



# User Manual

PCE-HT 120 Thermo Hygrometer



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)

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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.

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

Measuring function	<b>Humidity</b>
Measuring range	5 ... 95 % RH
Resolution	0.1 % RH
Accuracy	<70 % RH: 3 % RH >70 % RH: $\pm(3 \% \text{ of rdg.} + 1 \% \text{ RH})$
Measuring function	<b>Temperature</b>
Measuring range	0 ... 50 °C / 32 ... 122 °F
Resolution	0.1 °C / 0.18 °F
Accuracy	$\pm 0.8 \text{ °C} / 1.44 \text{ °F}$
Measuring function	<b>Dew point</b>
Measuring range	-25.3 ... 49 °C / -13.5 ... 120 °F
Resolution	0.1 °C / 0.18 °F
Measuring function	<b>Wet bulb temperature</b>
Measuring range	-5.4 ... 49 °C / 22.3 ... 120.2 °F
Measuring function	<b>PT1000</b>
Measuring range	-10 ... 70 °C / 14 ... 158 °F
Resolution	0.1 °C / 0.18 °F
Accuracy	$\pm 1.2 \text{ °C} / 2.2 \text{ °F}$
Display	LC display
Interfaces	RS232 (SOFT-LUT-USB optional)
Ethernet	WLAN / WiFi
WiFi interface	IEEE 802.11b / g / n 2.412 ... 2.484 GHz
WiFi connection types	Access Point Client mode
Encryption types	64, 128, 512 bits WEP, WPA-PSK, WPA2-PSK, WPA / WPA2
Power supply	Power supply 9V / 1 A
Current consumption	About 170 mA
Operating conditions	0 ... 50 °C / 32 ... 122 °F, max. 80 % RH
Dimensions	134 x 80 x 32 mm / 5.3 x 3.1 x 1.3 in
Weight	approx. 222 g / <1 lb

### 3 Features

- Temperature and humidity data can be sent to the desired device via Wi-Fi. Use a smartphone or tablet with the company's free data collection app
- Wi-Fi work mode: Access Point (AP) or Client mode
- I/O terminal:
  1. DC 9V power input
  2. DC 9V power output(power supply for the connecting RS232 meter)
  3. Pt-1000 ohm input.
  4. Three RS232 inputs
  5. Ethernet RJ45 input.
- Basic settings:
  1. Net Mode
  2. SSID
  3. Password
  4. IP Address
  5. Port
  6. Gateway address
- Simultaneous display of humidity, temperature, core temperature and dew point temperature values.
- Humidity range: 5% ... 95%
- Temperature range: 0 °C ... 50 °C, °C/°F
- Maximum of 20 TCP connections
- Ready for use, straight out of the box

