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<th>Alerton</th>
<th>Anderson Cornelius</th>
<th>Automated Logic</th>
<th>Auto-Matrix</th>
<th>Carrier</th>
<th>Circon</th>
<th>Delta Controls</th>
<th>Distech Energie</th>
<th>Honeywell</th>
<th>Invensys</th>
<th>JCI</th>
<th>KMC</th>
<th>Reliable Controls</th>
<th>Schneider General</th>
<th>Solidyne</th>
<th>TAC/CSI</th>
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<th>Trane</th>
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Room Temperature Sensors
– For Siemens APOGEE® Field Panels and Controllers

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.

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

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
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

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
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</thead>
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<tr>
<td>10K NTC</td>
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<tr>
<td>Sensing Only</td>
<td>540-660¹</td>
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<tr>
<td>Sensing with Override, Setpoint</td>
<td>540-670¹</td>
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<tr>
<td>Sensing with Override, Setpoint, Temperature and Display</td>
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<tr>
<td>1K Platinum RTD Type (375 ALPHA)</td>
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<td>Sensing Only</td>
<td>544-760¹</td>
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<td>544-770¹</td>
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<tr>
<td>Sensing with Override, Setpoint, Temperature Display</td>
<td>544-780²</td>
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</table>

Ordering Notes:
¹Add letter suffix to indicate desired color: A for Desert Beige, B for White (Example: 540-660A).
²Add letter suffix to indicate temperature display units and color:
100K NTC and 4 to 20 mA Room Temperature 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.
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°C)
**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

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<thead>
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<th>Temperature Range</th>
<th>Desert Beige Part No.</th>
<th>White Part No.</th>
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<td>20°F to 120°F (-7°C to 49°C)</td>
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<td>Room 4 to 20 mA</td>
<td>40°F to 90°F (-5°C to 32°C)</td>
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<td>536-752B</td>
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<tr>
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<td>20°F to 120°F (-6°C to 48°C)</td>
<td>536-753A</td>
<td>536-753B</td>
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</table>

**Ordering Notes:**
The controller to which the sensor is connected determines application-sensing range.
**Standard Room Temperature Systems**

**Description**

Series 2300 Temperature Room Units offer simple temperature sensing functionality. These devices work with most building automation 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.
Series 2300 Specifications

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

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<th>Description</th>
<th>Part No.</th>
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<td>QAA2320.EWNN</td>
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<td>Sensing, Digital Display, Setpoint Adjustment, Override, No Logo</td>
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<td>1K Nickel RTD Sensors @ 70°F</td>
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Series 2300 Accessories Ordering Information

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<td>Replacement Sensor Housing Base (For .E Models Only)</td>
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<tr>
<td>Room Sensor Wall Plate (10-Pack)</td>
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<tr>
<td>Room Sensor Wall Plate (Single-Pack)</td>
<td>AQA2200-QX4</td>
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Accessories & Service Kits
Room Temperature Sensors

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
• 0-10V or 4-20mA 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. Select the correct product based on the compatibility needs of your building automation system.
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 .............................................. 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

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<td>0 to 10 Volt Sensors</td>
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<td>40 to 90°F, Siemens Logo</td>
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<td>QAA2062.FWU</td>
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</table>

Accessories & Service Kits
Standard Relative Humidity and Room Temperature Sensors

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.
Series 2300 Specifications

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humidity &amp; Temp Room Units</td>
<td></td>
</tr>
<tr>
<td>2%, 0-10/0-5 Volt or 4-20mA Selectable Outputs, White, No Logo</td>
<td>QFA33SS.EWNN</td>
</tr>
<tr>
<td>2%, 0-10/0-5 Volt or 4-20mA Selectable Outputs, Display, Setpoint, Override, White, No Logo, No Communication Port</td>
<td>QFA33SS.FWNN</td>
</tr>
<tr>
<td>RH: 0-10/0-5 Volt or 4-20mA Selectable, 2% T: 10K Type 3 NTC, Display, Setpoint, Override, No Logo</td>
<td>QFA3332.FWNN</td>
</tr>
<tr>
<td>RH: 0-10/0-5 Volt or 4-20mA Selectable, 2% T: 10K Type 2 NTC, Display, Setpoint, Override, No Logo</td>
<td>QFA3330.FWNN</td>
</tr>
<tr>
<td>RH: 0-10/0-5 Volt or 4-20mA Selectable, 2% T: 1K Platinum (385) RTD, Display, Setpoint, Override, White, No Logo</td>
<td>QFA3312.FWNN</td>
</tr>
<tr>
<td>RH: 0-10/0-5 Volt or 4-20mA Selectable, 2% T: 1K Platinum (385) RTD, White, No Logo</td>
<td>QFA3312.EWNN</td>
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</tbody>
</table>

Series 2300 Accessories Ordering Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replacement Sensor Housing Base (For .E Models Only)</td>
<td>563-102-02</td>
</tr>
<tr>
<td>Room Sensor Wall Plate (10-Pack)</td>
<td>AQA2200-INTL</td>
</tr>
<tr>
<td>Room Sensor Wall Plate (Single-Pack)</td>
<td>AQA2200-QX4</td>
</tr>
</tbody>
</table>
Room Relative Humidity and Relative Humidity/Temperature Sensors

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 or for humidity and temperature sensing. 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

Applications
These units are especially suited for applications where precise, stable humidity sensing is required.
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) .... ±2% 0 to 100% 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 .......................................... 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 .................................................. ±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

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room Relative Humidity 2%</td>
<td>0 to 10 Vdc, No LCD, Beige</td>
<td>QFA3000.BU</td>
</tr>
<tr>
<td>Room Relative Humidity 2%</td>
<td>0 to 10 Vdc, No LCD, White</td>
<td>QFA3000.WU</td>
</tr>
<tr>
<td>Room Relative Humidity 2%</td>
<td>0 to 10 Vdc, with LCD, Beige</td>
<td>QFA3000.DBU</td>
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<tr>
<td>Room Relative Humidity 2%</td>
<td>0 to 10 Vdc, with LCD, White</td>
<td>QFA3000.DWU</td>
</tr>
<tr>
<td>Room Relative Humidity 2%</td>
<td>4 to 20 mA, No LCD, Beige</td>
<td>QFA3001.BU</td>
</tr>
<tr>
<td>Room Relative Humidity 2%</td>
<td>4 to 20 mA, No LCD, White</td>
<td>QFA3001.WU</td>
</tr>
<tr>
<td>Room Relative Humidity 2% &amp; Temperature</td>
<td>0 to 10 Vdc, No LCD, Beige</td>
<td>QFA3060.BU</td>
</tr>
<tr>
<td>Room Relative Humidity 2% &amp; Temperature</td>
<td>0 to 10 Vdc, No LCD, White</td>
<td>QFA3060.WU</td>
</tr>
<tr>
<td>Room Relative Humidity 2% &amp; Temperature</td>
<td>0 to 10 Vdc, LCD, Temp Setpoint, Occupant Override, Beige</td>
<td>QFA3060.FBU</td>
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<tr>
<td>Room Relative Humidity 2% &amp; Temperature</td>
<td>0 to 10 Vdc, LCD, Temp Setpoint, Occupant Override, White</td>
<td>QFA3060.FWU</td>
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<tr>
<td>Room Relative Humidity 2% &amp; Temperature</td>
<td>4 to 20 mA, No LCD, Beige</td>
<td>QFA3071.BU</td>
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<td>4 to 20 mA, LCD, Temp Setpoint, Occupant Override, Beige</td>
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<td>Room Relative Humidity 2% &amp; Temperature</td>
<td>4 to 20 mA, LCD, Temp Setpoint, Occupant Override, White</td>
<td>QFA3071.FWU</td>
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</tbody>
</table>
Immersion Temperature Sensors — Various Outputs

Description
The Immersion Temperature Sensors with Well monitor and transmit changes in temperature to the building control system. Specific devices within the range are compatible with most North American building automation systems. The sensors include a well to enable service and repair without draining the system. All sensors incorporate precision temperature sensing elements to accurately and reliably measure temperature.

