SIEMENS

Technical Specification Sheet
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Q-Series Duct Relative Humidity and Relative Humidity & Temperature Sensors

Figure 1. Q-Series Duct Relative Humidity and Relative Humidity & Temperature Sensor.

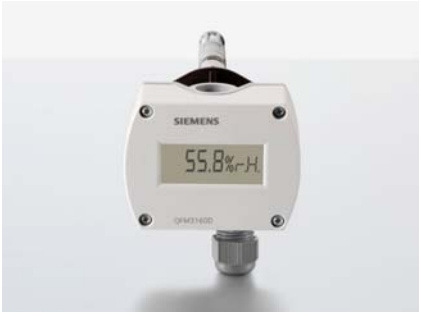

Figure 2. Q-Series Duct Relative Humidity and Relative Humidity & Temperature Sensor with Display.

Figure 3. Q-Series Relative Humidity Removable Sensing Tip.

Description

The Q-Series Duct Relative Humidity and Relative Humidity & Temperature Sensors monitor and transmit changes in humidity and temperature to the building control systems. These units are especially suited for applications where precise, stable humidity sensing is required. Certified units are also available where certification is required. Several models are available — for humidity only (in 5%, 2% and certified) or for humidity and temperature sensing (also in 5%, 2%, certified), and display versions. The humidity only units are available in either 4 to 20 mA or 0 to 10 Volt signal versions. Combination humidity and temperature units are also available in either dual current or voltage versions, transmitting proportional signals back to the controller. Nickel 1000 ohm or Platinum 1000 ohm RTD temperature outputs on combination versions are also offered.

2% and certified versions are equipped with a removable, replaceable sensing tip. The removable sensing tips have a Lumberg connection that allows the user to screw off the tip without disrupting the installation or wiring. Siemens sensors with replaceable tips are ideal for applications where measurement accuracy is critical and sensor replacement is not an option. Replaceable sensing tips eliminate the need for accuracy adjustment.

All certified sensors include a certificate of calibration. Humidity calibration and certification is based on a three-point process at 20, 50, and 85% rh @ 23°C.

Specifications – Humidity Element

Measurement range	0 to 100% rh
Accuracy at room temperature of 73°F (20°C)	QFM2xxx types: ±5% rh, 0 to 95% rh (±3% rh, 30 to 70% rh) QFM3xxx types: ±2% rh, 0 to 95% rh
Temperature effect	Less than 0.1% per degree C
Sensing element	Capacitive humidity sensing element
Output signal-rh only units	4 to 20 mA or 0 to 10 Vdc, 0 to 100% linear, proportional
Output signal-rh/T units	0 to 10 Vdc or 4 to 20mA (both outputs), 0 to 100% linear, proportional
Polarity protection	Yes
Calibration	None
Time constant	Approximately 20 seconds in moving air

Specifications–Temperature Element (for combination RH/T units only)

	QFM2110 (Platinum) **QFM2120 (Nickel)** **QFM2140 (T1)**	**QFM2160** **QFM31xx** **QFM2171** **QFM41xx**
Accuracy:	± 1.4°F: 59°F to 95°F (± 0.8°C): (15°C to 35°C) ± 1.8°F: -31°F to 59°F and 95°F to 158°F (± 1.0°C): (-35°C to 15°C and 35°C to 60°C)	± 1.4°F: 59°F to 95°F (± 0.8°C): (15°C to 35°C) ± 1.8°F: -40°F to 59°F and 95°F to 158°F (± 1.0°C): (-40°C to 15°C and 35°C to 60°C)
Output signal	Platinum 1K ohm RTD (385α) Nickel 1K ohm RTD (Siemens) T1 (PTC)	0 to 10 Vdc (QFMx160) 4 to 20 mA (QFMx171)

