PCE-CR 10 Current Data Logger User Manual

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User Manual
PCE-CR 10 Current Data Logger

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Contents

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.

Function

The data logger can display currents within a range of 0 … 20 mA DC and make 3-channel recordings at different storage intervals.

Specifications

Specification	Explanations
Measurement range	0/4 … 20 mA
Measurement accuracy	±(0.5 % + 0.02 mA)
Resolution	0.01 mA
Input impedance	10 0
Storage rate in seconds	1, 2, 5, 10, 30, 60, 120, 300, 600, Auto
Battery life when logging on battery power	Approx. 30 h at 2 s log interval
Memory	SD card up to 16 GB
Display	LCD with backlight
Display refresh rate	1 s
Power supply	6 x 1.5 V AAA battery Plug-in mains adaptor 9 V / 0.8 A
Operating conditions	0 … 50 °C / <85 % RH
Dimensions	132 x 80 x 32 mm / 5.2 x 3.1 x 1.3 in
Weight	approx. 190 g / / <1 lb

Delivery scope

1 x current data logger PCE-CR 10
3 x connection terminals
1 x SD memory card
1 x wall bracket
1 x adhesive pad
6 x battery 1.5 V AAA
1 x user manual

System description
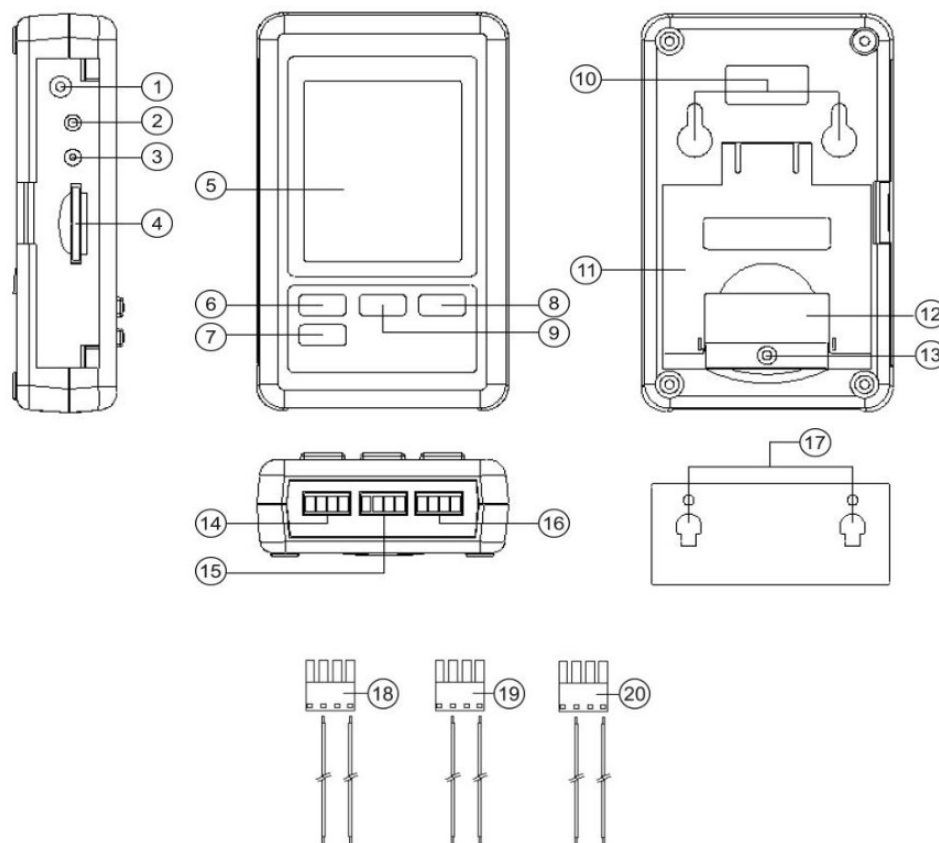
|	
① 9V DC input	Stand
② Reset key opening	Battery compartment
③ RS232 output	Battery compartment screw
④ SD card slot	Measuring input channel 1
⑤ Display	Measuring input channel 2
⑥ LOG / Enter key	Measuring input channel 3
⑦ Set key	Wall bracket
⑧ ▼ / Power key	Connector measuring input ch
⑨ ▲ / Time key	Connector measuring input ch
⑩ Mounting hole	Connector measuring input ch

Operation

6.1 Measurement preparation

- Before using the meter for the first time, insert the batteries correctly as described in chapter 7The batteries are absolutely necessary to operate the internal clock when
  the meter is switched off.
- 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 6.7.1
- Switch on the instrument with the "▼ / Power" key.
- 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 6.7.3
- 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

