E+E

your partner
in sensor
technology.

User Manual EE660

Low Air Velocity Sensor

Modbus

ASHRAE BACnet®

www.epluse.com

Content

1 General Information

This user manual serves for ensuring proper handling and optimal functioning of the device. The user manual shall be read before commissioning the equipment and it shall be provided to all staff involved in transport, installation, operation, maintenance and repair. E+E Elektronik Ges.m.b.H. does not accept warranty and liability claims neither upon this publication nor in case of improper treatment of the described products.

All information, technical data and diagrams included in this document are based on the information available at the time of writing. It may contain technical inaccuracies and typographical errors. The contents will be revised on a regular basis and changes will be implemented in subsequent versions. The described product(s) and the contents of this document may be changed or improved at any time without prior notice.

PLEASE NOTE

Find this document and further product information on our website at www.epluse.com/ee660.

1.1 Explanation of Warning Notices and Symbols

Safety precautions

Precautionary statements warn of hazards in handling the device and provide information on their prevention. The safety instruction labeling is classified by hazard severity and is divided into the following groups:

DANGER

Danger indicates hazards for persons. If the safety instruction marked in this way is not followed, the hazard will verly likely result in severe injury or death.

WARNING

Warning indicates hazards for persons. If the safety instruction marked in this way is not followed, there is a risk of injury or death.

CAUTION

Caution indicates hazards for persons. If the safety instruction marked in this way is not followed, minor or moderate injuries may occur.

NOTICE

Notice signals danger to objects or data. If the notice is not observed, damage to property or data may occur.

Informational notes

Informational notes provide important information which stands out due to its relevance.

INFO

The information symbol indicates tips on handling the device or provides additional information on it. The information is useful for reaching optimal performance of the device.

The title field can deviate from “INFO” depending on the context. For instance, it may also read “PLEASE NOTE”.

1.2 Safety Instructions

1.2.1. General Safety Instructions

NOTICE

Improper handling of the device may result in its damage.

- The EE660 enclosure, the sensing probe and the sensing module shall not be exposed to unnecessary mechanical stress.
- Do not apply the supply voltage to the RS485 data lines.
- Use the EE660 only as intended and observe all technical specifications.

1.2.2. Intended Use

The EE660 low air velocity sensor is dedicated for accurate and reliable measurement in laminar flow control and special ventilation applications, for instance in clean rooms.

⚠ WARNING

Non-compliance with the product documentation may cause safety risks for people and the entire measurement installation.

The manufacturer cannot be held responsible for damages as a result of incorrect handling, installation and maintenance of the device.

- Do not use the EE660 in explosive atmosphere or for measurement in aggressive gases.
- This device is not appropriate for safety, emergency stop or other critical applications where device malfunction or failure could cause injury to human beings.
- The device may not be manipulated with tools other than specifically described in this manual.

NOTICE

Failing to follow the instructions in this user manual may lead to measurement inaccuracy and device failures.

- The EE660 may only be operated under the conditions described in this user manual and within the specification included in chapter 9 Technical Data.
- Unauthorized product modification leads to loss of all warranty claims. Modification may be accomplished only with an explicit permission of E+E Elektronik Ges.m.b.H.!

1.2.3. Mounting, Start-up and Operation

The EE660 has been produced under state of the art manufacturing conditions, has been thoroughly tested and has left the factory after fulfilling all safety criteria. The manufacturer has taken all precautions to ensure safe operation of the device. The user must ensure that the device is set up and installed in a way that does not impair its safe use. The user is responsible for observing all applicable local and international safety guidelines for safe installation and operation of the device. This user manual contains information and warnings that must be observed by the user in order to ensure safe operation.

ⓘ PLEASE NOTE

The manufacturer or his authorized agent can only be held liable in case of willful or gross negligence. In any case, the scope of liability is limited to the corresponding amount of the order issued to the manufacturer. The manufacturer assumes no liability for damages incurred due to failure to comply with the applicable regulations, operating instructions or the specified operating conditions. Consequential damage is excluded from liability.

⚠ WARNING

Non-compliance with the product documentation may cause accidents, personal injury or property damage.

- Mounting, installation, commissioning, start-up, operation and maintenance of the device may be performed by qualified staff only. Such staff must be authorized by the operator of the facility to carry out the mentioned activities.
- The qualified staff must have read and understood this user manual and must follow the instructions contained within. The manufacturer accepts no responsibility for non-compliance with instructions, recommendations and warnings.
- All process and electrical connections shall be thoroughly checked by authorized staff before putting the device into operation.
- Do not install or start-up a device supposed to be faulty. Make sure that such devices are not used accidentally by marking them clearly as faulty.
- A faulty device must be removed from the process.
- Service operations other than described in this user manual may only be performed by the manufacturer.

