P9Prt**" ⇨ "**oPt**" ⇨ "**iP1-4**" Set IP address KIB-TM as follows: Enter IP address not yet allocated in network:

Example: **10.0.1.104**
It is always necessary to enter three numbers following scheme below:

10.	**0.**	**1**	**104**	**IP-address**
010	000	001	104	Entry sequence in KIB-TM
IP1	IP2	IP3	IP4	

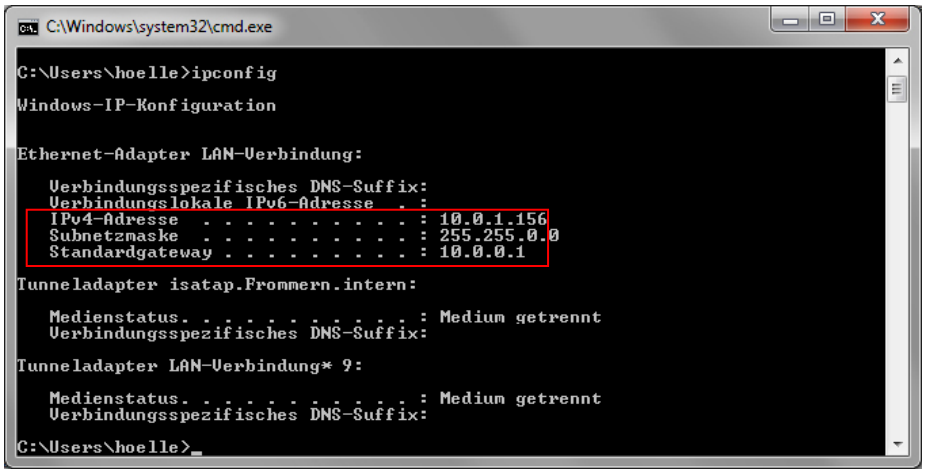
English

The same principle is used to configure the following settings:

- ⇨ Menu item "**P9 Prt**" ⇨ "**oPt**" ⇨ "**MASK_1-4**" (Subnet mask)
- ⇨ Menu item "**P9 Prt**" ⇨ "**oPt**" ⇨ "**GATE_1-4**" (Gateway)

Now enter the IP address for the PC on the display unit

(If unknown proceed as follows:
- ⇨ Press Windows key and "R" simultaneously
- ⇨ Enter "cmd" and press Enter to confirm
- ⇨ The entry prompt will appear
- ⇨ Enter "ipconfig" and press Enter to confirm
- ⇨ The PC‘s IP address will appear on the screen)

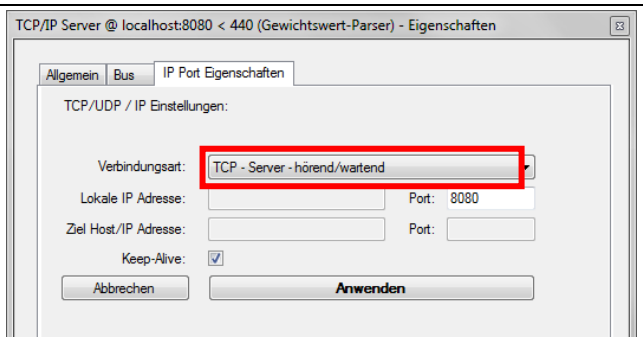
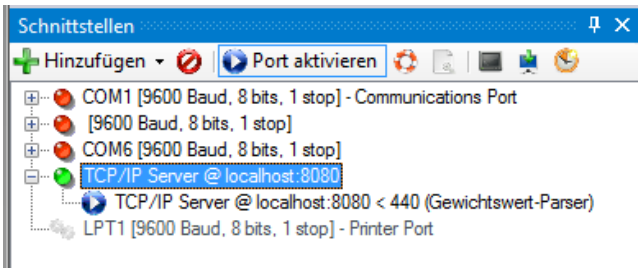
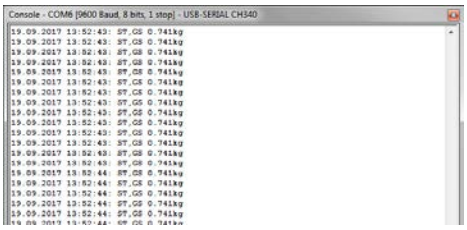


As the IP address is saved to the KIB-TM we recommend using a static IP address of the computer.