- Enable or disable the key and control sound as described in chapter 6.7.4
- Enable or disable the RS232 output as described in chapter 6.7.6
- Connect the signal line to the corresponding plugs of the measuring inputs, observing correct polarity.
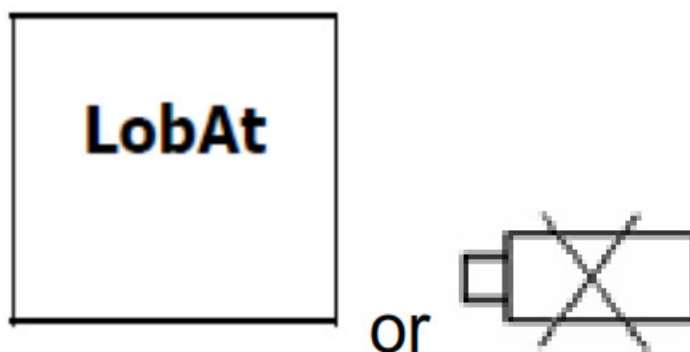
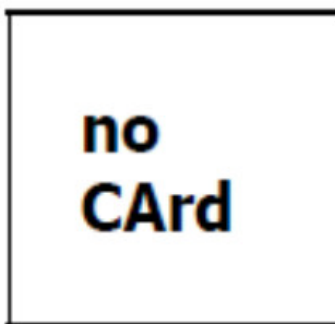## 6.2 Display information

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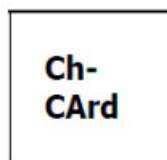
SD card is full or defective.
Empty and format the SD card.
If the indicator continues to appear, replace the SD card.

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.
- Switch on the meter with the "▼ / Power" key.

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" appears briefly in the upper part

of the display as confirmation. "Datalogger" appears

between the displays for channels 2 and 3. 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 exit the log function, press and hold the "LOG / Enter" key for 2 seconds. The unit returns to the measuring
  mode.

6.4 Backlight
6.4.1 Battery operation
Press the "▼ / Power" key to switch on the display backlight for approx. 6 seconds when the meter is switched on.

6.4.2 Mains operation
Press the "▼ / Power" key to switch the display backlight on or off when the meter is switched on.

6.5 Switching the meter off and on

- If necessary, disconnect the plug-in mains adaptor from the mains and from the meter.
- Press and hold the "▼ / Power" key for 2 seconds.
- To switch the meter back on, press and release the "▼ / Power" key once.

It is not possible to switch off the meter while power is supplied by the mains adaptor.
6.6 Data transfer to the PC

- Remove the SD card from the meter 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 corresponding SD card slot on the PC or into an SD card reader connected to the
  PC.
- Start the spreadsheet program on your PC, open the file on the SD card and read out the data.

6.6.1 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 "MAA01
- File "MAA01001" with max. 30000 data records
- File "MAA01002" with max. 30000 records if MAA01001 overflows.
- etc. until "MAA01099
- File "MAA02001" if MAA01099 overflows
- etc. until "MAA10….

Example file

6.7 Advanced settings

- With the meter 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.

	Display indication	Action
1	Sd F	Format SD card
2	dAtE	Set date / time
3	SP-t	Sampling time/log interval
4	bEEP	Key / control sound on / off
5	dEC	Decimal character . or 1
6	rS232	RS 232 output on / off

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

6.7.1 Format SD card

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

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

6.7.2 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 "▼ / Power" or "▲ / Time" keys to select the current year and confirm the entry with the "LOG / Enter" key.
- Proceed with entering the month and the day as you have entered the year. After confirming the day, the hour, minute and second appear on the display.
- Proceed with these entries as with the year, etc.
- Press the "SET" key repeatedly until you return to measuring mode or wait 5 seconds; the meter will then switch to measuring mode automatically.

6.7.3 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 "▼ / Power" or "▲ / Time" keys and confirm the

  entry with the "LOG / Enter" key. The following can be selected: 1, 2, 5, 10, 30, 60, 120, 300, 600 seconds and

  auto.

- Press the "SET" key repeatedly until you return to measuring mode or wait 5 seconds; the meter will then

  switch to measuring mode automatically.

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

6.7.4 Key/control sound

- Navigate to the advanced settings as described above.

  Press the "SET" key repeatedly until "bEEP" appears on the display.

- Use the "▼ / Power" 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 5 seconds; the meter will then

  switch to measuring mode automatically.