Features
- Variety of output signals / probe lengths
- Suitable for hot or chilled fluids
- Responsive to temperature change
- Accurate and reliable indication of temperature
- Simple installation requires no special tools

Applications
Immersion temperature sensors are used throughout HVAC and processing systems to monitor fluid temperatures in piping and vessels.

Liquid Immersion Temperature Sensor with Well
## Immersion Temperature Sensor Specifications

### Output Signals

<table>
<thead>
<tr>
<th>Active</th>
<th>Pt 1k Ω (375 alpha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive</td>
<td>Pt 1k Ω (385 alpha)</td>
</tr>
<tr>
<td></td>
<td>Ni 1k Ω @32F</td>
</tr>
<tr>
<td></td>
<td>Ni 1k Ω @70F</td>
</tr>
<tr>
<td></td>
<td>NTC 100k Ω</td>
</tr>
<tr>
<td></td>
<td>NTC 10k Ω Type II</td>
</tr>
<tr>
<td></td>
<td>NTC 10k Ω Type III</td>
</tr>
</tbody>
</table>

### Accuracy

- NTC Thermistors, mid-range: ±1.0°F (±0.5°C)
- Pt RTD and Ni RTD, mid-range: ±0.75°F (±0.4°C)

### External Installation Threads

- 1/2-inch – 14 NPT

### Conduit Connection Threads

- 1/2-inch – 14 NPSMI

### Housing Material

- Cast zinc

### Immersion Well Material

- 300 Series Stainless Steel

## Immersion Temperature Sensors Product Ordering

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Output Signal</th>
<th>Part Number</th>
<th>Range</th>
<th>Data Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid Immersion</td>
<td>2.5” Immersion Temp Sensor With Well</td>
<td>Platinum 1k Ω 375 alpha</td>
<td>544-577-25</td>
<td>Controller Dependent</td>
<td>149-261P25</td>
</tr>
<tr>
<td></td>
<td>4” Immersion Temp Sensor With Well</td>
<td>Platinum 1k Ω 375 alpha</td>
<td>544-577-40</td>
<td>Controller Dependent</td>
<td>149-261P25</td>
</tr>
<tr>
<td></td>
<td>6” Immersion Temp Sensor With Well</td>
<td>Platinum 1k Ω 375 alpha</td>
<td>544-577-60</td>
<td>Controller Dependent</td>
<td>149-261P25</td>
</tr>
<tr>
<td></td>
<td>2.5” Immersion Temp Sensor With Well</td>
<td>Pt 1k Ω (385 alpha)</td>
<td>536-767-25</td>
<td>30 to 250F</td>
<td>149-263P25</td>
</tr>
<tr>
<td></td>
<td>2.5” Immersion Temp Sensor With Well</td>
<td>Pt 1k Ω (385 alpha)</td>
<td>536-774-25</td>
<td>20 to 70F</td>
<td>149-263P25</td>
</tr>
<tr>
<td></td>
<td>2.5” Immersion Temp Sensor With Well</td>
<td>Pt 1k Ω (385 alpha)</td>
<td>544-562-25</td>
<td>32 to 212F</td>
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<tr>
<td></td>
<td>2.5” Immersion Temp Sensor With Well</td>
<td>Pt 1k Ω (385 alpha)</td>
<td>536-774-40</td>
<td>20 to 70F</td>
<td>149-263P25</td>
</tr>
<tr>
<td></td>
<td>4” Immersion Temp Sensor With Well</td>
<td>Pt 1k Ω (385 alpha)</td>
<td>544-562-40</td>
<td>32 to 212F</td>
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<tr>
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<td>6” Immersion Temp Sensor With Well</td>
<td>Pt 1k Ω (385 alpha)</td>
<td>536-767-60</td>
<td>30 to 250F</td>
<td>149-263P25</td>
</tr>
<tr>
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<td>6” Immersion Temp Sensor With Well</td>
<td>Pt 1k Ω (385 alpha)</td>
<td>536-774-60</td>
<td>20 to 70F</td>
<td>149-263P25</td>
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<tr>
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<td>6” Immersion Temp Sensor With Well</td>
<td>Pt 1k Ω (385 alpha)</td>
<td>544-562-60</td>
<td>32 to 212F</td>
<td>149-263P25</td>
</tr>
<tr>
<td></td>
<td>2.5” Immersion Temp Sensor With Well</td>
<td>Nickel 1k Ω @ 32F</td>
<td>QAE2020.005</td>
<td>Controller Dependent</td>
<td>149-919</td>
</tr>
<tr>
<td></td>
<td>4” Immersion Temp Sensor With Well</td>
<td>Nickel 1k Ω @ 32F</td>
<td>QAE2020.010</td>
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<tr>
<td></td>
<td>6” Immersion Temp Sensor With Well</td>
<td>Nickel 1k Ω @ 32F</td>
<td>QAE2020.015</td>
<td>Controller Dependent</td>
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</tr>
<tr>
<td></td>
<td>2.5” Immersion Temp Sensor With Well</td>
<td>Nickel 1k Ω @ 70F</td>
<td>QAE2021.005</td>
<td>Controller Dependent</td>
<td>149-919</td>
</tr>
<tr>
<td></td>
<td>4” Immersion Temp Sensor With Well</td>
<td>Nickel 1k Ω @ 70F</td>
<td>QAE2021.010</td>
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<td>149-919</td>
</tr>
<tr>
<td></td>
<td>6” Immersion Temp Sensor With Well</td>
<td>Nickel 1k Ω @ 70F</td>
<td>QAE2021.015</td>
<td>Controller Dependent</td>
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<td>2.5” Immersion Temp Sensor With Well</td>
<td>NTC 10k Ω Type 2</td>
<td>536-777-25</td>
<td>Controller Dependent</td>
<td>149-262P25</td>
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<td>4” Immersion Temp Sensor With Well</td>
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<td>Controller Dependent</td>
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<td>6” Immersion Temp Sensor With Well</td>
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<td>536-777-60</td>
<td>Controller Dependent</td>
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<td>2.5” Immersion Temp Sensor With Well</td>
<td>NTC 10k Ω Type 2</td>
<td>QAE2030.005</td>
<td>Controller Dependent</td>
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<td>4” Immersion Temp Sensor With Well</td>
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<td>QAE2030.010</td>
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<td>6” Immersion Temp Sensor With Well</td>
<td>NTC 10k Ω Type 2</td>
<td>QAE2030.015</td>
<td>Controller Dependent</td>
<td>149-919</td>
</tr>
<tr>
<td></td>
<td>2.5” Immersion Temp Sensor With Well</td>
<td>NTC 10k Ω Type 3</td>
<td>QAE2032.005</td>
<td>Controller Dependent</td>
<td>149-919</td>
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<td>4” Immersion Temp Sensor With Well</td>
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<tr>
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<td>6” Immersion Temp Sensor With Well</td>
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<td>Controller Dependent</td>
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<tr>
<td></td>
<td>2.5” Immersion Temp Sensor With Well</td>
<td>Platinum 1k Ω 385 alpha</td>
<td>QAE2012.005</td>
<td>Controller Dependent</td>
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<tr>
<td></td>
<td>4” Immersion Temp Sensor With Well</td>
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<td>6” Immersion Temp Sensor With Well</td>
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<td>QAE2012.015</td>
<td>Controller Dependent</td>
<td>149-919</td>
</tr>
</tbody>
</table>
Duct Temperature Sensors — Various Outputs

Description
The Duct Temperature Sensors monitor and transmit changes in temperature to the building control system. Specific devices within the range are compatible with most North American building automation systems. They install directly into the duct and are equipped with necessary mounting hardware. All sensors incorporate precision temperature sensing elements to accurately and reliably measure temperature.

Features
- Variety of sensing elements
- Responsive to temperature change
- Accurate and reliable indication of duct temperature
- Simple installation requires no special tools

Applications
Duct temperature sensors are used throughout forced air HVAC systems to monitor air temperature within the ductwork. Single point sensors include one sensing element. Averaging sensors incorporate multiple sensing elements and are typically used in larger ducts where some temperature stratification may occur.

