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SIEMENS

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Sensors

Sensor Compatibility Matrix

Signal Type	AET	Alerton	Anderson Cornelius	Andover	Automated Logic	Auto-Matrix	Carrier	Circon	Delta Controls	Distech Energie	Honeywell	Invensys	JCI	KMC	Reliable Controls	Schneider General	Solidyne	TAC/CSI	Teletrol	Trane	Triangle Microsystems	Walker	York	T&A
0 to 10 Vdc								•																
1K Platinum RTD (375 element)													•							•				
1K Platinum RTD (385 element)											•	•	•							•				
4 to 20 / 0 to 20 mA								•																
Ni1000 RTD (JCI)													•										•	
Ni1000 RTD (L&S)																								
NTC 10K (Type II)		•			•		•		•				•	•			•	•		•	•			
NTC 10K (Type III)	•			•		•	•	•				•		•	•				•				•	

SIEMENS

Series 1000

Room Temperature Sensors

– For Siemens APOGEE® Field Panels and Controllers

Series 1000 Room Temperature Sensor
with all Available Options.

B-3

Sensors

Description

The Series 1000 Room Temperature Sensors offer a wide range of features and functionality that deliver exceptional occupant comfort in even the most demanding application environments. The product family range includes plain sensing only variants, as well as types with temperature setpoint LCD display and night set back. All sensors incorporate precision temperature sensing elements to accurately and reliably measure room temperature. Their compact design results in an attractive, inconspicuous installation. A styled ventilation ring optimizes airflow through the cover for fast measurement response and superior control.

Features

• Platinum RTD or thermistor element
• Variety of connections
• Unpluggable termination block simplifies installation and service
• Plug in terminal for troubleshooting
• Maintenance free

Optional

• LCD temperature display
• Setpoint adjustment
• Occupancy override button

Applications

These sensors may be installed in all kinds of environments including schools, hospitals, universities, strip malls and commercial office buildings.

SIEMENS

Series 1000 Room Temperature Specifications

Temperature Range
Setpoint .... 55 to 95°F (13 to 35°C)
Operating.. 55 to 95°F (13 to 35°C)

Output Signals .... Changing Resistance

Accuracy
10K Ohm Thermistor
   55 to 80.6°F (13 to 27°C) .... ±0.5°F (±0.3°C)
   80.6 to 95°F (27 to 35°C) .... ±1.0°F (±0.5°C)
1,000 Ohm RTD Mid-Range
   75°F (24°C) .... ±0.75°F (± 0.4°C)

Calibration Adjustments .... None Required

Installation
TEC   ....100 ft. Maximum Cable Length
                        6C # 24 AWG, Belden 1228A or Equal, NEC Class 2
APOGEE Field Panels ....300 to 750 ft.
                        Max. Cable Length 18 to 22 AWG
                        Twisted Pair, NEC Class 2

Installation Adjustments .... None Required

Cover Dimensions .... 3-11/32" H x 2-1/2" W x 1-1/2" D
                        (85 mm x 63 mm x 38 mm)

Cover Color .... Desert Beige or White

Series 1000 Room Temperature Ordering

Description	Part No.
10K NTC	
Sensing Only	**540-660**[1]
Sensing with Override, Setpoint	**540-670**[1]
Sensing with Override, Setpoint, Temperature and Display	**540-680**[2]
1K Platinum RTD Type (375 ALPHA)	
Sensing Only	**544-760**[1]
Sensing with Override, Setpoint	**544-770**[1]
Sensing with Override, Setpoint, Temperature Display	**544-780**[2]

Ordering Notes:
[1]Add letter suffix to indicate desired color: **A** for Desert Beige, **B** for White (Example: 540-660A).

[2]Add letter suffix to indicate temperature display units and color:
 F for °F, **C** for °C, **A** for Desert Beige, **B** for White (Example: 540-680FA).

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Sensors

SIEMENS

100K NTC and 4 to 20 mA
Room Temperature Sensors

**Energy &
Atmosphere**

**Indoor
Environmental
Quality**

Siemens 4 to 20 mA and 100K Ohm
Room Temperature Sensor.

B-5

Sensors

Description

The miscellaneous Room Temperature Sensors provide
accurate 100K NTC, reliable sensing of room temperature.
The sensor's resistance varies proportionally to the
actual room temperature being measured.

SIEMENS

100K NTC and 4 to 20 mA Room Temperature Sensors Specifications

Temperature Range
Setpoint .... 55 to 95°F (13 to 35°C)
Operating .... 55 to 95°F (13 to 35°C)
Output Signal .... Changing Resistance
or 4 to 20 mA

Calibration Point Factory Setting .... 77°F (25°)
Accuracy .... ±0.5°F (±0.3°C)
Resistance Value .... 10K Ohm
Calibration Adjustments .... None Required
Cover Dimensions .... 3-11/32"H x 2-1/2"W x 1-1/2"D
(85 mm H x 64 mm W x 38 mm D)

100K NTC and 4 to 20 mA Room Temperature Sensors Product Ordering

Application	Temperature Range	Desert Beige Part No.	White Part No.
Room 100K Ohm	20°F to 120°F (-7°C to 49°C)	536-983A	536-983B
Room 4 to 20 mA	40°F to 90°F (-5°C to 32°C)	536-752A	536-752B
Room 4 to 20 mA	20°F to 120°F (-6°C to 48°C)	536-753A	536-753B

Ordering Notes:
The controller to which the sensor is connected determines application-sensing range.

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Sensors

SIEMENS

536/540/544 Series

Flush Mount
Room Temperature Sensors

Plastic Flush Mount Room
Temperature Sensor.

Metal Flush Mount Room
Temperature Sensor.

**Energy &
Atmosphere**

**Indoor
Environmental
Quality**

Description

The Flush Mount Room Temperature Sensor provides
sensing of room temperature to the Siemens room
controller products. The sensor's resistance varies with the
actual room temperature being measured.

The sensor connects to the controller via a 2-wire pigtail
connection. It incorporates a temperature-sensing element
(10K Ohm Type II thermistor, 100K Ohm thermistor, or
1000 Ohm RTD) behind a blank, stainless steel or plastic
switch cover plate.

Features

• Tamper-proof screws
• Can be painted after installation
• Designed for mounting to a 2 x 4 electrical box
• Option of brushed stainless steel finish or beige
  or white plastic

Applications

The Flush Mount Room Temperature Sensor is
designed for those applications in which a protruding
room temperature sensor is not acceptable.

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Sensors

SIEMENS

Flush Mount Room Temperature Sensors Specifications

Output Signal .... Changing Resistance

Operating Temperature Range*................-40 to +257°F (-40 to +120°C)

10K Ohm Thermistor
Calibration Point Factory Setting...............................77°F (25°)
   Accuracy.. ±0.5°F (±0.3°C)
   Resistance Value @ Cal. Temp.......................................10k

100K Ohm Thermistor
Calibration Point ....77°F (25°)
   Accuracy.. ±0.5°F (±0.3°C)
   Resistance Value @ Cal. Temp.............................100k Ohm

1000 Ohm RTD
Calibration Point ....32°F (0°)
   Accuracy... ±0.54°F (±0.3°C)
   Resistance Value @ Cal. Temp................................ 1K Ohm

Dimensions ....4-1/2" H x 2-3/4" W x 1-1/36" D
   (114 mm H x 70 mm W x 27 mm D)

*Functional range is controller dependent.

Flush Mount Room Temperature Sensors Product Ordering

Description	Part No.
10K Ohm (APOGEE TEC) NTC Thermistor, Metal Plate	**540-995**
10K Ohm (Type II) NTC Thermistor, Metal Plate	**540-984**
10K Ohm (Type II) NTC Thermistor, Beige Plastic Plate	**536-994A**
10K Ohm (Type II) NTC Thermistor, White Plastic Plate	**536-994B**
100K Ohm NTC Thermistor, Metal Plate	**536-984**
1000 Ohm (375 ALPHA) Platinum RTD, Metal Plate	**544-973**
1000 Ohm (375 ALPHA) Platinum RTD, Beige Plastic Plate	**544-374A**
1000 Ohm (375 ALPHA) Platinum RTD, White Plastic Plate	**544-374B**

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Sensors

SIEMENS

Button Room Temperature Sensors

Button Room Temperature Sensor
(with or without Wall Plate).

Energy & Atmosphere

Indoor Environmental Quality

Description

The Button Room Temperature Sensor provides a resistance signal to the Siemens controller that varies proportionally with temperature.

The sensor connects to the controller via a two-wire field cable or pre-terminated cable with RJ-11 plugs. The Button Room Temperature Sensor has a temperature-sensing element (10K ohm Thermistor [TEC compatible only], or 1000 ohm RTD, 375 alpha) installed on the button sensor.

Features

• 10K NTC for TEC or 1K platinum (375) RTD Sensors

• Tamper-proof screws

• Can be painted after installation

• Designed for mounting to a 2 x 4 electrical box

• Brushed stainless steel finish

• Available with or without matching wall plate

Applications

This room sensor is designed for applications in which a normal or flush-mount room temperature sensor is not acceptable. It is available with or without a brushed, stainless steel wall plate.

The wall plate version is designed to mount to a 2-inch x 4-inch electrical box. The tamper-proof screws, used to install the sensor to the utility box, protect the sensor from removal by unauthorized personnel.

B-9

Sensors

SIEMENS

Button Room Temperature Sensors Specifications

Output Signal .... Changing Resistance

10K Ohm Thermistor
Operating Temperature Range* .... 55 to 95°F (13 to 35°C)
Calibration Point .... 77°F (25°C)
   Accuracy .... ±0.5°F (±0.3°C)
   Resistance Value .... 10K Ohm

1000 Ohm RTD
Operating Temperature Range* .... -40 to 257°F (-40 to 125°C)
Calibration Point .... 32°F (0°C)
   Accuracy .... ±0.54°F (±0.3°C)
   Resistance Value .... 1K Ohm
Dimensions .... 4-1/2" H x 2-3/4" W x 1-1/36" D
   .... (114 mm x 70 mm x 27 mm)

*Functional range is controller dependent.

Button Room Temperature Sensors Product Ordering

Description	Part No.
1K Platinum (375) RTD	**QAA1011.AASU**
1K Platinum (375) RTD, with Wall Plate	**QAA1011.AATU**

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Sensors

SIEMENS

Temperature Room Units
For Third-party Systems

QAA2312.BWNN
Temperature Room Unit with Analog
Display, Setpoint and Override.

QAA23SS.FWNN
Temperature Room Unit.

Description

Series 2300 Temperature Room Units offer simple temperature sensing functionality. These devices work with third party systems to deliver exceptional occupant comfort. All room units incorporate precision temperature sensing elements to accurately and reliably measure room temperature. Their compact, low-profile design results in an attractive, inconspicuous installation. Strategically placed ventilation slots in the housing optimize airflow through the cover for fast measurement response and superior control.

Features

- Resistive output signals
- Selectable voltage or current output models
- High degree of accuracy
- Analog temperature display
- Organic light emitting diode
- Analog setpoint adjustment
- Occupancy override button
- Dim or brighten display
- Show or hide OLED display elements
- Local setpoint limiting
- Numerical or graphical display of temperature setpoint

Applications

These room units connect to the controllers input points via free wire cabling, which is landed on the controllers' terminal block connector.

