User Manual

PCE-PDR 10 Pressure Data Logger

User manuals in various languages (français, italiano, español, português, nederlands, türk, polski, русский, 中文) can be found by using our

product search on: www.pce-instruments.com

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Contents

1   Safety notes

Please read this manual carefully and completely before you use the device for the first time. The device may only be used by qualified personnel and repaired by PCE Instruments personnel. Damage or injuries caused by non-observance of the manual are excluded from our liability and not covered by our warranty.

- The device must only be used as described in this instruction manual. If used otherwise, this can cause dangerous situations for the user and damage to the meter.
- The instrument may only be used if the environmental conditions (temperature, relative humidity, …) are within the ranges stated in the technical specifications. Do not expose the device to extreme temperatures, direct sunlight, extreme humidity or moisture.
- Do not expose the device to shocks or strong vibrations.
- The case should only be opened by qualified PCE Instruments personnel.
- Never use the instrument when your hands are wet.
- You must not make any technical changes to the device.
- The appliance should only be cleaned with a damp cloth. Use only pH-neutral cleaner, no abrasives or solvents.
- The device must only be used with accessories from PCE Instruments or equivalent.
- Before each use, inspect the case for visible damage. If any damage is visible, do not use the device.
- Do not use the instrument in explosive atmospheres.
- The measurement range as stated in the specifications must not be exceeded under any circumstances.
- Non-observance of the safety notes can cause damage to the device and injuries to the user.

We do not assume liability for printing errors or any other mistakes in this manual.

We expressly point to our general guarantee terms which can be found in our general terms of business.

If you have any questions please contact PCE Instruments. The contact details can be found at the end of this manual.

2   Function

The data logger can display 4 ... 20 mA signals from pressure sensors scaled in different units of measurement and make 3-channel recordings at different storage intervals.

3   Specifications

Specification	Explanations
Measurement range	0/4 ... 20 mA
Measurement accuracy	±(0.5 % + 0.02 mA)
Resolution	0.01 mA
Adjustable pressure ranges	2, 5, 10, 20, 50, 100, 200, 400 bar
Units of measurement	bar, psi, kg/cm², mmHg, inHg, mH2O, inH2O, ATP, kPa
Input impedance 4 ... 20 mA	10 Ω
Storage rate in seconds	5, 10, 30, 60, 120, 300, 600, Auto
Memory	SD card up to 16 GB
Display	LCD with illumination
Refresh rate display	1s
Power supply	6 x 1.5 V AAA battery + plug-in mains adaptor 9 V / 1 A
Operating conditions	0 ... 50 °C / 32 ... 122°F, <85 % RH
Dimensions	132 x 80 x 32 mm / 5.2 x 3.1 x 1.3 in
Weight	approx. 199 g / <1 lb

4   Delivery scope

1 x pressure data logger PCE-PDR 10
3 x connection terminals
1 x SD memory card
1 x wall bracket
1 x adhesive pad
1 x plug-in mains adaptor 9 V 1.0 A
1 x user manual

5   Device description
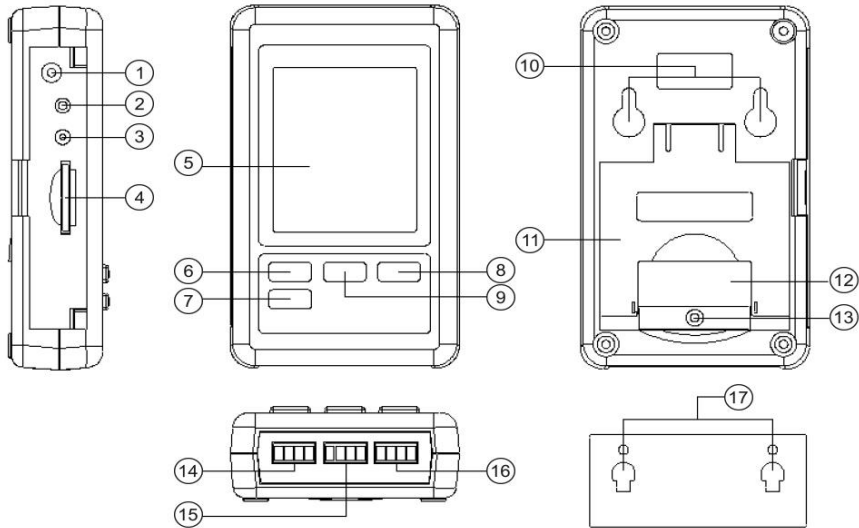
|			
①	9 V DC input	⑩	Mounting hole
②	Opening Reset key	⑪	Stand
③	RS232 output	⑫	Battery compartment
④	SD card slot	⑬	Battery compartment screw
⑤	Display	⑭	Measuring input channel 1
⑥	LOG / Enter key	⑮	Measuring input channel 2
⑦	Set key	⑯	Measuring input channel 3
⑧	Key ▼	⑰	Wall bracket
⑨	Key ▲ / Time		

