EplusE
Velocity Sensor with RS485 Interface

EplusE EE650 Air Velocity Sensor with RS485 Interface User Guide

Contents

EplusE

EplusE EE650 Air Velocity Sensor with RS485 Interface

Specifications

- **Product:** EE650 – Air Velocity Sensor with RS485 Interface
- **Interface**: RS485
- **Power Supply**: Peak current of 150 mA
- **Address Setting**: Modbus (slave device) – factory setting 65 (permitted values: 1…247); BACnet (master device) – factory setting 65 (permitted values: 0…127)
- **Measurement Units**: Must be chosen according to the ordering guide in the datasheet

Product Usage Instructions

- **Electrical Connection**
  Ensure correct cabling by following the wiring diagram for the specific product version used. Use a power supply that can maintain the supply voltage within the specified range.
- **Hardware**
  Implement bus termination with a 120Ω resistor switch on the electronics board to prevent damage from improper handling.
- **Wiring**
  Connect the digital interface and power supply as per the provided wiring diagram. Ensure proper connection of V+, GND, A (=D+), B (=D-), and termination resistor S1 S2 ON.
- **Address Setting**
  Set the address using either PCS10 Product Configuration Software or DIP switches based on the protocol being used (Modbus or BACnet). Refer to the manual for specific address settings.
- **Modbus Setup**
  For reading temperature and air velocity parameters, use the specified function codes and register numbers as per the provided table. Make sure to choose the correct scale based on the measurement units.
- **BACnet Setup**
  Set up the BACnet address as per the guidelines provided in the manual. Ensure proper configuration for communication within the network.

PLEASE NOTE
Find this document and further product information on our website at www.epluse.com/ee650.

Electrical Connection

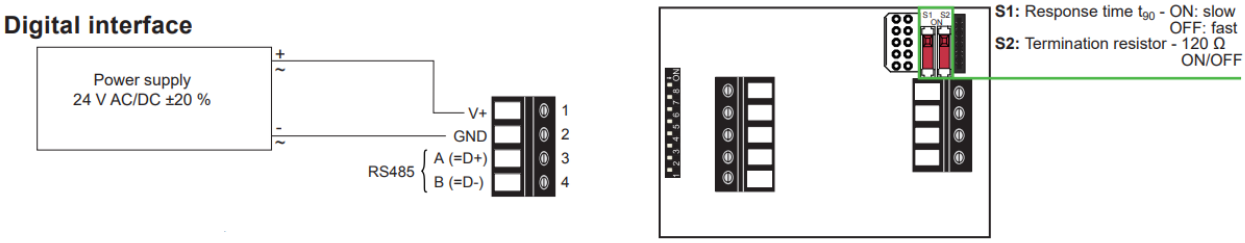
WARNING
Incorrect installation, wiring or power supply may cause overheating and can therefore lead to personal injuries or damage to property. For correct cabling of the device, always observe the presented wiring diagram for the product version used. The manufacturer cannot be held responsible for personal injuries or damage to property as a result of incorrect handling, installation, wiring, power supply or maintenance of the device.

Hardware

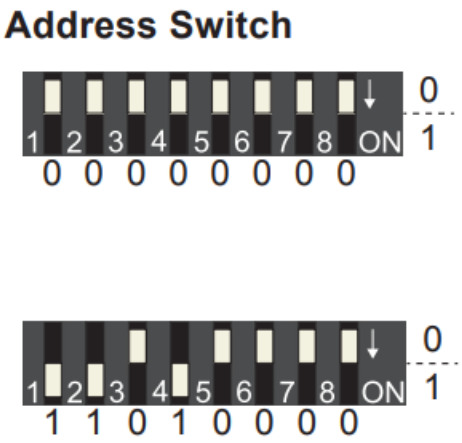
The bus termination shall be implemented with a 120 Ω resistor, switch on the electronics board.

NOTICE
Improper handling of the device may result in its damage. The power supply must be strong enough to ensure supply voltage within the specified range (see technical data) at any time and at all devices in the bus. This is particularly relevant when using long and thin cables which can cause high voltage drop. Please note that a single EE650 requires peak current of 150 mA.

Wiring



Address Setting



- **Address setting via PCS10 Product Configuration Software**
  - All DIP switches at position 0 → address has to be set via PCS10.
  - **Modbus (slave device):** factory setting 65 (permitted values: 1…247).
  - **BACnet (master device)**: factory setting 65 (permitted values: 0…127).
  - **Example**: Address is set via configuration software = factory setting.
- **Address setting via DIP switch**
  - **Modbus (slave device):** Setting the DIP switches to any other address than 0, overrules the Modbus address set via PCS10 (permitted values: 1…247).
  - **BACnet (master device):** Setting the DIP switches to any other address than 0, overrules the BACnet

address set via the configuration software.

- **BACnet Note:** permitted values are 0…127. 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). Example: Address set to 11 (= 0000 1011 binary).

BACnet Setup

Please refer to PICS (Product Implementation Conformance Statement), available on www.epluse.com/ee650.

