SIEMENS

QVM62.1

Air Velocity Sensor

Description	This sensor is used to control the air velocity to a constant value, balance out pressure fluctuations (supply or exhaust air control), or to monitor the flow in air ducts. It is primarily used for modulating fan control in primary applications to set the basic volume flow.
Application	The QVM62.1 Sensor records the air velocity as a measured value and converts it to an active 0 to 10 Vdc output signal. There are three measuring ranges available:

Application

The QVM62.1 Sensor records the air velocity as a measured value and converts it to an active 0 to 10 Vdc output signal. There are three measuring ranges available:

- 0 to 16 ft/s (0 to 5 m/s)
- 0 to 33 ft/s (0 to 10 m/s)
- 0 to 49 ft/s (0 to 15 m/s).

The sensor measures a point (that is it measures the values at a specific location in the flow profile. For recording the mean air velocity in the duct, the sensor's immersion depth is the key measure. The immersion depth depends on the flow profile.

The measurement principle is based on the anemometric measurement principle. The specially developed thin film sensing element of the QVM62.1 is almost totally independent from the flow direction and is insensitive to almost any kind of dirt in the airflow.

Product Number

QVM62.1

Operation

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, screened, four-core, 3 feet (1 m) long

Operation (Continued)

A scale with 0.20 in (0.5 cm) grating 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 are a unit.

The measuring ranges are selected by inserting or removing a plug-in jumper.

Protection against false wiring is provided related to own voltages. (Measuring output U1 is short-circuit proof.) The sensor head connections are not protected against 24 Vac operating voltage.

Components
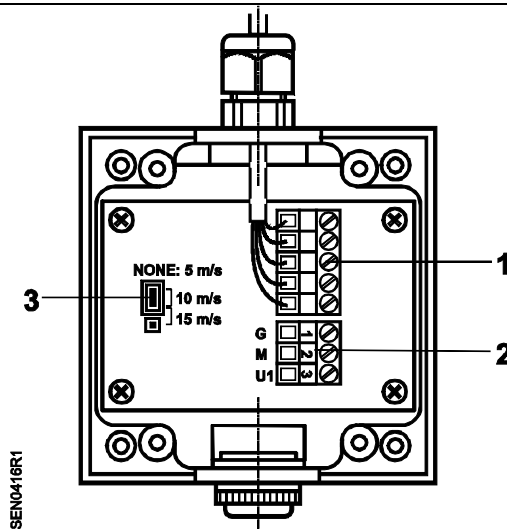
1 Terminal block for connection to the immersion stem.
2 Terminal block for connection to the controller.
3. Plug-in unit for setting the three velocity ranges.
   No plug-in jumper = 0 to 16 ft/s (0 to 5 m/s)
   Plug-in on 1 and 2 = 0 to 32 ft/s (0 to 10 m/s) (Factory setting)
   Plug-in on 2 and 3 = 0 to 49 ft/s (0 to 15 m/s)

Figure 1. Wiring and Setting Elements.

Specifications

Power supply		
	Operating voltage	24 Vac +/- 20%
	Frequency	50/60 Hz
	Power consumption	$\leq$ 5 VA (maximum 200 mA)
	Output impedance	<20 ohm
Measuring data	Measuring ranges, adjustable	0 to 16 ft/s (0 to 5 m/s)
		0 to 33 ft/s (0 to 10 m/s) (factory setting)
		0 to 49 ft/s (0 to 15 m/s)
	Measuring accuracy at 68°F (20°C), 45% rh, 1013 hPa	$\pm$ 0.7 ft/s (0.2 m/s + 3% of measured value)
	Permissible air velocity	66 ft/s (20 m/s)
	Direction dependence	< 0.3% of measured value at $\leq$ + 10°
	Time constant t_{90} at 10 m/s	ca. 4 seconds
Signal output U1	Voltage	0 to 10 Vdc
	Current	$\pm$ 1 mA
Line length	Permissible length to controller at:	
	20 AWG copper cable	164 ft (50 m)
	18 AWG copper cable	492 ft (150 m)
	16 AWG copper cable	984 ft (300 m)
	Line length to the sensor head	3 ft (1 m) (prewired)

Connections	Mechanical	Screw connection
	Electric	Screw terminal, maximum 2 × 18 AWG
Degree of protection	Degree of protection provided by enclosures as per EN 60 529	
	Transducer	IP 42
	Sensor head	IP 20
	Degree of protection as per EN 60 730	III
Environmental conditions	Climatic conditions	
	Temperature	23°F to 113°F (-5°C to 45°C)
	Humidity (non-condensing)	<95% rh
	Mechanical conditions	Class 3M2
	Chemical conditions	Class 3C2
	Storage (transducer and immersion stem)	
	Temperature	23°F to 113°F (-5°C to 45°C)
	Humidity (non-condensing)	<95% rh
	Mechanical conditions	Class 1M2
	Transportation	
	Temperature	23°F to 113°F (-5°C to 45°C)
	Humidity (non-condensing)	<95% rh
	Mechanical conditions	Class 2M2
Materials and colors	Housing bottom	Polycarbonate, RAL 7001 (silver-gray)
	Housing cover	Polycarbonate, RAL 7035 (light gray)
	Sensor pipes	Polycarbonate, RAL 7001 (silver-gray)
	Sensor head, extension, enc	Polycarbonate, RAL 7035 (light gray)
	Connecting flange	Polycarbonate, RAL 7001 (silver gray)
	Sensor	Silicone-free
Weight	With packaging	12 oz (0.352 kg)