B-11

Sensors

SIEMENS

Series 2300 Specifications

Temperature Range
Setpoint and Operating………..........................55F to 95°F (13C to 35°C)

Output Signals…………………........................ .Changing Resistance

Sensing Element Type
QAA2312 Types ....1K ohm Platinum RTD
QAA2320 Types ....1K Ohm Nickel RTD @ 32°F
QAA2321 Types ....1K Ohm Nickel RTD @ 70°F
QAA2330 Types .... 10K Ohm NTC Type II Thermistor
QAA2332 Types ....10K Ohm NTC Type III Thermistor
QAA23SS Types .... 0-10V/0-5V/4-20 mA Selectable

Accuracy
10K Ohm Thermistor
    55° - 80.6°F (13°C - 27°C)...................................... ±0.5°F (±0.3°C)
    80.6° - 95°F (27°C - 35°C)...................................... ±1.0°F (±0.5°C)
1K Ohm RTD Mid-Range
    75°F (24°C) .... ±0.75°F (± 0.4°C)

Installation
NTC Types..100 ft. Maximum Cable Length.
6C #24 AWG, Belden 1228A or Equal, NEC Class 2

RTD Types.....................................300 to 750 ft. Maximum Cable Length.
18 to 22 AWG, Twisted Pair, NEC Class 2

Installation Adjustments... None Required

Cover
Dimensions.………………………………................ 4.5" × 2.75" × 1.18"
(115 mm × 70 mm × 30 mm)
Color .... White

Regulatory Agency .... UL 916

Series 2300 Product Ordering

Description	Part No.
1K Platinum RTD Sensors (385 ALPHA)	
Sensing, No Logo	**QAA2312.EWNN**
Sensing, Digital Display, Setpoint Adjustment, Override, No Logo	**QAA2312.FWNN**
Warmer/Cooler Setpoint Adjustment, Bi-metallic Display, No Logo	**QAA2312.BWNN**
1K Nickel RTD Sensors @ 32°F	
Sensing, No Logo	**QAA2320.EWNN**
Sensing, Digital Display, Setpoint Adjustment, Override, No Logo	**QAA2320.FWNN**
Override, Warmer/Cooler Setpoint Adjustment, Bi-metallic Display, No Logo	**QAA2320.BWNN**
1K Nickel RTD Sensors @ 70°F	
Sensing, No Logo	**QAA2321.EWNN**
Sensing, Digital Display, Setpoint Adjustment, Override, No Logo	**QAA2321.FWNN**
Override, Warmer/Cooler Setpoint Adjustment, Bi-metallic Display, No Logo	**QAA2321.BWNN**
10K NTC Type II Thermistor Sensor	
Sensing, No Logo	**QAA2330.EWNN**
Sensing, Digital Display, Setpoint Adjustment, Override, No Logo	**QAA2330.FWNN**
Override, Warmer/Cooler Setpoint Adjustment, Bi-metallic Display, No Logo	**QAA2330.BWNN**
10K NTC Type III Thermistor Sensor	
No Logo, Sensing	**QAA2332.EWNN**
Sensing, Digital Display, Setpoint Adjustment, Override, No Logo	**QAA2332.FWNN**
Override, Warmer/Cooler Setpoint Adjustment, Bi-metallic Display, No Logo	**QAA2332.BWNN**
0-10V/0-5V/4-20 mA Selectable Temperature Sensor	
Sensing, No Logo	**QAA23SS.EWNN**
Digital Display, Temperature Setpoint, Override, No Logo	**QAA23SS.FWNN**

Series 2300 Accessories Ordering Information

Description	Part No.
Replacement Sensor Housing Base (For .E Models Only)	**563-102-02**
Replacement Sensor Housing Base (For .B Models Only)	**563-102-03**
Room Unit Back Plate (10-Pack)	**AQA2200-INTL**

SIEMENS

Room Temperature Sensors

QAA20xx.FWNU
Room Temperature Sensor with
Analog Display, Setpoint and Override.

QAA20xx.WNU
Room Temperature Sensor.

**Energy &
Atmosphere**

**Indoor
Environmental
Quality**

Description

The QAA20 Series Room Temperature Sensors monitor and transmit changes in temperature to the building control systems. QAA20 Series sensors utilize the standard Series 1000 housing, but with a totally new internal circuit design.

Features

•   Resistive output signals

•   High degree of accuracy

•   Analog temperature display

•   Liquid Crystal Display (LCD)

•   Analog setpoint adjustment

•   Occupancy override button

Applications

The QAA20 Series Room Temperature Sensors are especially suited for applications where precise, stable temperature sensing is required. An assortment of models is available – versions with sensing only or setpoint adjustment, occupancy override and display.

The QAA20 Series temperature sensors are also available in a variety of signal types. Choose from powered 4 to 20 mA or 0 to 10 Volt signal versions. Choose also from numerous resistive signal outputs. Select the correct product based on the compatibility needs of your building automation system. See the **Sensor Compatibility Matrix** on page B-2 for more details.

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Sensors

SIEMENS

QAA20 Series Specifications

General

Installation................................ 18 AWG Cable Length Shared in Conduit with Other Sensor Wiring 750 ft. (229 m) max.

Connections .... Screw Terminals

Voltage Requirement.. 13.5 to 35 Vdc and 24 Vac (for Sensors with 0-10 Vdc outputs)

Housing

Material Type...Polycarbonate Plastic

Color .... White

Dimensions..3-11/32" H x 2-1/2" W x 1-1/2" D (85 mm H x 63 mm W x 38 mm D)

Temperature Element

Measurement Range .... Controller Dependent

Operating Temperature .... -40 to 240°F (-40 to 116°C)

Operating Range, Active Signal Types...................................40 to 90°F

Temperature Effect...................................Less than 0.1% per Degree C

Sensing Element..Various,See Table Below

Output Signals

Resistive Types ....Various

Active Types.. 4 to 20 mA and 0 to 10 Vdc, 0-100% Linear, Proportional

Polarity Protection...Yes

Accuracy at Calibration Temperature...+/- 1 K

QAA20 Series Product Ordering

Description	Part No.
Nickel RTD Sensors	
1000 Ohms @ 32°F, Setpoint, Night Override, Display, No Logo	**QAA2020.FWNU**
1000 Ohms @ 77°F, No Logo	**QAA2021.WNU**
1000 Ohms @ 77°F, Setpoint, Night Override, Display, No Logo	**QAA2021.FWNU**
NTC Thermistor Sensors	
1000 Ohms @ 77°F, No Logo	**QAA2021.WNU**
4 to 20 mA Sensors	
40 to 90°F, No Logo	**QAA2072.WNU**
40 to 90°F, Siemens Logo	**QAA2072.WU**
40 to 90°F, Setpoint, Night Override, Display, No Logo	**QAA2072.FWNU**
40 to 90°F, Setpoint, Night Override, Display, Siemens Logo	**QAA2072.FWU**
0 to 10 Volt Sensors	
40 to 90°F, No Logo	**QAA2062.WNU**
40 to 90°F, Siemens Logo	**QAA2062.WU**
40 to 90°F, Setpoint, Night Override, Display, No Logo	**QAA2062.FWNU**
40 to 90°F, Setpoint, Night Override, Display, Siemens Logo	**QAA2062.FWU**

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Sensors

Accessories & Service Kits	B-51

SIEMENS

Duct, Pipe, Outdoor Air Temperature Sensors

QAC20xxU
Outside Air Sensor.

QAM20xx.xxx
8-inch Duct Point Temperature Sensor.

QAM20xx.xxx
Averaging Flexible Thermistor Sensor.

Energy &
Atmosphere

Indoor
Environmental
Quality

QAM20xx.xxx
Duct (Single Point) Thermistor Sensor.

QAD20xxU
Surface Mounted Pipe Sensor.

QAE20xx.xxx
Liquid Immersion Thermistor Sensor.

B-15

Sensors

Description

The QAx20 Series Duct, Pipe and Outdoor Air Temperature Sensors monitor and transmit changes in temperature to the building control systems.

Features

• Resistive output signals
• High degree of accuracy
• 2 x 4 or metal box enclosure

Applications

The QAx20 Series Duct, Pipe and Outdoor Air Temperature Sensors are especially suited for applications where precise, stable temperature sensing is required. These sensors are available in a variety of signal types. Choose from numerous resistive signal outputs, and select the correct product, based on the compatibility needs of your building automation system. See the **Sensor Compatibility Matrix** on page B-2 for more details.

Specifications

General

Installation................................. 18 AWG cable length shared in conduit with other sensor wiring 750 ft. (229 m) max

Connections .... Screw Terminals

Temperature Element

Measurement Range .... Controller Dependent

Operating Temperature................................. -40 to 240°F (-40 to 116°C)

Sensing Element.....................Various Resistive Types, see Naming Key

Polarity Protection..Yes

Accuracy at Calibration Point ....+/- 1 K

SIEMENS

QAx20 Series Product Ordering

Application	Description	Part No.
Outdoor Air Sensor	PT 1000 Ohm (385), Metal Housing	QAC2012U
Outdoor Air Sensor	NI 1K Ohm @ 32°F, Metal Housing	QAC2020U
Outdoor Air Sensor	NI 1K Ohm @ 77°F, Metal Housing	QAC2021U
Outdoor Air Sensor	NTC 10K Ohm Type 2, Metal Housing	QAC2030U
Outdoor Air Sensor	NTC 10K Ohm Type 3, Metal Housing	QAC2032U
Outdoor Air Sensor	PT 1000 Ohm (385), Polycarbonate Housing	QAC2012
Outdoor Air Sensor	NTC 10K Ohm Type 2, Polycarbonate Housing	QAC2030
Outdoor Air Sensor	0-10 Vdc Ohm Type 2, Polycarbonate Housing	QAC3161
Outdoor Air Sensor	4-20 mA, Polycarbonate Housing	QAC3171
Duct Point Sensor	PT 1K Ohm, (385), 4 Inch	QAM2012.010
Duct Point Sensor	PT 1K Ohm, (385), 8 Inch	QAM2012.020
Duct Point Sensor	PT 1K Ohm, (385), 18 Inch	QAM2012.045
Duct Point Sensor	PT 1K Ohm, (385), 8 Foot	QAM2012.250
Duct Point Sensor	PT 1K Ohm, (385), 16 Foot	QAM2012.500
Duct Point Sensor	PT 1K Ohm, (385), 24 Foot	QAM2012.750
Duct Point Sensor	NI 1K Ohm @ 32°F, 4 Inch	QAM2020.010
Duct Point Sensor	NI 1K Ohm @ 32°F, 8 Inch	QAM2020.020
Duct Point Sensor	NI 1K Ohm @ 32°F, 18 Inch	QAM2020.045
Duct Averaging Sensor	NI 1K Ohm @ 32°F, 16 Foot	QAM2020.500
Duct Averaging Sensor	NI 1K Ohm @ 32°F, 24 Foot	QAM2020.750
Duct Point Sensor	NI 1K Ohm @ 77°F, 8 Inch	QAM2021.020
Duct Point Sensor	NI 1K Ohm @ 77°F, 18 Inch	QAM2021.045
Duct Averaging Sensor	NI 1K Ohm @ 77°F, 24 Foot	QAM2021.750
Duct Point Sensor	NTC 10K Ohm Type 2, 4 Inch	QAM2030.010
Duct Point Sensor	NTC 10K Ohm Type 2, 8 Inch	QAM2030.020
Duct Point Sensor	NTC 10K Ohm Type 2, 18 Inch	QAM2030.045
Duct Averaging Sensor	NTC 10K Ohm Type 2, 8 Foot	QAM2030.250
Duct Averaging Sensor	NTC 10K Ohm Type 2, 16 Foot	QAM2030.500
Duct Averaging Sensor	NTC 10K Ohm Type 2, 24 Foot	QAM2030.750
Duct Point Sensor	NTC 10K Ohm Type 3, 4 Inch	QAM2032.010
Duct Point Sensor	NTC 10K Ohm Type 3, 8 Inch	QAM2032.020
Duct Point Sensor	NTC 10K Ohm Type 3, 18 Inch	QAM2032.045
Duct Averaging Sensor	NTC 10K Ohm Type 3, 8 Foot	QAM2032.250
Duct Averaging Sensor	NTC 10K Ohm Type 3, 16 Foot	QAM2032.500
Duct Averaging Sensor	NTC 10K Ohm Type 3, 24 Foot	QAM2032.750
Strap-on Pipe Sensor	PT 1K Ohm (385 Alpha), Polycarbonate Housing	QAD2012
Strap-on Pipe Sensor	NTC 10K Ohm Type II, Polycarbonate Housing	QAD2030
Surface Mounted Pipe Sensor	PT 1K Ohm RTD (385 Alpha), Metal Housing	QAD2012U
Surface Mounted Pipe Sensor	NTC 10K Ohm Type II, Metal Housing	QAD2030U
Surface Mounted Pipe Sensor	NTC 10K Ohm Type 3, Metal Housing	QAD2032U
Surface Mounted Pipe Sensor	NI 1K Ohm (at 32°F), Metal Housing	QAD2020U
Surface Mounted Pipe Sensor	NI 1K Ohm (at 70°F), Metal Housing	QAD2021U
Liquid Immersion Sensor*	PT 1K Ohm (385); xxx= 010 (4") or 015 (6")	QAE2112.xxx
Liquid Immersion Sensor*	NTC, 10K Ohm Type 2; xxx=010 (4") or 015 (6")	QAE2130.xxx
Liquid Immersion Sensor*	0-10 Vdc; xxx= 010 (4") or 015 (6")	QAE2164.xxx
Liquid Immersion Sensor*	4-20 mA; xxx=010 (4") or 015 (6")	QAE2174.xx