1.3 Environmental Aspects

PLEASE NOTE

Products from E+E Elektronik Ges.m.b.H. are developed and manufactured in compliance with all relevant environmental protection requirements. Please observe local regulations for the disposal of the device.

For disposal, the individual components of the device must be separated according to local recycling regulations. The electronics shall be disposed of correctly as electronics waste.

2 Scope of Supply

- EE660 Low Air Velocity Sensor according to ordering guide
- Cable gland (two pieces at output RS485 for daisy chain wiring)
- Mounting flange
- Mounting material
- Protection cap
- Quick guide
- Test report according to DIN EN 10204-2.2

3 Product Description

3.1 General

The EE660 is optimized for highly accurate measurement of very low air velocity in laminar flow control and special ventilation applications, for instance in clean rooms.

The E+E thin-film sensing element used in the EE660 is based on the thermal anemometer principle and offers outstanding measurement accuracy from as little as 0.15 m/s. The construction of the sensing head results in a very low angle dependency, which facilitates installation. The mounting flange allows for easy adjustment of the immersion depth. High resistance to contamination and low angular dependence ensure excellent measurement performance.

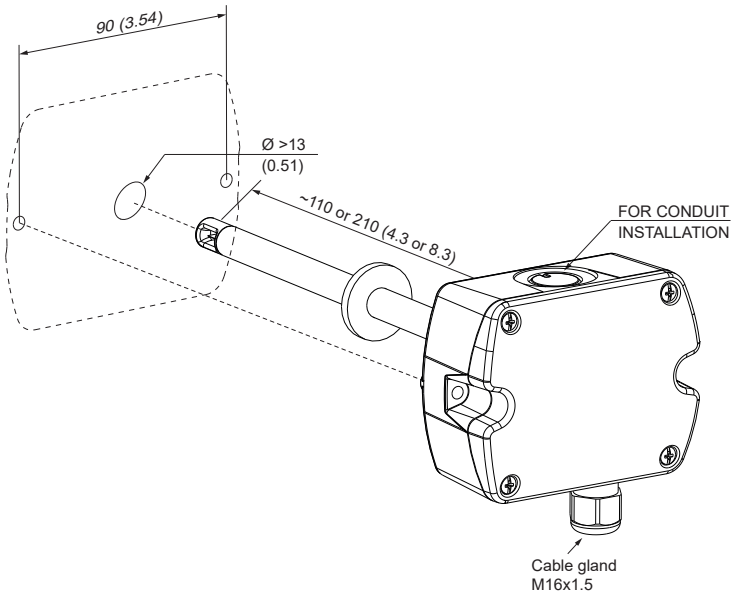
The air velocity measured data is available at the current and voltage outputs or via a digital RS485 interface with Modbus RTU or BACnet MS/TP protocol. The air velocity can also be read on the optional display.

The measuring range and the response time of the EE660 can be configured via jumpers on the electronics board (refer to chapter 6.1 Analogue Settings) or with the software.
Both the device and display settings can be customised using an optional adapter and the free PCS10 Product Configuration Software.

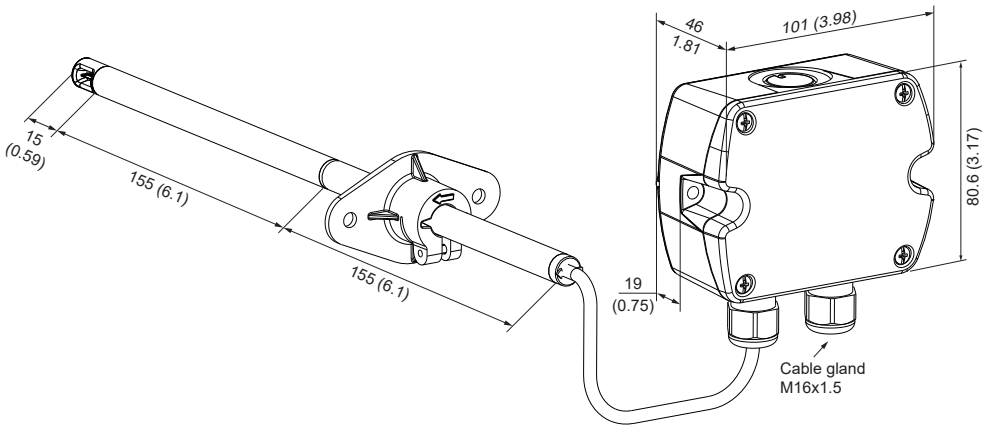
3.2 Dimensions

Values in mm (inch)

