

## QUICK GUIDE

### EE872 - Modular CO<sub>2</sub> Probe for Demanding Applications

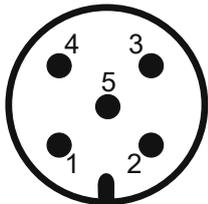
(Full Manual at [www.epluse.com/EE872](http://www.epluse.com/EE872))

#### Connection Diagram



**Important note:**

The manufacturer cannot be held responsible for personal injuries or damage to property as a result of incorrect handling, installation, wiring, power supply and maintenance of the device.



M12 device plug  
front view

| Pin number | Function                       | Wire colors for accessories:<br>- Couplig flange HA010705<br>- Connection cable HA010819/820/821 |
|------------|--------------------------------|--------------------------------------------------------------------------------------------------|
| 1          | Supply voltage                 | brown                                                                                            |
| 2          | B RS485 (D-) or voltage output | white                                                                                            |
| 3          | GND                            | blue                                                                                             |
| 4          | A RS485 (D+) or current output | black                                                                                            |
| 5          | Configuration pin              | gray                                                                                             |

#### Hardware Selection between Analogue Output and RS485 Interface Options

The "default output" of the EE872 can be analogue, Modbus RTU or BACnet MS/TP, corresponding to the ordered type number, refer to the EE872 datasheet. Dependent on the configuration pin level, during the first 10 seconds after power on the EE872 awaits connection with the PCS10 Product Configuration Software.

|                    | Default: analogue                     | Default: Modbus RTU | Default: BACnet MS/TP              |
|--------------------|---------------------------------------|---------------------|------------------------------------|
| Pin 5 open (=HIGH) | 10 s timeout,<br>then analogue output | Modbus RTU          | 10 s timeout,<br>then BACnet MS/TP |
| Pin 5 GND (=LOW)   | Analogue                              | Analogue            | BACnet MS/TP                       |

#### Interface Settings

|                  | BACnet           |                                             | Modbus           |                           |
|------------------|------------------|---------------------------------------------|------------------|---------------------------|
|                  | Factory settings | Selectable values                           | Factory settings | Selectable values         |
| <b>Baud rate</b> | As ordered       | 9600, 19200, 38400,<br>57600, 76800, 115200 | As ordered       | 9600, 19200, 38400, 57600 |
| <b>Data bits</b> | 8                | 8                                           | 8                | 8                         |
| <b>Parity</b>    | None             | None                                        | Even             | None, odd, even           |
| <b>Stop bits</b> | 1                | 1                                           | 1                | 1, 2                      |
| <b>Address</b>   | 6                | 0...127                                     | 237              | 1...247                   |

#### BACnet Protocol

The EE872 PICS (Product Implementation Conformance Statement) is available on the website at [www.epluse.com/EE872](http://www.epluse.com/EE872).

The recommended settings for multiple devices in a BACnet MS/TP network are 38400, 8, none, 1.

BACnet address and baud rate can be set via:

1. PCS10 Product Configuration Software and the USB configuration adapter HA011066.
2. BACnet protocol, see the PICS.

#### Modbus Protocol

The recommended settings for multiple devices in a Modbus RTU network are 9600, 8, even, 1.

Modbus address, baud rate, parity and stop bits can be set via:

1. PCS10 Product Configuration Software and the Modbus configuration adapter HA011018.

The PCS10 can be downloaded free of charge from [www.epluse.com/pcs10](http://www.epluse.com/pcs10).

2. Modbus protocol in the register 60001 (0x00) and 60002 (0x01).

See Application Note Modbus AN0103 (available on [www.epluse.com/EE872](http://www.epluse.com/EE872))

| INTEGER 16 bit                                            |                                     |                                      |
|-----------------------------------------------------------|-------------------------------------|--------------------------------------|
| Parameter                                                 | Register number <sup>1)</sup> [DEC] | Protocol Address <sup>2)</sup> [HEX] |
| <b>Read and write register: function code 0x03 / 0x06</b> |                                     |                                      |
| Modbus address                                            | 0001                                | 0x00                                 |
| Modbus protocol settings <sup>3)</sup>                    | 0002                                | 0x01                                 |

| INFO (read register):                                     |                                     |                                      |
|-----------------------------------------------------------|-------------------------------------|--------------------------------------|
| Parameter                                                 | Register number <sup>1)</sup> [DEC] | Protocol Address <sup>2)</sup> [HEX] |
| <b>Read and write register: function code 0x03 / 0x04</b> |                                     |                                      |
| Serial number (as ASCII)                                  | 0001                                | 0x00                                 |
| Firmware version                                          | 0009                                | 0x08                                 |
| Sensor Name                                               | 0010                                | 0x09                                 |

1) Register number starts from 1.