Specifications

Output Signals
Active................................................................. 4-20mA
Passive............................................................. Pt 1k Ω (375 alpha)
                                                      Pt 1k Ω (385 alpha)
                                                      Ni 1k Ω @32°F
                                                      Ni 1k Ω @70°F
                                                      NTC 100k Ω
                                                      NTC 10k Ω Type II
                                                      NTC 10k Ω Type III

Accuracy
NTC Thermistors, mid-range.................................. ±1.0°F (±0.5°C)
Pt RTD and Ni RTD, mid-range............................. ±0.75°F (±0.4°C)

Conduit Connection Threads .......................... 1/2-inch – 14 NPSMI

Housing..................... Standard NEC approved 2 × 4 inch (5 × 10 cm)
utility box with 1/2 inch (13 mm) knockouts

Probe Material....... 0.028 Wall SAE J526 ZTEW or Galfan steel tubing
## Standard Duct Temperature Sensor Ordering

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Output Signal</th>
<th>Part Number</th>
<th>Range</th>
<th>Data Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duct Averaging</strong></td>
<td>Duct Averaging Sensor with 16 ft. Probe</td>
<td></td>
<td>544-342-16</td>
<td></td>
<td>149-261P25</td>
</tr>
<tr>
<td></td>
<td>Duct Averaging Sensor with 18 in. Probe</td>
<td>Platinum 1k Ω</td>
<td>544-343-18</td>
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<td>149-261P25</td>
</tr>
<tr>
<td></td>
<td>Duct Averaging Sensor with 24 ft. Probe</td>
<td>Platinum 1k Ω</td>
<td>544-342-24</td>
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<td>149-261P25</td>
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<td>Duct Averaging Sensor with 24 in. Probe</td>
<td>Platinum 1k Ω</td>
<td>544-343-24</td>
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<td>149-261P25</td>
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<td>Duct Averaging Sensor with 36 in. Probe</td>
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<td>Duct Averaging Sensor with 48 in. Probe</td>
<td>Platinum 1k Ω</td>
<td>544-343-48</td>
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<td>149-261P25</td>
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<tr>
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<td>Duct Averaging Sensor with 8 ft. Probe</td>
<td>Platinum 1k Ω</td>
<td>544-342-8</td>
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<td>149-261P25</td>
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<tr>
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<td>Duct Averaging Sensor with 16 ft. Probe</td>
<td>Nickel 1k Ω @ 32F</td>
<td>QAM2020.500</td>
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<td>149-916</td>
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<td>Duct Averaging Sensor with 24 ft. Probe</td>
<td>Nickel 1k Ω @ 70F</td>
<td>QAM2021.750</td>
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<td>Duct Averaging Sensor with 18 in. Probe</td>
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<td>540-245-36</td>
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<td>Duct Averaging Sensor with 72 in. Probe</td>
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<td>540-246-72</td>
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<td>149-916</td>
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<td>QAM2030.500</td>
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<td>Duct Averaging Sensor with 24 ft. Probe</td>
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<td>Duct Averaging Sensor with 24 ft. Probe</td>
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<td>149-916</td>
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<tr>
<td><strong>Duct Temp Point</strong></td>
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<td>149-916</td>
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<td>Duct Temp Sensor with 4” Probe</td>
<td>Platinum 1k Ω</td>
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<td>Duct Temp Sensor with 8” Probe</td>
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</table>
Flush Mount Room Temperature Sensors — Various Outputs

Description
Flush Mount Room Temperature Sensors provide a resistance signal to the controller that varies proportionally with temperature. The sensors are available with Platinum 1k \( \Omega \) 375, NTC 100k \( \Omega \) Type 2, or NTC 10k \( \Omega \) Type 2 passive output signals.

The wall plate version is designed to mount to a 2-inch \( \times \) 4-inch electrical box. The tamper-proof screws used to install the sensor to the utility box protects the sensor from removal by unauthorized personnel. The sensors may be painted after installation.

Features
- Tamper-proof screws
- Can be painted after installation
- Designed for mounting to a 2 \( \times \) 4 electrical box
- Option of brushed stainless steel finish or beige or white plastic (except for button sensor)

Applications
Flush mount temperature sensors are used to monitor air temperature throughout the facility. Flush mounted sensors are ideally suited to high traffic areas and in facilities where vandalism / tampering is a concern.
Flush Mount Temperature Sensor Specifications

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

1K Ohm RTD (375 alpha)
  Calibration Point......................................... 32°F (0°)
  Accuracy.................................................. ±0.54°F (±0.3°C)
  Resistance Value @ Cal. Temp............................. 1K Ohm

Flush Mount Temperature Sensor Product Ordering

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Output Signal</th>
<th>Part Number</th>
<th>Range</th>
<th>Data Sheet</th>
</tr>
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<tbody>
<tr>
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<td>Button Style Room Temp Sensor</td>
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<td>QAA1011.AASU</td>
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<td>149-471</td>
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<td>without Wall Plate</td>
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<td>QAA1011.AATU</td>
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<td>Button Style Room Temp Sensor</td>
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<td>375 alpha</td>
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<td>149-956</td>
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<td>Beige Plastic</td>
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<tr>
<td></td>
<td>Flush Mount Room Temp Sensor</td>
<td>NTC 100k Ω Type 2</td>
<td>536-784A</td>
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<td>White Plastic</td>
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<td>536-784B</td>
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<td>149-956</td>
</tr>
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<td>Metal</td>
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<td>536-984</td>
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<td>Flush Mount Room Temp Sensor</td>
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<td></td>
<td>White Plastic</td>
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<td>540-984</td>
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<td>149-956</td>
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<tr>
<td></td>
<td>Metal</td>
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</table>
Outdoor and Surface Temperature Sensors — Various Outputs

Description
Standard temperature Sensors monitor and transmit changes in temperature to the building control system. Specific devices within the range are compatible with most North American building automation systems. All sensors incorporate precision temperature sensing elements to accurately and reliably measure temperature.

Features
- Variety of output signals available
- Outdoor sensors are ruggedly constructed for use in all climates
- Responsive to temperature change
- Accurate and reliable indication of temperature
- Simple installation requires no special tools

Applications
Outdoor temperature sensors are used to monitor the temperature of outdoor air. This variable is often used in a variety of HVAC control strategies, including outdoor reset and building ventilation.

Pipe surface temperature sensors are often used in place on immersion type sensors, particularly in cases where sensor installation occurs after the system if filled.
Standard Outdoor Temperature Sensor Specifications

Output Signals
Active .......................................................................................... 4-20mA
Passive ........................................................................ Pt 1k Ω (375 alpha)
Pt 1k Ω (385 alpha)
Ni 1k Ω @32F
Ni 1k Ω @70F
NTC 100k Ω
NTC 10k Ω Type II
NTC 10k Ω Type III

Passive ........................................................................................ Pt 1k Ω (375 alpha)
Pt 1k Ω (385 alpha)
Ni 1k Ω @32F
Ni 1k Ω @70F
NTC 100k Ω
NTC 10k Ω Type II
NTC 10k Ω Type III

Accuracy
NTC Thermistors, mid-range ........................................... ±1.0°F (±0.5°C)
Pt RTD and Ni RTD, mid-range .................................... ±0.75°F (±0.4°C)

Standard Outdoor Temperature Sensor Product Ordering

<table>
<thead>
<tr>
<th>Application</th>
<th>Output Signal</th>
<th>Part Number</th>
<th>Range</th>
<th>Data Sheet</th>
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<tbody>
<tr>
<td>Outdoor Air Temp Sensor</td>
<td>Platinum 1k Ω 375 alpha</td>
<td>544-578</td>
<td>Controller Dependent</td>
<td>149-261P25</td>
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<tr>
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<td>4-20 mA</td>
<td>536-768</td>
<td>-58 to 122°F</td>
<td>149-263P25</td>
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<td>Nickel 1k Ω @ 32F</td>
<td>QAC2020U</td>
<td>Controller Dependent</td>
<td>149-920</td>
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<td>Surface Mount Pipe Temp</td>
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<td>4-20 mA</td>
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<td>30 to 250°F</td>
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<td>Nickel 1k Ω @ 70F</td>
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<td>Platinum 1k Ω 385 alpha</td>
<td>QAD2012U</td>
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</tbody>
</table>
Outdoor, Surface, Duct Temperature Sensors — Various Outputs

Description
Our premium line of temperature sensors are designed to install easily and to bring a sleek modern look to the finished project. These sensors are available with active or passive output signals. The duct sensors with active outputs can be quickly adapted to the application using a number of different, easily-adjustable measurement ranges.

