



User Manual

PCE-CTT Series Torque Meter



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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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.
- Gloves and a face shield must be worn during the test procedure to avoid injuries.

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 Specifications

Model	Measurement range	Resolution	Accuracy
PCE-CTT 2	2 Nm	0.001 Nm	0.3 % of meas. range
PCE-CTT 5	5 Nm	0.002 Nm	
PCE-CTT 10	10 Nm	0.005 Nm	
Further specifications			
Unit	Nm, kgFcm, lbFin		
Direction of rotation	left and right		
Clamping pins / sample holders	can be repositioned w/o tools / rubberised		
Data memory	for up to 100 measured values		
Display	LCD graphical display		
Power supply	230 V		
Sample size	20 ... 200 mm diameter		
Sample weight	max. 5 kg		
Environmental conditions	5 ... 45 °C, 35 ... 65 % RH		
Dimensions	280 x 210 x 200 mm		
Weight	approx. 9 kg		








3 Delivery scope

- 1 x torque meter PCE-CTT series
- 1 x USB cable
- 1 x power cable
- 1 x software
- 1 x M6 hexagon key
- 1 x M5 hexagon key
- 4 x rubber feet
- 4 x rubberised sample holders
- 1 x user manual

4 Device description



4.1 Key description

Key	Description	Function
	Power key	Press and hold this key to turn the meter on and off.
	Menu key	Press this key to enter the menu. Press this key repeatedly to select between the individual menu pages or to exit the menu.
	Enter key	Open parameters and apply settings.
 Unit	Up key (Unit key)	<ul style="list-style-type: none"> - Increase value - Go up one parameter - Select units
 DATA	Down key (Data key)	<ul style="list-style-type: none"> - Decrease value - Go down one parameter - Open memory
 DEL	Mode key (Del key)	<ul style="list-style-type: none"> - Select measuring mode - Delete individual saved measured values
 ESC	Zero point key (ESC key)	<ul style="list-style-type: none"> - Set zero point - Apply setting - Go one menu level back



No.	Description
1	Limit value alarm for clockwise direction of rotation
2	Limit value alarm for counterclockwise direction of rotation
3	Measuring direction
4	Measuring mode
5	Last peak value in PEAK mode
6	Unit
7	Measured value
8	Connected to a PC
9	Set minimum limit value
10	Set maximum limit value

5 Measuring modes

This torque meter has four different measuring modes. If the measured value is outside the measurement range, "OVER" is shown on the display and an acoustic signal is generated. Only when the measured value is back within the measurement range, a normal measurement can be resumed.

To switch between the modes, press the "MODE" key in the current measuring mode. The current measuring mode is displayed below the measured value.

5.1 Real Time

In Real Time (RT) measuring mode, the current measured value is continuously displayed.

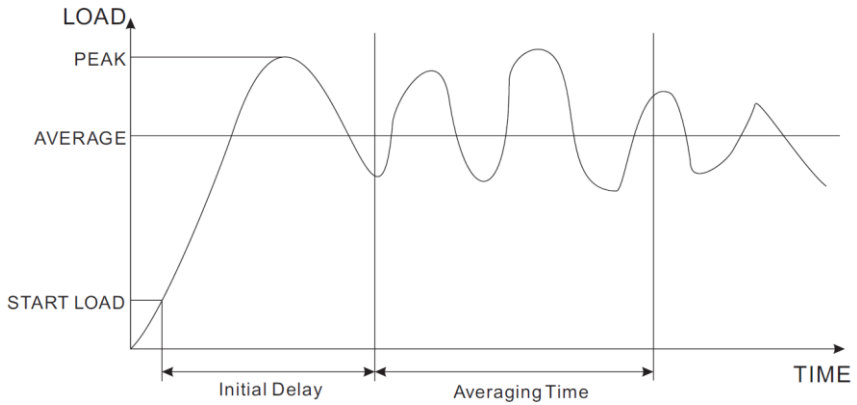
5.2 Peak

In peak mode (PK), the highest measured value is displayed and held. This measuring mode can be used for tensile and compressive force. The peak value can be reset with the "Zero" key.

