USER'S GUIDE

EE160 - Humidity and Temperature Transmitter for HVAC Applications

GENERAL

The EE160 transmitter, available for wall or duct mounting, is designed for the measurement of humidity and temperature in HVAC applications. The transmitter incorporates the E+E humidity and temperature sensor HCT01.

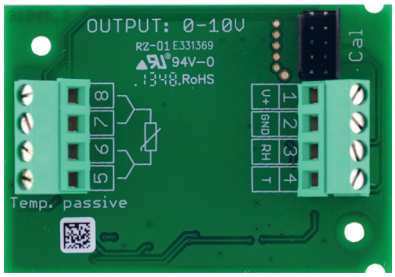
For use in special applications do not hesitate to contact E+E Elektronik or a local distributor.

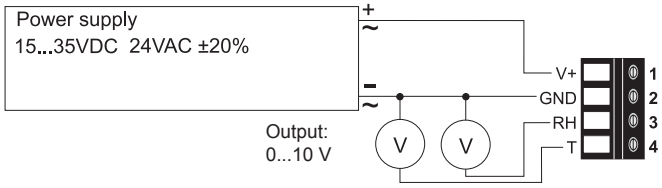
COUTION

- For accurate measurement it is essential that the temperature of the sensing probe and mainly of the sensing head is same as the temperature of the air to measure. Avoid mounting the EE160 transmitter in a way which creates temperature gradients along the probe.
- The transmitter and mainly the sensing head shall not be exposed to extreme mechanical stress.
- The transmitter must be operated with the filter cap on at all times. Do not touch the sensors inside the sensing head.
- While replacing the filter cap (because of pollution for instance) against an original E+E spare one please take very good care to not touch the sensors.

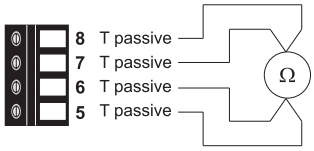
CONNECTION DIAGRAM

EE160-HT3xxx

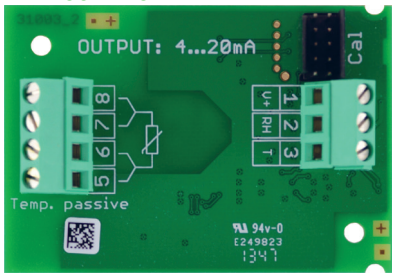


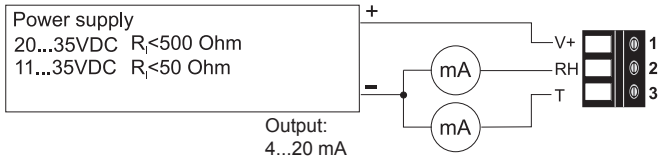


T-passive connection for HT3xxx/HT6xxx

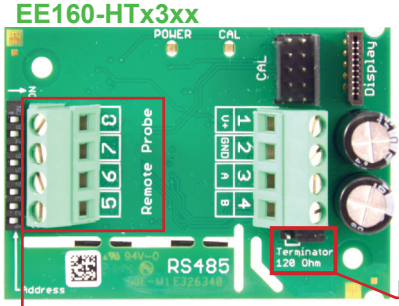


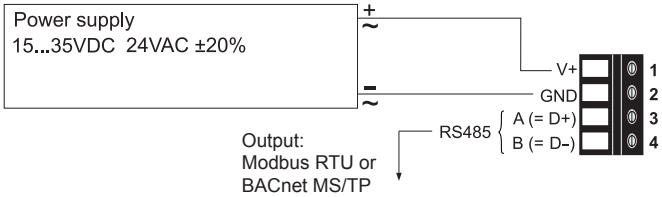
EE160-HT6xxx





EE160-HTx3xx





Bus termination resistor 120 Ω (jumper)

DO NOT CONNECT!

LED INDICATION

Green LED - information to normal operation mode:

on = everything OK

flashing = the main board does not recognize the measurement electronics inside the sensing probe

off = no power supply or main board failure

Blue LED - information during setup with the optional E+E Configuration Kit:

on = E+E Product Configuration Adapter (EE-PCA) is powered, no communication in progess

flashing = EE-PCA powered, communication in progress

off = EE-PCA not connected to the EE160

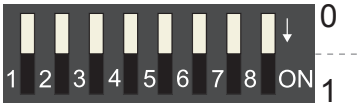
DIGITAL SETTINGS

BACnet Setup

BACnet PICS are available for download at www.epluse.com/EE160

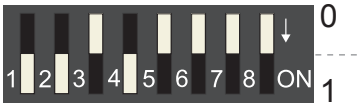
Modbus Setup

Address Switch



Slave address setting via EE-PCS Product Configuration Software:
All switches at position 0 → address has to be set via configuration software (factory setting 245).
Example: Slave address is set via configuration software.