Features
- Wide choice of products covering all common measurement ranges and output signals
- Precise engineering delivers balanced measurement weighting, short reaction times, and high measuring accuracy
- Innovative housing designs enable simple installation and provide a professional finished appearance

Applications
Siemens offers a complete line of temperature sensors that are employed throughout the HVAC system to ensure occupant comfort and maximum system efficiency.
# Premium Temperature Sensor Specifications

Output Signals
- **Active**: 4-20mA, 0-10VAC
- **Passive**: Platinum and Nickel 1k Ω (385 alpha), Ni 1k Ω @ 32°F, NTC 10k Ω Type II

Refer to Technical Specification Sheets for additional details

## Premium Temperature Sensor Product Ordering

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Output Signal</th>
<th>Part Number</th>
<th>Range</th>
<th>Data Sheet</th>
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<td>4-20 mA</td>
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<td>-58 to 122°F</td>
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<td>Pipe Temp Sensor</td>
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<td>Pipe Temp</td>
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<td>Platinum 1k Ω 375 alpha</td>
<td>QAD2012</td>
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<td>149-806</td>
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</table>
Room/Outdoor Relative Humidity and Relative Humidity/Temperature Sensors

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 separately on B-39
- "D" suffix models include LCD Display*

* Units with display are not intended for outdoor use.

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

For outdoor applications, an AQF 3100 sunshield is required (sold separately).
### QFAx1 Specifications

#### General
- **Installation**: 18 AWG cable length shared in conduit with other sensor wiring up to 750 ft. (229 m) max
- **Connections**: Screw Terminals

#### Installation
- **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

#### Voltage Requirement
- **Operational Temperature**: -31 to +140°F (-35 to +60°C)
- **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
  - **Overall 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

#### QFAx1 Series Product Ordering

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<th>Application</th>
<th>RH</th>
<th>Description</th>
<th>Part No.</th>
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<td>2%</td>
<td>0 to 10 Vdc</td>
<td>QFA3100</td>
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<td>4 to 20 mA</td>
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<td>2%</td>
<td>0 to 10 Vdc / Temp 0 to 10 Vdc</td>
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<td>QFA4160D</td>
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</table>

#### QFAx1 Series Accessories

<table>
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<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor Air Sunshield</td>
<td>AQF3100</td>
</tr>
<tr>
<td>Remote Sensing Cable, 10 Foot</td>
<td>AQY2010</td>
</tr>
<tr>
<td>Remote Sensing Cable, 30 Foot</td>
<td>AQY2030</td>
</tr>
</tbody>
</table>

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**Accessories & Service Kits**

www.usa.siemens.com/hvac
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.
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)

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duct Humidity 5%</td>
<td>0 to 10 Vdc</td>
<td>QFM2100</td>
</tr>
<tr>
<td>Duct Humidity 5%</td>
<td>4 to 20 mA</td>
<td>QFM2101</td>
</tr>
<tr>
<td>Duct Humidity 5% &amp; Temperature</td>
<td>0 to 10 Vdc / Temp 1K Ohm Platinum RTD (385 alpha)</td>
<td>QFM2110</td>
</tr>
<tr>
<td>Duct Humidity 5% &amp; Temperature</td>
<td>0 to 10 Vdc / Temp 1K Ohm Nickel RTD (L&amp;S Type)</td>
<td>QFM2120</td>
</tr>
<tr>
<td>Duct Humidity 5% &amp; Temperature</td>
<td>0 to 10 Vdc / Temp 0 to 10 Vdc</td>
<td>QFM2160U</td>
</tr>
<tr>
<td>Duct Humidity 5% &amp; Temperature</td>
<td>4 to 20 mA / Temp 4 to 20 mA</td>
<td>QFM2171</td>
</tr>
<tr>
<td>Duct Humidity 2%</td>
<td>0 to 10 Vdc</td>
<td>QFM3100</td>
</tr>
<tr>
<td>Duct Humidity 2%</td>
<td>4 to 20 mA</td>
<td>QFM3101</td>
</tr>
<tr>
<td>Duct Humidity 2% &amp; Temperature</td>
<td>0-10 Vdc / Temp 1K Ohm Platinum RTD (385 alpha)</td>
<td>QFM3110</td>
</tr>
<tr>
<td>Duct Humidity 2% &amp; Temperature</td>
<td>0 to 10 Vdc, Temp 0 to 10 Vdc</td>
<td>QFM3160</td>
</tr>
<tr>
<td>Duct Humidity 2% &amp; Temperature</td>
<td>0 to 10 Vdc, Temp 0 to 10 Vdc, w/Display</td>
<td>QFM3160D</td>
</tr>
<tr>
<td>Duct Humidity 2% &amp; Temperature</td>
<td>4 to 20 mA / Temp 4 to 20 mA</td>
<td>QFM3171</td>
</tr>
<tr>
<td>Duct Humidity 2% &amp; Temperature</td>
<td>4 to 20 mA / Temp 4 to 20 mA, w/Display</td>
<td>QFM3171D</td>
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<tr>
<td>Duct Humidity</td>
<td>4 to 20 mA (Certified)</td>
<td>QFM4101</td>
</tr>
<tr>
<td>Duct Humidity &amp; Temperature</td>
<td>0 to 10 Vdc, Temp 0 to 10 Vdc (Certified)</td>
<td>QFM4160</td>
</tr>
<tr>
<td>Duct Humidity &amp; Temperature</td>
<td>4 to 20 mA / Temp 4 to 20 mA (Certified)</td>
<td>QFM4171</td>
</tr>
</tbody>
</table>
Electronic Room Hygrostats

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.
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

<table>
<thead>
<tr>
<th>Description</th>
<th>Control Range</th>
<th>Type of Control</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room</td>
<td>30 to 90% RH</td>
<td>Humidity Switch with Concealed Setpoint</td>
<td>QFA1000</td>
</tr>
<tr>
<td>Room</td>
<td>30 to 90% RH</td>
<td>Humidity Switch with Exposed Setpoint</td>
<td>QFA1001</td>
</tr>
</tbody>
</table>
Electronic Duct Hygrostats

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.
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

<table>
<thead>
<tr>
<th>Description</th>
<th>Control Range</th>
<th>Type of Control</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duct</td>
<td>15 to 95% RH</td>
<td>Humidity Switch with External Setpoint</td>
<td>QFM81.2</td>
</tr>
<tr>
<td>Duct</td>
<td>15 to 95% RH</td>
<td>Humidity Switch with Internal Setpoint</td>
<td>QFM81.21</td>
</tr>
</tbody>
</table>

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

Accessories & Service Kits

www.usa.siemens.com/hvac
**Description**

The QXA2601 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.

• 1 Amp @ 24 Vac  
• 0.5 Amp @ 24 Vdc

**Features**

• Comes complete with a strap-on band for pipe diameters from 0.5 to 4 inches (12.7 to 102 mm), and thermal conductive paste  
• LED status indicator

**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.
QXA2601 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 AC/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 x 1.5 mm2 or 1 x 2.5 mm2)

Environmental Conditions
- Operation: 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: 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

QXA2601 Product Ordering

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condensation Sensor</td>
<td>QXA2601</td>
</tr>
</tbody>
</table>
Room CO₂/VOC/Temperature/RH

Description
The QPA Series Room Carbon Dioxide Sensors monitor and transmit changes in CO₂ to the building control systems. No calibration of the CO₂ sensor is necessary — these microprocessor-based units consist of a non-dispersive infrared CO₂ sensor that experiences less than 1% drift per year for the first two years of operation and negligible drift thereafter. All variants for CO₂ and combination versions with Temperature or VOC deliver 0 to 10 Volt or 0 to 5 Volt (field selectable) proportional signals to the controller.