## 4 Device description

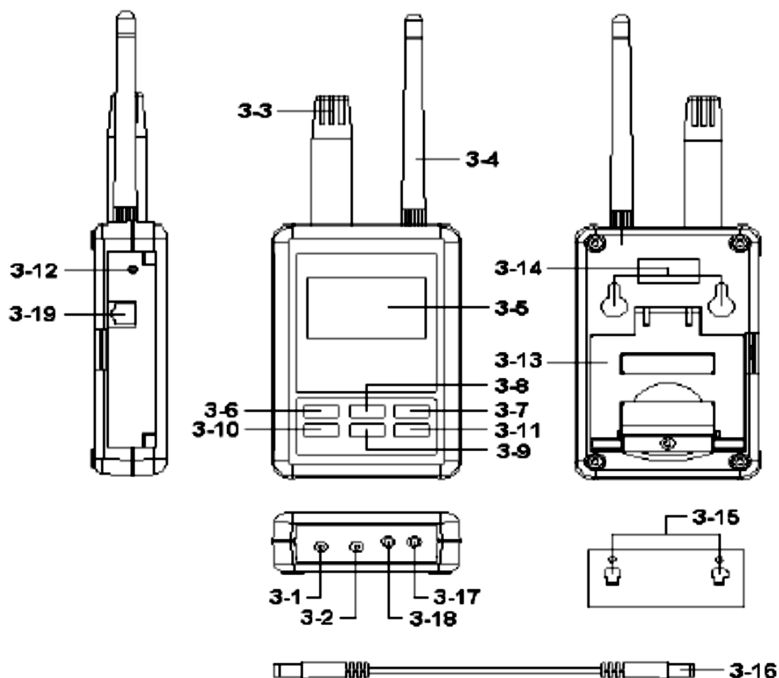


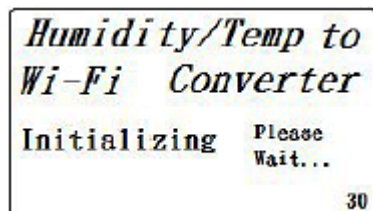
Fig.1

- 3.1 DC 9V power adapter input socket
- 3.2 DC 9V output socket
- 3.3 Humidity/Temp. sensor
- 3.4 Antenna and antenna socket
- 3.5 Display
- 3.6 SETUP/ENTER BUTTON
- 3.7 EXIT/SHIFT (\*) button
- 3.8 ▲ button
- 3.9 ▼ button
- 3.10 ◀ button

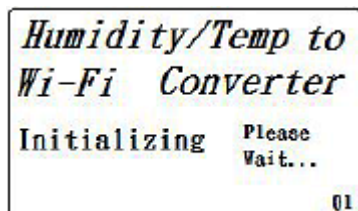
- 3.11 ► button
- 3.12 System reset button
- 3.13 Stand
- 3.14 Hanging holes
- 3.15 Hanging unit (with sticker)
- 3.16 Power interface cable/plugs
- 3.17 Isolate RS232 output socket
- 3.18 Pt1000 input socket
- 3.19 Network socket (RJ45)

## 5 Measuring procedure

### 5.1 Initial start-up screen



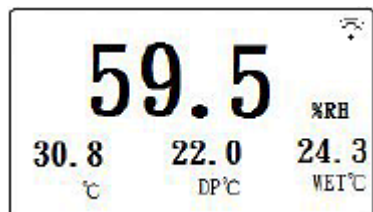
Screen 1 (start-up screen)



Screen 2: (start-up screen)

### 5.2 Measurement and settings screens

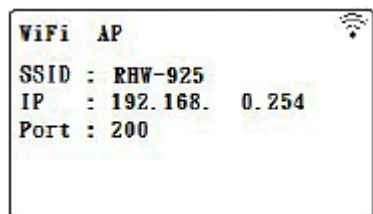
#### 1. Measurement screen



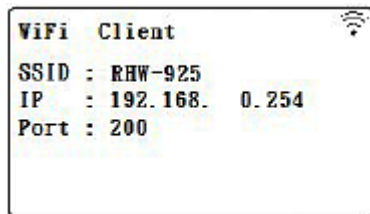
Screen 3 (temp/humidity measurement)



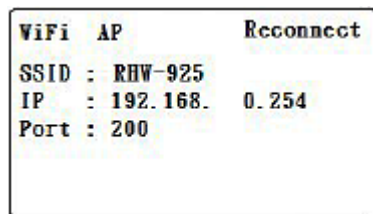
Screen 4 (Pt1000 measurement)



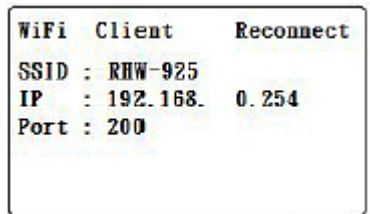
Screen 5 (settings preview)



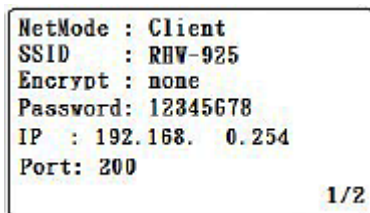
Screen 6 (settings preview)



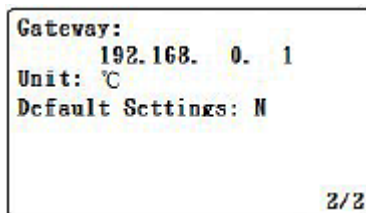
Screen 7 (settings preview)



Screen 8 (settings preview)



Screen 9 (settings)



Screen 10 (setting)

### 5.3 Button description

- SETUP/ENTER button: enters the setup screen and confirms selection
- In the settings menu:
  - Use the ▼ and ▲ buttons to select the desired field.
  - Pressing and holding the ▲ or ▼ button will scroll between the fields more rapidly.
  - Pressing and holding the ▲ and ▼ buttons together will clear the selected field.
  - Use the ◀ and ▶ buttons to move left or right.
  - EXIT/SHIFT (✱) button: changes the text input type or exits the settings menu,
- In measurement mode:
  - Press and hold the ▲ and ▼ buttons simultaneously until the screen flickers to toggle between easy and full mode
  - EXIT/SHIFT (✱) button: toggle the backlight