Now enter the IP address for the PC on the display unit:

⇨ Menu item "**P9Prt**" ⇨ "**oPt**"⇨"**riP_1-4**" (IP address PC: 192.168.1.104)

⇨ Connect KIB-TM to network (router/switch).
⇨ Start Balance Connection
⇨ Start Expert mode (See chap. 2)

How to add interface: - Click on "Add" (green +) - Click on "TCP/IP Server" - Tab "IP Port Properties"	
Set "TCP – Server listening/waiting" **How to set port**: The settings must match the settings of the KIB-TM: "**P9Prt**" ⇨ "**opt**" ⇨ "**rPort**" The port must be set to "8080" or "6000". It must not be blocked by the router. Click Apply, close window.	
Enable port: Right-click → Open console	
→ Data will be transferred (The console is merely used to check data transmission). All other output methods can only be set in Balance Connection.)	

- If data transmission is not happening, check the settings described above and re-enter as required.

- Restart of KIB-TM is required after making changes to WLAN settings.
- After the restart it may take up to 20 sec until the WLAN module is displayed.

English

5 Bluetooth (Option)

Wireless data transmission over a short distance between devices is possible with the help of Bluetooth.

Establish connection between KIB-TM and computer/mobile phone. To that end enter the following:

- Password: 0000 (alternatively 1234)
- Name: HC-06

The menu items shown below must be set in KIB-TM

⇨ Menu item "**P9 Prt**" ⇨ "**oPt**" ⇨"**intF**" ⇨"**Bt**"
⇨ Menu item "**P9 Prt**" ⇨ "**oPt**" ⇨"**ModE**" ⇨"**Count**"

Among other things Balance Connection can be used to process data.

⇨ The Bluetooth interface is not IOS-capable!
⇨ KIB-A04 supports Bluetooth Low Energy (BLE) (incompatible with old Bluetooth versions).

6 Alibi memory (optional)

For balances with obligatory verification, which are evaluated and processed by a connected PC, the verification law prescribes in the interest of consumer protection electronic storage for all weighings liable to verification in the form of a verifiable data storage device that cannot be manipulated. Alibi memories by KERN meet this requirement.
This is used for paperless storage of weighing results.
All data transmitted to the PC will be saved including date, time and all the important weighing values. These saved data records are available for viewing on the weighing balance at any time.

Data that can be transmitted include:

- Number of measurement
- Date of measurement
- Time of measurement
- Gross weight
- Tare value
- Net weight
- Weighing unit

1.1 Export of ALIBI memory data to computer

Selected data are automatically saved after pressing PRINT. The user is able to browse and print the records. As soon as the memory space is full, the first record in the list will be overwritten.

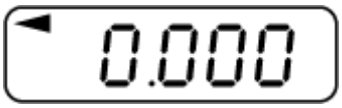
To export ALIBI memory data to a USB stick, take the steps below:

- ⇨ In the weighing mode, press and hold the M+ CAL button until Pn appears.
- ⇨ Enter the password and make appropriate menu settings as described in section 1.1.

Export of saved data:

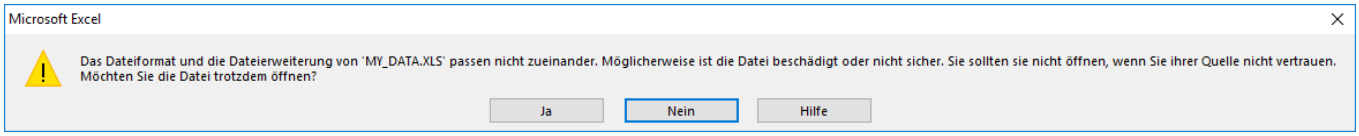
- ⇨ Select the menu item "**P8 ind**" ⇨ "Alibi" "**ALibi**" ⇨ "**EXPT**".
- ⇨ Place the USB stick in the USB type A port.

