SPEC SHEET

# 75F® Multi Sensor

An all-in-one wall sensor supporting indoor air quality, comfort, and efficiency


- Senses for temperature, humidity, occupancy, and $CO_2$
- Enables out-of-the-box Title 24 compliance when combined with the 75F® Smart Node™

# 75F® Multi Sensor

75F's suite of sensor offerings gives building owners the power of IoT-connected devices for optimal efficiency and comfort in spaces where it matters most. Measure to manage with the 75F Multi Sensor, a high-precision $CO_2$, occupancy, temperature and humidity sensor that connects with the 75F® Smart Node™ or Stat to deliver data that influences equipment control. This device can be daisy chained with other sensors on the sensor bus to provide an extensible sensor network.

## OVERVIEW

The 75F® Multi Sensor is an all-in-one sensor providing temperature, humidity, occupancy, and $CO_2$ to augment the 75F® Smart Node™ for full Title 24 compliance. This small sensor informs air quality and occupancy-based energy sequences for optimal IAQ and efficiency.

The sensor plugs into the standard sensor bus that 75F offers on its nodes and stats. The modern, low-profile design appeals to aesthetics and allows the sensor to blend in with office environments.

## KEY FEATURES

- Accurate temperature readings (typical +/- 1F)
- Accurate humidity readings (typical +/- 2% R.H.)
- Accurate occupancy measurement with a measuring angle of 100-degree angle and 8ft height
- $CO_2$ sensitivity and accuracy meets Title 24. +/- 75 ppm at a 400 to 1000 ppm concentration
- Proprietary 1-wire protocol to communicate with a master device such as an HIA or the Smart Node
- Can be daisy-chained with other sensors to provide extensible sensor network

## ADDITIONAL FEATURES

- Sensor bus for power and communication
- Sleek design, low-impact aesthetics
- Factory pre-calibrated
- Easily mounted
- Up to 4 devices can be connected on the Bus

## COMPATIBLE APPLICATIONS

- 75F® Dynamic Airflow Balancing™
- 75F® Outside Air Optimization™
- 75F® Smart VAV with Reheat™
- 75F® Single-Stage Equipment
- HyperStat Remote Sensing

# 75F® Multi Sensor

## MECHANICAL

| | |
|---|---|
| **Dimensions** | 2.4” x0.83” (60.9mm x 21.1mm) |
| **Mounting** | Wall Mount |
| **Operating Temperature** | 32°F – 122°F (0°C – 50°C) |

## SENSORS

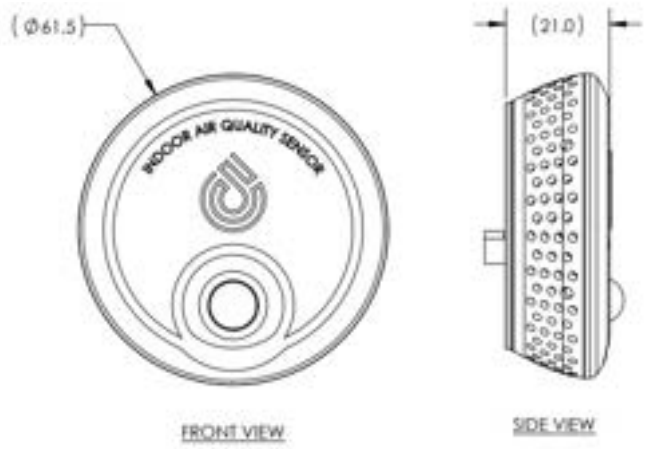
| | |
|---|---|
| **Temperature** | 14°F – 140°F (-10°C – 60°C); typical accuracy of +/- 1°F or 0.2°C |
| **Humidity** | Sensing range between 0 to 100%RH; Typical accuracy of +/- 2% RH |
| **CO2** | +/- 75 ppm at 400 and 1000 ppm concentration when measured at sea level and 77°F (25°C) |
| **Occupancy** | Senses targets within 8ft distance and 100 deg angle. |