6 Operation

6.1 Measurement preparation

- Before using the device for the first time, insert the batteries correctly as described in chapter 7The batteries are absolutely necessary for the operation of the internal cLOGk.
- First connect the plug-in mains adaptor to the meter and then to the mains. The unit automatically switches to measuring mode. Without the mains adaptor, only the time is shown on the display. Measuring or logging is not possible.
- Insert an SD card into the card slot. Format the card before using it for the first time or if the card has been formatted by other devices. To format the SD card, proceed as described in chapter 6.6.1
- Check the date, time and log interval. Press the "▲ / Time" key for approx. 2 seconds. The set values are displayed one after the other. You can change the date, time and log interval as described in chapter 6.6
- Make sure that the decimal character is set correctly. The default decimal character is a dot. In Europe, however, the comma is customary. If the decimal character is not set correctly in your country, this can lead to incorrect values and complications when reading out the memory card. You can make the setting as described under chapter 6.6.5
- Switch the key and control sounds on or off as described in chapter 6.6.4
- Enable or disable the RS232 output as described in chapter 6.6.6
- Check the set measurement ranges. Press the "▼" key. If necessary, correct the measurement range for each measuring channel to the values of the connected sensor as described in chapters 6.6.7... 6.6.9
- Select one of the available units of measurement as described in chapter 6.6.10.
- Connect the signal line with correct polarity to the corresponding connectors of the measuring inputs.

Connection example:
Each channel can be assigned with 4 ... 20 mA or a TR-PS2W-XXX sensor. With the TR-PS2W-XXX sensor, the power supply for the sensor is provided by the data logger.
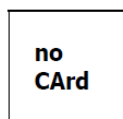(TR-PS2W-XXX pressure sensor from the accessories)
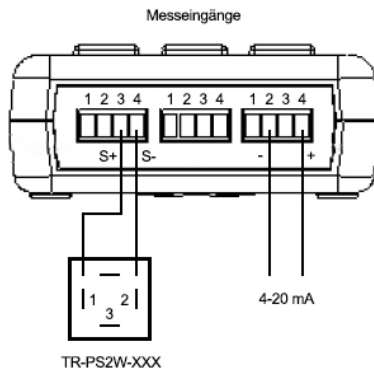
6.2   Display information

Ch-CArd
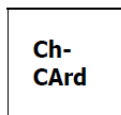
SD card is full or defective.
Clear and format the SD card
If the indication continues to appear, replace the SD card.

LobAt or
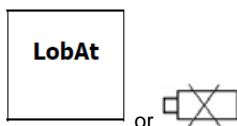
Battery level low
Replace the batteries.

no CArd

No SD card inserted

6.3   Measuring / logging

- Plug the measuring input connectors into the corresponding channel input, observing correct polarity.
The current measured values are displayed.

6.3.1   Starting the log function

- To start the logger, press and hold the "LOG / Enter" key for >2 seconds. "Scan" quickly appears in the upper part of the display as a confirmation. "Datalogger" appears between the channel 2 and 3 display. The lettering "Datalogger" flashes and the control sound is audible at the set log interval (if not disabled).

6.3.2   Exiting the log function

- To end the log function, press and hold the "LOG / Enter" key for >2 seconds. The meter returns to measuring mode.

6.4   Backlight

To switch the backlight on or off, press and hold the "▼" key for >2 seconds.

6.5 Data transfer to the PC

- Remove the SD card from the unit when the log function is finished.
  Attention!
  Removing the SD card while the log function is active can lead to data loss.
- Insert the SD card into the appropriate SD card slot on the PC or into an SD card reader connected to the PC.
- Start the spreadsheet programme on your PC, open the file on the SD card and read out the data.

6.5.1 SD card structure

The following structure is automatically created on the SD card when it is used for the first time or after formatting:

- Folder "PSB01
- File "PSB01001" with max. 30000 data records
- File "PSB01002" with max. 30000 records if PSB01001 overflows.
- etc. until "PSB01099"
- File "PSB02001" if PSB01099 overflows
- etc. until "PSB10...."

