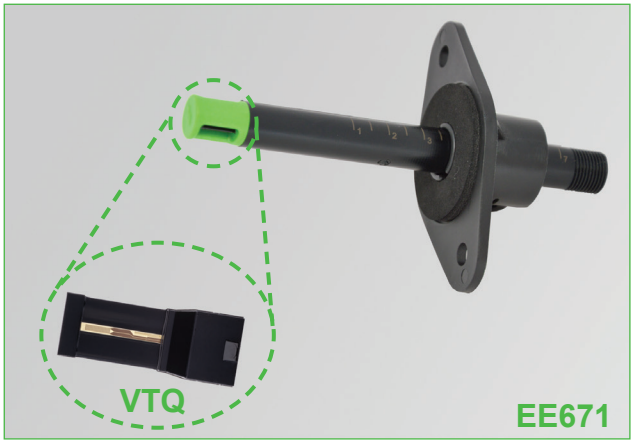
EE671

HVAC Miniature Air Flow Transmitter

EE671 is a compact air velocity probe for HVAC applications. The built-in flow sensing element VTQ combines the advantages of state-of-the-art E+E thin-film manufacturing and of the newest transfer molding technology.
It operates on the hot-film anemometer principle and ensures high accuracy and excellent long-term stability. The flow sensing element ist very robust and highly insensitive to contamination.
EE671 is available with fixed cable or M12 connector. The alignment strip on the probe and the matching mounting flange within the scope of supply simplify installation and precise positioning in the air flow. The flange enables the immersion depth to be infinitely variable.
The measured air velocity up to 20 m/s (4000 ft/min) is available as linear voltage output 0 - 1 V, 0 - 5 V or 0 - 10 V. The digital version of EE671 with Modbus RTU interface facilitates integration into modern building automation systems. With an optional configuration kit it is easy to scale the output, set the Modbus parameters and perform the adjustment of the probe.



Typical Applications

Heating and ventilation systems
Flow monitoring and control
Inlet air monitoring in ovens

Features

High accuracy and long-term stability
Outstanding resistance to contamination
Easy and quick mounting
User configurable

Technical Data

Flow measurement

Measurement range[1]	0...5 m/s (0...1000 ft/min) 0...10 m/s (0...2000 ft/min) 0...15 m/s (0...3000 ft/min) 0...20 m/s (0...4000 ft/min)
Output signal	
analogue[1]	0 - 1 V (max. 1 mA) 0 - 5 V (max. 1 mA) 0 - 10 V[2] (max. 1 mA)
RS485	Modbus RTU
Accuracy[3] at 20 °C (68 °F) / 45 % rh and 1013 hPa (14.7 psi)	0.5...5 m/s (100...1000 ft/min): ±(0.2 m/s / 40 ft/min + 3 % of measured value) 1... 10 m/s (200...2000 ft/min): ±(0.3 m/s / 60 ft/min + 4 % of measured value) 1... 15 m/s (200...3000 ft/min): ±(0.35 m/s / 70 ft/min + 5 % of measured value) 1... 20 m/s (200...4000 ft/min): ±(0.4 m/s / 80 ft/min + 6 % of measured value)
Response time τ_{90}	typ. 4 s

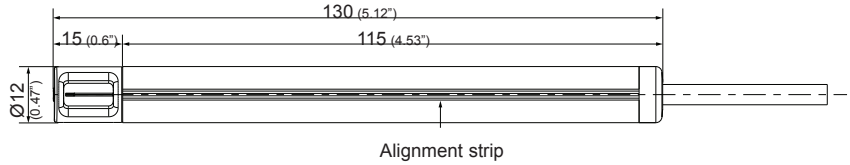
General

Supply voltage (Class III)	10...29 V DC SELV
Current demand	max. 50 mA at 20 m/s (4000 ft/min)
Temperature range	operation: -20...60 °C (-4...140 °F) storage: -30...60 °C (-22...140 °F)
Operating range humidity	5...95 % rh (non-condensing)
Connection	
Cable version	0.5 m (1.6 ft) / 2 m (6.6 ft) cable, PVC, temperature-flexible, 5x0.25 mm² (AWG 23) with ferrules
Plug version	M12 connector system, 5-pin
Electromagnetic compatibility[4]	EN61326-1 EN61326-2-3
Material / protection class	polycarbonate / IP50 (probe head); IP54 (housing)

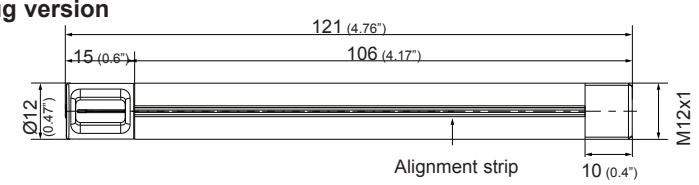
1) See ordering information
2) Only at supply voltage V+ ≥ 15 V
3) The accuracy statement includes the uncertainty of the factory calibration with an enhancement factor k=2 (2-fold standard deviation). The tolerance was calculated in accordance with EA-4/02 following the GUM (Guide to the Expression of Uncertainty in Measurement).
4) The EE671 is not short-circuit-proof and not surge-proof (ESD-sensitive device).