Features
• LCD display option
• Various models:
  CO₂
  CO₂/VOC
  CO₂/Temp
  CO₂/Temp/RH
• Built-in test function for troubleshooting
• Jumper selectable °C/°F units for temp models w/display
• No Logo versions available
• QPA2080 and QPA2080D include multiple resistance temperature elements

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

**CO₂ Element**

**Operating Range**
- 0 - 2000 ppm

**Accuracy at Room Temperature**
- ±2% mV

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

**Temperature Effect**
- Less than 0.1% per degree C

**Sensing Element**
- NDIR CO₂ 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 CO₂/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

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### QPA Series Product Ordering

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO₂</td>
<td>0 to 5 V or 0 to 10 V</td>
<td>QPA2000</td>
</tr>
<tr>
<td>CO₂ and VOC</td>
<td>0 to 5 V or 0 to 10 V</td>
<td>QPA2002</td>
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<tr>
<td>CO₂ and VOC</td>
<td>0 to 5 V or 0 to 10 V, with Display</td>
<td>QPA2002D</td>
</tr>
<tr>
<td>CO₂ and Temp (Active)</td>
<td>0 to 5 V or 0 to 10 V</td>
<td>QPA2060</td>
</tr>
<tr>
<td>CO₂ and Temp (Active)</td>
<td>0 to 5 V or 0 to 10 V, with Display</td>
<td>QPA2060D</td>
</tr>
<tr>
<td>CO₂, Temp and RH (Active)</td>
<td>0 to 5 V or 0 to 10 V</td>
<td>QPA2062</td>
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<tr>
<td>CO₂, Temp and RH (Active)</td>
<td>0 to 5 V or 0 to 10 V, with Display</td>
<td>QPA2062D</td>
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<tr>
<td>CO₂ and Temp (Passive)*</td>
<td>0 to 5 V or 0 to 10 V T (Selectable R)</td>
<td>QPA2080</td>
</tr>
<tr>
<td>CO₂ and Temp (Passive)*</td>
<td>0 to 5 V or 0 to 10 V, T (Selectable R) with Display</td>
<td>QPA2080D</td>
</tr>
</tbody>
</table>

*Units include interchangeable resistance elements for LG-Ni1000, Pt1000, Pt100, and NTC 10K Ohm.

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www.usa.siemens.com/hvac
Duct CO₂/VOC/Temperature/RH

Description
The QPM Series Duct CO₂ Sensors monitor and transmit changes in CO₂ to the building control systems. Several models are available for CO₂ only, CO₂/Temp, CO₂/Temp/RH and CO₂/VOC. All variants for CO₂ and combination versions with Temperature or VOC deliver 0 to 10 Volt to 5 Volt (field selectable) proportional signals to the controller.

No calibration of the CO₂ 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:
  - CO₂
  - CO₂/VOC
  - CO₂/Temp
  - CO₂/Temp/RH
- Jumper selectable °C/°F units for temp models w/display
- No Logo versions available
- QPM2080 include multiple resistance temperature elements

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

CO₂ 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 CO₂ 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

CO₂ 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 CO₂ 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

QPM Series Product Ordering

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

*Units include interchangeable resistance elements for LG-Ni1000, Pt1000, Pt100, and NTC 10K Ohm.

Accessories & Service Kits
Air Differential Pressure Sensors / Switches

Description
The Siemens QBM Series Air Differential Pressure Devices use a proven sensing technology to deliver accurate and repeatable data in applications that require monitoring of differential pressure.

Features
- Loop powered 4 to 20 mA output signal (QBE3100)
- SPDT contact output (QBM81)
- Compact construction
- Integral mounting bracket and snap-on cover with a single screw for fast and easy installation
- Resettable zero point for different mounting positions (QBM3100)
- Ultra-low susceptibility to temperature
- No mechanical aging

Applications
QBM Series Differential Pressure Devices can be used in a wide range of HVAC and general building management applications where differential air pressure monitoring is required.

Typical applications for the QBE3100 include control of variable speed fans in VAV systems and monitoring of pressure differentials in clean room applications.

The QBM81 can be wired NO or NC and provide a digital output with adjustable differential pressure trip point. Common applications include monitoring of air filters and general indication of high/low differential pressure situations.
QBM Series Air Differential Pressure Specifications

QBM3100 Series Sensors (4-20mA Output)

- **Input Power**: 8 to 33 Vdc
- **Accuracy**: +/-1% Full Scale
- **Maximum Pressure**: TBD
- **Permitted Media**: Air and other non-corrosive gases
- **Process/Ambient Operating Temp.**: 32°F to 160°F (0°C to 71°C)
- **Ambient Humidity**: Non-condensing
- **Enclosure**: Polycarbonate
- **Diaphragm**: Silicone
- **Measuring Element**: Ceramic

QBM81 Series Switches (SPDT Relay Output)

- **Contact Rating**: AC 250V, 5A max (3A inductive)*
- **Maximum Pressure**: 20" WC
- **Ambient Operating Temp.**: -22°F to +185°F
- **Humidity (Max)**: 90% rh, non-condensing
- **Permitted Media**: Air and other non-corrosive gases
- **Mounting Orientation**: Any
- **Housing/Cover**: Polycarbonate
- **Diaphragm**: Emission free silicone
- **Bracket**: Galvanized Steel

*Consult local codes for voltages over 24V

QBM Series Air Differential Pressure Devices Product Ordering

<table>
<thead>
<tr>
<th>Description</th>
<th>Output Signal</th>
<th>Differential Pressure Range</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air DP Sensor</strong></td>
<td>4-20mA</td>
<td>-0.25 to +0.25 inches</td>
<td>QBM3100U025U</td>
</tr>
<tr>
<td></td>
<td>4-20mA</td>
<td>0 to 1 inch</td>
<td>QBM3100U1</td>
</tr>
<tr>
<td></td>
<td>4-20mA</td>
<td>0 to 2.5 inches</td>
<td>QBM3100U2.5</td>
</tr>
<tr>
<td></td>
<td>4-20mA</td>
<td>0 to 5 inches</td>
<td>QBM3100U5</td>
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<tr>
<td></td>
<td>4-20mA</td>
<td>0 to 10 inches</td>
<td>QBM3100U10</td>
</tr>
<tr>
<td><strong>Air DP Switch</strong></td>
<td>SPDT</td>
<td>0.08 to 1.2 inches</td>
<td>QBM81-3</td>
</tr>
<tr>
<td></td>
<td>SPDT</td>
<td>0.2 to 2 inches</td>
<td>QBM81-5</td>
</tr>
<tr>
<td></td>
<td>SPDT</td>
<td>0.4 to 4 inches</td>
<td>QBM81-10</td>
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</tbody>
</table>
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
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