Example file

	A	B	C	D	E	F	G	H	I
	Position	Date	Time	Ch1_Value	Ch1_Unit	Ch2_Value	Ch2_unit	Ch3_Value	Ch3_unit
1									
2	1	2011/11/22	10:28:14	0.16	Bar	0.3	Bar	0.22	Bar
3	2	2011/11/22	10:28:25	0.16	Bar	0.3	Bar	0.22	Bar
4	3	2011/11/22	10:28:35	0.19	Bar	0.294	Bar	0.19	Bar
5	4	2011/11/22	10:28:45	0.19	Bar	0.294	Bar	0.19	Bar
6	5	2011/11/22	10:28:55	0.19	Bar	0.298	Bar	0.19	Bar
7	6	2011/11/22	10:29:05	0.22	Bar	0.306	Bar	0.25	Bar
8	7	2011/11/22	10:29:15	0.22	Bar	0.306	Bar	0.25	Bar
9	8	2011/11/22	10:29:25	0.25	Bar	0.314	Bar	0.22	Bar
10	9	2011/11/22	10:29:35	0.25	Bar	0.314	Bar	0.22	Bar
11	10	2011/11/22	10:29:45	0.22	Bar	0.314	Bar	0.19	Bar
12	11	2011/11/22	10:29:55	0.22	Bar	0.306	Bar	0.19	Bar
13	12	2011/11/22	10:30:05	0.19	Bar	0.31	Bar	0.17	Bar
14	13	2011/11/22	10:30:15	0.19	Bar	0.298	Bar	0.17	Bar
15	14	2011/11/22	10:30:25	0.25	Bar	0.298	Bar	0.2	Bar
16	15	2011/11/22	10:30:35	0.25	Bar	0.302	Bar	0.2	Bar

6.6 Advanced settings

- With the unit switched on and the data logger not activated, press and hold the "SET" key until "Set" appears on the display.
- With the "SET" key, you can call up the following setting options one after the other.

No.	Display indication	Action
1	Sd F	Format SD card
2	dAtE	Set date and time
3	SP-t	Sampling time / storage interval
4	bEEP	Key / control sound on / off
5	dEC	Decimal character . or ,
6	rS232	RS 232 output on / off
7	tyPE CH1	Measurement range channel 1
8	tyPE CH2	Measurement range channel 2
9	tyPE CH3	Measurement range channel 3
10	unit	Unit of measurement

If no entries are made for 5 seconds, the unit returns to measuring mode.

6.6.1 Format SD card

- Navigate to the advanced settings as described above. The prompt Sd F appears on the display.
- Use the "▼" or "▲ / Time" keys to select yes or no.
- Confirm the selection with the "LOG / Enter" key.
- If you select "yes", you must confirm the security prompt again with the "LOG / Enter" key.
- Press the "SET" key repeatedly until you return to measuring mode or wait for 5 seconds; then the meter will return to measuring mode automatically.

Attention!
If you select "yes" and confirm the security prompt, all data on the SD card will be deleted and the SD card will be reformatted.

6.6.2 Date / time

- Navigate to the advanced settings as described above.
- Press the "SET" key repeatedly until "dAtE" appears on the display.
  After a short time, the year, month and day appear on the display.
- Use the "▼" or "▲ / Time" keys to select the current year and confirm the entry with the "LOG / Enter" key.
- Proceed with the entry of the month and the day as with the entry of the year. After confirming the day, the display shows the hour, minute and second.
- Proceed with these entries as with the year, etc.
- Press the "SET" key repeatedly until you return to measuring mode or wait for 5 seconds; then the meter will return to measuring mode automatically.

6.6.3   Sampling time / log interval

- Navigate to the advanced settings as described above.
- Press the "SET" key repeatedly until "SP-t" appears on the display.
- Select the desired log interval with the "▼" or "▲ / Time" keys and confirm the entry with the "LOG / Enter" key. The following can be selected:
  5, 10, 30, 60, 120, 300, 600 seconds and auto.
- Press the "SET" key repeatedly until you return to measuring mode or wait for 5 seconds; then the meter will return to measuring mode automatically.

Attention!
"auto" means that each time the measured values change (>±10 digits), the values are saved. If the setting is 1 second, individual data records may be lost.

6.6.4   Key / control sound

- Navigate to the advanced settings as described above.
  Press the "SET" key repeatedly until "bEEP" appears on the display.
- Use the "▼" or "▲ / Time" keys to select yes or no.
- Confirm the selection with the "LOG / Enter" key.
- Press the "SET" key repeatedly until you return to measuring mode or wait for 5 seconds; the meter will return to measuring mode automatically.

6.6.5   Decimal character

- Navigate to the advanced settings as described above.
  Press the "SET" key repeatedly until "dEC" appears on the display.
- Use the "▼" or "▲ / Time" keys to select "Euro" or "USA".
  "Euro" corresponds to the decimal comma and "USA" corresponds to the decimal point. In Europe, the "comma" is predominantly used as decimal character.
- Confirm the selection with the "LOG / Enter" key.
- Press the "SET" key repeatedly until you return to measuring mode or wait for 5 seconds; the meter will return to measuring mode automatically.