*Liquid Immersion Sensors require ARG150U (6" immersion well) or ARG100U (4" immersion well), sold separately.

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Sensors

SIEMENS

4 to 20 mA Analog Sensors

Surface Mounted
Pipe Sensor.

Outside Air
Temperature Sensor.

Duct (Single Point)
Temperature Sensor.

Duct (Averaging)
Flexible Temperature Sensor.

Duct (Averaging)
Rigid Temperature Sensor.

Duct Liquid Immersion
Temperature Sensor.

**Energy &
Atmosphere**

**Indoor
Environmental
Quality**

Description

Available in a variety of models for specific mounting requirements and sensing applications, Analog Sensors provide input for accurate loop-powered temperature sensing (detecting) for controllers via a 20 AWG twisted, shielded cable pair. The loop current varies according to the temperature being measured.

Features

• Output Signal 4 to 20 mA
• High degree of accuracy
• Rugged construction

Applications

Analog Sensors are designed for a variety of temperature sensing applications including room, surface-mount, outside air, duct point or averaging, and liquid immersion where high accuracy and/or long wiring runs are required.

Important: Sensors are not suitable for use with Siemens RWD Controller.

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Sensors

SIEMENS

4 to 20 mA Analog Sensors Specifications

Output Signal .... 4 to 20 mA
Reference Resistance at 32°F (0°C) .... 100 Ohms
Element Material ....Platinum

4 to 20 mA Analog Sensors Product Ordering

Application	Probe Length	Temperature Range/Mid-range Accuracy (Transmitter and Sensor Combined)	Part No.
Surface Mount	NA	30 to 250°F/±1.1°F (-1 to +121°C/±0.65°C)	536-780
Outdoor Air	NA	-58 to +122°F/±0.6°F (-50 to +50°C/±0.3°C)	536-768
Duct – Single Point	4"	20 to 120°F/±0.7°F (-7 to +49°C/±0.4°C)	533-376-4
	8"		533-376-8
	18"		533-376-18
	4"	70 to 220°F/±1.1°F (21 to 104°C/±0.6°C)	533-377-4
	8"		533-377-8
	18"		533-377-18
	4"	4 to 122°F/±0.7°F (-20 to +50°C/±0.4°C)	544-560-4
	8"		544-560-8
	18"		544-560-18
Flexible Duct – Averaging	8 ft	20 to 120°F/±0.7°F (-6 to +49°C/±0.4°C)	533-380-8
	16 ft		533-380-16
	24 ft		533-380-24
Rigid Duct – Averaging	18"	20 to 120°F/±0.7°F (-6 to +49°C/±0.4°C)	535-490-18
	24"		535-490-24
	36"		535-490-36
	48"		535-490-48
Liquid Immersion	2.5"	30 to 250°F/±1.1°F (-1 to +121°C/±0.6°C)	536-767-25
	4.0"		536-767-40
	6.0"		536-767-60
	2.5"	20 to 70°F/±0.6°F (-7 to +21°C/±0.3°C)	536-774-25
	4.0"		536-774-40
	6.0"		536-774-60
	2.5"	32 to 212°F/±1.0°F (0 to 100°C/±0.6°C)	544-562-25
	4.0"		544-562-40
	6.0"		544-562-60

B-18

Sensors

SIEMENS

Relative Humidity and Temperature Room Units for Third-party Systems

Series 2300 Room Relative Humidity and Relative Humidity/Temperature Sensor.

Description

The Series 2300 Relative Humidity and Temperature Room Units offer simple temperature sensing functionality. These devices work with third party systems to deliver exceptional occupant comfort. All room units incorporate precision humidity and temperature sensing elements to accurately and reliably measure room temperature. Their compact, low-profile design results in an attractive, inconspicuous installation. Strategically placed ventilation slots in the housing optimize airflow through the cover for fast measurement response and superior control.

These room units provide accurate, reliable sensing of room humidity and temperature. Various models can be used with all equipment controllers that accept the respective NTC thermistor or RTD inputs for primary control.

Features

- 4 to 20 mA and 0 to 10 Vdc output signals
- High degree of accuracy

Full-featured Models

- Digital temperature setpoint adjustment in degree increments
- Occupancy override button
- Removable, replaceable humidity element
- Resistive output signals
- Selectable voltage or current output models
- High degree of accuracy
- Analog temperature display
- Organic light emitting diode
- Analog setpoint adjustment
- Occupancy override button
- Dim or brighten display
- Show or hide OLED display elements
- Local setpoint limiting
- Numerical or graphical display of temperature setpoint

Applications

These room units connect to the controller's input points via free wire cabling, which is landed on the controllers' terminal block connector.

B-19

Sensors

SIEMENS

Series 2300 Specifications

Temperature Range
   Setpoint and Operating ....55F to 95°F (13C to 35°C)
Output Signals .... Changing Resistance
Sensing Element Type
   QFA3312 Types...1K Ohm Platinum RTD
   QFA3330 Types .... 10K Ohm NTC Type II Thermistor
   QFA3332 Types ....10K Ohm NTC Thermistor
Accuracy
   10K Ohm Thermistor
      55° - 80.6°F (13°C - 27°C)...................................... ±0.5°F (±0.3°C)
      80.6° - 95°F (27°C - 35°C)...................................... ±1.0°F (±0.5°C)
   1K Ohm RTD Mid-range
      75°F (24°C)…………………………………………… ±0.75°F (± 0.4°C)
Humidity Specifications (QFA Types Only)
   Humidity Range...0% to 100% rh
   Output Signal...Select 0-5V, 0-10V, 4-20mA
   Sensing Element Type ....Digital Sensor IC
   Humidity Accuracy
      10% - 90% rh.. ± 2% rh
      < 10% rh; > 90% rh ....± 4% rh

Calibration Features
   Temperature .... Adjustable to ± 5°F
   Humidity .... Adjustable to ± 5% rh
Installation
NTC Types..100 ft. Maximum Cable Length.
                    6C #24 AWG, Belden 1228A or Equal, NEC Class 2
RTD Types.....................................300 to 750 ft Maximum Cable Length.
                    18 to 22 AWG, Twisted Pair, NEC Class 2
Installation Adjustments...None required
Cover
Dimensions................... 4.5" × 2.75" × 1.18" (115 mm × 70 mm × 30 mm)
Color   .... White
Regulatory Agency .... UL 916

Series 2300 Product Ordering

Description	Part No.
Humidity Room Unit	
2%, 0-10/0-5 Volt or 4-20mA Selectable Outputs, No Logo	**QFA330S.EWNN**
Humidity & Temp Room Units	
2%, 0-10/0-5 Volt or 4-20mA Selectable Outputs, White, No Logo	**QFA33SS.EWNN**
2%, 0-10/0-5 Volt or 4-20mA Selectable Outputs, Display, Setpoint, Override, White, No Logo, No Communication Port	**QFA33SS.FWNN**
RH: 0-10/0-5 Volt or 4-20mA Selectable, 2% T: 10K Type 3 NTC, Display, Setpoint, Override, No Logo	**QFA3332.FWNN**
RH: 0-10/0-5 Volt or 4-20mA selectable, 2% T: 10K Type 2 NTC, Display, Setpoint, Override, No Logo	**QFA3330.FWNN**
RH: 0-10/0-5 Volt or 4-20mA Selectable, 2% T: 1K Platinum (385) RTD, Display, Setpoint, Override, White, No Logo	**QFA3312.FWNN**
RH: 0-10/0-5 Volt or 4-20mA selectable, 2% T: 1K Platinum (385) RTD, White, No Logo	**QFA3312.EWNN**

Series 2300 Accessories Ordering Information

Description	Part No.
Replacement Sensor Housing Base (For .E Models Only)	**563-102-02**
Replacement Sensor Housing Base (For .B Models Only)	**563-102-03**
Room Unit Back Plate (10-Pack)	**AQA2200-INTL**

B-20

Sensors

SIEMENS

Room Relative Humidity and Relative Humidity/Temperature Sensors

QFA Series Room Relative Humidity and Relative Humidity/Temperature Sensor.

QFA Series Room Relative Humidity and Relative Humidity/Temperature Sensor.

Energy & Atmosphere

Indoor Environmental Quality

Description

The QFA Series Room Relative Humidity and Relative Humidity/Temperature Sensors monitor and transmit changes in humidity and temperature to the building control systems.

Several models are available for humidity only (in 5% and 2%) or for humidity and temperature sensing (also in 5% and 2% 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 available in either dual current or voltage versions, transmitting proportional signals back to the controller.

Features

Standard Features

*   4 to 20 mA and 0 to 10 Vdc output signals
*   High degree of accuracy

Full-featured Models

*   Liquid Crystal Display (LCD in degrees F or C)
*   Digital temperature setpoint adjustment in 0.5 degree increments
*   Override button
*   Removable, replaceable humidity element (2% versions only)

Applications

These units are especially suited for applications where precise, stable humidity sensing is required.