590 Series Product Ordering

<table>
<thead>
<tr>
<th>Description</th>
<th>Accuracy</th>
<th>Part No.</th>
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</thead>
<tbody>
<tr>
<td>Differential Pressure Sensor, 5&quot; WC, 10 Vdc Signal</td>
<td>1%</td>
<td>590-501</td>
</tr>
<tr>
<td>Differential Pressure Sensor, 2&quot; WC, 24 Vac, 10 Vdc Signal</td>
<td>1%</td>
<td>590-502</td>
</tr>
<tr>
<td>Differential Pressure Sensor, 1&quot; WC, 24 Vac, 10 Vdc Signal</td>
<td>1%</td>
<td>590-503</td>
</tr>
<tr>
<td>Differential Pressure Sensor, ±0.25&quot; WC, 24 Vac, 10 Vdc Signal</td>
<td>1%</td>
<td>590-505</td>
</tr>
<tr>
<td>Differential Pressure Sensor In Conduit Box, 5&quot; WC, 24 Vac, 10 Vdc Signal</td>
<td>1%</td>
<td>590-506</td>
</tr>
<tr>
<td>Differential Pressure Sensor In Conduit Box, 2&quot; WC, 24 Vac, 10 Vdc Signal</td>
<td>1%</td>
<td>590-507</td>
</tr>
<tr>
<td>Differential Pressure Sensor In Conduit Box, 1&quot; WC, 24 Vac, 10 Vdc Signal</td>
<td>1%</td>
<td>590-508</td>
</tr>
<tr>
<td>Differential Pressure Sensor In Conduit Box, ±0.25&quot; WC, 24 Vac, 10 Vdc Signal</td>
<td>1%</td>
<td>590-510</td>
</tr>
<tr>
<td>Differential Pressure Transmitter, 1.0&quot;, 0.4%, 4 to 20 mA, Conduit Cover, 24 Vac</td>
<td>0.4%</td>
<td>590-780</td>
</tr>
<tr>
<td>Differential Pressure Transmitter, .65&quot;, 0.4%, 4 to 20 mA, Conduit Cover, 24 Vac</td>
<td>0.4%</td>
<td>590-781</td>
</tr>
<tr>
<td>Differential Pressure Transmitter, 0.5&quot;, 0.4%, 4 to 20 mA, Conduit Cover, 24 Vac</td>
<td>0.4%</td>
<td>590-782</td>
</tr>
</tbody>
</table>

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

www.usa.siemens.com/hvac
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 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
- Field selectable output (4-20 mA or 0-10V)

Applications
This sensor is primarily used to set the basic volumetric flow rate for modulating fan control.
QVM62.1 Sensor Specifications

Power Supply
- Operating Voltage: 24 Vac +/- 20%
- Frequency: 50/60 Hz
- Power Consumption: \( \leq 5 \text{ VA (maximum 200 mA)} \)
- Output Impedance: \( \leq 20 \text{ ohm} \)

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)
  - 0 to 49 ft/s (0 to 15 m/s)
- Measuring Accuracy at 68°F (20°C), 45% rh: \( \pm 0.7 \text{ ft/s} \)
- 1013 hPa: \( (0.2 \text{ m/s} + 3\% \text{ of measured value}) \)
- Permissible Air Velocity: 66 ft/s (20 m/s)
- Direction Dependence: \( < 0.3\% \text{ of measured value at } \leq 10\° \)
- Time Constant \( t \): 4 seconds

Signal Output U1
- Voltage: 4-20 mA or 0 to 10 Vdc
- Current: \( \pm 1 \text{ mA} \)

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

Chemical Conditions
- Class 3M2
- 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)

QVM62.1 Sensor Product Ordering

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Velocity Sensor</td>
<td>0 to 3000 FPM</td>
<td>QVM62.1</td>
</tr>
</tbody>
</table>

Accessories & Service Kits

www.usa.siemens.com/hvac
Pitot Tube Sensor Kits

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.
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

<table>
<thead>
<tr>
<th>Duct Size</th>
<th>Maximum Probe Length</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6” (152 mm)</td>
<td>5.75” (146 mm)</td>
<td>536-376</td>
</tr>
<tr>
<td>8” (203 mm)</td>
<td>7.75” (197 mm)</td>
<td>536-378</td>
</tr>
<tr>
<td>10” (254 mm)</td>
<td>9.75” (248 mm)</td>
<td>536-380</td>
</tr>
<tr>
<td>12” (305 mm)</td>
<td>11.75” (298 mm)</td>
<td>536-382</td>
</tr>
<tr>
<td>14” (356 mm)</td>
<td>13.75” (349 mm)</td>
<td>536-384</td>
</tr>
</tbody>
</table>
**Wet Differential Pressure Sensors**

New!

**Description**
QBE Series Wet Differential Pressure Sensors utilize a well-proven ceramic technology making them an ideal choice across a broad spectrum of applications. These sensors can be ordered individually or pre-assembled with an optional three-valve manifold.

**Features**
- Loop powered 4 to 20 mA output signal
- Compatible with water and water/glycol mixtures
- Ultra-low susceptibility to temperature
- Maintenance free

**Applications**
The QBE Sensor is particularly suitable for use in HVAC systems where continuous monitoring of flow rate or differential pressure across a control valve is required.
QBE Series Wet Differential Pressure Specifications

- **Input Power**: 7.5V to 33 Vdc
- **Output Signal**: 4 to 20 mA
- **Long-Term Stability**: ±0.5% Full Scale
- **Resolution**: 0.1% Full Scale
- **Manifold**: Aluminum (6061-T6511)
- **Tubing**: Copper (UNS C12200)
- **Fitting**: Brass (C36000)
- **Valve Stem**: High-performance thermoplastic polymer
- **O-rings**: Ethylene Propylene Rubber (EPS, EPDM)
- **Suitable Process Media**: Air, water, water and glycol mixtures
- **Process Temperature (Sensor)**: 5°F to 185°F (-15°C to 85°C)
- **Process Temperature (Manifold)**: 40°F to 185°F (5°C to 85°C)
- **Ambient Operating Temperature**: 5°F to 185°F (-15°C to 85°C)
- **Enclosure**: IP65/NEMA 4
- **Electrical Connections**: 1/2” FNPT conduit (kit included for non-conduit installations)
- **Process Connections**: 1/4” FNPT
- **Mounting Orientation**: Any orientation is allowable (avoid orientations that may be susceptible to air pockets)
- **Maximum Working Pressure (Sensor)**: 540 PSIG
- **Maximum Working Pressure (Manifold)**: 250 PSIG

### QBE Series Wet Differential Pressure Sensor Product Ordering

<table>
<thead>
<tr>
<th>Description</th>
<th>Output Signal</th>
<th>Differential Pressure Range</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet DP Sensor</td>
<td>4-20mA</td>
<td>0-25 PSID</td>
<td>QBE3100UD25</td>
</tr>
<tr>
<td></td>
<td>4-20mA</td>
<td>0-50 PSID</td>
<td>QBE3100UD50</td>
</tr>
<tr>
<td></td>
<td>4-20mA</td>
<td>0-100 PSID</td>
<td>QBE3100UD100</td>
</tr>
<tr>
<td>Wet DP Sensor with 3-Valve Manifold</td>
<td>4-20mA</td>
<td>0-25 PSID</td>
<td>QBE3190UD25</td>
</tr>
<tr>
<td></td>
<td>4-20mA</td>
<td>0-50 PSID</td>
<td>QBE3190UD50</td>
</tr>
<tr>
<td></td>
<td>4-20mA</td>
<td>0-100 PSID</td>
<td>QBE3190UD100</td>
</tr>
</tbody>
</table>
Pressure Sensors for Liquid and Gas

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 pressure ranges, from 0-15 psid to 0-300 psid.