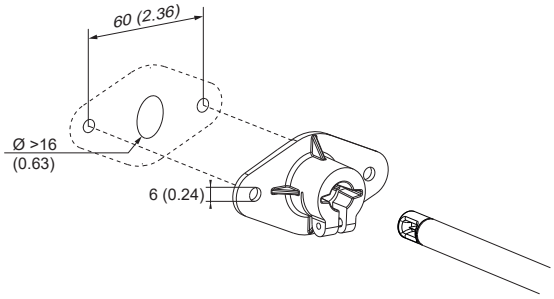
Duct mount



Remote Probe



Mounting flange

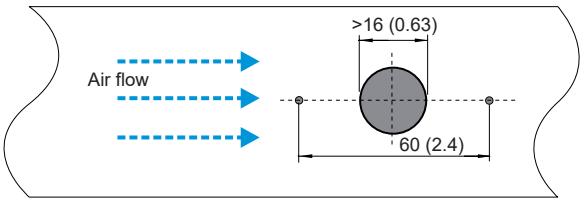


4 Mounting and Installation

4.1 Drilling in the Wall of the Duct for Installing the Mounting Flange

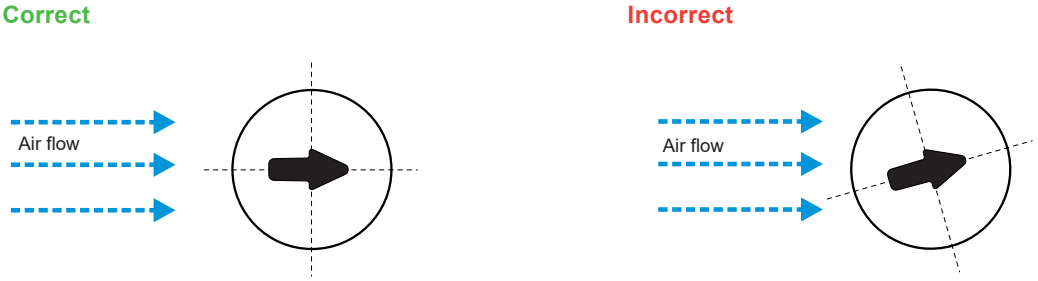
Drilling hole dimensions

in mm (inch)

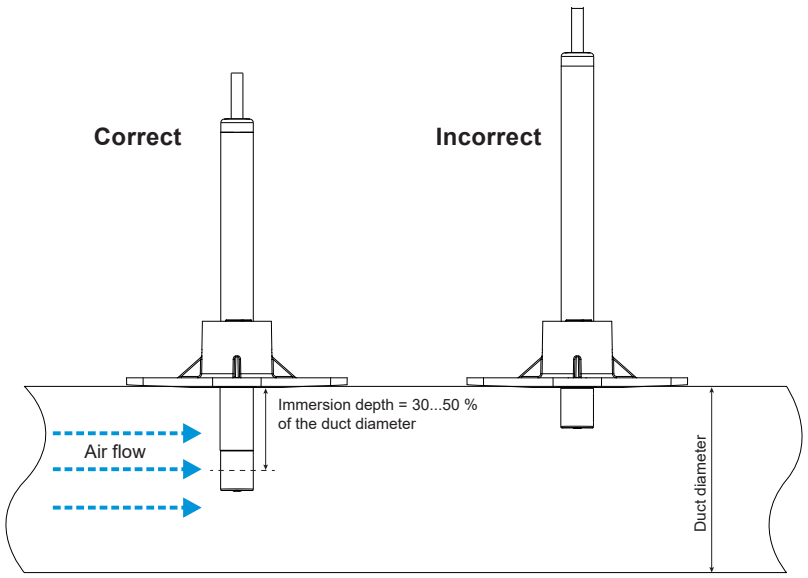


The arrow engraved on the sensing head of EE660 indicates the direction of the air stream during factory adjustment.

When installing the EE660 probe, make sure that the arrow matches exactly the flow direction.



The mounting flange allows for precise setting of the EE660 immersion depth in a duct. The entire sensing head must be in the air flow to be measured.