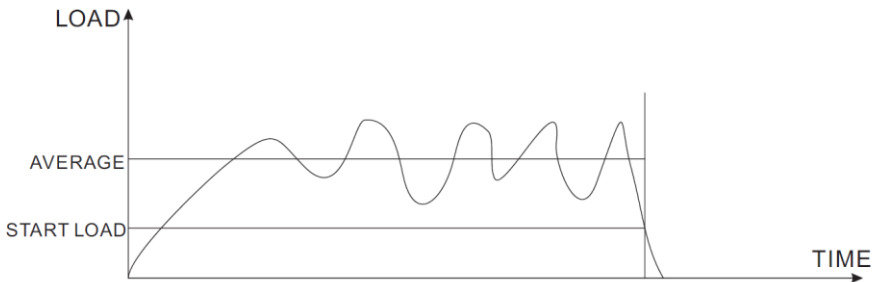
5.3 Average Mode

In Average (AVG) mode, the average value of a measurement is displayed. There are two different functions in this measurement mode.

MOD1: With this function, the average value of the force curve is displayed starting from the set minimum force and over the set period of time.

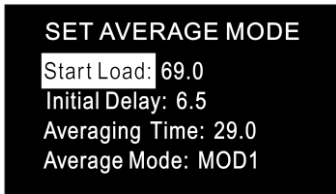


MOD2: This function calculates the average above the set minimum measured value. When the measured value falls below the set minimum value again, the measurement is finished. This measuring procedure is possible over a period of 10 minutes. As long as the measuring time of 10 minutes is not exceeded, this measurement can be resumed at any time.





To make settings for this measuring mode, press the "Menu" key twice.



Setting	Meaning
Start Load	Here you set the force at which the average measurement should start.
Initial Delay	Here you enter the time span at the beginning of the measurement that is not to be taken into account in the average measurement. Available settings: 0.0 ... 300.0 seconds. Resolution 0.1 seconds. This parameter only affects the MOD1 function.
Averaging Time	Here you set the measuring time for the average measurement. Available settings: 0.0 ... 300.0 seconds. Resolution 0.1 seconds. This parameter only affects the MOD1 function.
Average Mode	Here you select between the MOD1 and MOD2 function.

To select a parameter, use the arrow keys. Press the "Enter" key to select a parameter. Use the arrow keys again to change the parameter properties. Press the "Enter" key again to apply the settings you have made.

5.3.1 Measuring procedure

When "WAIT" is displayed on the screen, the meter waits until the set minimum load is applied.



When "DELAY" is shown on the display, the force gauge will wait until the set minimum time has elapsed.



When the minimum load is present and the minimum time has elapsed, the actual measurement begins. "AVE..." appears on the display. The measurement is made. During this measurement, it is not possible to see the current measured value.



When the measurement is completed, the display shows "DONE". You will then see the average reading.



To reset the average value to start a new measurement, press the "Zero" key. The measured value is saved at the same time. Up to 10 average values can be saved.

5.4 Save Mode

In "SAVE Mode", the highest measured values can be saved in a single measurement run. In the memory, you can save 100 measured values (memory item number 00 ... 99). The number of memory items used is displayed to the left of "SAVE". As soon as a single measurement run is completed, the highest measurement value is automatically saved. It is recommended to permanently save the measurement data on an external PC as the measurement values saved in the meter could be lost.

You can set the minimum load for this function in the settings under "Save Load". This can be found on the third menu page "OTHER SETTINGS".



6 View / print saved data

To evaluate the saved data, press the "DATA" key. Then select "Save Mode Data" for the data saved in "SAVE" mode or "Average Mode Data" to view the data saved in "AVE" mode.

