

Air velocity sensor

QVM62.1-HE, QVM62.1-HU



To control air velocity

- Controls air velocity to a constant value
- Compensates for pressure variations
- Monitors air flow in air ducts
- QVM62.1-HE: CE and UKCA compliant
- QVM62.1-HU: CE and UKCA compliant, UL certified

Application

Air velocity sensors QVM62.1-HE and QVM62.1-HU:

- Controls air velocity to a constant value
- Compensates for pressure variations
- Monitors air flow in air ducts

The sensor is primarily suited for modulating fan control in primary plants to set basic volume flow.

Functions

Mode of operation

The air velocity sensor records the air velocity as a measured value and converts it to an active DC 0...10 V or 4...20 mA output signal.

Three measuring ranges are available::

- 0...5 m/s (0...16.4 ft/s)
- 0...10 m/s (0...32.8 ft/s)
- 0...20 m/s (0...65.6 ft/s)

The air velocity sensor measures a point, i.e., it measures the values at a specific location in the flow profile. The sensor's immersion depth is the key measure for recording the mean air velocity in the duct. The immersion depth is based on the flow profile.

The measurement process is based on the anemometer measuring principle.

The specially developed, robust sensing element is nearly insensitive to any kind of dirt in the airflow.

Technical design

Mechanical design

The air velocity sensor consists of:

- Immersion stem with sensor head and sensing element
- Extension pipe with fitting
- Immersion stem end with flow direction arrow
- Adjustable connecting flange
- Transducer
- Connection cable, shielded, four-core, 1 m (39.4 inches) long

A scale with 0.5 cm (0.197 inches) increments on the immersion stem and the extension pipe indicates the immersion depth.

The connecting flange is used to attach and seal the immersion stem on the duct wall.

A plastic housing with removable cover accommodates the transducer; it can be screwed to a flat surface.

The sensor cable is connected; the sensor and the transducer together represent a unit.

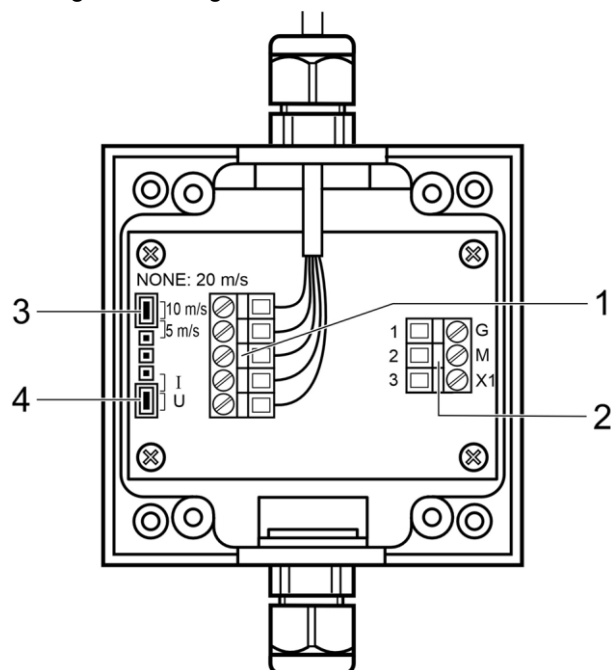
The measuring ranges are selected by inserting or removing a plug-in jumper. Protection against incorrect wiring is provided related to own voltages, i.e.

- Measuring output X1 is short-circuit proof
- The sensor head connections are not protected against AC/DC 24 V operating voltage.

Additional information on measuring ranges is available in 'Functions [► 2]'.