## ELECTRICAL

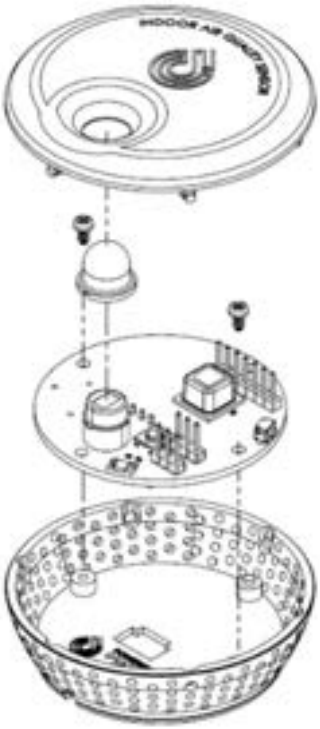
| | |
|---|---|
| **Power** | 3.3VDC (+/-10%) |

## COMMUNICATIONS

| | |
|---|---|
| **Wired** | Sensor bus for power and communication; proprietary 1 wire protocol to communicate with a master device. Up to 4 sensors can be connected on the bus. |







SPEC SHEET

# 75F® HyperSense

## Sophisticated Indoor Air Quality Sensing Station & Occupant Interface


- Occupancy, temperature, light, humidity, sound, CO2 & optional VOC and particulate matter
- TFT LCD display with touch slider and user buttons
- (2) Thermistor inputs
- (2) Analog inputs

# 75F HyperSense

The HyperSense caters to use cases where a highly capable remote interface is desired for a 75F® Smart Node™ operating in a terminal unit. HyperSense is part of 75F's vertically- integrated suite of intelligent building solutions delivering multi- mode sensing, remote monitoring, and individual zone control for the comfort and productivity of building occupants. The HyperSense works out of the box with the Smart Node.

## OVERVIEW

The HyperSense brings building owners eight onboard sensors for indoor air quality management (IAQM) bundled into one device. Paired with the 75F® Smart Node™, the HyperSense's industry-leading sensing turns into granular and sophisticated zone control. The HyperSense delivers various parameter values in a room or zone to the Smart Node, which then carries out advanced control algorithms based on real-time data from the space.

## KEY FEATURES

- Provides a large screen with a touch slider and mechanical keys to change values on the Smart Node
- Measures indoor air quality and conveys the information to a Smart Node
- 4 wire interface for RS 485 communication from the Smart Node to the HyperSense

## ADDITIONAL FEATURES

- Sensor bus for power and communication with the Smart Node
- Option to connect a PM2.5 sensor

## COMPATIBLE APPLICATIONS

- 75F® Dynamic Airflow Balancing™
- 75F® Outside Air Optimization™
- 75F® Smart VAV with Reheat™
- Single-Stage Equipment Controls

## INCLUDED

| |
|---|
| (1) HyperSense |
| (1) Mounting Adapter plate |
| (2) Mounting Screws |

# 75F HyperSense

## MECHANICAL

| | |
|---|---|
| **Dimensions** | 6.5” x 4.5” x 1.15” (165mm x 115mm x 29 mm) |
| **Mounting** | (2) screws in drywall |
| **Screen** | 2.8” 240x320 pixel TFT LCD |
| **Operating Range** | 32°F to 122°F (0°C to 50°C) |

## SENSORS

| | |
|---|---|
| **Temperature** | Operating range between 32°F to 122°F (0°C to 50°C); typical accuracy of +/- 1°F or 0.2°C |
| **Humidity** | Operating range between 20 to 85% noncondensing; Typical accuracy of +/- 2% RH |
| **Dedicated $CO_2$ Sensor** | Range 0-40’000 ppm; Accuracy +/-30ppm over range of 400-10,000ppm and lifetime of 15 years |
| **Light** | Ambient light sensor; high-accuracy UV index sensor; matches erythemal curve; < 100 mix resolution |
| **Sound** | 40-120dB response for 100 Hz to 10Khz |
| **Occupancy** | Passive Infra Red (PIR) with detection range of 4m with 30-degree angle |