### 5.4 Changing the settings

- After the device has been switched on, the start-up screen appears (Screen 1 – Screen 2) and the device will be initialised over 30 sec. The temp/humidity measurement screen will then be displayed (Screen 3).
- Press the SETUP/ENTER button to enter the settings screen (Screen 9).
- Use the ▲ and ▼ buttons to move the selection between settings.
- Use the ◀ and ▶ buttons to select between the setting and its value. To change a value select it by pressing the ▶ button and then using the ▲ and ▼ buttons to change the value. Press the SETUP/ENTER button to confirm the change.
- Net mode:
  - The default setting is Client
  - With the setting selected (blinking) press the ◀ or ▶ button, then use the ▲ or ▼ button to toggle between Client and AP.
  - Press the SETUP/ENTER button to confirm your change.
  - Press the ▼ button to move the selection to SSID.
- SSID:
  - The default SSID is RHW-925
  - Press the ◀ or ▶ button to select the value, then use the ▲ and ▼ buttons to input numbers or letters, after pressing the EXIT/SHIFT button (max. 21 characters).
  - Press the SETUP/ENTER button to confirm your change.
  - Press the ▼ button to move the selection to *Encrypt*.



- **Encrypt:**
  - The default setting is none
  - Press the ◀ or ▶ button to select the value, then use the ▲ and ▼ buttons to toggle between none / wep\_open / wep / wpa\_tkip / wpa\_aes / wpa2\_tkip / wpa2\_aes / wpawpa2\_tkip / wpawpa2\_aes
  - Press the SETUP/ENTER button to confirm your change.
  - Press the ▼ button to move the selection to *Password*.
- **Password:**
  - The default password is 12345678
  - Press the ◀ or ▶ button to select the value, then use the ▲ and ▼ buttons to input numbers or letters, after pressing the EXIT/SHIFT button.
  - Press the SETUP/ENTER button to confirm your change.
  - Press the ▼ button to move the selection to *IP*.
- **IP:**
  - The default IP address is 192.168.0.254
  - Press the ◀ or ▶ button to select the value and then use the ▲ and ▼ buttons to input numbers for a new IP address.
  - Press the SETUP/ENTER button to confirm your change.
  - Press the ▼ button to move the selection to *Port*.
- **Port:**
  - The default port is 200
  - Press the ◀ or ▶ button to select the value and then use the ▲ and ▼ buttons to input numbers for a new port (max. 65535 numbers).
  - Press the SETUP/ENTER button to confirm your change.
  - Press the ▼ button to move the selection to *Gateway*.
- **Gateway:**
  - The default gateway is 192.168.0.1
  - Press the ◀ or ▶ button to select the value and then use the ▲ and ▼ buttons to input numbers for a new gateway.
  - Press the SETUP/ENTER button to confirm your change.
  - Press the ▼ button to move the selection to *Unit*.
- **Unit:**
  - Press the ◀ or ▶ button to select the value, and then use the ▲ and ▼ buttons to toggle between C and F.
  - Press the SETUP/ENTER button to confirm your change.
  - Press the ▼ button to move the selection to *Default Settings*.
- **Default Settings:**
  - Restore to factory settings (refer to point 5.6).
- Press the EXIT/SHIFT (\*) button to save the changed settings. The device then needs ~25 sec. to reconnect (Screen 7 or 8) before returning to the measurement screen (Screen 5 or 6).

## 5.5 Measurement and Wi-Fi connection

- Screen 3 is the temperature and humidity measurement screen.
- Pt1000 measurement mode
  - Insert the probe into the PT 1K input (Fig.1 3.18).
  - Press the ▶ button to toggle between the PT1000 measurement screen (Screen 4) and the Temp/Humidity measurement more (Screen 3)
- A Wi-Fi symbol (📶) will flash in the upper, right hand corner of both measurement screens to indicate an existing connection.