B-21

Sensors

SIEMENS

QFA Series 1000 Specifications

General

Installation................................18 AWG Cable Length Shared in Conduit with Other Sensor Wiring 750 ft. (229 m) Max

Connections ....Screw Terminals

Voltage Requirement.. 13.5 to 35 Vdc and 24 Vac (for sensors with 0-10 Vdc outputs)

CE and UL listed.................................UL 873 Standard for Temperature Indicating and Regulating Equipment

Housing
    Material Type...Polycarbonate Plastic
    Color .... Desert Beige or White
    Dimensions..3-11/32" H x 2-1/2" W x 1-1/2" D (85 mm H x 63 mm W x 38 mm D)

Operating Range.. 0 to 100% RH

Measurement Range .... 0 to 100% RH

Accuracy at room temperature (73°F, 20°C)...................±5% RH for 0% ≤ RH < 30% or 70% ≤ RH < 95% ±3% RH for 30% ≤ RH < 70%

Operating Temperature...............................-31 to +140°F (-35 to +60°C)

Temperature Effect.....................................Less than 0.1% per Degree C

Sensing Element...........................Capacitive Humidity Sensing Element

Output Signal...4 to 20 mA or 0 to 10 Vdc, 0 to 100% Linear, Proportional

Polarity Protection..Yes

Humidity Element

Temperature Element (for combination RH/T units only)

Operating Temperature....................................... 32 to 122°F (0 to 50°C)

Time Constant at 0 to 50°C and 10-80%RH .... Approx. 20 Seconds in Moving Air

Accuracy ....at 32 to 122°F (0 to 50°C): ±1 K at -31 to +95°F (-35 to +35°C): ±0.8 K at -31 to +140°F (-35 to +60°C): ±1 K

Output Signal ....4 to 20 mA or 0 to 10 Vdc, 0 to 100% Linear, Proportional, (Terminal U2)

Calibration Adjustments ....None

QFA Series 1000 Product Ordering

Application	Description	Part No.
Room Relative Humidity 5%	0 to 10 Vdc, No LCD, Beige	**QFA2000.BU**
Room Relative Humidity 5%	0 to 10 Vdc, No LCD, White	**QFA2000.WU**
Room Relative Humidity 5%	4 to 20 mA, No LCD, Beige	**QFA2001.BU**
Room Relative Humidity 5%	4 to 20 mA, No LCD, White	**QFA2001.WU**
Room Relative Humidity 5% & Temperature	0 to 10 Vdc, No LCD, Beige	**QFA2060.BU**
Room Relative Humidity 5% & Temperature	0 to 10 Vdc, No LCD, White	**QFA2060.WU**
Room Relative Humidity 5% & Temperature	0 to 10 Vdc, LCD, Temp Setpoint, Occupant Override, Beige	**QFA2060.FBU**
Room Relative Humidity 5% & Temperature	0 to 10 Vdc, LCD, Temp Setpoint, Occupant Override, White	**QFA2060.FWU**
Room Relative Humidity 5% & Temperature	4 to 20 mA, No LCD, Beige	**QFA2071.BU**
Room Relative Humidity 5% & Temperature	4 to 20 mA, No LCD, White	**QFA2071.WU**
Room Relative Humidity 5% & Temperature	4 to 20 mA, LCD, Temp Setpoint, Occupant Override, Beige	**QFA2071.FBU**
Room Relative Humidity 5% & Temperature	4 to 20 mA, LCD, Temp Setpoint, Occupant Override, White	**QFA2071.FWU**
Room Relative Humidity 2%	0 to 10 Vdc, No LCD, Beige	**QFA3000.BU**
Room Relative Humidity 2%	0 to 10 Vdc, No LCD, White	**QFA3000.WU**
Room Relative Humidity 2%	0 to 10 Vdc, with LCD, Beige	**QFA3000.DBU**
Room Relative Humidity 2%	0 to 10 Vdc, with LCD, White	**QFA3000.DWU**
Room Relative Humidity 2%	4 to 20 mA, No LCD, Beige	**QFA3001.BU**
Room Relative Humidity 2%	4 to 20 mA, No LCD, White	**QFA3001.WU**
Room Relative Humidity 2% & Temperature	0 to 10 Vdc, No LCD, Beige	**QFA3060.BU**
Room Relative Humidity 2% & Temperature	0 to 10 Vdc, No LCD, White	**QFA3060.WU**
Room Relative Humidity 2% & Temperature	0 to 10 Vdc, LCD, Temp Setpoint, Occupant Override, Beige	**QFA3060.FBU**
Room Relative Humidity 2% & Temperature	0 to 10 Vdc, LCD, Temp Setpoint, Occupant Override, White	**QFA3060.FWU**
Room Relative Humidity 2% & Temperature	4 to 20 mA, No LCD, Beige	**QFA3071.BU**
Room Relative Humidity 2% & Temperature	4 to 20 mA, No LCD, White	**QFA3071.WU**
Room Relative Humidity 2% & Temperature	4 to 20 mA, LCD, Temp Setpoint, Occupant Override, Beige	**QFA3071.FBU**
Room Relative Humidity 2% & Temperature	4 to 20 mA, LCD, Temp Setpoint, Occupant Override, White	**QFA3071.FWU**

SIEMENS

Room/Outdoor Air Relative Humidity and Relative Humidity/Temperature Sensors

AQY2010
Remote Sensing Cable
Shown with QFA3100.

QFA3100 Series
Outdoor Air Relative Humidity and
Relative Humidity/Temperature Sensor.

AQF3100
Sunshield for Sensor.
Sold Separately.

**Energy &
Atmosphere**

**Indoor
Environmental
Quality**

Description

The QFA Series Outdoor Air Relative Humidity and Relative Humidity/Temperature Sensors monitor and transmit changes in humidity and temperature to the building control systems. Standard models available are 2% and 2% certified, for both humidity only and combination humidity with temperature sensing. Sensors are offered with either 4 to 20 mA or 0 to 10 Volt output signals.

Features

• 4 to 20 mA or 0 to 10 Vdc output signals

• High degree of accuracy

• Removable, replaceable sensing tip sold seperately on B-39

• Display model is available on QFA series version

Applications

The QFA Series Outdoor Air Relative Humidity and Relative Humidity/Temperature Sensors are especially suited for applications where precise, stable humidity sensing is required.

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Sensors

SIEMENS

QFAx1 Specifications

General

Installation.............................. 18 AWG cable length shared in conduit with other sensor wiring 750 ft. (229 m) max

Connections .... Screw Terminals

Dimensions

Outdoor Air Probe................. 6" O.D. x 3.3" L (15 mm O.D. x 84 mm L)
Outdoor Air Housing.. 3.1" L x 2.3" W x 1.5" D
(80 mm L x 60 mm W x 40 mm D)
Shield (mounted)... 3.43" H x 3.5" W x 4.1" D
(87 mm L x 89 mm W x 104 mm D)

Voltage Requirement................................... 13.5 to 35 Vdc and 24 Vac (for sensors with 0-10 Vdc outputs)

Material Type... Polycarbonate plastic

CE and UL listed ....UL 873 standard for Temperature Indicating and Regulating Equipment

Humidity Element

Operating Range.. 0 to 100% RH

Measurement Range .... 0 to 95% RH

Accuracy at Room Temperature (73°F, 20°C)..........±2% RH, 0-95% RH

Operating Temperature ....-31 to +140°F (-35 to +60°C)

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 -100% Linear, Proportional
RH & T units ... 4 to 20 mA or 0 to 10 Vdc, 0 -100% Linear, Proportional

Polarity Protection...Yes

Temperature Element (for Combination RH/T Units Only)

Application	Temperature
Operating Temperature Jumper Selectable	32 to 122°F (0 to 50°C) or -31 to +95°F (-35 to +35°C) 32 to 122°F (0 to 50°C) or -31 to +140°F (-35 to +60°C)
Time Constant at 0 to 50°C and 10 to 80% RH	Approx. 20 seconds in moving air
Accuracy	at 59 to 95°F (15 to 35°C): ±0.8 K
	at 31 to 122°F (-35 to +50°C): ±1 K
	at 31 to 140°F (-35 to +60°C): ±1 K
Output Signal	4 to 20 mA or 0 to 10 Vdc, 0 -100% linear, proportional, (terminal U2)
Calibration Adjustments	None

QFAx1 Series Product Ordering

Application	RH	Description	Part No.
Room/Outdoor Air Humidity	2%	0 to 10 Vdc	QFA3100
Room/Outdoor Air Humidity	2%	4 to 20 mA	QFA3101
Room/Outdoor Air Humidity & Temperature	2%	0 to 10 Vdc / Temp 0 to 10 Vdc	QFA3160
Room Air Humidity & Temperature	2%	0 to 10 Vdc / Temp 0 to 10 Vdc with Display	QFA3160D
Room/Outdoor Air Humidity & Temperature	2%	4 to 20 mA / Temp 4 to 20 mA	QFA3171
Room Air Humidity & Temperature	2%	4 to 20 mA / Temp 4 to 20 mA with Display	QFA3171D
Room/Outdoor Air Humidity & Temperature	2%	4 to 20 mA / Temp 4 to 20 mA (Certified)	QFA4171
Room Air Humidity & Temperature	2%	4 to 20 mA / Temp 4 to 20 mA (Certified) with Display	QFA4171D
Room Outdoor Air Humidity & Temperature	2%	0 to 10 Vdc, Temp 0 to 10 Vdc (Certified)	QFA4160
Room Air Humidity & Temperature	2%	0 to 10 Vdc, Temp 0 to 10 Vdc (Certified) with Display	QFA4160D

QFAx1 Series Accessories

Description	Part No.
Outdoor Air Sunshield	AQF3100
Remote Sensing Cable, 10 Foot	AQY2010
Remote Sensing Cable, 30 Foot	AQY2030

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Sensors

SIEMENS

Duct Relative Humidity/Temperature Sensors

QFM Series Duct Relative
Humidity Sensor.

QFM Series Duct Relative Humidity and
Relative Humidity/Temperature Sensor.

**Energy &
Atmosphere**

**Indoor
Environmental
Quality**

Description

The QFM Series Duct Relative Humidity and Relative
Humidity/Temperature Sensors monitor and transmit
changes in humidity and temperature to the building
control systems. Several models are available for humidity
only (in 5%, 2% and 2% certified) or for humidity and
temperature sensing (also in 5%, 2% and 2% certified
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 (Siemens
type) or Platinum 1000 Ohm RTD (385 ALPHA type)
temperature outputs on combination versions are
also offered.

Features

• 4 to 20 mA or 0 to 10 Vdc output signals

• High degree of accuracy

• Removable, replaceable sensing tip
  (2% and 2% certified models)

• Versions with LCD display also available

Applications

The QFM Series Duct Relative Humidity and Relative
Humidity/Temperature Sensors are especially suited for
applications where precise, stable humidity sensing
is required.