## OPTIONAL SENSORS

| | |
|---|---|
| **PM2.5, PM10** | Detection range of 0-1000ug/m3 and accuracy of +/- 10ug/m3 (PM2.5, 0-100 ug/m3) or +/- 25ug/m3 (PM10, 0-100ug/m3) |
| **VOC** | TVOC: 0-60’000 ppb. Typical Accuracy - 15% of measured value |


## ELECTRICAL

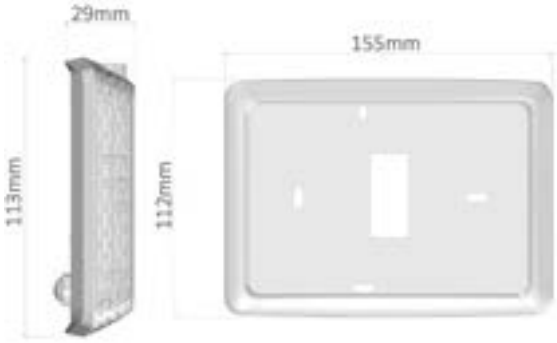
| | |
|---|---|
| **Power** | 24V AC/DC (+/-15%) with nominal power consumption 1.0W and maximum consumption of 2.5W |

## COMMUNICATIONS

| | |
|---|---|
| **Bluetooth** | BLE4.1; used during commissioning |
| **Mesh** | 900 MHz IEEE 802.15.4-compliant; used for device communication on mesh network |
| **Wired** | 4 wire RS-485 interface<br>3 wire connector for low-power sensor bus |

## I/O

| | |
|---|---|
| **Inputs** | (2) 10k type-2 thermistor inputs with 2% accuracy<br>(2) 0-10V analog voltage inputs with 2% detection accuracy |
| **Outputs** | (6) 24V dc/1A relays<br>(3) 0-10V/4 -20ma (max load of 20mA per channel) analog outputs |



SPEC SHEET

# 75F® Ceiling Sensor™

## High-precision temperature and humidity measurement for increased comfort

- Accurate temperature readings
- Accurate humidity readings
- Sleek design, low impact aesthetics

# 75F® Ceiling Sensor™

75F's suite of sensor offerings gives building owners the power of IoT-connected devices for optimal efficiency and comfort in spaces where it matters most. This rings true even for wide open spaces or zones without room for a wall-mounted sensor.

The 75F Ceiling Sensor mounts easily to the ceiling with a threaded bush and is adjustable with a set screw, making temperature and humidity readings not only possible in airy spaces, but accurate, too.

## OVERVIEW

The 75F® Ceiling Sensor™ offers high-precision measurement pre-calibrated from the factory for measuring comfort factors of temperature and humidity. The Ceiling Sensor is easily mounted on a ceiling by a threaded bush. The module drop from the ceiling can be adjusted via a set screw.

The Ceiling Sensor uses a proprietary 1-wire protocol to communicate with other devices such as the Central Control Unit, Smart Node, or HyperStat.

## KEY FEATURES

- Accurate temperature readings (typical +/- 1F or 0.2C)
- Accurate humidity readings (typical +/- 2% R.H.)
- Sensor bus for power and communication
- Can be daisy-chained with other sensors on the 1-wire bus to provide an extensible sensor network

## ADDITIONAL FEATURES

- Sleek design, low impact aesthetics
- Easily mounted on ceiling via threaded bush
- Module drop can be easily adjusted

## APPLICATIONS

- 75F® Dynamic Airflow Balancing™
- 75F® Smart VAV with Reheat™
- 75F® Single Stage Equipment Controls™
- 75F® HyperStat™ Remote Sensing