Address Switch



Slave address setting via Dip-Switch:
Setting the Dip-Switch to any other address than 0 overwrites the slave address set via configuration software.
Example: Slave address set to 11 (=00001011 binary).

The measured values are saved as a 32Bit float value from 0x19 to 0x1B. Additionally, the measured values can be read as 16-bit signed integer from 0x12C to 0x12D.

The factory setting for the Slave-ID is 245 as an integer 16Bit value. This ID can be customised in the register 60001 (0x00) (value margin 1 - 247 permitted).

The required units (metric or non-metric) must be selected in the „Ordering guide“, see EE160 data sheet.

FLOAT (read register):

Register address	Communication address	Parameter name	
30026	0x19	Temperature	[°C], [°F]
30028	0x1B	relative Humidity	[%]

INFO (read register):

Register address	Communication address	Parameter name
30001	0x00	Serial number (as ASCII)
30009	0x08	Firmware version

*INTEGER (read register):**

Register address	Communication address	Parameter name	
30301	0x12C	Temperature	[°C], [°F]
30302	0x12D	relative Humidity	[%]

* Values are stored with a scaling of 1:100
(e.g.: 2550 is equivalent to 25.5°C)

*INTEGER (write register):**

Register address	Communication address	Parameter name
60001	0x00	Slave-ID (modbus addresse)
60002	0x01	Modbus protocol settings*

*For Modbus protocol setting please see Application Note Modbus (www.epluse.com/EE160)

Protocol setting:
Address, baudrate, parity and stop bits can be set via:
1. Configurator software (available on www.epluse.com/EE160)
2. Modbus protocol (please see Application Note Modbus available on www.epluse.com/EE160)

TECHNICAL DATA

Measured values

Relative Humidity

Sensor	E+E Sensor HCT01-00D
Working range	10...95% RH
Accuracy at 20°C	±2.5% RH
Temperature dependency	typ. ±0.03% RH/°C

Temperature

Sensor	Pt1000 (tolerance class B, DIN EN 60751)
T-Accuracy at 20°C	±0.3°C

Outputs

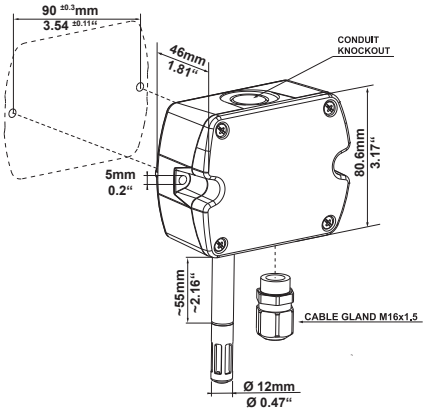
Analog output	0-10 V	-1 mA < I_L < 1 mA or
(RH: 0...100%; T: see ordering guide)	4-20 mA (two-wire)	R_L < 500 Ohm
Digital output	RS485 (BACnet MS/TP or Modbus RTU) max. 32 EE160 in one bus	
Passiver T-sensor		
4-wire	see ordering guide	

General

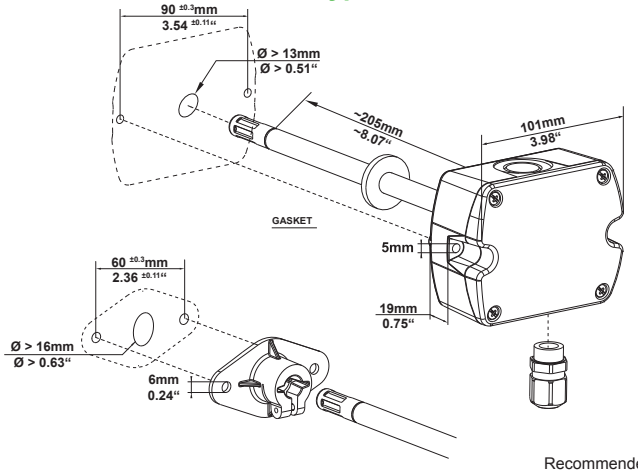
Power supply	
for 0 - 10 V / RS485	15 - 35V DC or 24V AC ±20%
for 4 - 20 mA	10V + R_L x 20 mA < U_V < 35V DC
Current consumption	
Analog	with DC power supplytyp. 5mA with AC power supplytyp. 13mA_{eff}
Digital	with DC power supplytyp. 15mA with AC power supplytyp. 25mA_{eff}
Connection	Screw terminals, max. 1.5 mm^2
Housing material	Polycarbonate, UL94V-0 approved
Protection class	IP65 / NEMA 4
Cable gland	M16 x 1.5
Sensor protection	membrane filter
Electromagnetic compatibility	EN61326-1 EN61326-2-3
Temperature ranges	Operating temperature: -40...60°C (-40...140°F) Storage temperature: -20...60°C (-4...140°F)