## 5.6 Restoring to factory setting

- Press the SETUP/ENTER button to enter the settings screen (Screen 9).
- Use the ▲ or ▼ buttons to move the selection to the Default Settings option.
- With the setting selected (blinking) press the ◀ or ▶ button, then use the ▲ or ▼ button to change the setting from N (No) to Y (Yes).
- Press the EXIT/SHIFT (\*) button to save the changed settings. The device then needs ~25 sec. to reconnect (Screen 7 or 8) before returning to the measurement screen (Screen 5 or 6) with the factory settings restored.

## 5.7 AP Mode

- First, install the dedicated app.
  - For iOS devices: download the app from the App Store (Image 1). Password: az6210.



Image 1

- For Android devices: please use the QR code provided below to download the PDF file and follow the instructions.

OR

Use the direct URL link <https://tinyurl.com/lutronapp> to download the MeterApp.



Password: Az6210



Image 2



Image 3

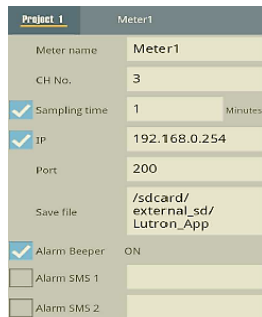


Image 4

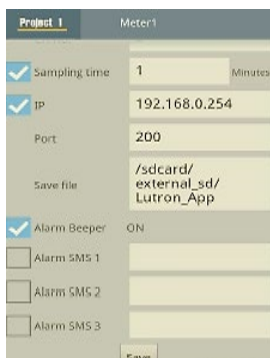


Image 5

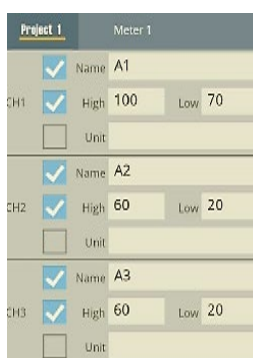


Image 6

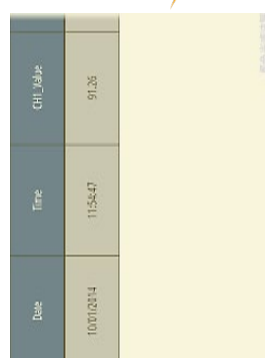


Image 7

- After starting the device, enter the settings menu (Screen 9) and set the following parameters:  
 NetMode: AP  
 B.SSID: RHW-925  
 C.IP: 192.168.0.254  
 D.Port: 200
- Connect to the device with your smart phone Wi-Fi. (On Phone Settings Connect to WiFi signal which has name identical to Device SSID "RHW-925")
- Start the MeterApp and select Meter 1 on the first screen (Image 2).
- Press the settings button (Image 3, step 2).
- In the settings menu (Image 4) you can set/change the following settings:
  - Meter name (default is Meter 1)
  - CH No: channel number in accordance with the device channel number
  - Sampling time: must be set, in minutes. Check back after doing the logging function.
  - IP: must be set in accordance with the device. The default IP address is 192.168.0.254.
  - Port: must be set in accordance with the device. The default port is 200.
  - Save File: select the log file save path here.
  - Alarm Beeper: device beeps when the conditions on *Image 6* are met.
  - Alarm SMS: device sends an SMS as an alarm to your smart phone when the conditions on *Image 6* are met.
- The Save button (Image 5) stores the set settings and returns the device to *Image 3*. The Wi-Fi icon (Step 3) will now flash green, indicating that the device is connected.
- When in the project screen (Image 3), tap on CH1 (step 4) to enter the settings screen (image 6) and set the desired parameters. Then press the return button to go back to the project screen (Image 3). When the measured values reach the conditions set in *Image 6*, the numbers will become red and the device will either beep or send an SMS.
- When in the project screen (Image 3), use the buttons in *Step 5* to switch the display directly between Meter1 to Meter4.
- Re-connect Use the reconnect button if the device loses connection.
- Auto Log: the log will be saved based on the sampling time set in *Image 4*.
- Manual Log: press the Manual Log button to save the log manually. The log file is in xml formal.
- View Log: view the recorded data directly on your smartphone (Image 7).

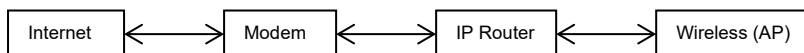
## 5.8 Client Mode (internal network)

- First, a wireless device must be set as an AP
  - Determine the SSID for the meter.
  - Setting a password is not necessary.
- Set the meter to Client mode with the following parameters:
  - Net mode: Client
  - SSID: RHW-925 (or used defined) Internet
  - IP: 192.168.0.254
  - Port: 200

Refer to *Screen 6*.