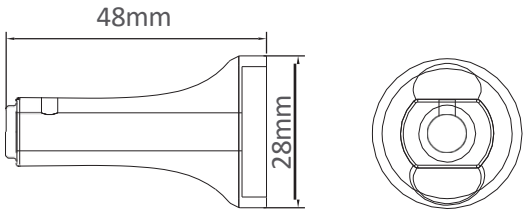
## INCLUDED

(1) 75F Ceiling Sensor

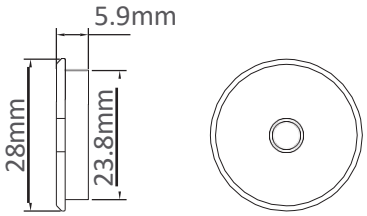
# 75F® Ceiling Sensor™

## MECHANICAL

| | |
|---|---|
| **Dimensions** | Body length: 1.89” (48mm)<br>Max body height: 1.10” (28mm)<br>Male bush length: 1.77” (45mm) Male bush max height: 1.26” (32mm)<br>Included wire: 20’<br>Drop adjustments extender: 8” (203mm) |
| **Mounting** | (1) threaded bush, requires 15mm hole in ceiling tile |
| **Operating Temp** | 0˚F – 122˚F (-18˚C – 50˚C) |
| **Termination** | 3 pin connector |
| **Accuracy** | Humidity (typical +/- 2% RH), temperature (typical +/- 1˚F or 0.2˚C) |



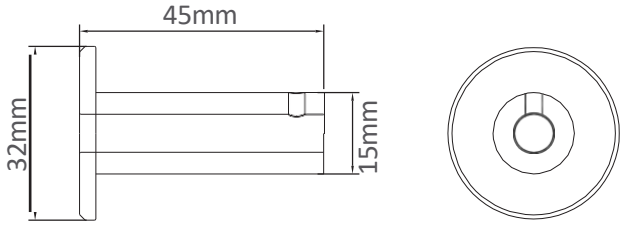

BODY



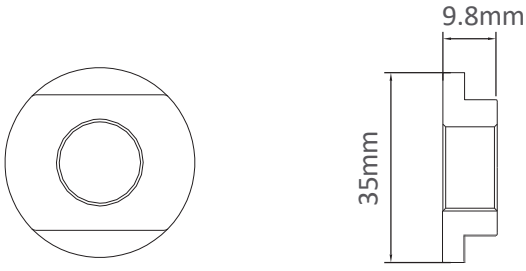

BODY CAP

## COMMUNICATIONS

| | |
|---|---|
| **Wired** | Proprietary 1-wire protocol to communicate with master devices |




MALE BUSH




FEMALE BUSH

## ELECTRICAL

| | |
|---|---|
| **Power** | 3.3V DC provided by Smart Node via 3 pin connectors |

SPEC SHEET

# 75F® Duct Sensor™

A high-precision, pre-calibrated duct temperature and humidity sensor


- Accurate temperature readings
- Accurate humidity readings
- Sleek design, low-impact aesthetics

# 75F® Duct Sensor™

75F's suite of sensor offerings gives building owners the power of IoT-connected devices for optimal efficiency and comfort in spaces where it matters most. Measure to manage with the 75F Wall Sensor, a high-precision temperature and humidity sensor that pairs with the 75F Smart Node to deliver data that influences equipment control. This device can be daisy chained with other sensors to provide an extensible sensor network.

## OVERVIEW

The Duct Temperature and Humidity Sensor (DTH) is a high-precision sensor that is pre calibrated from the factory. The DTH is easily mounted on a duct or VAV box by self-drilling screws. The sensor also has a secondary communication port to enable Daisy chain communication over the one-wire bus.

It comes with modular pipes that are approximately 4 and 6 inches long. This enables easy installation on variable duct thickness and sizes.

## KEY FEATURES

- Accurate temperature readings (typical +/-0.2C)
- Accurate humidity readings (typical +/- 2% R.H.)
- Proprietary 1-wire protocol to communicate with a master device such as the 75F® Smart Node™
- Can be daisy-chained with other sensors to provide extensible sensor network

## ADDITIONAL FEATURES

- Sensor bus for power and communication
- Sleek design, low impact aesthetics
- Factory pre-calibrated
- Easily mounted

## COMPATIBLE APPLICATIONS

- 75F® Dynamic Airflow Balancing™
- 75F® Outside Air Optimization™
- 75F® Smart VAV with Reheat™
- 75F® Single Stage Equipment™