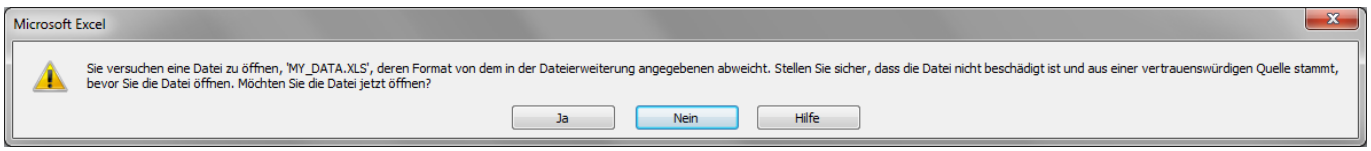
If the USB is properly connected, an arrow is shown in the top left corner of the display:



- ⇨ Save the data as described above.
- ⇨ Connect the USB to a USB port in the computer.
- ⇨ Open an Excel spreadsheet to analyze saved data or, after connecting an optional printer, print them.

When the below messages are displayed, confirm them by pressing "Yes".





Sample data exported to Microsoft Excel:

	A	B	C	D	E	F	G
1	1	15.02.2018	11:43:27	2.995	1.000	1.995	kg
2	2	15.02.2018	11:43:55	6.000	1.000	5.000	kg
3	3	15.02.2018	11:49:14	6.000	5.008	0.992	kg
4	4	15.02.2018	11:54:23	2.994	2.003	0.991	kg
5							

	Record number	Date of weighing	Time of weighing	Gross weight	Tare value	Net weight	Weighing unit

English

7 I/O interface (optional)

(available for example in the KIB-A06 indicator light)

The I/O module has 2 inputs and 8 outputs.

It is possible to connect an indicator light to display the upper and lower limit values.

To connect the indicator light, make the following menu settings:

Menu item to activate the I/O module:

⇨ Select the menu item “**P0 CHK**“ ⇨ “**rELAy**“ ⇨“**on**“ and confirm by pressing →0←.

Setting the upper limit value:

⇨ Select the menu item “**P0 CHK**“ ⇨ “**nEt H**“ and confirm by pressing →0←.
⇨ Use the navigation buttons to enter the upper limit value and confirm by pressing →0←.

Setting the lower limit value:

⇨ Select the menu item “**P0 CHK**“ ⇨ “**nEt L**“ and confirm by pressing →0←.
⇨ Use the navigation buttons to enter the lower limit value and confirm by pressing →0←.

Manual input and output switching (test mode):

⇨ Select the menu item “**P9 Prt**“ ⇨ “**io**“ ⇨ “**o_tSt**“ (output test mode).
⇨ Select the menu item “**P9 Prt**“ ⇨ “**io**“ ⇨ “**i_tSt**“ (input test mode).

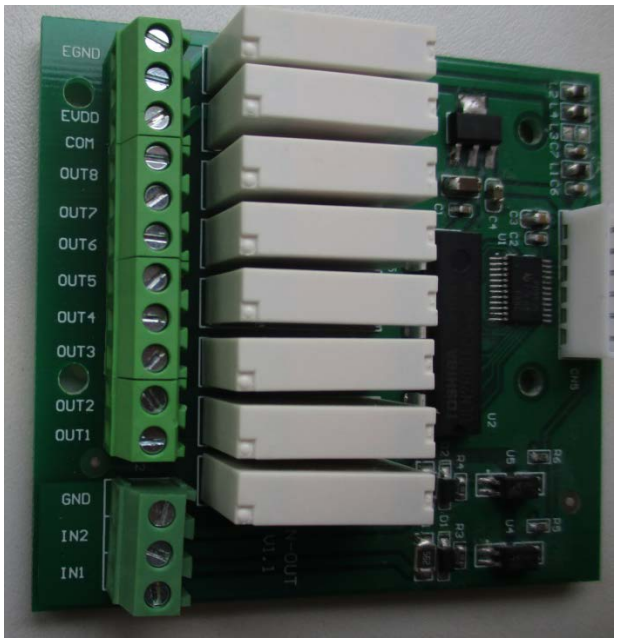
- The number on the left of the display designates the output number (connected to OUT1-OUT8 or IN1-IN2).
- The number on the right of the display designates the current output status:
  - “0“ means deactivated
  - “1“ means activated (test voltage: 12V)