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

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

#### Accuracy
- 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 mm² stranded wires
- External thread G1/2

#### 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)

### 7MF Series Product Ordering

<table>
<thead>
<tr>
<th>Pressure Range (psi)</th>
<th>Output Signal</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 15 PSI</td>
<td>4-20ma</td>
<td>7MF156544BB005EA1</td>
</tr>
<tr>
<td></td>
<td>0-10 V</td>
<td>7MF156544BB105EA1</td>
</tr>
<tr>
<td>0 - 30 PSI</td>
<td>4-20ma</td>
<td>7MF156544BE005EA1</td>
</tr>
<tr>
<td></td>
<td>0-10 V</td>
<td>7MF156544BE105EA1</td>
</tr>
<tr>
<td>0 - 60 PSI</td>
<td>4-20ma</td>
<td>7MF156544BF005EA1</td>
</tr>
<tr>
<td></td>
<td>0-10 V</td>
<td>7MF156544BF105EA1</td>
</tr>
<tr>
<td>0 - 100 PSI</td>
<td>4-20ma</td>
<td>7MF156544BG005EA1</td>
</tr>
<tr>
<td></td>
<td>0-10 V</td>
<td>7MF156544BG105EA1</td>
</tr>
<tr>
<td>0 - 150 PSI</td>
<td>4-20ma</td>
<td>7MF156544CA005EA1</td>
</tr>
<tr>
<td></td>
<td>0-10 V</td>
<td>7MF156544CA105EA1</td>
</tr>
<tr>
<td>0 - 200 PSI</td>
<td>4-20ma</td>
<td>7MF156544CB005EA1</td>
</tr>
<tr>
<td></td>
<td>0-10 V</td>
<td>7MF156544CB105EA1</td>
</tr>
<tr>
<td>0 - 300 PSI</td>
<td>4-20ma</td>
<td>7MF156544CD005EA1</td>
</tr>
<tr>
<td></td>
<td>0-10 V</td>
<td>7MF156544CD105EA1</td>
</tr>
</tbody>
</table>
Liquid Flow Switches

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 any device capable of receiving and NO/NC input
- Trimmable paddles provide correct flow measurement based on pipe diameter
- Can be wired NO or NC
- Maintenance-free
- Suitable for all common HVAC applications (not for use with ammonia)
- QVE1901U is a direct replacement for common flow switches from McDonnel & Miller, Taco, and others

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.
QVE Series Specifications

Piping Diameter
QVE1900U ........................................... 1.25" (32) to 8.00" (200)
QVE1901U ........................................... 7.5" (20) to 8.00" (200)

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)

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 Brass
QVE1901U ........................................ Screw-in body Brass

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

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

System Connections
QVE1900U ........................................... 1" MNPT
QVE1901U ........................................... 3/4" NNPT

Housing Base
QVE1900U ........................................... 150 PSIG
QVE1901U ........................................... 365 PSIG

Flow Switch Product Ordering

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPDT, 15A, 1-1/4&quot; to 8&quot; pipe</td>
<td>QVE1900U</td>
</tr>
<tr>
<td>SPST, 1A, 3/4&quot; to 8&quot; pipe</td>
<td>QVE1901U</td>
</tr>
</tbody>
</table>

Accessories & Service Kits

www.usa.siemens.com/hvac
Solar Impact Sensor

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
- 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.
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 t₆ .............................................................. <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
Temperature .............................................................. -13°F to 158°F (-25°C to 70°C)
Humidity ................................................................. <95% rh

Agency Standards ....................................................... UL Listed to UL 873
cUL Listed to Canadian Standard C22.2 No. 24-93
CE conformity to EMC directive 2004/108/EC

QLS60 Product Ordering

<table>
<thead>
<tr>
<th>Description</th>
<th>Output Signal</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar Impact Sensor</td>
<td>4 to 20 mA or 0 to 10 Vdc</td>
<td>QLS60</td>
</tr>
</tbody>
</table>

Accessories & Service Kits
**MD Model Power Meter**

**Description**

The MD Model Power Meter is a submetering device designed to provide real time, accurate electricity metering, enabling greater control over energy costs. The meter captures kWh/kW energy and demand data, as well as virtually all relevant energy parameters for diagnostics and monitoring on three-phase or single-phase circuit installations.

The meter uses direct connections to each phase of the voltage and various interchangeable current transformer (CT) options such as split-core CTs or flexible Rogowski Coils (for large loads or large cables and bussbars) to monitor current on each phase. All of Siemens’ current transformers are internally shunted for intrinsically safe operation on energized conductors.

The power meter takes over 50 total electrical measurements which are derived from the voltage and current inputs. Electrical load diagnostic parameters, such as power factor (both Apparent and Displacement) and line frequency, are captured in addition to energy and demand values.

The MD Model Power Meter requires no external power and the power supply can accommodate service voltages ranging from 80 to 600V (phase-to-phase). The simple installation is accomplished by connecting the color-coded voltage leads and clearly labeled CTs. A three-LED indicator display confirms proper CT-to-phase installation. The meter automatically adjusts for CT orientation—greatly reducing set-up time and all but eliminating installation errors.

**Features**

- Monitors voltage, current, power, energy, and many other electrical parameters on single and three-phase electrical systems
- RS-485 serial connection communications interface
- Uses either BACnet or Modbus protocol and features two digital pulse output ports
- Mix-and-match Split-Core or Rogowski-style CTs
- LED indicators ensure correct CT orientation during installation
- Line-powered: 80 to 600V Phase-Phase Power Supply (Use on 120/240V, 480/277V, 580/355V, or 380/220V services); 50 or 60 Hz
- Data updates occur every 0.5 seconds
- UL and CE Mark.
- ANSI C12.20-2010 Class 0.2

**Applications**

Its flexibility, size, and ease-of-use make it an ideal tool for gathering detailed consumption information in commercial, industrial, governmental, and retail environments. Perfect for tenant submetering and data center monitoring.

**Note:**

The MD Power Meter is sold as a kit consisting of the meter and related current transformers. Please refer to page B-56 for kit ordering information.
**MD Model Power Meter Specifications**

**Technical**
- Service type: Single Phase, Three Phase-Four Wire (WYE), Three Phase-Three Wire (Delta)
- Power: From L1 Phase to L2 Phase, 80 to 600 Vac CAT III, 50/60 Hz, 70 mA maximum. Non-user replaceable 0.5A internal fuse protection
- Voltage channels: 80 to 346V AC Line-to-Neutral, 600V Line-to-Line, CAT III
- Current channels: 0 to 5,000+ Amps, depending on CT
- Maximum current input: 200% of current transformer rating
- Measurement rating: True RMS using high-speed digital signal processing (DSP)
- Line frequency: 50/60 Hz
- Waveform sampling: 12 kHz voltage and current
- Channel sampling rate: 500 milliseconds
- Measurements: Volts, Amps, kW, kWh, kVAR, kVARh, kVA, kVAh, aPF, dPF
- Accuracy: Better than 1% (≤0.2% typical) for V, A, kW, kVAR, kVA, PF (ANSI C12-20-2010 Class 0.2)
- Resolution: 0.01 Amp, 0.1 Volt, 0.01 watt, 0.01 VAR, 0.1 VA, 0.01 Power Factor depending on scalar setting
- LED indicators: Bi-color LED (red and green): 1 LED to indicate communication, 3 LEDs for correct CT-to-phase installation
- Pulse output: Open Collector, 75 mA maximum current, 40V maximum open voltage

**Communications**
- Direct: User selectable Modbus or BACnet Master Slave Token Passing protocol (MS/TP)
- Maximum distance: 1200 meters with Data Range of 100K bits/second or less
- Baud rate: 9600 (Modbus default), 19200, 38400, 57600, 76800 (BACnet default), 115200
- Data bits: 8
- Parity: None, Even, Odd
- Stop bit: 1, 2, 0
- Data formats: Modbus or BACnet (MS/TP)

**Mechanical**
- Operating temperature: 20°F to 140°F (-7°C to 60°C)
- Humidity: 5% to 95% non-condensing
- Enclosure: ABS Plastic, 94-V0 flammability rating
- Weight: 12.6 ounces (357 g) exclusive of CTs
- Dimensions: 8.6” x 5.8” x 1.6” (21.8 cm x 5.8 cm x 4.0 cm)

**ViewPoint Software**
- Operating system: Windows® 8, Windows® 7 (32/64-bit), Windows® Vista (32/64-bit) or Windows® XP
- Communications port: One USB to RS-485 converter required

**Safety**
- Certifications: UL Listed to UL Standard 61010-1, cUL certified to CAN/CSA Standard C22.2 No. 61010-1

**Enclosure**
- Dimensions: 
- Data formats: Modbus or BACnet (MS/TP)
- MS/TP

**MD Model Power Meter Product Ordering**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meter with three 100A split core CTs</td>
<td>MD-BM-3-CTSC-100A</td>
</tr>
<tr>
<td>Meter with three 200A split core CTs</td>
<td>MD-BM-3-CTSC-200A</td>
</tr>
<tr>
<td>Meter with three 400A split core CTs</td>
<td>MD-BM-3-CTSC-400A</td>
</tr>
<tr>
<td>Meter with three 600A split core CTs</td>
<td>MD-BM-3-CTSC-600A</td>
</tr>
<tr>
<td>Meter with three 16” (5000A) Rogowski Coils</td>
<td>MD-BM-3-RC-16</td>
</tr>
</tbody>
</table>

**NOTE:** Meter is shipped as a BACnet device (default) but can be easily reconfigured into a Modbus device through simple hardware steps. Advanced configuration can be completed by using ViewPoint™ software (orderable from DENT Instruments, Inc. www.DENTInstruments.com or 800-388-0770.)
Rogowski Coil Flexible Current Transformer

Description
Rogowski Coil Flexible Current Transformer has been designed for accurate, non-intrusive measurement of AC current, pulsed DC or distorted waveforms. This type of sensor may be used to measure AC current over a wide dynamic range and from 20 Hz to 5 kHz.