# 75F® Duct Sensor™

## MECHANICAL

| | |
|---|---|
| **Dimensions** | 5.49" x 1.37" (139.45mm x 34.8mm) |
| **Mounting** | Duct mount |
| **Operating Temperature** | 14°F – 122°F (-10°C – 50°C) |

## SENSORS

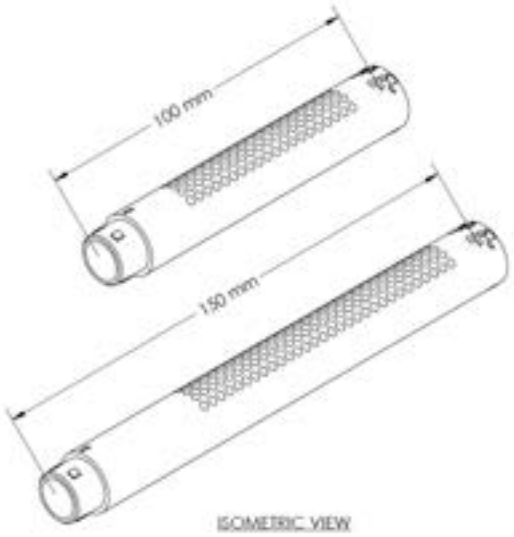
| | |
|---|---|
| **Temperature** | 14°F – 122°F (-10°C – 50°C); typical accuracy of +/- 1°F or 0.2°C |
| **Humidity** | Sensing range between 0 to 100%RH; Typical accuracy of +/- 2% RH |

## ELECTRICAL

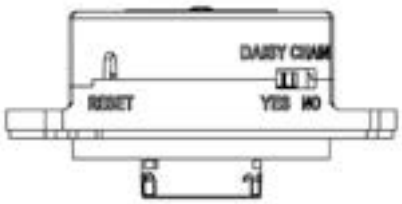
| | |
|---|---|
| **Power** | 3.3VDC (+/-10%) |

## COMMUNICATIONS

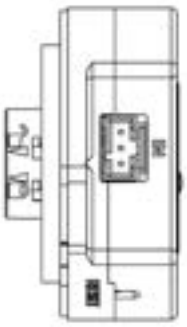
| | |
|---|---|
| **Wired** | Sensor bus for power and communication; proprietary 1 wire protocol to communicate with a master device |

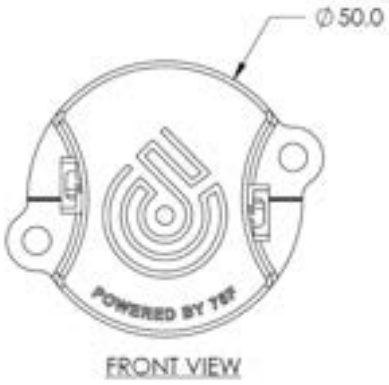


ISOMETRIC VIEW

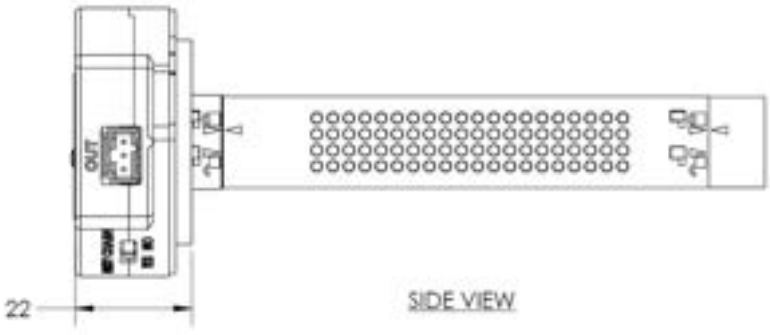


BOTTOM VIEW


SIDE VIEW



FRONT VIEW



SIDE VIEW

SPEC SHEET

# 75F® Flush Sensor™

Intelligent flush-mount temperature and humidity sensor


- Accurate temperature readings
- Accurate humidity readings
- Sleek design, low impact aesthetics

# 75F® Flush Sensor™

75F's suite of sensor offerings gives building owners the power of IoT-connected devices for optimal efficiency and comfort in spaces where it matters most. The Flush Sensor provides accurate temperature and humidity values from your space to the Smart Node, which reports these values to the 75F® Central Control Unit™ (CCU) for zone monitoring and control. This sleek device mounts to a wall or metal beam duct with self-drilling screws - saving you time and money on installation.