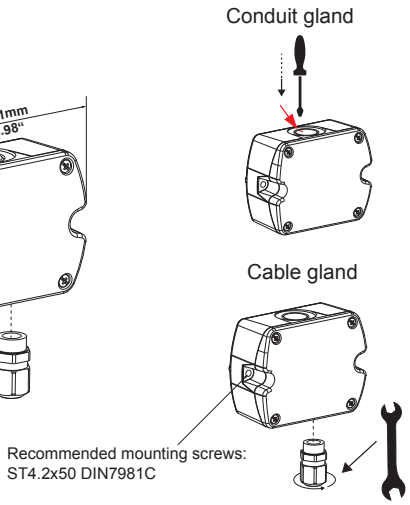
Dimensions

Type A



Type B





SCOPE OF SUPPLY

EE160 WALL MOUNT (TYPE A):

- EE160 Transmitter according Ordering Guide
- 1 x Cable gland
- Mounting kit
- Inspection certificate according to DIN EN 10204 – 3.1

EE160 WALL MOUNT (TYPE B):

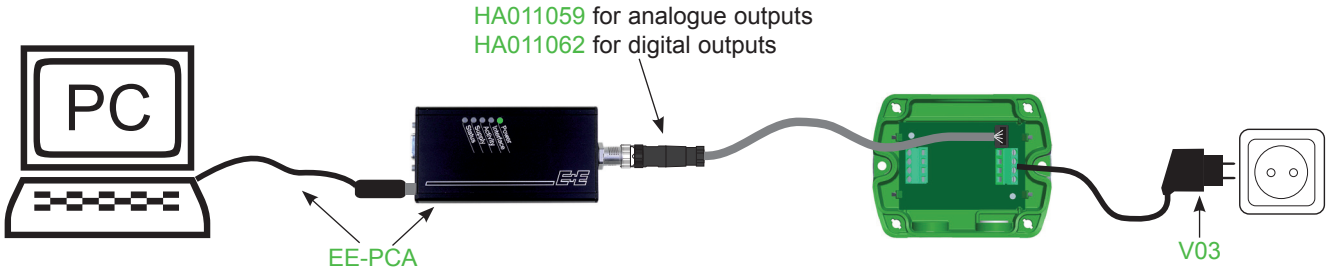
- EE160 Transmitter according Ordering Guide
- 1 x Cable gland
- Mounting flange
- Mounting kit
- Inspection certificate according to DIN EN 10204 – 3.1

ADDITIONALLY FOR ALL EE160 WITH RS485 INTERFACE:

- 1 x Cable gland
- Quick guide – EE160 Modbus Setup

SETUP AND ADJUSTMENT

The EE160 transmitter is ready to use and does not require any configuration by the user. The factory setup of EE160 corresponds to the type number ordered. For ordering guide please see data sheet at www.epluse.com/EE160.)
If need, the user can change the factory setup by using the optional E+E Product Configuration Adapter (EE-PCA) and the E+E Product Configuration Software (EE-PCS).



One can assign other physical quantities to the analogue outputs, change the scaling of the outputs and perform one or two point adjustment for humidity and temperature.

For product data sheets EE-PCS and EE-PCA please see www.epluse.com.
The E+E Product Configuration Software (EE-PCS) is free and can be downloaded from www.epluse.com/configurator.

MAINTENANCE

When employed in dusty, polluted environment:

- The filter cap shall be replaced once in a while with an E+E original one. A polluted filter cap causes longer response time of the device.
- If needed, the sensing head can be cleaned. For this remove first very carefully the filter cap. Take care not to hit the sensing head. Shake slowly the sensing head for one minute in a solution of 50% isopropyl alcohol with 50% distilled water. Then the sensing head shall be rinsed with cold tap water and let dry freely. Do not touch or rub the sensing head! After cleaning the sensors install carefully a new E+E original filter cap.

ACCESSORIES

Configuration kit: The configuration kit allows user setup for the output scaling and for the interface parameters, as well as humidity and temperature adjustment of the sensor.

Position 1:
- configuration adapter (incl. USB cable for PC) EE-PCA

Position 2:
- for analogue outputs: cable for configuration adapter HA011059
- for digital outputs: cable for configuration adapter HA011062

Position 3:
- configuration software: free of charge; download: www.epluse.com/EE160

Position 4 - optional:
- power supply for EE160 V03

USA
FCC notice:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the installation manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which thereceiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CANADIAN
ICES-003 Issue 5:

CAN ICES-3 B / NMB-3 B

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