To switch between different outputs and inputs, use the navigation buttons M+ CAL (←) and MR F (→).

Press the TARE (↑) button to activate or deactivate an output/input (constant voltage:12 V).

Terminal assignment in KERN CFS-A03 or KERN KIB-A06 indicator lights:

EGND
EVDD
COM
OUT 8
OUT 7
OUT 6
OUT 5
OUT 4
OUT 3
OUT 2
OUT 1
GND
IN 2
IN 1



Connections		
Indicator light		**KIB-TM - IN-OUT**
Function	Colour	J1
power (-)	black	COM
power (+)	red	EVDD
LOW	yellow	OUT 1
OK	green	OUT 2
HIGH	red	OUT 3
COM	black	GND

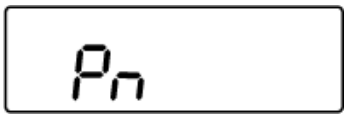
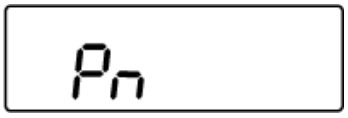
* Voltage is supplied to the indicator light via a single cable.

8 RS 485 interface (optional)

The RS-485 interface is used exclusively with the KERN KIB-A07 large-format display.

9 Menu

Navigation in the menu:

Call up menu	⇨ Switch-on balance and during the selftest press M+ CAL.  ⇨ Press M+ CAL, BG NET ESC, TARE, subsequently, the first menu block „PO CHK“ will be displayed. 
	⇨ From the weighing mode: Press and hold M+ CAL until Pn appears.  ⇨ Enter the password (see above).
Select menu block	⇨ With help of TARE, the individual menu items can be selected one after the other.
Select setting	⇨ Confirm selected menu item by pressing →0←. The current setting will be displayed.
Change settings	⇨ The arrow keys can be used to change the available settings.
Acknowledge setting / exit the menu	⇨ Either save by pressing →0← or cancel by pressing BG NET ESC.
Return to weighing mode	⇨ Press BG NET ESC repeatedly to exit menu.

English

Menu overview

Menu block Main menu	Menu item Submenu	Available settings / explanation		
PO CHK **Weighing with tolerance range**	nEt H	Upper limit value "Tolerance Control Weighing", Entry		
	nEt L	Lower limit value "Tolerance Control Weighing", Entry		
	PCS H	Upper limit value "Tolerance Control Counting", Entry		
	PCS L	Lower limit value "Tolerance Control Counting", Entry		
	BEEP	no	Acoustic signal for weighing with tolerance range switched off	
		ok	Audio sound when weighed load is within tolerance limits	
		nG	Audio sound when weighed load is beyond tolerance limits	
	rELAY	on	Relay pilot light	
		oFF		
P1 rEF[1] **Zero point settings**	A2n0	Automatic zero point correction (Autozero) by changing the display, digits selectable (0, 0.5d, 1d, 2d, 4d)		
	0AUto	Zero setting range Load range where the display after switching-on the balance is set to zero. Selectable 0, 2, 5, 10, 20, 30, 50, 100 %		
	0rAGE	Zero setting range Load range where the display is set to zero by pressing →0← . Selectable 0, 2, 4, 10 , 20* , 50, 100%.		
	0tArE	Automatic taring „on / off“, taring range adjustable in menu item „0Auto“.		
P2 COM **Interface parameter**	MODE	CONT	S0 off	Continuous data output, selectable „sending 0“, yes / no
			S0 on	
		ST1	One output for stable weighing value	
		STC	Continuous data output of stable weighing values	
		PR1	• Output after pressing PRINT C • Precondition for alibi memory	
		PR2	Manual totalizing Press M+ CAL and the weighing value will be added to the summation memory and issued.	