Basic design

Wiring and setting elements



- | | |
|--|--|
| <p>1 Terminal block for connection to the immersion stem</p> <p>3 Plug-in unit for setting the three measuring ranges. The following applies:</p> <ul style="list-style-type: none"> • No plug-in jumper = 0. 20 m/s (0...65.6 ft/s) • Plug-in jumper on 1 and 2 = 0. 10 m/s (0...32.8 ft/s) factor setting • Plug-in jumper on 2 and 3 = 0...5 m/s (0...16.4 ft/s) | <p>2 Terminal block for connection to controller</p> <p>4 Terminal block for selection of the output signal:</p> <ul style="list-style-type: none"> • Pos I = DC 4...20 mA • Pos U = DC 0...10 V |
|--|--|

Type summary

Order number	Type	Description
S55720-S536	QVM62.1-HE	Air velocity sensor
S55720-S775	QVM62.1-HU	Air velocity sensor, UL certified

Ordering

Specify quantity, product name and type when ordering.

Product documentation

Installation instructions for the air velocity sensor are including on the inside of the packaging.

A CE declaration is included in German and English.

Related documents such as the environmental declarations, CE declarations, etc., can be downloaded from the following Internet address:

<https://siemens.com/bt/download>

⚠ CAUTION



National safety regulations

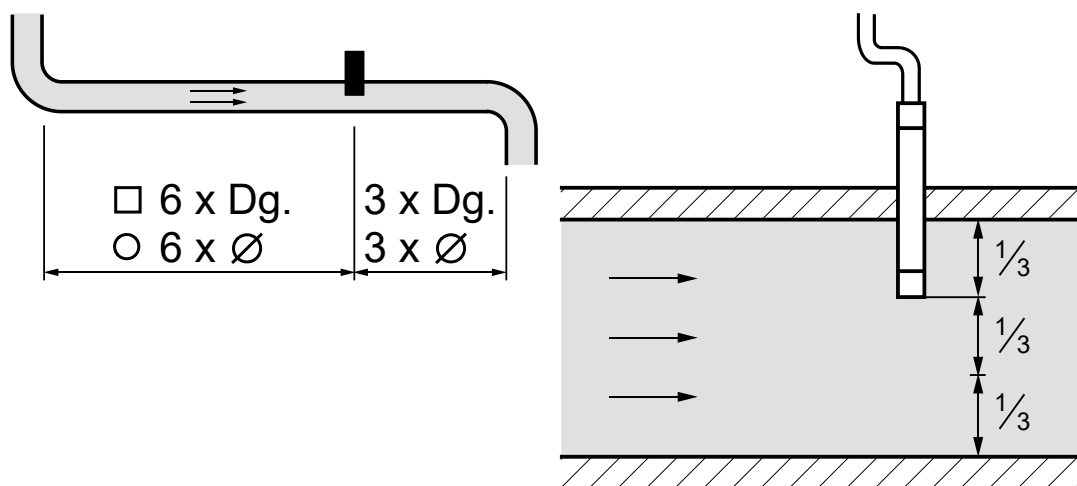
Failure to comply with national safety regulations may result in personal injury and property damage.

- Observe national regulations and comply with the appropriate safety regulations.

Engineering

Note the following during engineering:

- Place the air velocity sensor on the measuring path in a location where the air flow is quiet: Do not place it close to dampers, registers, and changes in duct direction.



- Use a transformer with safety extra-low voltage (SELV) with separate winding for 100% ON-time. Observe all local safety rules and regulations pertaining to sizing and protecting transformers.
- Comply with permissible line lengths to the controller.

Installation

Note the following during Installation:

- Mount the immersion stem so that the air flows through the opening at the sensor head.
- The immersion stem is premounted and wired to the transducer on delivery.
- The sensor pipes and the end piece with the direction arrow are prearranged on the connecting cable, fit them together (use the direction-oriented snap-on connections).
- The connecting flange can be removed from the cable if not needed.
- The connecting flange is not attached on delivery.

Installation instructions for the air velocity sensor are included on the inside of the packaging.

Commissioning

- Check the following prior to commissioning:
- Wiring
 - Air velocity range setting
 - Correct placement of the immersion stem in the air ducts (mounting instructions!)