6.6.6   RS232 output

- Navigate to the advanced settings as described above.
  Press the "SET" key repeatedly until "rS232" appears on the display.
- Use the "▼" or "▲ / Time" keys to select yes or no.
- Confirm the selection with the "LOG / Enter" key.
- Press the "SET" key repeatedly until you return to measuring mode or wait for 5 seconds; the meter will return to measuring mode automatically.

6.6.7 Measurement range channel 1

- Navigate to the advanced settings as described above.
  Press the "SET" key repeatedly until "tyPE CH1" appears on the display.
- Use the "▼" or "▲ / Time" keys to select the measurement range of the connected pressure sensor.
- Confirm the selection with the "LOG / Enter" key.
- Press the "SET" key repeatedly until you return to measuring mode or wait for 5 seconds; the meter will return to measuring mode automatically.

6.6.8 Measurement range channel 2

- Procedure as in 6.6.7

6.6.9 Measurement range channel 3

- Procedure as in 6.6.7

6.6.10 Unit of measurement

- Navigate to the advanced settings as described above.
  Press the "SET" key repeatedly until "unit" appears on the display.
- Use the "▼" or "▲ / Time" keys to select the desired unit of measurement.
- Confirm the selection with the "LOG / Enter" key.
- Press the "SET" key repeatedly until you return to measuring mode or wait for 5 seconds; the meter will return to measuring mode automatically.

Attention!
With the measurement range setting of 200 bar with the unit of measurement mmHg and with the measurement range setting of 400 bar with the unit of measurement mmHg and inH2O, the measured value must be multiplied by 100 when it reaches a certain level. A necessary multiplication is signalled by synchronous flashing of the corresponding measured value and the indication "x 100" at the lower edge of the display. (The measured values would be too long to display).

7 Battery replacement

- Replace the batteries when the low battery indicator ⟨×⟩ appears in the left corner of the display or when "LobAt" is displayed. Low batteries can cause incorrect readings and loss of data.
- Loosen the middle screw in the lower area on the back of the unit.
- Open the battery compartment.
- Remove the used batteries and insert 6 new 1.5 V AAA batteries correctly.
- Close the battery compartment and fasten the LOGking screw.

8 Reset system

If a serious system error occurs, resetting the system can solve the problem. To do this, press the reset key with a thin object while the meter is switched on. Note that this resets the advanced settings to the factory settings.

9 RS232 interface

The meter has an RS232 interface via a 3.5 mm socket. The output is a 16-digit data string that can be set up according to user-specific requirements. An RS232 cable with the following features is required to connect the unit to a PC:
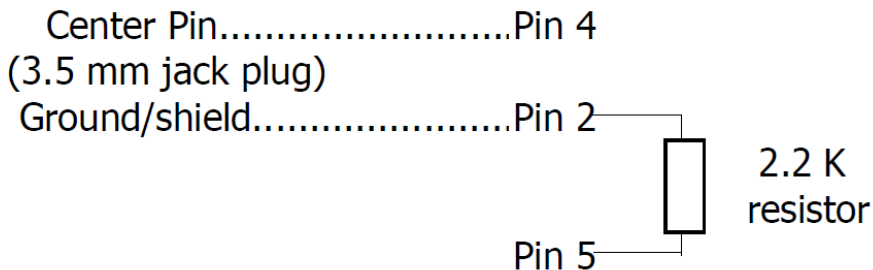
The 16-digit data string is displayed in the following format:
D15 D14 D13 D12 D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 D1 D0

The numbers stand for the following parameters:

D15	Start word		
D14	4		
D13	When upper display data is sent, 1 is sent When middle display data is sent, 2 is sent When lower display data is sent, 3 is sent		
D12 & D11	Annunciator for display		
	bar = 22	mmHg = 78	inH2O = 25
	Psi = 23	inHg = 80	ATP = 26
	kg/cm² = 77	mH2O = 79	kPa =88
D10	Polarity 0 = Positive 1 = Negative		
D9	Decimal point (DP), position from right to left 0 = no DP, 1= 1 DP, 2 = 2 DP, 3 = 3 DP		
D8 to D1	Display indication, D1 = LSD, D8 = MSD For example If display is 1234, D8 ... D1 is 00001234		
D0	End word		

Baud rate	9600
Parity	No parity
Data bit no.	8 data bits
Stop bit	1 stop bit

10   Contact

If you have any questions, suggestions or technical problems, please do not hesitate to contact us. You will find the relevant contact information at the end of this user manual.

11   Disposal

For the disposal of batteries in the EU, the 2006/66/EC directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose.

In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law.

For countries outside the EU, batteries and devices should be disposed of in accordance with your LOGal waste regulations.

If you have any questions, please contact PCE Instruments.

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