Selection	Description
View Data	View all measurement data
View Statistics	The highest value, the lowest value and the average of all saved values are displayed here.
Print Data	The saved measurement data is printed here.
Clear All Data	Deletes all measured values

Under "View Data", the memory item number, the direction of rotation and the measured value are displayed. You can now select a measured value with the arrow keys. To switch between the individual pages, press the "Menu" key. To delete a single measured value, press and release the "DEL" key once.

```
>00=C 2.200 01=C 2.205
02=C 2.215 03=C 2.225
04=C 2.205 05=C 2.215
06=C 2.220 07=C 2.235
08=C 2.240 09=C 2.250
N.m Page 01/Total 10
```





The highest value, the lowest value and the average of all saved values are displayed here.





```
DATA STATISTICS
Max. Load: 2.500 N.m
Min. Load: 1.200 N.m
Average Load: 2.200 N.m
Data Total: 20
```

7 Alarm limits

The alarm limits function is useful, for example, to check during quality control whether the tested item is working within the specified tolerances. Two limits can be set here. If the measured value is lower than the set "Lower Limit", this is indicated by the red and green LEDs lighting up. If the measured value lies between the set "Higher Limit" and the set "Lower Limit", only the green LED lights up. If the "Higher Limit" is also exceeded, only the red LED lights up.

Note: This function is only available in the measurement modes RT, PK and Save.

SET POINTS		1
	H. Limit: 2.500	N.m
	L. Limit: 0.500	N.m
	H. Limit: 0.500	N.m
	L. Limit: 0.500	N.m

Display	Meaning
 H. Limit	Highest limit value clockwise
 L. Limit	Lowest limit value clockwise
 H. Limit	Highest limit value counterclockwise
 L. Limit	Lowest limit value counterclockwise

Now use the arrow keys to select the desired parameter. Press the "Enter" key to make changes to this value. You can then change the value as desired with the arrow keys. Confirm the entry with the "Enter" key. Press the "ESC" key to return to measuring mode.

Note: The second limit value must always be higher than the first set limit value. The set values are shown above the reading in measuring mode.

8 Communication of interface and output interface

There are two different softwares for the torque meter. Both do not need to be installed. If the computer does not find the correct drivers, you will find them in the installation folder.

With the Data Software, the memory can be read out and processed. With the Graph Software, the current measured values can be transferred live to a PC and transmitted both graphically and in tabular form.



8.1 Data Software

With the Data Software, the saved data can be transferred directly to a PC.

Button	Function
Offline	Click this button to disconnect from the meter.
Online	Click this button to connect to the meter.
Peak	Transfers all saved data that have been saved in the "SAVE" mode
Ave	Transfers all saved data that have been saved in "AVE" mode
Clear	Clears the text field (does not clear the memory)
Save	Saves the text field in TXT format

The screenshot shows the 'Data Software' window. On the left, the 'Control' panel displays 'Connected successfully' in green. Below this are five buttons: 'Peak' (green), 'Ave' (green), 'Clear' (blue), and 'Save' (blue), along with an 'Offline' button (blue). On the right, the 'About me' section provides contact information for PCE Deutschland GmbH, including a website, phone number, email, and address.

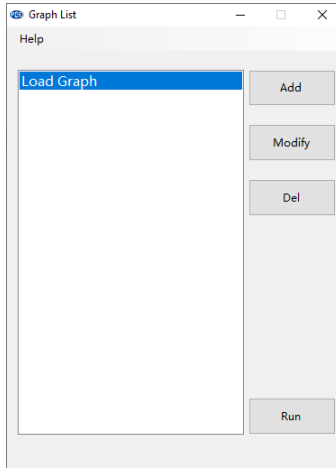
The main data area displays the following information:

PCE-CTT 10 Digital Cap Torque Tester
 COMPANY:
 DATE:
 UNIT: N.m

P00=	-2.610	P01=	-3.055	P02=	-2.175	P03=	-4.090	P04=	-1.265
P05=	+0.000	P06=	+0.000	P07=	+0.000	P08=	+0.000	P09=	+0.000
P10=	+0.000	P11=	+0.000	P12=	+0.000	P13=	+0.000	P14=	+0.000
P15=	+0.000	P16=	+0.000	P17=	+0.000	P18=	+0.000	P19=	+0.000
P20=	+0.000	P21=	+0.000	P22=	+0.000	P23=	+0.000	P24=	+0.000
P25=	+0.000	P26=	+0.000	P27=	+0.000	P28=	+0.000	P29=	+0.000
P30=	+0.000	P31=	+0.000	P32=	+0.000	P33=	+0.000	P34=	+0.000
P35=	+0.000	P36=	+0.000	P37=	+0.000	P38=	+0.000	P39=	+0.000
P40=	+0.000	P41=	+0.000	P42=	+0.000	P43=	+0.000	P44=	+0.000
P45=	+0.000	P46=	+0.000	P47=	+0.000	P48=	+0.000	P49=	+0.000
P50=	+0.000	P51=	+0.000	P52=	+0.000	P53=	+0.000	P54=	+0.000
P55=	+0.000	P56=	+0.000	P57=	+0.000	P58=	+0.000	P59=	+0.000
P60=	+0.000	P61=	+0.000	P62=	+0.000	P63=	+0.000	P64=	+0.000
P65=	+0.000	P66=	+0.000	P67=	+0.000	P68=	+0.000	P69=	+0.000
P70=	+0.000	P71=	+0.000	P72=	+0.000	P73=	+0.000	P74=	+0.000
P75=	+0.000	P76=	+0.000	P77=	+0.000	P78=	+0.000	P79=	+0.000
P80=	+0.000	P81=	+0.000	P82=	+0.000	P83=	+0.000	P84=	+0.000
P85=	+0.000	P86=	+0.000	P87=	+0.000	P88=	+0.000	P89=	+0.000
P90=	+0.000	P91=	+0.000	P92=	+0.000	P93=	+0.000	P94=	+0.000

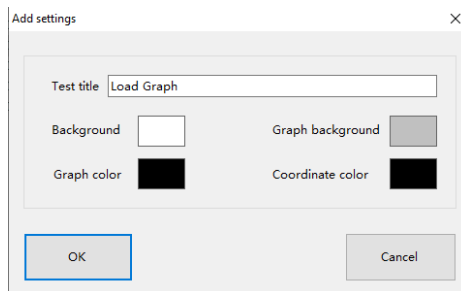
8.2 Graph Software

The Graph Software enables a live display of all data on the PC. When you open the programme, you first see a list of graphs in the colours you have set.



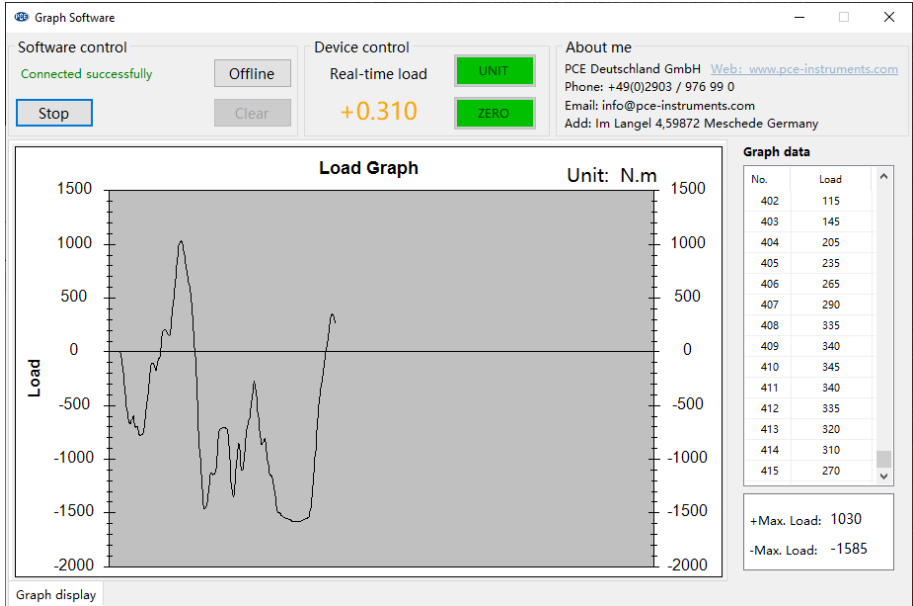
Button	Function
Add	Add a layout
Modify	Change a layout
Del	Delete a layout
Run	Starts the layout

When you create or edit a layout, the following window appears. Here you can change the name and set the colours as required.