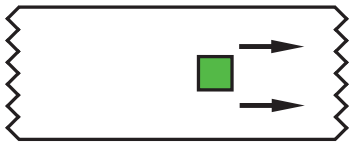
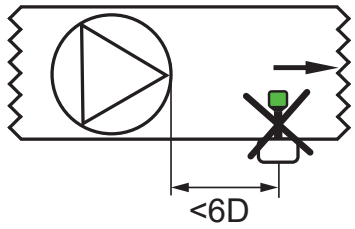
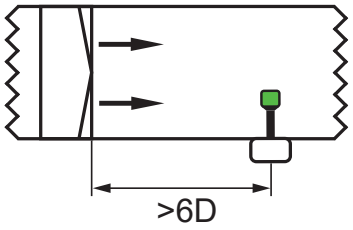
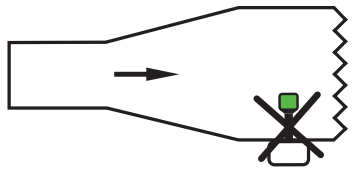
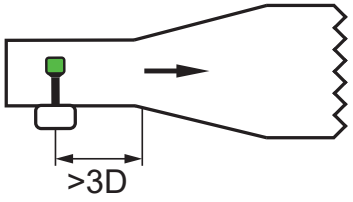
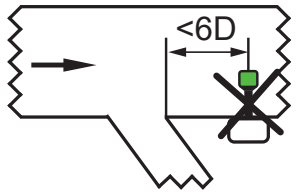
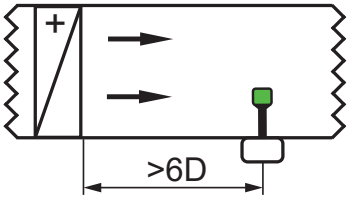
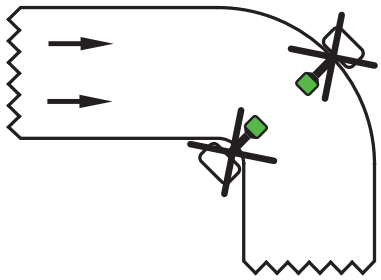
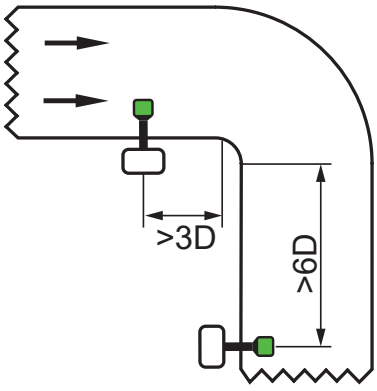


4.2 Positioning of Air Velocity Sensor in a Ventilation Duct

The reliable and accurate measurement of air velocity depends on the correct positioning of the sensor in the ventilation duct. Accurate measurements are only possible if the air velocity probe is positioned at a location with a laminar (not-turbulent) flow.

The required length of the calming section after a fault is a function of the tube diameter D. For a rectangular channel a x b applies:

$$D_{gl} = \frac{2 \cdot a \cdot b}{a + b}$$

Incorrect positioning	Correct positioning	Description
		Mounting the sensing probe in the centre of the duct.
		The optimal position is after the filter. Please ensusre sufficient distance.
		Position the probe in front of the diffusor, at a place with high flow rate.
		Position the probe at a location with a laminar (to-turbulent) flow.
		Turbulent flows are caused by pipe bends, branches, behind flaps, flanges, air heaters, air coolers or cross-sectional changes.

Tab. 1 Positioning examples

5 Electrical Connection

⚠ WARNING

Incorrect installation, wiring or power supply may cause overheating and therefore personal injuries or damage to property.

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

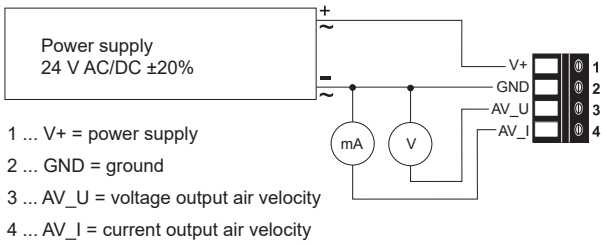
The manufacturer cannot be held responsible for personal injuries or damage to property as a result of incorrect handling, installation, wiring, power supply and maintenance of the device.

The EE660 features screw terminals for connecting the power supply and the outputs. The cables are fed into the enclosure through the M16 cable gland.

