E Plus E Elektronik EE160 Humidity and Temperature Sensor for Building Automation User Guide

Contents

E Plus E Elektronik EE160 Humidity and Temperature Sensor for Building Automation

Specifications:

- Product Name: EE160 – Humidity and Temperature Sensor for Building Automation
- Electrical Connection: Bus termination with 120 Ohm resistor
- Address Setting: Via PCS10 Product Configuration Software or DIP switches
- Modbus Register Map: FLOAT32 and INT16 parameters for temperature and relative humidity
- Modbus Setup: Baud rate, data bits, parity, stop bits, and Modbus address settings

Product Usage Instructions

- **Electrical Connection:**
  Ensure proper hardware bus termination using a 120 Ohm resistor. Use the jumper on the PCB to terminate the bus.
- **Address Setting:**
  - **Address Switch:**
    - Factory Setting: All DIP switches at position 0 (default address 245DEC, 0xF5)
    - Custom Setting: Adjust DIP switches to set custom Modbus address (1…247)
- **Modbus Register Map:**
  The measurement data is saved as 32-bit float and 16-bit signed integer values. Refer to the Modbus Register map for register numbers and addresses.
- **Modbus Setup:**
  Configure baud rate, data bits, parity, stop bits, and Modbus address settings using PCS or Modbus protocol. Recommended settings for multiple devices in a Modbus RTU network are 9600, 8, Even, 1.

FAQ:

- **Q: How can I set the device address and other communication parameters?**
  A: You can set the device address, baud rate, parity, and stop bits via PCS Product Configuration Software or Modbus protocol using the appropriate configuration cable HA011018.
- **Q: Can I switch between metric and non-metric measurement units using PCS?**
  A: No, switching between metric and non-metric units must be done when ordering the product. Refer to the ordering guide in the datasheet for more information.

PLEASE NOTE
Find this document and further product information on our website at www.epluse.com/ee160.

Electrical Connection

WARNING

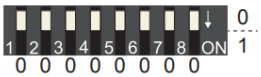
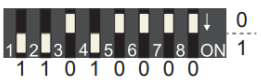
- Incorrect installation, wiring, or power supply may cause overheating and therefore personal injuries or property damage.
- The cables mustn't be under voltage during installation. No voltage must be applied when the product is connected or disconnected. For correct cabling of the device, always observe the presented wiring diagram for the product version used.
- 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.

Hardware Bus Termination

If required, the bus termination shall be realized with a 120 Ohm resistor, by the jumper on the PCB.

- Jumper mounted → bus terminated
- Jumper not mounted → bus not terminated

Address Setting

Address Switch	Option
	**Address setting via PCS10 Product Configuration Software (= factory setting)** All DIP switches at position 0 à factory-set default address (245_{DEC}, 0xF5) applicable, can be changed via software (PCS10 or Modbus protocol, permitted values: 1…247). Example: Address is set via configuration software.
	**Address setting via DIP switches** DIP switches in any other position than 0 indicate the effective Modbus address which overrules the factory setting and any Modbus address set via PCS10 or Modbus command (permitted values: 1…247). Example: Address set to 11_{DEC} ($0000\ 1011_{BIN}$).

Modbus Register Map

The measurement data is saved as 32-bit float and as 16-bit signed integer values, see the Modbus Register map below.

FLOAT32

Parameter	Unit	Register number[1)] [DEC]	Register address[2)] [HEX]
Read register: function code 0x03 / 0x04			
Temperature T	°C, °F[3)]	26	19
Relative humidity RH, Uw	%RH	28	1B

1. The register number starts from 1.
2. Register address starts from 0.
3. The choice of measurement units (metric or non-metric) is done at the time of ordering, see the ordering guide in the EE160 data sheet. It is not possible to switch from metric to non-metric or vice versa by means of the PCS.

INT16

Parameter	Unit	Scale [1)]	Register number[2)] [DEC]	Register address[3)] [HEX]
Read register: function code 0x03 / 0x04				
Temperature T	°C, °F[4)]	100	301	12C
Relative humidity RH, Uw	%RH	100	302	12D

1. Example: For a scale of 100, a reading of 2550 is equivalent to 25.5.
2. The register number starts from 1.
3. Register address starts from 0.
4. The choice of measurement units (metric or non-metric) shall be done when ordering, see the ordering guide in the datasheet. Switching from metric to non-metric or vice versa using the PCS is not possible.

Modbus Setup

	Factory settings	User-selectable values (via PCS)
Baud rate	9 600	9 600, 19 200, 38 400, 57 600, 76 800, 115 200
Data bits	8	8
Parity	Even	None, odd, even
Stop bits	1	1, 2
Modbus address	245	1…247

- The recommended settings for multiple devices in a Modbus RTU network are 9600, 8, Even, 1.
- The EE160 represents 1 unit load in a Modbus network.
- Device address, baud rate, parity, and stop bits can be set via:
  - PCS Product Configuration Software and the appropriate configuration cable HA011018.
  - Modbus protocol in the register 1 (0x00) and 2 (0x01).
  - See Application Note Modbus AN0103 (available at **www.epluse.com/ee160**).
- The serial number as ASCII-code is located in read-only registers 1 – 8 (0x00 – 0x07, 16 bits per register).
- The firmware version is located in register 9 (0x08) (bit 15…8 = major release; bit 7…0 = minor release).
- The sensor name ASCII-code is located in read-only registers 10 – 17 (0x09 – 0x11, 16 bits per register).

Communication settings (INT16)			
Parameter	**Register number[1] [Dec]**	**Register address[2] [Hex]**	**Size[3]**
Write register: function code 0x06			
Modbus address[4]	1	00	1
Modbus protocol settings[4]	2	01	1

Device information (INT16)			
Parameter	**Register number[1] [Dec]**	**Register address[2] [Hex]**	**Size[3]**
Read register: function code 0x03 / 0x04			
Serial number (as ASCII)	1	00	8
Firmware version	9	08	1
Sensor name (as ASCII)	10	09	8

1) Register number (decimal) starts from 1.

2) Register address (hexadecimal) starts from 0.

3) Number of registers

4) For Modbus address and protocol settings see Application Note Modbus AN0103 (available at **www.epluse.com/ee160**).

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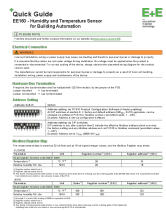
Documents / Resources

	E Plus E Elektronik EE160 Humidity and Temperature Sensor for Building Automation [pdf] User Guide EE160, EE160 Humidity and Temperature Sensor for Building Automation, EE160, Humidity and Temperature Sensor for Building Automation, Temperature Sensor for Building Automation, Sensor for Building Automation, Building Automation, Automation

References

- E+E High-end sensor solutions for your applications | E+E Elektronik
- User Manual