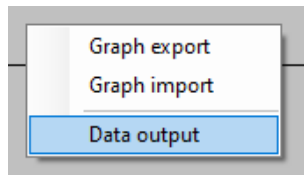


After you have selected your layout, the following window opens:



Button	Function
Start	Starts the recording in the software
Stop	Stops the recording in the software
Offline	Disconnects from the meter
Online	Establishes a connection to the meter
Clear	Deletes all displayed values
UNIT	Switches the unit
Zero	Resets the zero point

To save the displayed data, right-click on the graph.

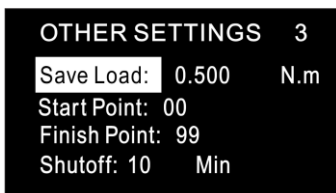


Here you can export the graph and also import it again. The data can also be exported in TXT format via "Data output".

Important: The exported graph can only be displayed again via the software.

9 More settings

You can access further settings for the meter by pressing the "Menu" key three times. This will take you to the "Other Settings" menu page.



Function	Description
Save Load	Here you can set the minimum value that must be reached so that the measured value is saved.
Start Finish Point	Here you can set which memory item is to be used for saving or printing, for example.
Shutoff	Here you can set the time for automatic power-off.

10 Warranty

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

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 local waste regulations.

If you have any questions, please contact PCE Instruments.





PCE Instruments contact information

Germany

PCE Deutschland GmbH
Im Langel 4
D-59872 Meschede
Deutschland
Tel.: +49 (0) 2903 976 99 0
Fax: +49 (0) 2903 976 99 29
info@pce-instruments.com
www.pce-instruments.com/deutsch

United Kingdom

PCE Instruments UK Ltd
Unit 11 Southpoint Business Park
Ensign Way, Southampton
Hampshire
United Kingdom, SO31 4RF
Tel: +44 (0) 2380 98703 0
Fax: +44 (0) 2380 98703 9
info@pce-instruments.co.uk
www.pce-instruments.com/english

The Netherlands

PCE Brookhuis B.V.
Institutenweg 15
7521 PH Enschede
Nederland
Telefoon: +31 (0)53 737 01 92
info@pcebenelux.nl
www.pce-instruments.com/dutch

United States of America

PCE Americas Inc.
1201 Jupiter Park Drive, Suite 8
Jupiter / Palm Beach
33458 FL
USA
Tel: +1 (561) 320-9162
Fax: +1 (561) 320-9176
info@pce-americas.com
www.pce-instruments.com/us

France

PCE Instruments France EURL
23, rue de Strasbourg
67250 Soultz-Sous-Forets
France
Téléphone: +33 (0) 972 3537 17
Numéro de fax: +33 (0) 972 3537 18
info@pce-france.fr
www.pce-instruments.com/french

Italy

PCE Italia s.r.l.
Via Pesciatina 878 / B-Interno 6
55010 Loc. Gragnano
Capannori (Lucca)
Italia
Telefono: +39 0583 975 114
Fax: +39 0583 974 824
info@pce-italia.it
www.pce-instruments.com/italiano

China

PCE (Beijing) Technology Co., Limited
1519 Room, 6 Building
Zhong Ang Times Plaza
No. 9 Mentougou Road, Tou Gou District
102300 Beijing, China
Tel: +86 (10) 8893 9660
info@pce-instruments.cn
www.pce-instruments.cn

Spain

PCE Ibérica S.L.
Calle Mayor, 53
02500 Tobarra (Albacete)
España
Tel. : +34 967 543 548
Fax: +34 967 543 542
info@pce-iberica.es
www.pce-instruments.com/espanol

Turkey

PCE Teknik Cihazları Ltd.Şti.
Halkalı Merkez Mah.
Pehlivan Sok. No.6/C
34303 Küçükçekmece - İstanbul
Türkiye
Tel: 0212 471 11 47
Faks: 0212 705 53 93
info@pce- cihazlari.com.tr
www.pce-instruments.com/turkish

Hong Kong

PCE Instruments HK Ltd.
Unit J, 21/F., COS Centre
56 Tsun Yip Street
Kwun Tong
Kowloon, Hong Kong
Tel: +852-301-84912
jyi@pce-instruments.com
www.pce-instruments.cn