NOTICE

- It is important to make sure that the cable glands are closed tightly for the power supply and outputs cable. This is necessary for assuring the IP rating of the enclosure according to EE660 specification, as well as for stress relief at the screw terminals on the EE660 board.
- Accurate measurement results are conditioned by the correct positioning of the sensing probe in the air stream. The best accuracy is achieved with laminar flow.
- Observe the minimum inlet and outlet path length, refer to chapter 4.2 Positioning of Air Velocity Sensor in a Ventilation Duct.
- Avoid mechanical stress onto the probe and mainly onto the sensing head.
- Observe the humidity working range 5…95% RH, non-condensing.
- Avoid installation in corrosive environment, as this may lead to sensor destruction.

5.1 Analogue Output



Remote Sensor Probe

Notation	Colour
b	brown
g	green
y	yellow
w	white
s	black

Fig. 1 Connection diagram for analogue output

5.2 RS485 Interface

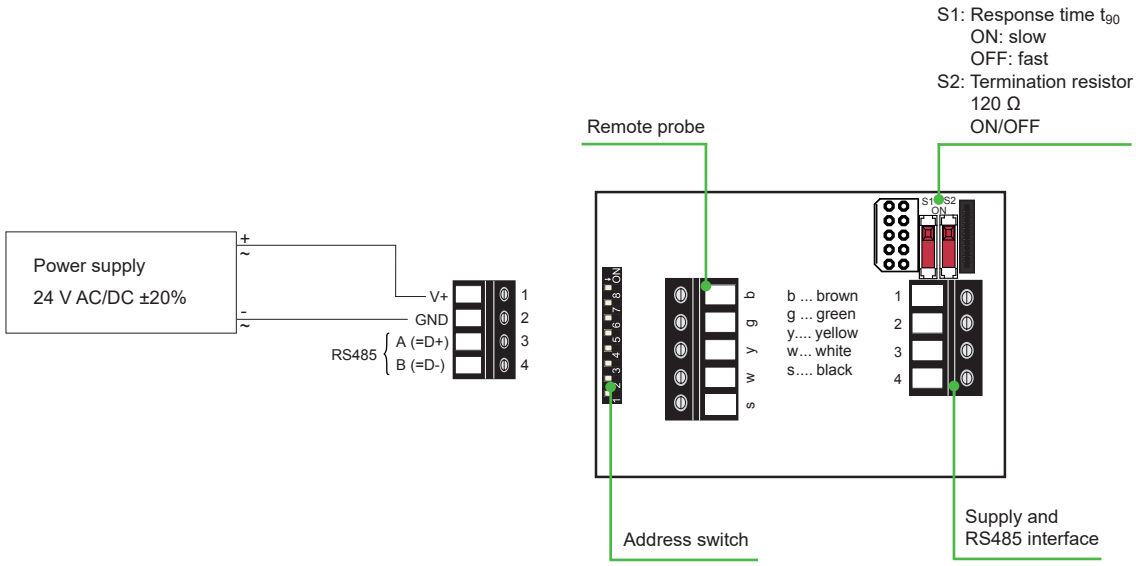
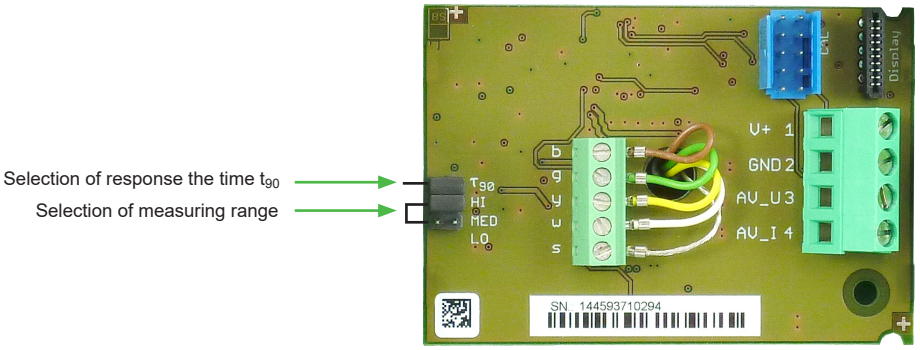


Fig. 2 Connection diagram for RS485 interface

6 Setup and Configuration

6.1 Analogue Settings

For performing the EE660 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.