B-25

Sensors

SIEMENS

QFM Series Specifications

General

Installation.................................. 18 AWG cable length shared in conduit with other sensor wiring 750 ft. (229 m) max

Connections .... Screw Terminals

Dimensions
  Probe................................ 0.6" O.D. x 7.2"L (15 mm O.D. x 183 mm L)
  Housing ..3.1" L x 2.3" W x 1.5" O.D. (80 mm L x 60 mm W x 40 mm D)

Voltage Requirement.. 13.5 to 35 Vdc and 24 Vac (for sensors with 0-10 Vdc outputs)

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 .... EC Directive on electromagnetic compatibility: 89/336/EEC

Humidity Element

Operating Range... 0 to 100% RH

Measurement Range .... 0 to 95% RH

Accuracy at Room Temperature ≈ 73°F (20°C):
  All types:............................ ±5% RH, 0-95% RH (±3% RH, 30-70% RH)
  ±2% RH, 0-95% RH

Operating Temperature Jumper Selectable....... 32 to 122°F (0 to 50°C) or -31 to 95°F (-35 to 35°C) or -31 to 140°F (-35 to 60°C)

Temperature Effect ....Less than 0.1% per degree C

Sensing Element............................ Capacitive humidity sensing element

Output Signal
  RH only units ....4 to 20 mA and 0 to 10 Vdc, 0-100% Linear, Proportional
  RH/T units ....0 to 10 Vdc, 0-100% Linear, Proportional

Polarity Protection..Yes

Temperature Element Specifications (for Combination RH/T Units Only)

Sensors

	QFM2110 (Platinum) QFM2120 (Nickel)	QFM2160 QFM2171	QFM31xx QFM41xx
Operating Temperature	-31 to +140°F (-35 to +60°C)	-31 to +122°F (-35 to +50°C)	-31 to +158°F (-35 to +70°C)
Time Constant	Approximately 20 seconds in moving air		
Accuracy +/-0.6K	—	—	59 to 95° F (15 to 35°C)
+/0.8K	59 to 95ºF (15 to 35ºC)	59 to 95ºF (15 to 35ºC)	31 to 158ºF (-35 to +70ºC)
+/-1.0K	31 to 140°F (-35 to +60°C)	-31 to +122°F (-35 to +50°C)	—
Output Signal	Platinum 1K Ohm RTD (385)	0 to 10 Vdc (QFMx160)	
	Nickel 1K Ohm RTD (Siemens)	4 to 20 mA (QFMx171)	
Calibration	None		

QFM Series Product Ordering

Application	Description	Part No.
Duct Humidity 5%	0 to 10 Vdc	**QFM2100**
Duct Humidity 5%	4 to 20 mA	**QFM2101**
Duct Humidity 5% & Temperature	0 to 10 Vdc / Temp 1K Ohm Platinum RTD (385 Alpha)	**QFM2110**
Duct Humidity 5% & Temperature	0 to 10 Vdc / Temp 1K Ohm Nickel RTD (L&S Type)	**QFM2120**
Duct Humidity 5% & Temperature	0 to 10 Vdc / Temp 0 to 10 Vdc	**QFM2160**
Duct Humidity 5% & Temperature	4 to 20 mA / Temp 4 to 20 mA	**QFM2171**
Duct Humidity 2%	0 to 10 Vdc	**QFM3100**
Duct Humidity 2%	4 to 20 mA	**QFM3101**
Duct Humidity 2% & Temperature	0 to 10 Vdc, Temp 0 to 10 Vdc	**QFM3160**
Duct Humidity 2% & Temperature	0 to 10 Vdc, Temp 0 to 10 Vdc, w/Display	**QFM3160D**
Duct Humidity 2% & Temperature	4 to 20 mA / Temp 4 to 20 mA	**QFM3171**
Duct Humidity 2% & Temperature	4 to 20 mA / Temp 4 to 20 mA, w/Display	**QFM3171D**
Duct Humidity	4 to 20 mA (Certified)	**QFM4101**
Duct Humidity & Temperature	0 to 10 Vdc, Temp 0 to 10 Vdc (Certified)	**QFM4160**
Duct Humidity & Temperature	4 to 20 mA / Temp 4 to 20 mA (Certified)	**QFM4171**

SIEMENS

Very Low Differential Pressure Transducers

Very Low Differential Pressure Transducers.

Description

The Very Low Differential Pressure Transducers sense differential or gauge (static) pressures and convert pressure difference to a proportional electrical output. The 590 Series is offered with a 0 to 10 Vdc output.

Used in Building Energy Management Systems, these transducers are capable of measuring pressures with the accuracy necessary for proper building pressurization and air-flow control.

The 590 Series Transducers are available in five different air pressure ranges. Static accuracy is ±1% full scale in normal ambient temperature environments. The units are temperature compensated to less than ±0.033% FS/°F of thermal error over the temperature range of 0°F to +150°F.

Features

- 10 psi proof pressure on all ranges
- 24 Vac
- 0 to 10 Vdc analog output is compatible with all energy management systems
- Fully protected against reverse wiring
- Internal regulation permits use with unregulated DC power supplies
- 1% accuracy, or better, improves variable air volume system performance
- Meet CE conformance standards
- No field calibration or adjustment necessary

Applications

The Very Low Differential Pressure Transducers are used for the following applications:

- Heating, Ventilation and Air Conditioning (HVAC)
- Energy Management Systems
- Variable Air Volume (VAV) and Fan Control
- Environmental pollution control
- Static duct and clean room pressures

B-27

Sensors

SIEMENS

590 Series Specifications

Temperature

Operating* .... 0 to +150°F (-18 to +65°C)

Storage .... -40 to +185°F (-40 to +85°C)

* Operating Temperature limits of the electronics only.
  Pressure media temperatures may be considerably higher or lower.

Physical Description

Case **Fire Retardant Glass Filled Polyester**

Electrical Connection .... Screw Terminal Strip

Pressure Fitting .... 1⁄4" Fitting

Weight .... 3 ounces

Electrical Data (Voltage)

Circuit .... 3-wire (Com, Out, Exc)

Excitation/Output** .... 12 to 30 Vac/0 to 10 Vdc

**Zero output factory-set to within ±50 mV (±25 mV for optional accuracies).

Bi-directional Output at Zero Pressure .... 2.5 Vdc (±50 mV)

Output Impedance*** .... 100 Ohms

***Calibrated into a 50K ohm load, operable into a 5000-ohm load or greater.

Pressure Media .... Typically air or similar non-conducting gases

590 Series Product Ordering

Description	Accuracy	Part No.
Differential Pressure Sensor, 5" WC, 10 Vdc Signal	1%	**590-501**
Differential Pressure Sensor, 2" WC, 24 Vac, 10 Vdc Signal	1%	**590-502**
Differential Pressure Sensor, 1" WC, 24 Vac, 10 Vdc Signal	1%	**590-503**
Differential Pressure Sensor, ±0.25" WC, 24 Vac, 10 Vdc Signal	1%	**590-505**
Differential Pressure Sensor In Conduit Box, 5" WC, 24 Vac, 10 Vdc Signal	1%	**590-506**
Differential Pressure Sensor In Conduit Box, 2" WC, 24 Vac, 10 Vdc Signal	1%	**590-507**
Differential Pressure Sensor In Conduit Box, 1" WC, 24 Vac, 10 Vdc Signal	1%	590-508
Differential Pressure Sensor In Conduit Box, ±0.25" WC, 24 Vac, 10 Vdc Signal	1%	**590-510**
Differential Pressure Transmitter, 1.0", 0.4%, 4 to 20 mA, Conduit Cover, 24 Vac	0.4%	**590-780**
Differential Pressure Transmitter, .65", 0.4%, 4 to 20 mA, Conduit Cover, 24 Vac	0.4%	**590-781**
Differential Pressure Transmitter, 0.5", 0.4%, 4 to 20 mA, Conduit Cover, 24 Vac	0.4%	**590-782**

B-28

Sensors

SIEMENS

Pressure Sensors for Liquid and Gas

Pressure Sensor.

Sustainable Sites

Indoor Environmental Quality

Energy & Atmosphere

Sensors

Description

The 7MF Series Pressure Sensors are suitable for the measurement of static and dynamic positive pressure in HVAC facilities, particularly in hydraulic and pneumatic systems using liquid or gaseous media (steam applications).

The 7MF Series Pressure Sensors are available in several different air pressure ranges, from 1 to 40 atmospheres of pressure (1 to 580 psi).

Features

• Piezo-resistive measuring system

• 0 to 10 Vdc and 4 to 20 mA output signals

• Measurement unaffected by changes in temperature

• High temperature stability

• No mechanical aging or creepage

• Excellent EMC characteristics

Applications

The 7MF Series Pressure Sensors are used for the following applications:

• Heating, Ventilation and Air Conditioning (HVAC)

• Energy Management Systems

• Chiller, Boiler and Steam Applications

SIEMENS

7MF Specifications

Power Supply
Supply Voltage .... DC 16...33 V
Max. Voltage Tolerance ....±15 % at AC 24 V
Current Consumption ....<4 mA

Output Signal
4 to 20 mA .... two-wire connection; power supply DC 10 to 36V

0 to 10 V ....three-wire connection; power supply DC 15 to 36V

Application Range.................................0 to 40 bar, refer to table below.

Accuracy .... (FS = Full Scale)
Total of linearity, hysteresis
and reproducibility .... <±0.3 % FS

Zero point offset voltage.. <30 Mv

Temperature Drift
TC zero point..<±0.015 % FS/K (typically)

TC sensitivity ....<±0.015 % FS/K (typically)

Response Time .... <2 ms

Nominal Pressure .... Relative pressure as in "Ordering Information" (measurement of difference from ambient pressure)

Max. Admissible Pressure and
Rupture Pressure .... 3 x scale end value of measuring range (FS) <4 bar

2.5 x scale end value of measuring range (FS) >4 bar

Media ....Neutral and slightly corrosive liquids and gases

Admissible temperature of medium........ -40 to +239°F (-40 to +125°C)

Maintenance.. Maintenance-free

Mounting Position ....Optional

Connecting Cable .... PVC, length 5 ft., 3 x 0.25 mm^2 stranded wires

Screwed Fitting..External thread G1⁄2"

Operation to Climatic Conditions
Temperature ....-40 to +85°C
Humidity ....<95% RH

Storage/transport Climatic Conditions
Temperature ....-40 to +85°C
Humidity ....<95% RH

CE conformity to EMC Directive 89/336/EEC

N474 Conformity to
Australian EMC Framework ....Radio Communication Act 1992
Radio Interference Emission Standard............................ AS/NZS 3548

Base ....Stainless Steel (1.4305)

Measuring Element...Ceramics diaphragm

Cover ....Stainless Steel (1.4305)

Sealant.. FPM (Viton) spec.

Shipping Weight ....0.53 lb. (0.24 kg)

B-30

Sensors

7MF Series Product Ordering

Pressure Range (psi)	Output Signal	Part No.
0 to 15 psi	4 to 20 mA	**7MF15644BB003EA1**
0 to 30 psi	4 to 20 mA	**7MF15644BE003EA1**
0 to 60 psi	4 to 20 mA	**7MF15644BF003EA1**
0 to 100 psi	4 to 20 mA	**7MF15644BG003EA1**
0 to 150 psi	4 to 20 mA	**7MF15644CA003EA1**
0 to 200 psi	4 to 20 mA	**7MF15644CB003EA1**
0 to 300 psi	4 to 20 mA	**7MF15644CD003EA1**
0 to 15 psi	0 to 10 V	**7MF15644BB103EA1**
0 to 30 psi	0 to 10 V	**7MF15644BE103EA1**
0 to 60 psi	0 to 10 V	**7MF15644BF103EA1**
0 to 100 psi	0 to 10 V	**7MF15644BG103EA1**
0 to 150 psi	0 to 10 V	**7MF15644CA103EA1**
0 to 200 psi	0 to 10 V	**7MF15644CB103EA1**
0 to 300 psi	0 to 10 V	**7MF15644CD103EA1**

Accessories & Service Kits   **B-51**

SIEMENS

Pitot Tube Sensor Kits

536 Pitot Tube Sensor Kit.

Description

The Pitot Tube Sensor Kit is used with either static or differential air pressure sensing devices, to measure average static or differential pressure across a duct.

Features

- Thin steel construction
- Mounting flange is easily bent to conform to round or oval ducts

Applications

This kit is used in situations where a terminal box manufacturer-supplied sensor (flow pick-up) is not available, or where the existing flow pick-up has been damaged.