Features
- Accuracy is <10%*
- 333 mVAC/1000A @ 60Hz;
  109.17 mVAC/1000A @ 50 Hz
- Window size: 5.0"
- The Rogowski Coil CT is UL Rated to 100KA AC. The Siemens MD Model Power Meter is rated for 5 to 5000A.

Applications
May be used with Siemens BACnet/Modbus Energy Meter.

Note:
Rogowski Coil Current Transformers are sold as a kit consisting of three coils and a MD Power Meter. Please refer to B-56 for kit ordering information.
## Rogowski Coil Specifications

### Electrical

(All accuracies specified at 20°C [+ 2°C]. Rogowski Coil installed using best practices with conductor centered in the CT window and ensure any external conductors are a minimum distance of > 2X the diameter of the RoCoil.)

<table>
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<tr>
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<th>Specification</th>
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<tr>
<td>Output Signal</td>
<td>131 mV/1000A @ 60 Hz</td>
</tr>
<tr>
<td></td>
<td>109.17 mV/1000A @ 50 Hz</td>
</tr>
<tr>
<td>Current Range</td>
<td>5 to 5000A AC</td>
</tr>
<tr>
<td>Wire Colors</td>
<td>White = (+) positive</td>
</tr>
<tr>
<td></td>
<td>Brown = (-) negative</td>
</tr>
<tr>
<td></td>
<td>Bare wire = shield</td>
</tr>
<tr>
<td>Phasing</td>
<td>Arrow points towards load</td>
</tr>
<tr>
<td>Phase Shift</td>
<td>&lt; 0.2° at 50/60 Hz</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>20 Hz to 5 Hz</td>
</tr>
<tr>
<td>Linearity</td>
<td>+/- 0.2%</td>
</tr>
<tr>
<td>Conductor Position Sensitivity</td>
<td>+/- 2% maximum</td>
</tr>
<tr>
<td>Influence of External Field</td>
<td>+/- 1.5% maximum</td>
</tr>
<tr>
<td>Temperature Sensitivity</td>
<td>0.07% per °C</td>
</tr>
<tr>
<td>Phase Error</td>
<td>&lt; -0.5°</td>
</tr>
<tr>
<td>Ratio Error</td>
<td>&lt; 0.5%</td>
</tr>
</tbody>
</table>

### Electrical Coil Materials

- Blue thermoplastic rubber, flame-retardant UL 94 V-0 rated

### Coupling Materials

- PA6 UL 94 V-0 rated

### Shielding

- 100% transducer, 100% output lead

### Operating temperature

- -4°F to 158°F (-20°C to 70°C)

### Safety

- Working Voltage ......................................... 1000 Vrms, maximum
- Dielectric Strength ..................................... 7400 Vac around coil
- Certified .................................................. 1000 Vac rated leads

### Certifications

- UL Recognized to UL Standard 61010-1
- cUL Recognized to CAN/CSA Standard C22.2 No. 61010-1
- CE Conformity .......................................... CE Low Voltage Directive 2006/95/EC
**Split-Core and Midi Hinged Split-Core Current Transformers**

**Description**

Split-Core Current Transformers provide linear output voltage that is directly proportional to the input current. These transformers are safely and easily installed over existing electrical power lines without disconnecting the lines or interrupting service.

Midi Hinged Split-Core Current Transformers are small, low-cost devices with high accuracy (<0.5%) over a wide dynamic range with excellent phase shift. These current transformers are ideal where space is limited such as when metering multiple loads within a panel board. Use for current measurement, energy metering, load surveys, demand metering, energy research, and sub-metering.

**Split-Core Features (400A & 600A)**
- Available with two window sizes: 1.25" (3.20 cm), 2.0" (5.1 cm)
- Available in two current ranges: 400A Model is 8 to 520A AC; 600A Model is 30 to 780A AC
- Output: 333 mV at rated current
- Ratio error: <1% at rated current (typical)
- Phase error: <2° at rated current (typical)

**Midi Hinged Split-Core Features (100A & 200A)**
- Window size: 1.0" (25 mm) for 100A, 200A
- Available in two current ranges*:
  - to 200A AC (for 100A)
  - to 300A AC (for 200A)
- Output:
  - 333 mV @ 100A AC (3.33 mV/A AC) (for 100A)
  - 333 mV @ 200A AC (1.67 mV/A AC) (for 200A)
- Ratio Error:
  - <0.3% from 1.0A to 200A AC (typical) (for 100A)
  - <1.0% from 1.0A to 300A AC (typical) (for 200A)
- Phase Error:
  - <0.5° from 1.0A to 200A AC (for 100A)
  - <0.5° from 1.0A to 300A AC (for 200A)
* May depend on meter compatibility. See associated Meter Specifications for details.

**Applications**

Siemens energy monitoring components are used for a variety of applications including building automation, tenant sub-metering, performance verification, energy management, and new technology assessment.

**Note:**
The Split-Core and Midi Hinged Split-Core Current Transformers are sold as a kit consisting of three transformers and an MD Power Meter. Please refer to page B-65 for kit ordering information.
### Split-Core and Midi Hinged Split-Core Specifications

#### Electrical
- **Output Signal**: 333 mV @ rated current
- **Wire Colors**: White = (+) Hi, positive, Black = (-) Low, negative
- **Frequency Range**: 50 Hz to 400 Hz
- **Phasing Orientation (for Mid-Hinged)**: Arrow on case points towards load

#### Mechanical
- **Case Material**
  - Midi-Hinged Split Core: White Nylon, UL 94 V-0
  - Split Core: Epoxy encapsulated housing
- **Leads**
  - Midi-Hinged Split Core: 8 feet (2.4 m), 600V, 20 AWG
  - Split Core: 8 feet (2.7 m), twisted pair, 20 AWG
- **Operating temperature**
  - Midi-Hinged Split Core: 5°F to 140°F (-15°C to 60°C)
  - Split Core: Maximum 105°F (220°C)
- **Storage temperature**
  - Midi-Hinged Split Core: -4°F to 185°F (-20°C to 85°C)

#### Safety
- **Working Voltage**: 600 Vac, Category III
- **Dielectric Strength**
  - Midi-Hinged Split Core: 100A, 200A 5200 Vac for 1 minute
  - Split Core: 5000 Vac around case
  - 600 Vac rated leads

#### Certifications
- **Midi-Hinged Split Core**
  - UL Recognized to UL Standard 61010-1
  - UL certified to CAN/CSA Standard C22.2 No. 61010-1
- **Split Core**
  - ETL certified to UL Standard 61010-1
  - cETL certified to CAN/CSA Standard C22.2 No. 61010-1
- **CE Conformity**
  - CE Low Voltage Directive 2006/95/EC
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<tr>
<td>Replaceable 2% Certified Humidity Sensor Tip.</td>
<td>Q Series Duct/Outdoor Air Humidity</td>
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</tr>
<tr>
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<td>Pipe Temp. Sensors</td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>0.26&quot;D x 4&quot;L (18 mm D x 102 mm L)</td>
<td></td>
</tr>
<tr>
<td>0.26&quot;D x 6&quot;L (18 mm D x 152 mm L)</td>
<td></td>
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