Dimensions (mm/inch)

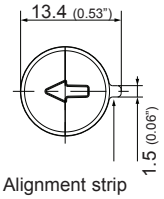
Cable version



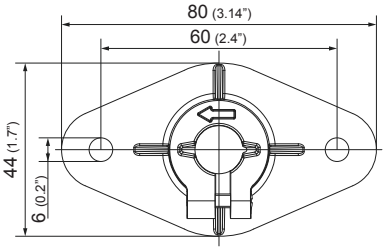
Plug version

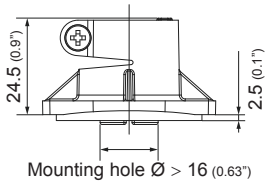


Front view Measurement head:



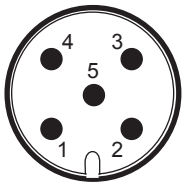
Flange (within the scope of supply):





Connection diagram

The device is not short-circuit-proof and not surge-proof (ESD-sensitive device). The two digital lines must not be connected to the supply!



view on sensor plug

Plug version	Cable version	Analog output	Modbus RTU output
1	grey	SDA (digital setup interface E2)	V+ = Supply voltage
2	brown	GND	RS485-B (=D-)
3	green	AV = Analog output	RS485-A (=D+)
4	yellow	SCL (digital setup interface E2)	GND
5	white	V+ = Supply voltage	n.c.

Modbus Map

The EE671 air flow transmitter can be operated in a Modbus RTU network with max. 32 devices. For Modbus protocol settings see Application Note Modbus AN0103 (www.epluse.com/EE671).

The factory setting for the Slave-ID is 238 as an integer 16Bit value. This ID can be customised in the register 0x00 (value margin 1 - 247 permitted).

READ REGISTERS (function code 0x03 / 0x04)

Register [DEC]	Protocol address [HEX]	Measured value	Unit	Type
30001	0x00	Serial number		ASCII
30009	0x08	Software version		Binary
30010	0x09	Transmitter name		ASCII
30026	0x19	Temperature	°C	32-bit float
30028	0x1B	Temperature	°F	32-bit float
30030	0x1D	Temperature	K	32-bit float
30032	0x1F	Air velocity	m/s	32-bit float
30034	0x21	Air velocity	ft/min	32-bit float
30046	0x2D	Temperature	°C x 100	16-bit integer
30047	0x2E	Temperature	°F x 100	16-bit integer
30048	0x2F	Temperature	K x 100	16-bit integer
30049	0x30	Air velocity	m/s x 100	16-bit integer
30050	0x31	Air velocity	ft/min x 100	16-bit integer

WRITE REGISTERS (function code 0x06)

Register [DEC]	Protocol address [HEX]	Measured value	Unit	Type
60001	0x00	Network address		
60002	0x01	Communication parameter		

Ordering Information

MODEL		OUTPUT		MEASUREMENT RANGE		TYPE	
air velocity	(V)	0 - 1 V	(1x)	0...5 m/s (0...1000 ft/min)	(C)	cable version 0.5 m	(KA)
		0 - 5 V	(2x)	0...10 m/s (0...2000 ft/min)	(D)	cable version 2 m	(KD)
		0 - 10 V	(3x)	0...15 m/s (0...3000 ft/min)	(E)	plug version	(Sx)
		RS485	(x3)	0...20 m/s (0...4000 ft/min)	(F)		
EE671-							

Digital output setup

PROTOCOL		BAUDRATE		PARITY		STOPBITS		UNIT	
Modbus RTU	(1)	9600	(A)	odd	(O)	1 stopbit	(1)	metric	(M)
		19200	(B)	even	(E)			non-metric	(N)
		38400	(C)	no parity	(N)				

Order Example

EE671-V2xDKA

Model:	air velocity
Output:	0 - 5 V
Measurement range:	0...10 m/s (0...2000 ft/min)
Type:	cable version 0.5 m

EE671-Vx3ESX/1AE1M

Model:	air velocity
Output:	RS485
Measurement range:	0...15 m/s
Type:	plug version
Protocol:	Modbus RTU
Baudrate:	9600
Parity:	even
Stopbits:	1 stopbit
Unit:	metric

Scope of Supply

- EE671 transmitter according to ordering guide
- Protection cap
- Mounting flange
- User manual

Accessories (see data sheet „Accessories“)

Product configuration adapter	see data sheet EE-PCA
Connections set for EE671 analogue	HA011064
RS485 USB-converter	HA011016
Product configuration software (free download: www.epluse.com/EE671)	EE-PCS
Mounting flange	HA010214
Especially for plug version (Design S):	
Mating plug (self assembling)	HA010708
Connecting cable, 5-pin, 2 m (79“), M12 plug	HA010816
Connecting cable, 5-pin, 5 m (197“), M12 plug	HA010817
Connecting cable, 5-pin, 1.5 m (59“), flying leads	HA010819
Connecting cable, 5-pin, 5 m (197“), flying leads	HA010820