Maintenance

NOTICE	
	Residual water Water can shorten the life of the air velocity sensor. • Clean the air velocity sensor on a regular basis in very dusty environments. Select a maintenance interval based on how dirty the plant is.

Disposal

	This symbol or any other national label indicates that the product, its packaging, and, where applicable, any batteries may not be disposed of as domestic waste. Delete all personal data and dispose of the item(s) at separate collection and recycling facilities in accordance with local and national legislation. For additional details, refer to Siemens information on disposal.
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Power supply	
Operating voltage	AC/DC 24 V ± 20 % (SELV)
Frequency	50/60 Hz
Current	AC: Max. 190 mA DC: Max. 70 mA
External fusing of supply line(s)	Non-renewable fuse, slow to a max. 10 A or Circuit breaker max. 13 A Characteristic curve B, C, D per IEC 60898-1 or Power source with current limitation of max. 10 A

Measured data		
Measuring ranges, adjustable	0...5 m/s (0...16.4 ft/s) 0. 10 m/s (0...32.8 ft/s) factor setting 0...20 m/s (0...65.6 ft/s)	
Measuring accuracy at 20 °C (68 °F), 45 % r.F., 1013 hPa (14.7 psi)	0...5 m/s (0...16.4 ft/s) 0...10 m/s (0...32.8 ft/s) 0...20 m/s (0...65.6 ft/s)	$\pm(0,2 \text{ m/s (0,7 ft/s) + 3 \% of measured value})$ $\pm(0,2 \text{ m/s (0,7 ft/s) + 3 \% of measured value})$ $\pm(0,2 \text{ m/s (0,7 ft/s) + 3 \% of measured value})$
Permissible air velocity	30 m/s (98.4 ft/s)	
Direction dependence	<3 % of measured value at $< \pm 10^\circ$	
Time constant t_{90} at 10 m/s (32.8 ft/s)	Ca. 4 s	

Signal output X 1	
Voltage output	DC 0...10 V, ± 1 mA
Current output	DC 4...20 mA, 0...500 Ω

Line lengths		
Perm. line length to controller at	Ø 0.6 mm (0.0236 in) copper cable 1 mm ² (0.00155 in ²) copper cable 1.5 mm ² (0.002325 in ²) copper cable	50 m (164.0 ft) 150 m (492.1 ft) 300 m (984.3 ft)
Line length to the sensor head	1 m (3.3 ft), fixed wiring	

Connections	
Mechanical	Screw connection
Electrical	Screw terminal, max. 2 x 1.5 mm ² (2 x 0.002325 in ²)

Safety class and degree of protection	
Protection class	III
Degree of protection of housing to EN 60529	
Transducer	IP65
Sensor head	IP20

Environmental conditions	
Operation (transducer and immersion stem)	
- Temperature (transducer) - Temperature (immersion stem) - Humidity (non-condensing)	-10...+45 °C (14...113 °F) -25...+50 °C (-13...+122 °F) <95 % r.h.
Transport and storage (transducer and immersion stem)	
- Temperature - Humidity (non-condensing)	-30...+60 °C (-22...+140 °F) <95 % r.h.

Materials and colors	
Housing base	Polycarbonate, RAL 7001 (silver-gray)
Housing cover	polycarbonate, RAL 7035 (light-gray)
Sensor tubes	Polycarbonate, RAL 7001 (silver-gray)
Sensor head, wiring, end piece	polycarbonate, RAL 7035 (light-gray)
Connecting flange	Polycarbonate, RAL 7001 (silver-gray)
Sensor, total	Silicone-free