6.1.1. Selection of Response Time t_{90}

t90 HI MED LO	t90 HI MED LO
Jumper t_{90} SLOW 4 s (factory setting)	no jumper FAST 1 s

6.1.2. Selection of Measuring Range

t90 HI MED LO	t90 HI MED LO	t90 HI MED LO
Jumper HI 0...2 m/s (0...400 ft/min) (factory setting)	Jumper MED 0...1.5 m/s (0...300 ft/min)	no jumper 0...1 m/s (0...200 ft/min)

6.2 RS485 Digital Interface

The EE660 is ready to use and does not require any configuration by the user. The factory setup of the EE660 corresponds to the type number ordered. Please refer to the datasheet at www.epluse.com/ee660. If needed, the user can change the factory setup with the help of the free PCS10 Product Configuration Software and the Modbus configuration adapter (HA011066).

NOTICE

The EE660 must be disconnected to any additional power supply when using the USB configuration adapter HA011066.

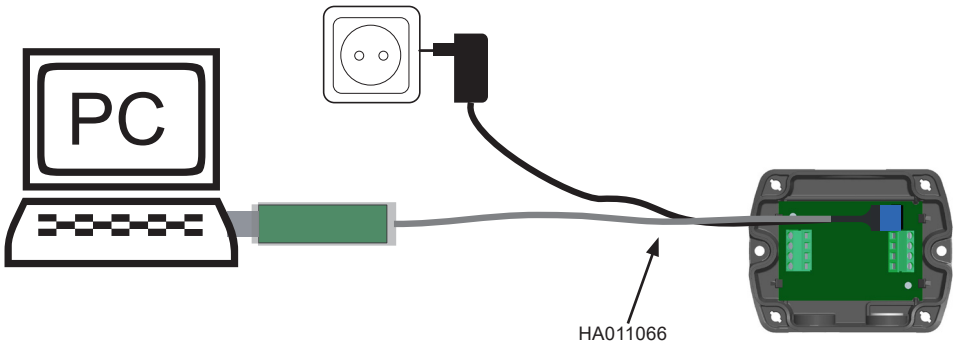


Fig. 3 EE660 connected to a PC running PCS10

6.2.1. PCS10 Product Configuration Software

To use the software for changes in settings, please proceed as follows:

1. Download the PCS10 Product Configuration Software from www.epluse.com/pcs10 and install it on the PC.
2. Connect the EE660 to the PC using the Modbus configuration adapter.
3. Start the PCS10 software.
4. Follow the instructions on the PCS10 opening page for scanning the ports and identifying the connected device.
5. Click on the desired setup mode from the main PCS10 menu on the left. Follow the online instructions of the PCS10 which are displayed when clicking the “Tutorial” button.
6. Changes are uploaded to the sensor by pressing the “Sync” button.

6.2.2. Hardware Bus Termination

For bus termination the EE660 features an internal 120 Ω resistor which can be activated using the slide switch S2 on the electronics board (refer to also chapter 5.2 RS485 Interface for details).

NOTICE

For proper function, the power supply must be strong enough to ensure supply voltage within the specified range (refer to chapter 9 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

A single EE660 requires peak current of 150 mA.

6.2.3. Device Address

Address Switch

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 Switch

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 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).

6.2.4. BACnet Protocol Settings

	Factory settings	User selectable values (via PCS10)
Baud rate	As specified in the order code	9 600, 19 200, 38 400, 57 600 and 76 800
Data bits	8	8
Parity	None	None
Stop bits	1	1
BACnet address	65	0…127

Tab. 2 BACnet protocol settings

PLEASE NOTE

The recommended settings for multiple devices in a BACnet MS/TP network are 38 400, 8, none, 1.

The EE660 PICS (Product Implementation Conformance Statement) is available on the E+E website at www.epluse.com/ee660.

BACnet address and baud rate can be set via:
- PCS10 Product Configuration Software and the USB configuration adapter HA011066.
- BACnet protocol, refer to the PICS.

6.2.5. Modbus RTU Protocol Settings

	Factory settings	Selectable values (via PCS10)
Baud rate	As specified in the order code	9 600, 19 200 and 38 400
Data bits	8	8
Parity	Even	None, odd, even
Stop bits	1	1, 2
Modbus address	65	1...247

Tab. 3 Modbus RTU protocol settings

PLEASE NOTE

- The recommended settings for multiple devices in a Modbus RTU network are 9600, 8, even, 1.
- The EE660 represents 1 unit load on an RS485 network.

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

- PCS10 Product Configuration Software and the USB configuration adapter HA011066.
  The PCS10 can be downloaded free of charge from www.epluse.com/pcs10.
- Modbus protocol in the register 1 (0x00) and 2 (0x01).
  Refer to Application Note Modbus AN0103 (available at www.epluse.com/ee660).