General Specifications

Operating conditions	
Relative humidity	0 to 100%
Temperature range:	
QFM2110, QFM2120, QFM2140	-31°F to 140°F (-35°C to 60°C)
QFM2160, QFM2171, QFM31xx, QFM41xx	-40°F to 158°F (-40°C to 70°C)
Installation	18 AWG cable length shared in conduit with other sensor wiring 750 ft (229 m) max
Connections	Screw terminals
Dimensions	Probe: .6" OD × 7.2" L (15 mm × 183 mm) Housing: 3.1" L × 2.3" W × 1.5" D (80 mm × 60 mm × 40 mm)
Environmental conditions	
LCD display readable	-13°F to 158°F (-25°C to 70°C)
Voltage requirement	13.5 to 35 Vdc
Input impedance (4 to 20 mA versions only)	Less than 500 ohms
Housing material type	Polycarbonate plastic, UL 94-5VB rated, suitable for plenum installations
Housing protection class	IP 65 (QFM3xxx, QFM4xxx types), IP54 (QFM2xxx types), NEMA 1 (all types)
Filter material and specification	Teflon™, 10 micron filter

Agency certification	UL listed to UL 873 for Temperature Indicating and Regulating Equipment
CE conformance	EMC directive 2004/108/EC
Weight	
Without LCD display	7.34 ounces (0.208 kg)
With LCD display	23.49 ounces (0.666 kg)

Ordering Information

Part Number	Description
QFM2100	Duct humidity sensor, (5%) 0 to 10 Vdc
QFM2101	Duct humidity sensor, (5%) 4 to 20 mA
QFM2110	Duct humidity sensor, (5%) 0 to 10 Vdc/Temp 1K ohm Platinum RTD (385 Alpha)
QFM2120	Duct humidity sensor, (5%) 0 to 10 Vdc/Temp 1K ohm Nickel RTD
QFM2140	Duct humidity sensor, (5%) 0 to 10 Vdc/Temp T1
QFM2160	Duct humidity sensor, (5%) 0 to 10 Vdc/Temp 0 to 10 Vdc
QFM2171	Duct humidity sensor, (5%) 4 to 20 mA/Temp 4 to 20 mA
QFM3100	Duct humidity sensor, (2%) 0 to 10 Vdc
QFM3101	Duct humidity sensor, (2%) 4 to 20 mA
QFM3160	Duct humidity sensor, (2%) 0 to 10 Vdc/Temp 0 to 10 Vdc
QFM3160D	Duct humidity sensor, (2%) 0 to 10 Vdc/Temp 0 to 10 Vdc, with display
QFM3171	Duct humidity sensor, (2%) 4 to 20 mA/Temp 4 to 20 mA
QFM3171D	Duct humidity sensor, (2%) 4 to 20 mA/Temp 4 to 20 mA, with display
QFM4101	Duct humidity sensor, 4 to 20 mA (certified)
QFM4160	Duct humidity sensor, 0 to 10 Vdc/Temp 0 to 10 Vdc (certified)
QFM4171	Duct humidity sensor, 4 to 20 mA/Temp 4 to 20 mA (certified)
Accessories	
AQF3101	Sensor filter cap
AQF3150	Replaceable 2% sensor tip
AQF4150	Replaceable 2% certified sensor tip
74 662 0104 0	US 1/2-inch rigid conduit adapter
74 662 0068 0	Replacement flange kit

Product Naming Key

HUMIDITY SENSORS

		Q	F	M	x	1	x	x	D
TYPE	SENSOR	Q							
MEASURING UNIT									
	HUMIDITY		F						
APPLICATION/LOCATION									
	DUCT			M					
SENSOR ACCURACY									
	STANDARD (3/5%)				2				
	HIGH ACCURACY (2%)				3				
	CERTIFIED (2% WITH CERT.)				4				
HOUSING TYPE									
	Q-SERIES HOUSING					1			
TEMPERATURE OUTPUT SIGNAL									
	NONE						0		
	PLATINUM 1000 OHM (385 ALPHA)						1		
	NICKEL 1000 OHM (L&S)						2		
	ACTIVE VOLTAGE (0-10 VOLT)						6		
	ACTIVE CURRENT (4-20 MA)						7		
HUMIDITY SIGNAL									
	0 TO 10 VOLT							0	
	4 TO 20 MA							1	
DISPLAY									D

NOTE: For combination RH&T versions, mixed 4-20 mA and 0-10V signals not offered.
NOTE: Display versions not offered on all types.

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