Engineering Notes

Place the sensor in a location where the airflow is quiet. Do not place it close to dampers, registers or duct direction changes.
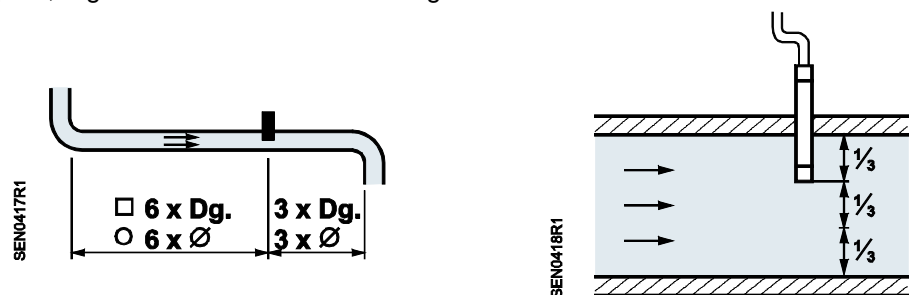
Figure 2. Sensor Placement.

Use a transformer with safety extra-low voltage (SELV) and separate winding for 100% ON-time.

Observe all local safety rules and regulations pertaining to sizing and protecting transformers.

Note the permissible line length to the controller.

Mounting and Installation Notes

Mount the immersion stem so that the air flows through the opening at the sensor head.

The immersion stem is pre-mounted and wired to the transducer on delivery. The sensor pipes and the end with the direction arrow are prearranged on the connecting cable; fit them together (use the direction-oriented snap-on connections). If the extension pipe is not required, remove it from the cable. The connecting flange is not attached on delivery.
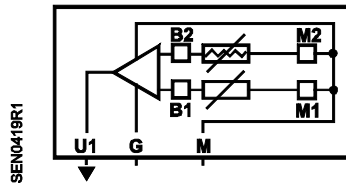
The sensor is supplied with Installation Instructions.

Commissioning Notes

Check the wiring and air velocity range settings prior to commissioning.

Check the immersion stem position in the air duct (see *Installation Instructions*).

Wiring Diagram

G   24 Vac operating voltage

M   Measuring neutral/operating voltage ground

U1 0 to 10 Vdc output signal
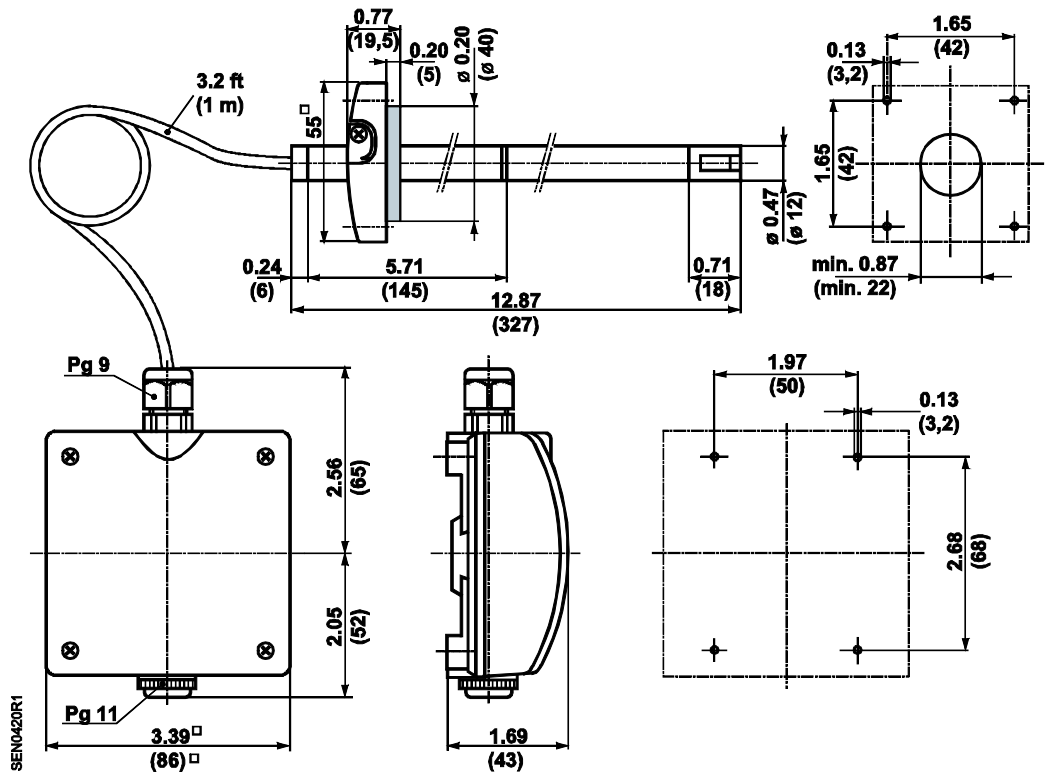
Figure 3. Wiring Diagram.

Dimensions

Figure 4. Dimensions in Inches (Millimeters).