



# 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](http://www.pce-instruments.com)

Last change: 15 February 2021  
v1.1



## Contents

|           |  |           |
|-----------|--|-----------|
| <b>1</b>  | <b>Safety notes</b> .....                                    | <b>1</b>  |
| <b>2</b>  | <b>Specifications</b> .....                                  | <b>2</b>  |
| <b>3</b>  | <b>Delivery scope</b> .....                                  | <b>2</b>  |
| <b>4</b>  | <b>Device description</b> .....                              | <b>2</b>  |
| 4.1       | Key description.....   | 3         |
| 4.2       | Display description .....                                    | 4         |
| <b>5</b>  | <b>Measuring modes</b> .....                                 | <b>4</b>  |
| 5.1       | Real Time.....   | 4         |
| 5.2       | Peak.....  | 4         |
| 5.3       | Average Mode.....  | 5         |
| 5.4       | Save Mode.....   | 7         |
| <b>6</b>  | <b>View / print saved data</b> .....                         | <b>8</b>  |
| <b>7</b>  | <b>Alarm limits</b> .....                                    | <b>9</b>  |
| <b>8</b>  | <b>Communication of interface and output interface</b> ..... | <b>9</b>  |
| 8.1       | Data Software .....  | 10        |
| 8.2       | Graph Software .....   | 11        |
| <b>9</b>  | <b>More settings</b> .....                                   | <b>13</b> |
| <b>10</b> | <b>Contact</b> .....   | <b>13</b> |
| <b>11</b> | <b>Disposal</b> .....  | <b>13</b> |

## 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   |                      |
| <b>Further specifications</b>  |  |            |                      |
| 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.   |
| <br>Unit | Up key<br>(Unit key)        | <ul style="list-style-type: none"> <li>- Increase value</li> <li>- Go up one parameter</li> <li>- Select units</li> </ul>     |
| <br>DATA | Down key<br>(Data key)      | <ul style="list-style-type: none"> <li>- Decrease value</li> <li>- Go down one parameter</li> <li>- Open memory</li> </ul>    |
| <br>DEL  | Mode key<br>(Del key)       | <ul style="list-style-type: none"> <li>- Select measuring mode</li> <li>- Delete individual saved measured values</li> </ul>  |
| <br>ESC  | Zero point key<br>(ESC key) | <ul style="list-style-type: none"> <li>- Set zero point</li> <li>- Apply setting</li> <li>- Go one menu level back</li> </ul> |



| 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.

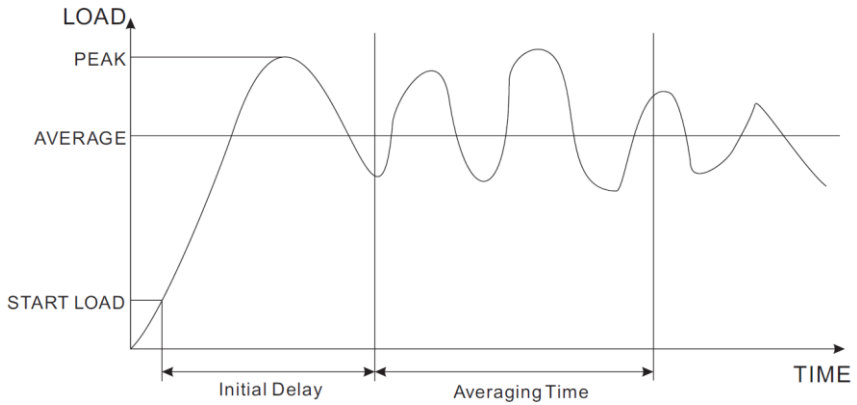
### 5.2 Peak

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.

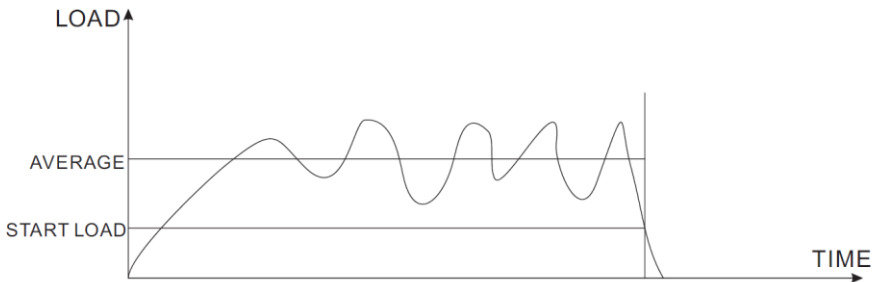
### 5.3 Average Mode

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.