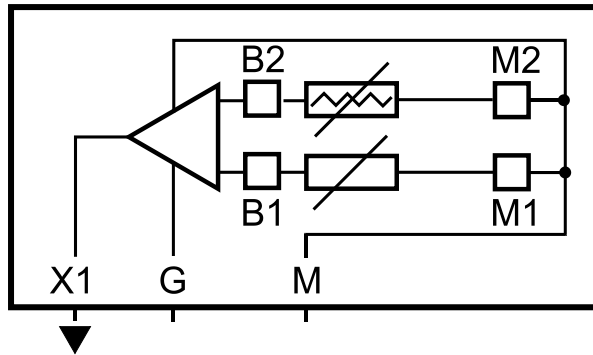
Standards, directives and approvals	
Electromagnetic compatibility (field of use)	For residential, commercial and industrial environment
EU compliance (CE)	See EU conformity (CE) *)
UK compliance (UKCA)	UK compliance (UKCA) *)
EAC compliance	Eurasian compliance
QVM62.1-HU only: UL certified	Corresponds to UL/CSA 60730-1 (CCN: XAPX/XAPX7), UL file E35198

Environmental compatibility	
The product environmental declaration *) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).	

Dimensions (weight)	
With packaging	0.352 kg (0.776 lb)

*) The documents can be downloaded at <http://siemens.com/bt/download>.

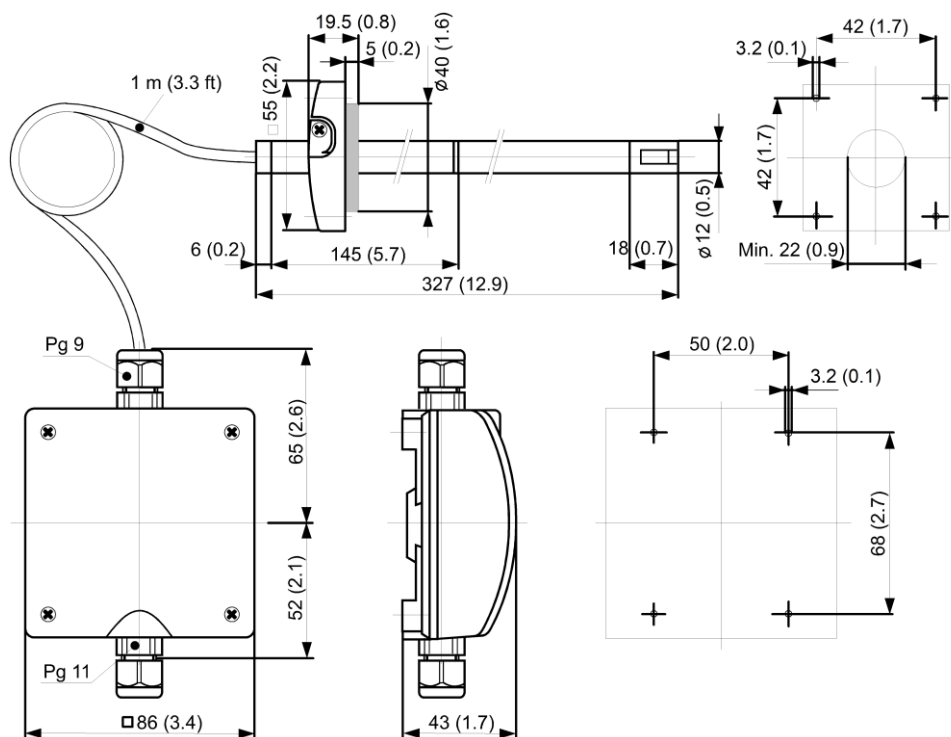
Connection diagrams



- G Operating voltage AC/DC 24 V
- M Measuring neutral/ operating voltage ground
- X1 Output signal: DC 0...10 V or 4...20 mA

Dimensions

Dimensions in mm (in)



European Union conformity

Contact for regulatory topics: (EU) Siemens AG, Berliner Ring 23, DE-76437 Rastatt

United Kingdom conformity assessed

Contact for regulatory topics: (GB) Siemens plc, Sir William Siemens House, Princess Road, Manchester, M20 2UR

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