2) Protocol address starts from 0.

3) For Modbus protocol settings see Application Note Modbus AN0103 (available at [www.epluse.com/EE872](http://www.epluse.com/EE872)).

## Modbus Register Map

The measured data is saved as a 32 bit float and as 16 bit signed integer:

| FLOAT 32 bit                                    |      |                                     |                                      |
|-------------------------------------------------|------|-------------------------------------|--------------------------------------|
| Parameter                                       | Unit | Register number <sup>1)</sup> [DEC] | Protocol Address <sup>2)</sup> [HEX] |
| <b>Read register: function code 0x03 / 0x04</b> |      |                                     |                                      |
| CO2 (average)                                   | ppm  | 1061                                | 0x424                                |
| CO2 (raw)                                       | ppm  | 1063                                | 0x426                                |
| Pressure p*                                     | mbar | 1201                                | 0x4B0                                |
| Pressure p*                                     | psi  | 1203                                | 0x4B2                                |
| Relative humidity RH**                          | %    | 1021                                | 0x3FC                                |
| Temperature T**                                 | ° C  | 1003                                | 0x3EA                                |
| Temperature T**                                 | ° F  | 1005                                | 0x3EC                                |
| Temperature T**                                 | K    | 1009                                | 0x3F0                                |
| Dew point temperature Td***                     | ° C  | 1105                                | 0x450                                |
| Dew point temperature Td***                     | ° F  | 1107                                | 0x452                                |
| Dew point temperature Td***                     | K    | 1147                                | 0x47A                                |

| INTEGER 16 bit                                  |      |                     |                                     |                                      |
|-------------------------------------------------|------|---------------------|-------------------------------------|--------------------------------------|
| Parameter                                       | Unit | Scale <sup>3)</sup> | Register number <sup>1)</sup> [DEC] | Protocol Address <sup>2)</sup> [HEX] |
| <b>Read register: function code 0x03 / 0x04</b> |      |                     |                                     |                                      |
| CO2 (average)                                   | ppm  | 1                   | 4031                                | 0xFBE                                |
| CO2 (raw)                                       | ppm  | 1                   | 4032                                | 0xFBF                                |
| Pressure p*                                     | mbar | 10                  | 4101                                | 0x1004                               |
| Pressure p*                                     | psi  | 100                 | 4102                                | 0x1005                               |
| Relative humidity RH**                          | %    | 100                 | 4011                                | 0xFAA                                |
| Temperature T**                                 | ° C  | 100                 | 4002                                | 0xFA1                                |
| Temperature T**                                 | ° F  | 50                  | 4003                                | 0xFA2                                |
| Temperature T**                                 | K    | 50                  | 4005                                | 0xFA4                                |
| Dew point temperature Td***                     | ° C  | 100                 | 4053                                | 0xFD4                                |
| Dew point temperature Td***                     | ° F  | 100                 | 4054                                | 0xFD5                                |
| Dew point temperature Td***                     | K    | 100                 | 4074                                | 0xFE9                                |

\*available for version M13

\*\*available for version M13 only when probe is not heated (default setting)

\*\*\*available for version M13 always: enabling or disabling the probe heating does not affect the Td measurement

1) Register number starts from 1.

2) Protocol address starts from 0.

3) 1xx is scale. E.g. for 100, reading of 2550 is equivalent to 25.5. For 50, reading of 2550 is equivalent to 51.

4) For Modbus protocol settings see Application Note Modbus AN0103 (available on [www.epluse.com/EE872](http://www.epluse.com/EE872)).

## INFORMATION

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