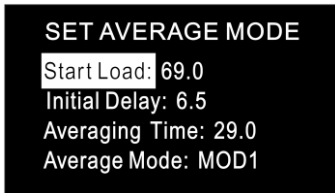


**MOD2:** This function calculates the average above the set minimum measured value. When the measured value falls below the set minimum value again, the measurement is finished. This measuring procedure is possible over a period of 10 minutes. As long as the measuring time of 10 minutes is not exceeded,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

Data Software
— □ ×

**Control**

Connected successfully

Peak
Ave
Clear
Save

**About me**

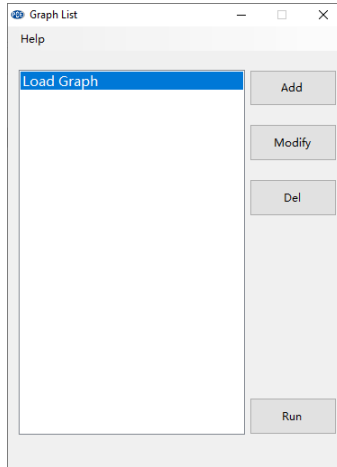
PCE Deutschland GmbH [Web: www.pce-instruments.com](http://www.pce-instruments.com)  
 Phone: +49(0)2903 / 976 99 0  
 Email: info@pce-instruments.com  
 Add: Im Langel 4,59872 Meschede Germany

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 |

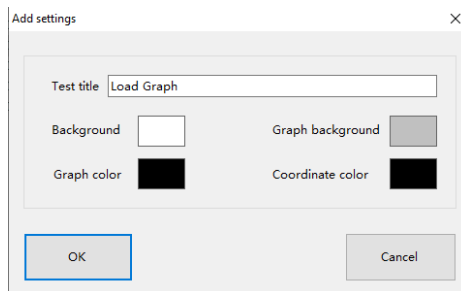
## 8.2 Graph Software

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.



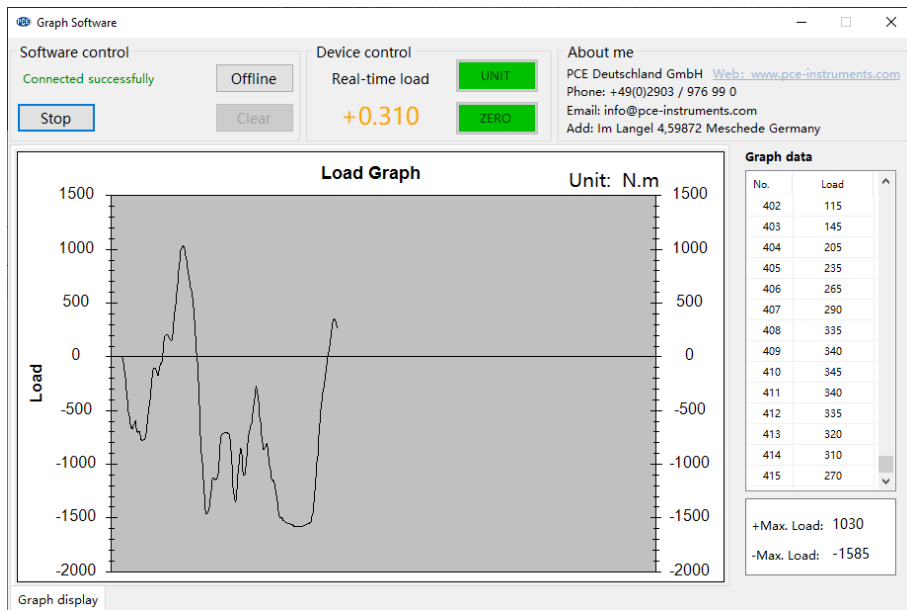
| Button | Function          |
|--------|-------------------|
| Add    | Add a layout      |
| Modify | Change a layout   |
| Del    | Delete a layout   |
| Run    | Starts the layout |

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



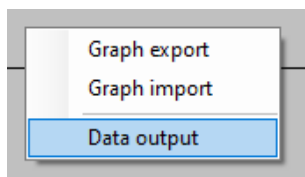


After you have selected your layout, the following window opens:



| 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.

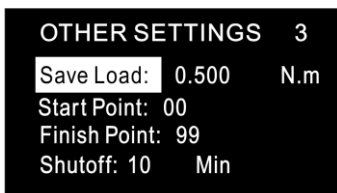


Here you can export the graph and also import it again. The data can also be exported in TXT format via "Data output".

**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 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 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