Modbus Setup

FLOAT32

Parameter	Unit[1]	Register number[2] [DEC]	Register address[3] [HEX]
Read register: function code 0x03 / 0x04			
Temperature	°C	1003	3EA
Temperature	°F	1005	3EC
Air velocity	m/s	1041	410
Air velocity	ft/min	1043	412

INT16

Parameter	Unit[1]	Scale[4]	Register number[2] [DEC]	Register address[3] [HEX]
Read register: function code 0x03 / 0x04				
Temperature	°C	100	4002	FA1
Temperature	°F	50	4003	FA2
Air velocity	m/s	100	4021	FB4
Air velocity	ft/min	1	4022	FB5

1. The choice of measurement units (metric or non-metric) must be done according to the ordering guide, refer to EE650 datasheet.
2. Switching from metric to non-metric or vice versa by using the PCS10 is not possible. The register number (decimal) starts from 1.
3. Register address (hexadecimal) starts from 0.
4. **Examples**: For scale 100, the reading of 2550 means a value of 25.5. For scale 50, a reading of 2550 means a value of 51.

Communication settings (INT16)

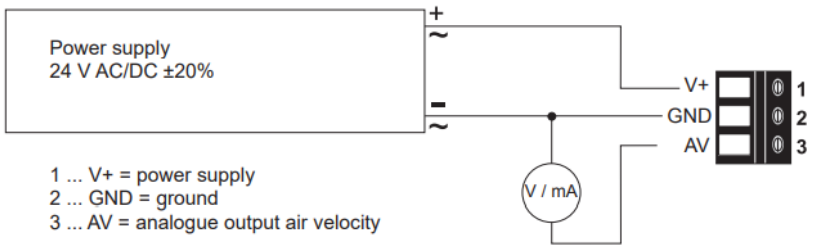
Parameter	Register number[1] [Dec]	Register address[2] [Hex]	Size[3]
Write register: function code 0x06			
Modbus address[4][5]	1	00	1
Modbus protocol settings[4]	2	01	1
Device information (INT16)			
Parameter	**Register number[1] [Dec]**	**Register address[2] [Hex]**	**Size[3]**
Read register: function code 0x03 / 0x04			
Serial number (as ASCII)	1	00	8
Firmware version	9	08	1
Sensor name (as ASCII)	10	09	8

1. The register number starts from 1.
2. The protocol address starts from 0.
3. Number of registers.
4. For Modbus address and protocol settings refer to Application Note Modbus AN0103 (available at www.epluse.com/ee650).
5. If the ID is set via DIP-Switch the response will be NAK.

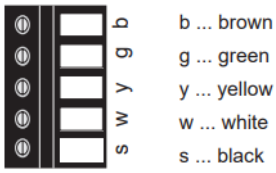
EE650 – Air Velocity Sensor with Analogue Output

Wiring

Supply / Output

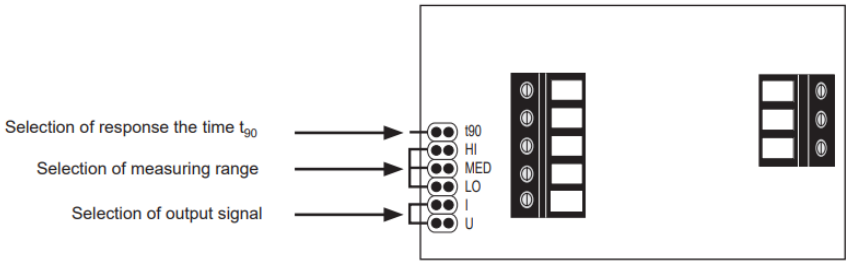


Remote probe



Jumper

For performing the EE650 settings via the PCS10 Product Configuration Software (free download from www.epluse.com/pcs10) the jumper for the measuring range must be set to HI.



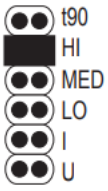
Selection of the Output Signal

	
Jumper I Current (factory setting)	Jumper U Voltage

Selection of Response Time t90

	
Jumper t_{90} SLOW 4 s (factory setting)	no jumper FAST 1 s

Selection of the measuring range

		
Jumper HI 0...20 m/s (0...4000 ft/ min)(factory setting)	Jumper MED 0...15 m/s (0...3000 ft/min)	Jumper LO 0...10 m/s (0...2000 ft/min)

Customized ranges[1)]


Jumper HI + MED (factory setting)

E+E Elektronik Ges.m.b.H.

- Langwiesen 7 4209 Engerwitzdorf Austria
- T +43 7235 605-0
- F +43 7235 605-8

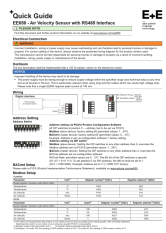
- info@epluse.com
- www.epluse.com

FAQ

How do I choose the measurement units?
The choice of measurement units must be done according to the ordering guide in the datasheet. Switching between metric and non-metric units using PCS10 is not possible.

What should I do if I encounter overheating issues?
If you experience overheating, immediately disconnect the power supply and check the wiring connections. Ensure that the power supply is adequate and within the specified range to prevent overheating.

Documents / Resources

	EplusE EE650 Air Velocity Sensor with RS485 Interface [pdf] User Guide Product Name Air Velocity Sensor with RS485 Interface, Model Numbers EE650, EE650 Air Velocity Sensor with RS485 Interface, EE650, EE650 Air Velocity Sensor, Air Velocity Sensor, Velocity Sensor, Sensor, Air Velocity Sensor with RS485 Interface

References

- E+E Sensor Technology: Humidity, CO2, Flow & Temperature Measurement
- User Manual