## 5.9 Client mode (external network, fixed IP)

- Simple schematic network:



- Set the meter to Client mode with the following parameters:
  - Net mode: Client
  - SSID: RHW-925 (or used defined)
  - IP: 192.168.0.254
  - Port: 200
  - Gateway: 192.168.0.1 (download IP Tools from the App Store to learn how to set this parameter).
- In the port forwarding settings of your IP router, you can set the parameters for SSID, IP address and port such as here:

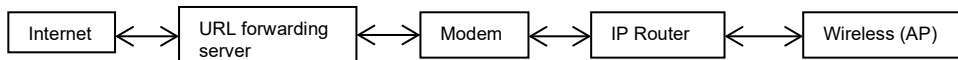


Image 8

- Enter the needed parameters in *Image 4* of the MeterApp. Set the IP address according to the required IP address of IP Tools.

## 5.10 Client mode (external network, floating IP)

- Simple schematic network:



- Set the meter to Client mode with the following parameters:
  - Net mode: Client
  - SSID: RHW-925 (or used defined)
  - IP: 192.168.0.254
  - Port: 200
  - Gateway: 192.168.0.1 (download IP Tools from the App Store to learn how to set this parameter).
- In the port forwarding settings of your IP router, you can set the parameters for SSID, IP address and port such as in *Image 8*.
- Apply for free transfer to [www.noip.com](http://www.noip.com). The name of the application will be transferred to the address input of your IP Router.

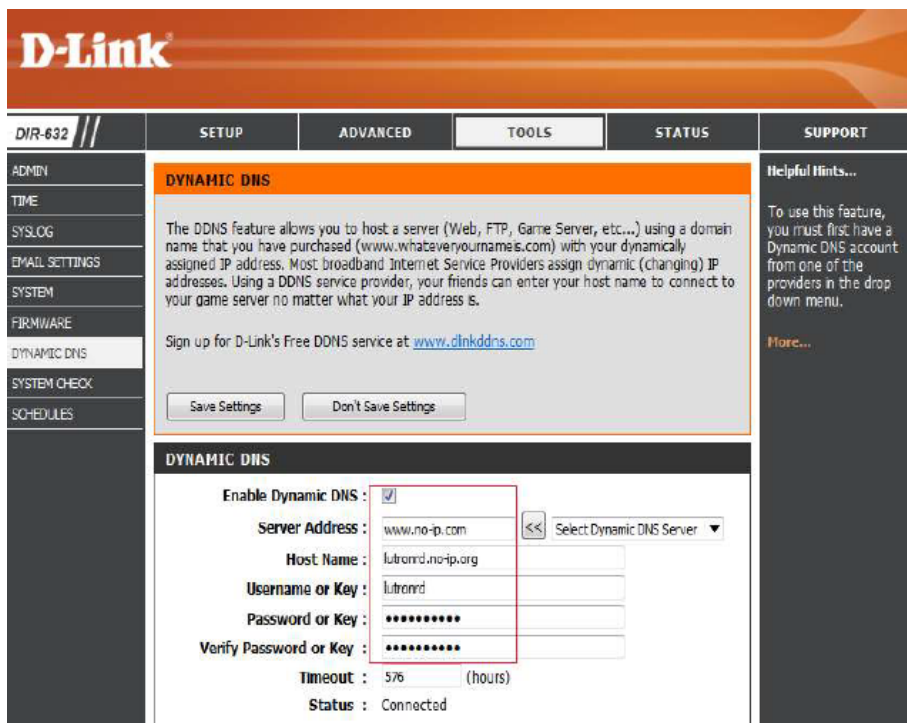


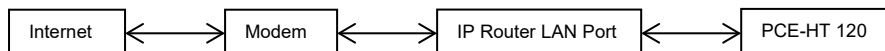
Image 9

- Enter the needed parameters in *Image 4* of the MeterApp. Set the IP address according to the required IP address of IP Tools.