The serial number as ASCII-code is located in read-only registers 1 - 8 (0x00 - 0x07).
The firmware version is located in read-only register 9 (0x08) (bit 15...8 = major release; bit 7...0 = minor release).
The sensor name as ASCII-code is located in read-only registers 10 - 17 (0x09 - 0x10).

NOTICE

When reading information that spans multiple registers, it is always necessary to read all registers, even if the desired information requires less.

NOTICE

For obtaining the correct floating point values, both registers have to be read within the same reading cycle. The measured value can change between two Modbus requests, exponent and mantissa may get inconsistent then.

INFO

The Modbus function codes mentioned throughout this document shall be used as described in the MODBUS APPLICATION PROTOCOL SPECIFICATION V1.1b3, chapter 6:
www.modbus.org/docs/Modbus_Application_Protocol_V1_1b3.pdf

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) Register number (decimal) starts from 1.
2) Register address (hexadecimal) 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/ee660).
5) If the ID is set via DIP-Switch the response will be NAK.

Tab. 4 EE660 registers for device setup

6.3 Modbus Register Map

The measurement data is saved as 32 bit floating point values (data type FLOAT32) and as 16 bit signed integer values (data type INT16).

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 EE660 datasheet. Switching from metric to non-metric or vice versa by using the PCS10 is not possible.
2) 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, the reading of 2550 means a value of 51

Tab. 5 EE660 FLOAT32 and INT16 measured data registers

6.4 Modbus RTU Example

The EE660's Modbus address is 65 [0x41].

Please refer to

- MODBUS APPLICATION PROTOCOL SPECIFICATION V1.1b3, chapter 6: www.modbus.org/docs/Modbus_Application_Protocol_V1_1b3.pdf
- E+E Application Note Modbus AN0103 (available at www.epluse.com/ee660)

Read the temperature (FLOAT32) T = 26.652524 °C from the register 0x03EA:

Master (e.g. PLC) → **EE660**

Request [Hex]:

Modbus address	Function code	Starting address Hi	Starting address Lo	Qty. of registers Hi	Qty. of registers Lo	CRC
41	03	03	EA	00	02	EB 7B

Response [Hex]:

Modbus address	Function code	Byte count	Register 1 value Hi	Register 1 value Lo	Register 2 value Hi	Register 2 value Lo	CRC
41	03	04	38	5F	41	D5	0A E3

Tab. 6 Example temperature query

Decoding of floating point values:

Floating point values are stored according to IEEE754. The byte pairs 1, 2 and 3, 4 are transformed as follows (numbers taken from T reading Modbus request/response example above):

Modbus response [Hex]			
Byte 3	Byte 4	Byte 1	Byte 2
38	5F	41	D5
MMMMMMMM	MMMMMMMM	SEEEEEEE	EMMMMMMM

Tab. 7 Modbus response

IEEE754			
Byte 1	Byte 2	Byte 3	Byte 4
41	D5	38	5F
0100 0001	1101 0101	0011 1000	0101 1111
SEEE EEEE	EMMM MMMM	MMMM MMMM	MMMM MMMM
Decimal value: 26.652524			

Tab. 8 Data representation according to IEEE754

7 Maintenance and Service

Due to the absence of moving parts, the E+E air velocity sensor is not a subject to wear. The design (shape, dimensions and materials) of the hot-film air velocity sensor is inherently very insensitive to dust and dirt. No maintenance is required under normal ambient conditions. For operation in dirty environments, it is advisable to clean the sensor head regularly in isopropyl alcohol, preferably in an ultrasonic cleaner. Alternatively shake it gently for a few minutes in a pot with isopropyl alcohol and allow it to dry freely.

NOTICE

Do not touch or rub the sensor head and do not use any mechanical tools for cleaning.

7.1 Repairs

Repairs may be carried out by the manufacturer only. The attempt of unauthorized repair excludes any warranty claims.

8 Accessories

For further information please refer to the Accessories datasheet.