Sensors

SIEMENS

Pitot Tube Sensor Kits Specifications

Material
Probe..6061 aluminum
Gasket... 1/4-in (6 mm) closed-cell neoprene
Tubing ....FR polyethylene
Mounting Flange......................................26 GA galvanized sheet steel

Mounting
Screws..#8 self-tapping
1/4-in (6 mm) hex washer head
Flange hub ....#10 pan head, slotted

Dimensions .... 1.50" x 3.75"
(38 mm x 95 mm)

Pitot Tube Sensor Kits Product Ordering

Duct Size	Maximum Probe Length	Part No.
6" (152 mm)	5.75" (146 mm)	**536-376**
8" (203 mm)	7.75" (197 mm)	**536-378**
10" (254 mm)	9.75" (248 mm)	**536-380**
12" (305 mm)	11.75" (298 mm)	**536-382**
14" (356 mm)	13.75" (349 mm)	**536-384**

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Sensors

SIEMENS

Room CO$_2$/VOC/Temperature/RH

QPA2060D Q Series
Room Carbon Dioxide & Temperature Sensor.

**Energy &
Atmosphere**

**Indoor
Environmental
Quality**

Sensors

Description

The QPA Series Room Carbon Dioxide Sensors monitor and transmit changes in CO$_2$ to the building control systems. No calibration of the CO$_2$ sensor is necessary — these microprocessor-based units consist of a non-dispersive infrared CO$_2$ sensor that experiences less than 1% drift per year for the first two years of operation and negligible drift thereafter. All variants for CO$_2$ and combination versions with Temperature or VOC deliver 0 to 10 Volt proportional signals to the controller.

Applications

These units are especially suited for applications where precise, stable CO$_2$ sensing is required.

Features

• LCD display option

• Various models:
   CO$_2$
   CO$_2$/VOC
   CO$_2$/Temp
   CO$_2$/Temp/RH

• Built-in test function for troubleshooting

• Jumper selectable °C/°F units for temp models w/display

• **No Logo** versions available

SIEMENS

QPA Series Specifications

General

Installation................................... 18 AWG cable length shared in conduit with other sensor wiring 750 ft. (229 m) max

Connections ....Screw terminals

Dimensions .... 3.94" H x 3.54" W x 1.65" D (100 mm x 90 mm x 42 mm)

Voltage Requirement.. 13.5 to 35 Vdc

Housing Protection Class...NEMA 1 (all types)

CO_2 Element

Operating Range.. 0 - 2000 ppm

Accuracy at Room Temperature ≈ 73°F (20°C) ....+2% mV

Operating Temperature ....-23 to +113°F (-5 to +45°C)

Temperature Effect ....Less than 0.1% per degree C

Sensing Element..NDIR CO_2 sensing module

Output Signal ....0 to 10 Vdc, 0-100% Linear, Proportional

Polarity Protection..Yes

Permissible Air Velocity in the Room ....<26.2 ft./s

Temperature Element
(for Combination CO_2/T unit only)

Operating Temperature ....23 to 113°F (-5 to 45°C)

Time Constant ....<1 minute

Accuracy .... ±0.8K

Output Signal ....0-10 volts

Calibration .... None Required

Humidity Element

Measuring Range... 0 to 100% RH

Accuracy ....±5% RH

QPA Series Product Ordering

Application	Description	Part No.
CO2	0 to 5 V or 0 to 10 V	QPA2000
CO2	0 to 5 V or 0 to 10 V, No Logo	QPA2000N
CO2 and VOC	0 to 5 V or 0 to 10 V	QPA2002
CO2 and VOC	0 to 5 V or 0 to 10 V, with Display	QPA2002D
CO2 and VOC	0 to 5 V or 0 to 10 V, No Logo	QPA2002N
CO2 and Temp (Active)	0 to 5 V or 0 to 10 V	QPA2060
CO2 and Temp (Active)	0 to 5 V or 0 to 10 V, with Display	QPA2060D
CO2 and Temp (Active)	0 to 5 V or 0 to 10 V, No Logo	QPA2060N
CO2, Temp and RH (Active)	0 to 5 V or 0 to 10 V	QPA2062
CO2, Temp and RH (Active)	0 to 5 V or 0 to 10 V, with Display	QPA2062D
VOC	0 to 5 V or 0 to 10 V	QPA1000
VOC	0 to 5 V or 0 to 10 V, No Logo	QPA1000N
CO2 and Temp (Passive)*	0 to 5 V or 0 to 10 V T (Selectable R)	QPA2080
CO2 and Temp (Passive)*	0 to 5 V or 0 to 10 V, T (Selectable R) with Display	QPA2080D

*Resistance included: P+100, P+1000, LG-Ni 1000, NTC 10K

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Sensors

Accessories & Service Kits	B-51

SIEMENS

Duct CO$_2$/VOC/Temperature/RH

QPM 2100 CO$_2$ only Sensor.

Sensors

Description

The QPM Series Duct CO$_2$ Sensors monitor and transmit changes in CO$_2$ to the building control systems. Several models are available for CO$_2$ only, CO$_2$/Temp, CO$_2$/Temp/RH and CO$_2$/VOC. All variants for CO$_2$ and combination versions with Temperature or VOC deliver 0 to 10 Volt proportional signals to the controller.

No calibration of the CO$_2$ sensor is necessary — these microprocessor-based units consist of an NDIR sensor that experiences less than 1% drift per year for the first two years of operation and negligible drift thereafter.

Features

• LCD display option
• Various models:
  CO$_2$
  CO$_2$/VOC
  CO$_2$/Temp
  CO$_2$/Temp/RH
• Jumper selectable °C/°F units for temp models w/display
• **No Logo** versions available

Applications

These units are especially suited for applications where precise, stable CO2 sensing is required.

SIEMENS

Energy & Atmosphere

Indoor Environmental Quality

QPM Series Specifications

General

Installation.............................. 18 AWG cable length shared in conduit with other sensor wiring 750 ft. (229 m) max.

Connections ....Screw terminals

Voltage Requirement.. 13.5 to 35 Vdc
Q Series sensors with 0-10 Vdc outputs can also operate on 24 Vac

Input Impedance (4 to 20 mA versions only) .... Less than 500 Ohms

CO_2 Element

Operating Range.. 0 - 2000 ppm

Accuracy at Room Temperature ≈ 73°F (20°C) ....+2% mean value

Operating Temperature................................ -31 to +113°F (-35 to +45°C)

Temperature Effect ....Less than 0.1% per degree C

Sensing Element..NDIR CO_2 sensing module

Output Signal .... 0 to 10 Vdc, 0-100% linear, proportional

Polarity Protection..Yes

Permissible Air Velocity in the Duct ....<26.2 ft./s

Temperature Element
(for Combination CO_2/T unit only)

Operating Temperature ....-31 to +113°F (-35 to +45°C)

Time Constant ....<1 min

Accuracy ....±1K

Output Signal ....0 to 10 Volt

Calibration .... None Required

QPM Series Product Ordering

Application	Description	Part No.
Duct Sensor, CO2	0 to 5 or 0 to 10 Vdc	**QPM2100**
Duct Sensor, CO2	0 to 5 or 0 to 10 Vdc, No Logo	**QPM2100N**
Duct Sensor, CO2 and VOC	0 to 5 or 0 to 10 Vdc	**QPM2102**
Duct Sensor, CO2 and VOC	0 to 5 or 0 to 10 Vdc with Display	**QPM2102D**
Duct Sensor, CO2 and Temp. (Active)	0 to 5 or 0 to 10 Vdc	**QPM2160**
Duct Sensor, CO2 and Temp. (Passive*)	0 to 5 or 0 to 10 Vdc (Selectable Resistance)	**QPM2180**
Duct Sensor, CO2 and Temp. (Active)	0 to 5 or 0 to 10 Vdc with Display	**QPM2160D**
Duct Sensor, CO2, RH and Temp. (Active)	0 to 5 or 0 to 10 Vdc	**QPM2162**
Duct Sensor, CO2, RH and Temp. (Active)	0 to 5 or 0 to 10 Vdc with Display	**QPM2162D**
Duct Sensor, VOC	0 to 5 or 0 to 10 Vdc	**QPM1100**

*Resistance included: Pt100, Pt1000, LG-Ni 1000, NTC 10k

Accessories & Service Kits   **B-51**

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Sensors

SIEMENS

Air Velocity Sensor

QVM62.1 Air Velocity Sensor.

Energy & Atmosphere

Indoor Environmental Quality

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 designed with a thin film sensing element and its unique, sleek housing guarantees product recognition. This unit is compatible with all Siemens systems and controllers.

Features

• Mounting flange allows the installer to vary the probe insertion length into the duct space for best control

• Mounting flange dampening gasket minimizes vibration

• Graduated probe ensures maximum flow accuracy

• Flow directional arrow provides for the most accurate reading

• Connection cable provides mounting flexibility

• Three jumper selectable flow measuring ranges accommodate any application or environment

Applications

This sensor is primarily used to set the basic volumetric flow rate for modulating fan control.

Sensors

SIEMENS

QVM62.1 Sensor Specifications

Power Supply
Operating Voltage...24 Vac +/- 20%
Frequency ....50/60 Hz
Power Consumption .... ≤ 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, ... ± 0.7 ft/s
1013 hPa .... (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 ≤ + 10°
Time Constant t_{90} at 10 m/s..................................... 4 seconds

Signal Output U1
Voltage .... 0 to 10 Vdc
Current .... ± 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 x 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

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

Weight with Packaging ....12 oz (0.352 kg)

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Sensors

QVM62.1 Sensor Product Ordering

Application	Description	Part No.
Air Velocity Sensor	0 to 3000 FPM	**QVM62.1**

Accessories & Service Kits	B-51

SIEMENS

Solar Impact Sensor NEW!

QLS60 Solar Impact Sensor.

Water Efficiency

Indoor Environmental Quality

Innovation in Design/Operations

Description

The outdoor wall-mounted Solar Impact Sensor (QLS60) is used as a demand sensor for heating, ventilation and air-conditioning in facilities where compensation of solar radiation is required or desired. Solar compensation is necessary where buildings or building sections with large window areas are subjected to strong solar radiation, especially in installations where thermostatic radiator valves cannot be used.

To determine the impact of solar radiation, the sensor uses a solar cell that acquires the level of radiation. That cell generates an electrical current depending on the extent of radiation, which is then evaluated by the sensor. As a result, the sensor delivers an output signal of 4 to 20 mA or 0 to 10 Vdc, which is proportional to the solar radiation range.

Features

• Configurable 0-10 Vdc, 4-20 ma output signal

• 24 Vac or 18-30 Vdc power source

• Output signal linear over entire measuring range

• Measuring range of 0-93 w/ft2 (0-1000 w/m2)

• Rain- and moisture-resistant NEMA 4 enclosure

• Small compact housing (2" x 3.62" x 1.8")

Applications

This sensor can be used in connection with all types of systems and devices capable of acquiring and handling the sensor's 4 to 20 mA or 0 to 10 Vdc output signal.