English

		AUTO*	Automatic adding-up This function is used to issue and add individual weighing values automatically to the summation memory on unloading of weighing scale.
		ASK	Remote control instructions
		wirel	Not documented
	BAUD	Available Baudrate: 600, 1200, 2400, 4800, 9600*	
	Pr	7E1	7 bits, even parity
		7o1	7 bits, odd parity
		8n1*	8 bits, no parity
	PTYPE	tPUP*	Standard printer setting
		LP50	Not documented
		KCP	KERN Communication Protocol
	LAb	LAb x	For data output format, see table below. 1
	Prt	Prt x	
	LAnG	eng*	Standard settings English
		chn	Not documented
P3 CAL **Configuration data**	COUNT	Display internal resolution	
	DECI	Position of the decimal dot	
	DUAL	Setting balance type, capacity (Max) and readability (d)	
		off	Single-range balance
			R1 inc: Readability
			R1 cap: Capacity
		on	Dual range balance
			R1 inc: Readability 1st weighing range
			R1 cap: Capacity 1st weighing range
			
			R2 inc: Readability 2nd weighing range
			R2 cap: Capacity 2nd weighing range
	CAL	noLin	Adjustment
		Liner	Linearisation
	GrA	Gravitational constant at place of installation	
	GrB	Gravitational constant at place of manufacture	
P4 OTH	LOCK	on	Keyboard lock enabled
		off*	Keyboard lock disabled
	ANM[1]	on	Animal weighing enabled
		off*	Animal weighing disabled
	SCr	on	watch as screensaver enabled
		off*	watch as screensaver diabled

P5 Unt[1] **Change weighing unit,**	kg	on*	
		off	
	g	on	
		off*	
	lb	on	
		off*	
	oz	on	
		off*	
	tJ	on	
		off	
	HJ	on	
		off	

P6 xcl[1]		Not documented	
P7 rst[1] **Factory setting**		Use  to reset balance settings to factory default.	
P8 ind	dAtE	Setting date: Format: TTMMJJ	
	tIME	Setting time: Format: HHMMSS	
	ALibi	Alibi memory	
		dAtA	Number of saved records
		rdAtA	Read the record value
		ErASE	Delete all data
		ExPT	Export data (USB stick)
	PrEt	Enter pre-tare value	

English

P9 Prt	485	ModE	2disP, Count	Export mode (2nd display)
		bAUd	600, 1200, 2400, 4800, 9600	Baud rate
		Pr	7o1	7 Bit, odd Parity, 1 Stop bit
			7E1	7 Bit, equal Parity, 1 Stop bit
			8n1	8 Bit, no Parity, 1 Stop bit
	io	i_tSt		Test input
		o_tSt		Test output
	oPt	intF	USB, UdiSK, Bt, WiFi, EnEt	Select connections
		ModE (output)	no, CoUnt (USB, Bt, Wi-Fi, EnEt) no, Expt (UdiSK)	
		iP_1		IP addresses KIB-TM
		iP_2		
		iP_3		
		iP_4		
		MASK_1		Subnet mask
		MASK_2		
		MASK_3		
		MASK_4		
		GAtE_1		KIB-TM Gateway
		GAtE_2		
		GAtE_3		
		GAtE_4		
	oPt	riP_1		remote (IP-Adresse PC)
		riP_2		
		riP_3		
		riP_4		
		rPort		Remote port (Port for communication between PC and KIB-TM
		SSid_1		SSID
		SSid_2		
		PSW_1		WLAN Password
		PSW_2		

Factory settings are marked with an asterisk (*).

[1] Function blocked when the adjustment switch is in the position "balance is calibratable"
(adjustment switch in the "LOCK" position).