Description	Code
USB configuration adapter	**HA011066**
PCS10 Product Configuration Software (free download: www.epluse.com/pcs10)	**EE-PCS**
Power supply adapter	**V03**

9 Technical Data

Measurands

Air Velocity (v)

Measuring range Selectable by jumper, only for analogue output	0...1 m/s (0...200 ft/min) 0...1.5 m/s (0...300 ft/min) 0...2 m/s (0...400 ft/min)
Accuracy[1)] in air @ 20 °C (68 °F), 45 %RH and 1 013 hPa (14.7 psi) **0.15...1 m/s (30...200 ft/min)** **0.15...1.5 m/s (30...300 ft/min)** **0.15...2 m/s (30...400 ft/min)**	 ±(0.04 m/s + 2 % of mv) / ±(7.9 ft/min + 2 % of mv) mv = measured value ±(0.05 m/s + 2 % of mv) / ±(9.8 ft/min + 2 % of mv) ±(0.06 m/s + 2 % of mv) / ±(11.8 ft/min + 2 % of mv)
Response time t_{90}, typ. @ constant temperature	4 s or 1 s (Selectable by jumper (analogue) and slide switch (digital))

1) The accuracy statement includes the uncertainty of the factory calibration with an enhancement factor k=2 (2-times standard deviation). The accuracy was calculated in accordance with EA-4/02 and with regard to GUM (Guide to the Expression of Uncertainty in Measurement).

Outputs

Analogue

Air velocity (v)	0 - 10 V 4 - 20 mA (linear, 3-wire)	-1 < I_L < 1 mA R_L < 450 Ω	I_L = load current R_L = load resistance
Scaling area	0...1 m/s / 0...1.5 m/s / 0...2 m/s (selectable by jumper, only for analogue output)		

Digital

Digital interface	RS485 (EE660 = 1 unit load)
Protocol **Factory settings** **Supported Baud rates** **Measured data types**	Modbus RTU 9 600 Baud, parity even, 1 stop bit, Modbus address 65 9 600, 19 200 and 38 400 FLOAT32 and INT16
Protocol **Factory settings** **Supported Baud rates**	BACnet MS/TP 9 600 Baud, no parity, 1 stop bit, BACnet address 65 9 600, 19 200, 38 400, 57 600 and 76 800

General

Power supply class III USA & Canada: Class 2 supply necessary		24 V AC / DC ±20 %			
Current consumption, max.		**AC supply - no display**	**DC supply - no display**	**AC supply - with display**	**DC supply - with display**
	Analogue output	74 mA $_{rms}$	41 mA	180 mA $_{rms}$	85 mA
	Digital output	120 mA $_{rms}$	50 mA		
Dependency	**of inflow angle (α)** **of inflow direction**	<3% for α <10° <3%			
Electrical connection		Screw terminals max. 1.5 mm^2 (AWG 16)			
Cable gland		M16x1.5			
Humidity working range		5…95 %RH, non-condensing			
Temperature range					
	Probe	-25 °C...+50 °C (-13 °F...+122 °F)			
	Electronics	-10 °C...+50 °C (-14 °F...+122 °F)			
	Storage	-30 °C...+60 °C (-22 °F...+140 °F)			
Enclosure	**Material**	PC (Polycarbonate)			
	Protection rating	IP65 / NEMA 4X			
	Compliance	UL94 V-0 approved / with display: UL94 HB approved			
Protection rating	**Remote probe**	IP20			
Electromagnetic compatibility		EN 61326-1 FCC Part15 Class A	EN 61326-2-3 ICES-003 Class A	Industrial environment	
Conformity		CE UKCA			
Configuration and adjustment		PCS10 Product Configuration Software (free download) and configuration adapter.			

10 Conformity

10.1 Declarations of Conformity

E+E Elektronik Ges.m.b.H. hereby declares that the product complies with the respective regulations listed below:

CE European directives and standards.

and

UKCA UK statutory instruments and designated standards.

Please refer to the product page at www.epluse.com/ee660 or the Declarations of Conformity.

10.2 FCC Part 15 Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

10.3 ICES-003 Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Company Headquarters &
Production Site

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

Subsidiaries

E+E Sensor Technology (Shanghai) Co., Ltd.
T +86 21 6117 6129
info@epluse.cn

E+E Elektronik France SARL
T +33 4 74 72 35 82
info.fr@epluse.com

E+E Elektronik Deutschland GmbH
T +49 6171 69411-0
info.de@epluse.com

E+E Elektronik India Private Limited
T +91 990 440 5400
info.in@epluse.com

E+E Elektronik Italia S.r.l.
T +39 02 2707 86 36
info.it@epluse.com

E+E Elektronik Korea Ltd.
T +82 31 732 6050
info.kr@epluse.com

E+E Elektronik Corporation
T +1 847 490 0520
info.us@epluse.com

your partner
in sensor
technology.

BA_EE660 | Version v1.3 | 06-2024

www.epluse.com