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Sensors

SIEMENS

QLS60 Specifications

Rated Voltage Range..24 Vac (± 20% SELV)
or 24 Vdc (18 to 30V)

Power Supply (G+, M)
Rated Frequency at 24 Vac...50/60Hz
Rated Power Consumption ....Max. 2.5 VA (1 W)

Measuring Range.. 0 to 1000 W/m²

Time Constant t$_{63}$ ....</- 2 seconds

Measured Value Outputs (U, I)
Voltage Signal Output (U)............................ 0 to 10 Vdc 0 = 1000 W/m²
Current Signal Output (I) ....4 to 30 mA 0 to 1000 W/m²

Permissible Cable Lengths With Copper Cable
18 AWG .... 164 feet (50 m)
16 AWG .... 492 feet (150 m)
12 AWG .... 984 feet (300 m)

Electrical Connections
Screw Terminals for.....................................2 × 16 AWG or 1 × 12 AWG

Degree of Protection of Housing .... IP 65 to IEC 60 529

Insulation Class..III to EN 60 730

Environmental Conditions
Operation to... IEC 60 721-3
Climatic Conditions..Class 3K5
Temperature .... -13°F to 131°F (-25°C to 55°C)
Humidity (Non-condensing)... 5 to 95% rh
Mechanical Conditions ....Class 3M2
Transportation to .... IEC 60 721-3-2
Climatic Conditions..Class 2K3
Temperature .... -13F to 158°F (-25C to 70°C)
Humidity ....<95% rh
Mechanical Conditions ....Class 2M2

Agency Standards...UL Listed to UL873
cUL Listed to Canadian Standard C22.2 No. 24-93
CE conformity to EMC directive 2004/108/EC

QLS60 Product Ordering

Description	Output Signal	Part No.
Solar Impact Sensor	4 to 20 mA or 0 to 10 Vdc	**QLS60**

Accessories & Service Kits

Sensors

SIEMENS

Liquid Flow Switches NEW!

QVE1900U Liquid Flow Switch.   QVE1901U Liquid Flow Switch.

Description

The QVE1900U Flow Switch is for liquids in piping 1-1/4-inch to 8-inch (20 mm to 200 mm) diameter. The QVE1901U Flow Switch is for liquids in piping 3/4-inch to 8-inch (20 mm to 200 mm) diameter.

These two units have the same general principle of operation, although their switching mechanisms are different. Both detect the flow of the medium to be monitored by means of a paddle. If the flow velocity in the piping falls below the adjusted switch-off value, the paddle in the QVE1900U model actuates a micro-switch with a dry contact (S.P.D.T.), which closes the contact. When the flow velocity reaches the switch-on value again, the opposite contact closes. In the QVE1901U model, the switching is achieved through a system of two opposite magnets and a reed contact. The switching point is adjustable on both devices.

Features

- Compatible with all currently offered zone (TEC, ATEC) or primary controllers (PXC) that are offered as part of the APOGEE building automation system
- Detachable steel paddles provide correct flow measurement based on pipe diameter
- Contact load/switching capacity: Maximum 24 Vac, 1 A, 26 VA Maximum 24 Vdc, 1 A, 20 W
- Nominal pressure PN25
- Manual setting of contact type (NO/NC)
- Housing IP 65 per EN 60 529
- Maintenance-free
- Suitable for all liquids (except ammonia)

Applications

Flow switches are used to monitor the flow of fluids in hydraulic systems, especially in refrigeration and heat pumps, and are for use with condensers, boilers, and heat exchangers.

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Sensors

SIEMENS

QVE Series Specifications

Piping Diameter
QVE1900U ....DN 1.25 (32) to 8.00 (200)
QVE1901U ....DN 20 to 200 (3/4" to 8")

Type of Switch
QVE1900U ....Micro Switch with Single-Pole Changeover, Potential Free
QVE1901U ....Reed Contact

Contact Rating
QVE1900U .... 24 Vac, 15 (8) A
QVE1901U .... 24 Vac, 1 A/24 Vdc, 1 A

Adjustment of Switching Point ....Manual, Supplied with Minimum Switch On/Off Values

Permissible Medium Temperature ....–4F to 248°F (–20C to 120°C) (Medium must be Antifreeze)

Permissible Operating Pressure (QVE1900U) ....PN 10

Nominal Pressure (QVE1901U) ....PN 25

Degree of Protection
Housing ....IP 65 per EN 60 529

Safety Class
QVE1900U .... I per EN 60 730
QVE1901U .... III per EN 60 730

Operation and Storage
QVE1900U .... –4F to 158°F (–20C to 85°C)
QVE1901U .... –4F to 176°F (–20C to 80°C)

Ambient Humidity (QVE1901U) .... <95% rh

Agency Listings.. UL Listed for UL 873 XAPX
cUL C22.2 No. 24-93 XAPX7

Housing Base
QVE1900U .... Bayblend T85/Color RAL 7015
QVE1901U .... Polyamide, black

Materials
QVE1900U ....Screw-in body R1" Brass
QVE1901U .... Screw-in body NPT ½" Brass

Paddle
QVE1900U Only ....High-grade steel (V2A)

Flow Switch, Overall (QVE1900U) ....Silicone-free

Sensors

Flow Switch Product Ordering

Description	Part No.
SPDT, 15A, 1-1/4" to 8" pipe	**QVE1900U**
SPST, 1A, 3/4" to 8" pipe	**QVE1901U**

Accessories & Service Kits	B-51

SIEMENS

Condensation Sensor NEW!

QXA2000 Condensation Sensor.

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Sensors

Description

The QXA2000 Condensation Sensor is used to avoid damage due to condensation on chilled ceilings and in HVAC installations.

It operates on AC/DC 24V and has a NO/NC changeover dry contact relay output capable of switching AC/DC loads from 1 to 48V, 0.5 amp.

Features

• Comes complete with a strap-on band for pipe diameters from 0.39 to 3.94 inches (10 to 100 mm), and thermal conductive paste

Applications

For monitoring condensation in buildings that are running chilled beam or chilled ceilings or in heating, ventilation, or air conditioning installations.

The condensation sensor is used

• to prevent condensation on chilled ceilings

• to prevent condensation at critical spots of HVAC installations or buildings (in air ducts, near fans, and so on)

• as a condensation switch

In general, the condensation sensor is for use on all kinds of surfaces where condensation must be avoided.

SIEMENS

QXA2000 Condensation Sensor Specifications

Power Supply G (G+), G0 (G-)
  Operating Voltage.. AC/DC 24V + 20%
  Frequency .... 50/60 Hz
  Power consumption...................................... Maximum 1 VA

Switching Point on Humidity Increase .... 95% +/- 4% rh

Switching Differential (Fixed)................................ Approximately 5% rh

Response Time in Static Air
  From 80 to 99% rh .... Maximum 3 minutes
  From 99 to 80% rh .... Maximum 3 minutes

Condensation ....Maximum 30 minutes

Output Q11, Q12, Q14
  Relay Output .... NO/NC Changeover Dry Contact
  Current Range at AC/DC 24V .... 0.02 to 1 (1) A
  Starting Current at AC/DC 24V.......................... < /- 10 A for </- 20 ms
  Switching Capacity..................................... Minimum AC/DC 1V, 1 mA
                                                         Maximum A/DC,48V, 0.5 A

Degree of Protection of Housing ....IP 40 to EN 60529

Safety Class .... III to EN 60 730

Connections
  Mechanical ....Strap-on Band for Pipe Diameter
                                        0.39 to 3.94 inches (10 to 100 mm)

  Electrical
    Screw Terminals for .... (2) 16 AWG or (1) 14 AWG
                                        (max 2 × 1.5 mm2 or 1 × 2.5 mm2)

Environmental Conditions
  Operation to .... IEC 60721-3-3
    Climatic Conditions .... Class 3K5
    Temperature (Housing & Electronics)… -23 to 122°F (-5 to 50°C)
    Humidity.. 5 to 95% rh (Non-condensing)
    Mechanical Conditions .... Class 3M2
  Transport to .... IEC 60721-3-2
    Climatic Conditions .... Class 2K2
    Temperature (Housing & Electronics)...... -13 to 150°F (-25 to 60°C)
    Humidity .... <95% rh
    Mechanical Conditions .... Class 2M2

Housing Materials and Colors...................... Thermoplastics, pure-white

Product Safety
  Automatic Electrical Controls for
  Domestic Use and Similar Applications.............................. EN 60730-1

Electromagnetic Compatibility
  Immunity.. EN 61000-6-2
  Emissions.. EN 61000 6-3

CE Conformity
  Electromagnetic Compatibility... 2004/108/EC
  Low-voltage Directive 2006/95/EC

Weight .... 4.4 ounces (0.126 kg) w/Packaging

QXA2000 Product Ordering

Description	Part No.
Condensation Sensor	**QXA2000**

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Sensors

SIEMENS

Electronic Room Hygrostats NEW!

QFA1000 Electronic Room Hygrostat
with Concealed Setpoint.

QFA1001 Electronic Room
Hygrostat with Exposed Setpoint.

**Energy &
Atmosphere**

**Indoor
Environmental
Quality**

Description

The room hygrostats are used for controlling and
monitoring relative humidity in ventilation or air
conditioning facilities. They ensure room humidity
control within the selectable range of 30 to 90% relative
humidity by controlling humidification or dehumidification
equipment. They can also be used for monitoring minimum
or maximum humidity levels.

Features

• Hygrostat with single-pole microswitch

• Humidity measuring element made of stabilized plastic

• Setpoint knob for the upper switching point

• Mounts directly on the wall or on a recessed
  conduit box

Applications

For controlling humidification and dehumidification
equipment.

B-45

Sensors

SIEMENS

QFA Series Electronic Room Hygrostats Specifications

Setpoint Range .... 30 to 90% rh

Temperature
 Operating Range ....32°F to 122°F (0°C to 50°C)

Humidity Measuring Element ....Stabilized Plastic Band

Control Mode .... Two-position

Time Constant (v = 0.2 m/s)... Approx. 5 minutes

Setting Accuracy .... + 5% rh (can be improved by calibrating on site)

Temperature Influence ....+ 0.5% rh/K

Humidity Calibration .... at 55% rh, 73°F (23°C)

Long-term Stability... Approximately ☐1.5% rh/a

Type of Switch .... Potential-free Microswitch (SPDT)

Contact Rating
   Maximum..5 (3) A, 24 Vac/Vdc
   Minimum..100 mA, 24 Vac/Vdc

Degree of Housing Protection.................................. IP 20 to EN 60 529

Safety Class ....II to EN 60 730

Electrical Connection
Screw Terminals .... .For Maximum 2 × 16 AWG

Materials and Colors
   Base ....PPS, Fortron, Fiberglass Reinforced, Black
   Cover..PC Lexan 940, Pure White
   Humidity Measuring Element ....Plastic

Agency Approvals ....UL listed for UL873
                                                   cUL Canadian Standard C22.2 No. 24-93
                                                                                          CE conformity
                                                                         EMC directive 89/336/EEC

Weight ....3.17 ounces (0.090 kg)

QFA Series Electronic Room Hygrostats Product Ordering

Description	Control Range	Type of Control	Part No.
Room	30 to 90% RH	Humidity Switch with Concealed Setpoint	**QFA1000**
Room	30 to 90% RH	Humidity Switch with Exposed Setpoint	**QFA1001**

Accessories & Service Kits	B-51

Sensors

SIEMENS

Electronic Duct Hygrostats NEW!

QFM81.21 Electronic Duct Hygrostat
with Internal Setpoint.

QFM81.2 Electronic Duct Hygrostat
with External Setpoint.

Energy & Atmosphere

Indoor Environmental Quality

B-47

Sensors

Description

On/off hygrostat with microswitch, and temperature-compensated humidity sensor for temperature-independent humidity measurements.

Features

• Stabilized sensing strip
(good linearity, very stable even at high humidity, insensitive to dust and contaminated air)

• Can be mounted in ventilating ducts or rooms

Applications

For controlling humidification and dehumidification equipment.