### 5.11 Ethernet Mode connector network floating (internal or external network)

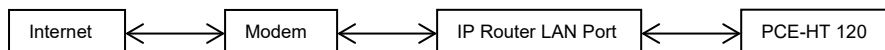
- Simple schematic network:



- Set the meter to Client mode with the following parameters:
  - IP: 192.168.0.254
  - Port: 200
  - Gateway: 192.168.0.1
- Connect the Ethernet cable to input 3.19 in *Fig. 1*.

### 5.12 Ethernet Mode connected via wireless bridge network (external network, fixed IP):

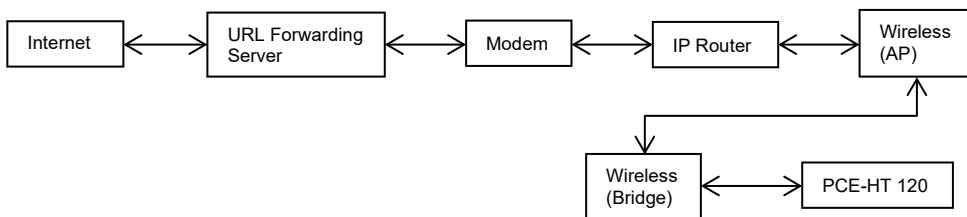
- Simple schematic network:



- Set the meter to Client mode with the following parameters:
  - IP: 192.168.0.254
  - Port: 200
  - Gateway: 192.168.0.1
- In the port forwarding settings of your IP router, you can set the parameters for SSID, IP address and port such as in *Image 8*.
- Connect the Ethernet cable to input 3.19 in *Fig. 1*.

### 5.13 Ethernet Mode connected via wireless bridge network (external network, floating IP):

- Simple schematic network:



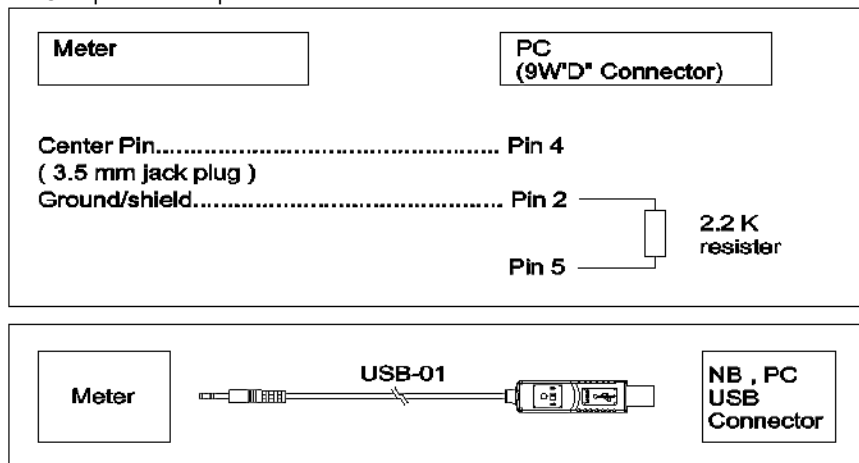
- Set the meter to Client mode with the following parameters:
  - IP: 192.168.0.254
  - Port: 200
  - Gateway: 192.168.0.1
- In the port forwarding settings of your IP router, you can set the parameters for SSID, IP address and port such as in *Image 8*.
- Apply for a free address at [www.Dlinkddns.com](http://www.Dlinkddns.com). The name of the application will be transferred to the address input of your IP Router (*Image 9*)
- If the Metro App is being used, the required parameters in *Image 4* should be entered using IP Tools.
- Connect the Ethernet cable to input 3.19 in *Fig. 1*.

## 5.14 RS232 Function SERIAL OUTPUT

The device has a 3.5 mm socket (3-17, Fig. 1) for a RS232 computer interface.

The connector output is a 16 digit data stream, which can be utilized to the user's specific application.

A RS232 lead with the following connection will be required to link the instrument with the PC, NB USB port or serial port.



The 16 digits data stream will be displayed in the following format:

D15 D14 D13 D12 D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 D1 D0

### 5.14.1 Digit chart:

D15	Start word		
D14	4		
D13	1 - 9		
D12 & D11	Display annunciator		
	01 = °C	02 = °F	04 = %RH
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 – D1	Display reading: D1 = LSD, D8 = MSD Eg: If the display reads 1234, the D8 to D1 is: 00001234		
D0	End word		

### 5.14.2 RS232 Settings

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



## 6 Warranty

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

## 7 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.





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