6.7.5 Decimal character

- Navigate to the advanced settings as described above.

  Press the "SET" key repeatedly until "dEC" appears on the display.

- Use the "▼ / Power" or "▲ / Time" keys to select "Euro" or "USA".

  "Euro" corresponds to the comma and "USA" corresponds to the dot. In Europe, the "comma" is predominantly

  used as the decimal character.

- Confirm the selection with the "LOG / Enter" key.

- Press the "SET" key repeatedly until you return to measuring mode or wait 5 seconds; the meter will then

  switch to measuring mode automatically.

6.7.6 RS232 output

- Navigate to the advanced settings as described above.

  Press the "SET" key repeatedly until "rS232" appears on the display.

- Use the "▼ / Power" or "▲ / Time" key 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 5 seconds; the meter will then

  switch to measuring mode automatically.

Battery replacement

- Replace the batteries when the low battery indicator appears in the left corner of the display. 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 locking screw.

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 default.

RS232 interface

The instrument 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 meter to a PC:
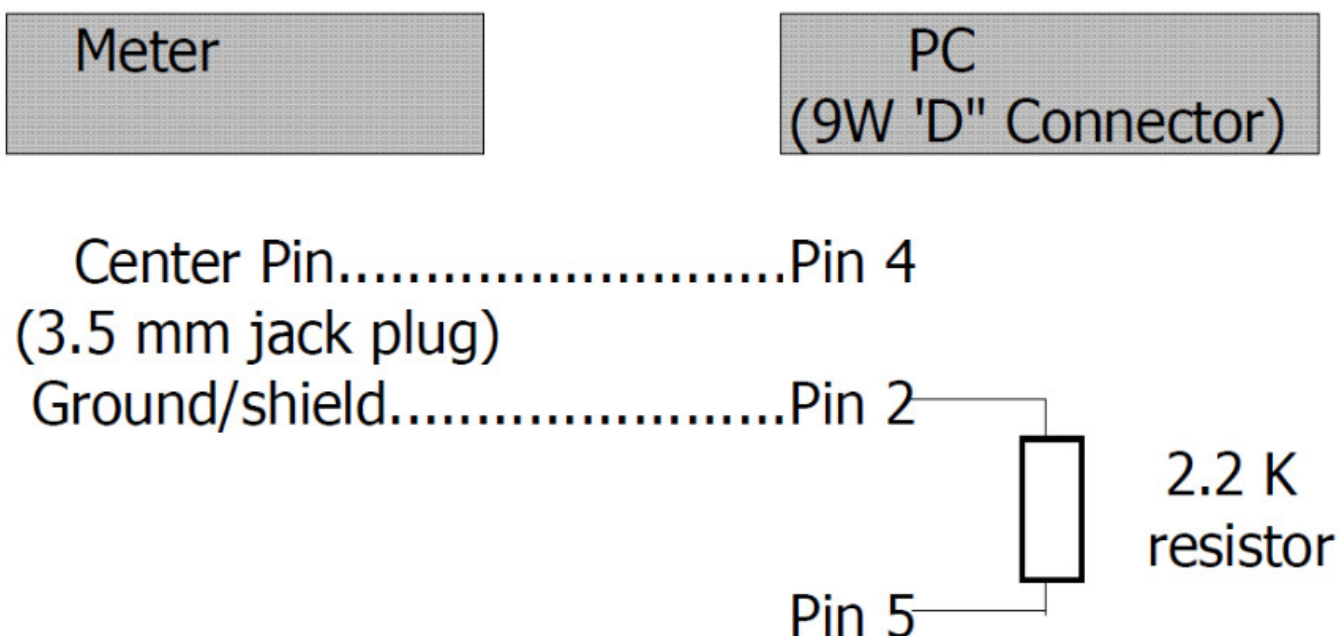
The 16-digit data string is displayed in the following format:
D15 D14 D13 D12 D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 D1 D0
The numbers stand for the following parameters:

D15	Start word
D14	4
D13	When upper display data is sent, 1 is sent When medium display data is sent, 2 is sent When lower display data is sent, 3 is sent
D12 & D11	Annunciator for display mA = 37
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
DO	End word

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

Warranty

You can read our warranty terms in our General Business Terms which you can find here: **https://www.pce-instruments.com/english/terms**.

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 that disposes of the devices in line with law. For countries outside the EU, batteries, and devices should be disposed of in accordance with your local waste regulations.

If you have any questions, please contact PCE Instruments.

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Documents / Resources

	PCE PCE-CR 10 Current Data Logger [pdf] User Manual PCE-CR 10, Current Data Logger

References

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