# Quick Guide EE431 / EE451 / EE471 Temperature Sensors with RS485 Interface



#### Hardware

The bus termination shall be realized with 120  $\Omega$  resistor (slide switch on the board).

### **Electrical Connection**

#### MARNING

Incorrect installation, wiring or power supply may cause overheating and result in personal injury or property damage. Cables must not be under voltage during electrical installation and connection or disconnection, especially at terminal connections on circuit boards.

For correct cabling, always observe the presented wiring diagram for the product version used.

The manufacturer cannot be held responsible for personal injury or damage to property caused by incorrect handling, installation, wiring, power supply or maintenance of the device.

#### Wiring



## **Address Setting**

Address Switch	Option
1 2 3 4 5 6 7 8 ON 1 0 0 0 0 0 0 0 0	Address setting via EE-PCS Product Configuration Software All DIP switches at position $0 \rightarrow$ address has to be set via EE-PCS Modbus (slave device): factory setting 66 (permitted values: 1247). BACnet (master device): factory setting 66 (permitted values: 0127). Example: Address is set via configuration software = factory setting
1 2 3 4 5 6 7 8 0N 1 1 1 0 1 0 0 0 0	Address setting via DIP switch Modbus (slave device): Setting the DIP switches to any other address than 0, overrules the Modbus address set via EE-PCS (permitted values: 1247).
	<b>BACnet</b> (master device): Setting the DIP switches to any other address than 0, overrules the BACnet address set via configuration software. BACnet Note: permitted values are 0127. The 8th bit of the DIP switches is ignored (ID 127 = 0111 111). To set address 0 via DIP switches, the 8th bit shall be set to 1 (ID 0 = 1000 0000). <i>Example: Address set to 11 (= 0000 1011 binary).</i>

### **BACnet Setup**

Please see PICS (Product Implementation Conformance Statement) - available on www.epluse.com.

## **Modbus Setup**

The EE431, EE451, EE471 Modbus address factory setting is 66 as an integer 16 bit value.

- Device address, baud rate, parity and stop bits can be set via:
- Product Configurator Software (available at <u>www.epluse.com</u>)
- Modbus protocol (please see Application Note Modbus AN0103 (available at www.epluse.com)

#### Communication settings (INT16)

Parameter	Register number <sup>1)</sup> [Dec]	Register address <sup>2)</sup> [Hex]		
Write register: function code 0x06				
Modbus address*	1	00		
Modbus protocol settings**	2	01		

\* If the address is set via DIP switch the response will be NAK.

\*\* For Modbus protocol setting please see Application Note Modbus AN0103 at <u>www.epluse.com</u>.

#### **Device information (INT16)**

Parameter	Register number <sup>1)</sup> [Dec]	Register address <sup>2)</sup> [Hex]			
Read register: function code 0x03 / 0x04					
Serial number (as ASCII)	1	00			
Firmware version	9	08			

1) Register number (decimal) starts from 1.

2) Register address (hexadecimal) starts from 0.

### Modbus Register Map

The measured values are saved as a 32 bit float value and 16 bit signed integer.

#### FLOAT32

Temperature

Parameter	Register number <sup>1)</sup> [Dec]	Register address <sup>2)</sup> [Hex]				
Read and write register: Read function code 0x03 / Write function code: 0x10						
Temperature [°C]	1003	3EA				
Temperature [°F]	1005	3EC				
Temperature [K]	1009	3F0				
INT16						
Parameter	Register number <sup>1)</sup> [Dec]	Register address <sup>2)</sup> [Hex]				
Read and write register: Read function code 0x03 / Write function code: 0x10						
Temperature [°C] * 100	4002	FA1				
Temperature [°F] * 50	4003	FA2				

4005

[K] \* 50 is scale 1:100 (2550 is equivalent to 25.5  $^\circ C)$  is scale 1:50 (2550 is equivalent to 51  $^\circ F)$ \* 100

\* 50

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FA4