SIEMENS

QFM81 Electronic Duct Hygrostats Specifications

Setpoint Range .... 30 to 90% rh

Control Mode ....On/off

Type of Switch .... Potential-free Microswitch (SPDT)

Contact Rating
 Maximum .... 5 (3) A, 24 Vac/Vdc
 Minimum ....100 mA, 24 Vac/Vdc

Temperature Influence .... Compensated

Long-term Stability .... Approximately ☐1.5% rh/a

Balancing .... At 55% rh, 73°F (23°C)

Time Constant (v = 0.2 m/s).. Approx. 3 minutes

Permissible Air Velocity .... 10 m/s

Permissible Ambient Temperature
 Operation .... 32°F to 158°F (0°C to 70°C)
 Storage/transport .... −22°F to 158°F (☐30 to 70°C)

Degree of Housing Protection
 FM81.2 .... IP 30 to EN 60 529
 QFM81.21 .... IP 55 to EN 60 529

Safety Class .... II to EN 60 730

Electrical Connection
 Screw Terminals .... 20 AWG Minimum
                                                                            2 x 16 AWG Maximum

Materials and Colors
 Sensing Element .... .Polymer
 Casing with Stem ....PPS, Fortron 1140L6, Fiberglass Reinforced
 Cover .... PC Lexan 940
 Transparent Cover (QFM81.21) .... PC Makrolon 2014R

Agency Approvals ....UL listed for UL873
                                                             cUL Canadian Standard C22.2 No. 24-93

Weight .... Approx. 12 ounces (0.34 kg)

QFM81 Electronic Duct Hygrostats Product Ordering

Description	Control Range	Type of Control	Part No.
Duct	15 to 95% RH	Humidity Switch with External Setpoint	**QFM81.2**
Duct	15 to 95% RH	Humidity Switch with Internal Setpoint	**QFM81.21**

NOTE: Includes a mounting flange (for duct or wall mounting) and a sealing ring (for duct mounting).

Accessories & Service Kits	**B-51**

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Sensors

SIEMENS

Pneumatic Room and Duct Hygrostats

186 Room Hygrostat.

186 Duct Hygrostat.

Energy &
Atmosphere

Indoor
Environmental
Quality

Description

The 186 Room and Duct Hygrostats are pneumatic instruments sensitive to slight changes in relative humidity.

Features

• Adjustable sensitivity

• Sensitive hygroscopic membrane

• Includes temperature compensation

• Galvanized steel housing standard on duct model

• Models available for normal comfort range and high limit range

• Room type comes complete with standard cover and wall plate

• Duct type comes mounted inside a duct mounting box

Applications

The 186 Room and Duct Hygrostats provide control of relative humidity for comfort control in hospitals, schools and office buildings.

Application Drawings
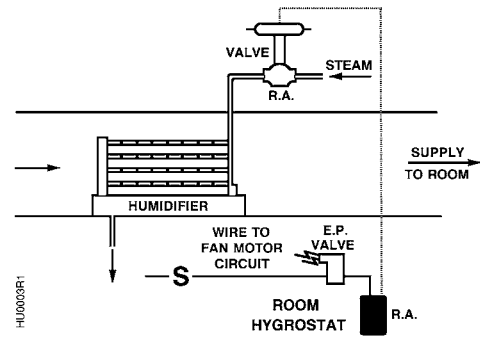
Room Application.

Duct Application.

SIEMENS
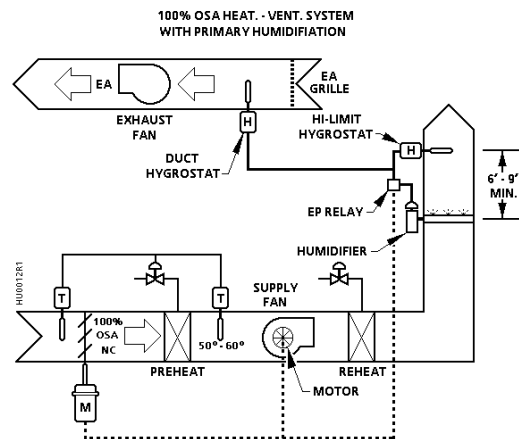
Pneumatic Room and Duct Hygrostats Specifications

Sensitivity ....1/4 to 4 psi/% RH

Normal Supply Pressure .... 15 to 25 psi (103 kPa to 172 kPa)

Maximum Supply Pressure ....30 psi (207 mm)

Air Consumption .... 15 scim (4 ml/s)

Effect of 10°F Temperature Change ....Shift of 1% RH

Effect of 5 psi Supply Pressure Change (mid sensitivity) .... 7.0 min./vol unit

Duct Box .... Extends 6" (152 mm) into duct

Air Connections
  Duct .... Barb fitting for 1/4" (64 mm) OD polyethylene tubing
  Room... 5/32" (4 mm) OD polyethylene tubing

Dimensions
  Chassis.. 2.9" H x 1.75" W x 1.13" D
  (73.66 mm W x 44.45 mm H x 28.70 mm D)
  Room... 2.16" W x 3.34" H
  (55 mm W x 85 mm H)
  Duct .... 4.5" W x 5.88" H x 6" D
  (114 mm x W 149 mm H x 152 mm D)

Standard Room Cover ....Desert Beige, plastic

Shipping Weights
  186-0013 & 186-0019.. 0.84 lb. (0.38 kg)
  186-0087; 186-0088; 186-0090; 186-0091 ....3.3 lb. (1.5 kg)

Pneumatic Room and Duct Hygrostats Product Ordering

Description	Control Range	Type of Control	Direct Control Action	Reverse Control Action
Room	20 to 90% RH	Humidification/Dehumidification	186-0013	186-0019
Duct	20 to 90% RH	Humidification/Dehumidification	186-0087	186-0088
Duct	55 to 95% RH	High Limit	—	186-0090
Duct	25 to 65% RH	Room Comfort	—	186-0091

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Sensors

Accessories & Service Kits   **B-51**

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Sensors

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Sensors

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	Description	Product Group	Quantity	Part No.
Sensors				
	Single Adapter Base Kit.	T, RH & RH/T Sensors		
	• Beige		1	**544-782A**
	• White		1	**544-782B**
	Double Adapter Base Kit.	T, RH & RH/T		
	• Beige		1	**544-783A**
	• White		1	**544-783B**
	Extender Ring Kit.	T, RH & RH/T		
	• Beige		1	**544-785A**
	• White		1	**544-785B**
	Non-Conduit Rough-in Kit. Comes with plastic GWB protrusion piece which is discarded when wall sensor is installed.	T, RH & RH/T Sensors	1	**544-784**
	Metal Gym Guard. Desert Beige	RT Sensors	1	**182-621**
	Electrical Box (2 x 4) Adapter Plate Kit.	T, RH & RH/T Sensors	Pkg. of 5	**192-506**
	Electrical Box (2 x 4) Adapter Base. (low profile)	T, RH & RH/T Sensors	Pkg. of 5	**192-507**
	Adapter Base.	T, RH & RH/T Sensors	1	**192-307**

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Accessories & Service Kits

	Description	Product Group	Quantity	Part No.
Sensors				
	Adapter Frame.	RT Sensors	1	**192-308**
	Mounting Strap. For mounting Room Sensor on standard light switch plate.	RT Sensors	1	**536-666**
	Adapter Plug. For plugging in Room Sensor & Portable Operator's Terminal into Controller.	RT Sensors	1	**540-142**
	Fixing Bracket for Remote Mounting. Made from die-cast Aluminum.	Q Series Pressure	1	**AQB22.1**
	Mounting Kit.	Q Series Pressure	1	**AQB51.1**
	Conduit Assembly Kit.	599 Series Diff. Pressure Sensors	1	**590-500**
	Replaceable Humidity Sensing Element. 2% versions only.	Q Series Room Humidity (Series 1000 Housing Only)	1	**AQF3051**
	Humidity Sensor Filter Cap.	Q Series Duct/Outdoor Air Humidity	1	**AQF3101**
	Replaceable 2% Humidity Sensor Tip.	Q Series Duct/Outdoor Air Humidity	1	**AQF3150**
	Replaceable 2% Certified Humidity Sensor Tip.	Q Series Duct/Outdoor Air Humidity	1	**AQF4150**

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Sensors

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Accessories & Service Kits
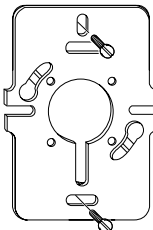
	Description	Product Group	Quantity	Part No.
Sensors				
	Replacement Flange Kit.	Q Series Duct Humidity	1	**74 662 0068 0**
	Sun Shield.	Q Series Outdoor Air Humidity	1	**AQF3100**
	Stainless Steel Well.	Pipe Temp. Sensors		
	0.26"D x 2 1/2"L (18 mm D x 64 mm L)		1	**AQE2000.005**
	0.26"D x 4"L (18 mm D x 102 mm L)		1	**184-120**
	0.26"D x 4"L (18 mm D x 102 mm L)		1	**AQE2000.010**
	0.26"D x 6"L (18 mm D x 152 mm L)		1	**AQE2000.015**
186				
	Hygrostat Restrictor Repair Kit. Includes enough restrictor for plates and upper and lower Hygrostats gaskets.	186	Material for 10 Hygrostats	**180-893**
	Membrane Element Kit. Replaces membrane element. Contains one element assembly, screws, nuts, and lock washers.	186	1	**186-062**
	Wall Box Rough-In. For 2-pipe dual 1/8" (3 mm) OD copper with plaster plate. 8' (2 m) long, belled to 3/16" (5 m) OD with thermostat chassis plug-in adapters for easy maintenance.	186	1	**192-478**
	3-pipe dual 1/8" (3 mm) OD copper with plaster plate. 8' (2 m) long, belled to 3/16" (5 m) OD with thermostat chassis plug-in adapters for easy maintenance.		1	**192-498**
	Wall Box Rough-In. For 1- or 2-pipe dual 1/4" (6 mm) OD polyethylene with plaster plate. 10' (2 m) long. With thermostat chassis plug-in adapters for easy maintenance.	186	1	**192-480**
	3-pipe dual 1/4" (6 mm) OD polyethylene with plaster plate. 8' (2.4 m) long. With thermostat chassis plug-in adapters for easy maintenance.		1	**192-499**

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Accessories & Service Kits

	Description	Product Group	Quantity	Part No.
186				
	Mounting Clips, Spacer and Template for finished drywall.	186	Package of 10	**182-685**
	Stud Mounting Bracket and Dual Copper Tubing. Belled to 3/16" (5 mm) OD with plug-in adapters for easy maintenance.	186	1	**192-482**
	Metal/Wood Stud Bracket. Drywall rough-in. Wall mounting kit for either wood or metal stud. This kit does not offer a conduit connection and is to be used for open wire projects. Kit comes 5/box.	186	Package of 5	**182-683**
	Dual 1/8" (3 mm) OD Copper Tubing with Plug-in Adapters. For 1- or 2-pipe. Split for 3-pipe.	186	1	**192-479**
	Plug-in Adapter. Includes Tee 20 scim restrictor for 1-pipe.	186	Package of 10	**192-875**
	Installation Plate for Conduit Single gang electrical box mounted plate with a plastic GWB protrusion which is removed at the time of wall sensor installation. This kit is intended for conduit-installed projects.	Series 1000	1	**981-344**

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Sensors

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Notes

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Sensors

Siemens sensors are strong, accurate, and reliable.

Whether your applications are for warehouses or clean rooms, Siemens has decades of sensor experience designed into every unit. Fully tested and in-depth applications expertise guarantee the precise performance of our sensors and full compatibility with all Siemens HVAC controllers and building automation systems.

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