## OVERVIEW

The 75F® Flush Sensor adds a high precision temperature and humidity sensor that is pre calibrated from the factory. The Flush Sensor is easily mounted on a wall or metal beam duct by self-drilling screws.

Unlike the Wall Sensor, it does not involve drilling a hole for the mounting or running the wiring behind the surface. A Flush sensor paired with a 75F® Smart Node™ results in a clean aesthetic in your space while minimizing installation times.

## KEY FEATURES

- Accurate temperature readings (typical +/- 1˚F or 0.2˚C)
- Accurate humidity readings (typical +/- 2% R.H.)
- Proprietary 1 wire protocol to communicate with a master device

## ADDITIONAL FEATURES

- Sleek design, low impact aesthetics
- Easily mounted with self-drilling screws; does not involve drilling holes or wiring

## APPLICATIONS

- 75F® Dynamic Airflow Balancing™
- 75F® Smart VAV with Reheat™
- HyperStat Remote Monitoring

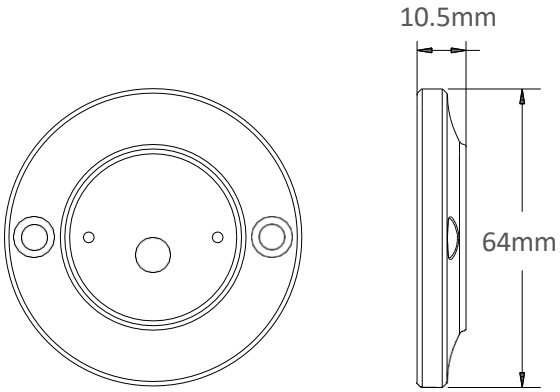
## INCLUDED

(1) Flush Sensor

# 75F® Flush Sensor™

## MECHANICAL

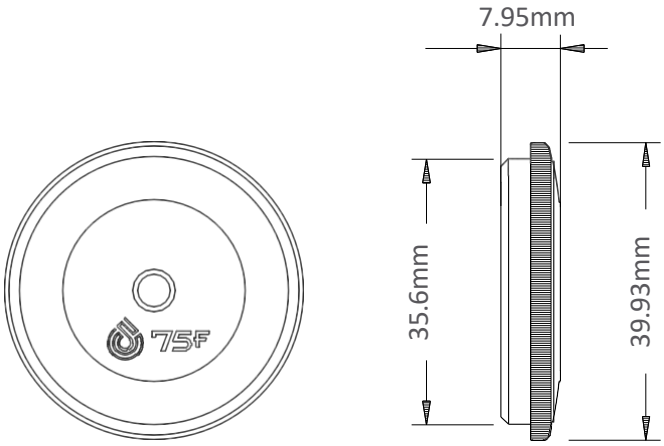
| | |
|---|---|
| **Dimensions** | Back plate: 2.52” x 0.41” (64mm x 10.5mm)<br>Front plate: 1.57” x 0.31” (39.93mm x 7.95mm) |
| **Mounting** | Self-drilling screws |
| **Operating Temp** | 0°F - 122°F (-18°C – 50°C) |
| **Termination** | 3 pin connector |
| **Accuracy** | Humidity (typical +/- 2% RH), temperature (typical +/- 1°F or 0.2°C) |




BACK PLATE

## ELECTRICAL

| | |
|---|---|
| **Power** | 3.3V DC provided by Smart Node via 3 pin connectors |




FRONT PLATE

## COMMUNICATIONS

| | |
|---|---|
| **Wired** | Sensor Bus for power and communication; proprietary 1-wire protocol to communicate with a master device |

SPEC SHEET

# 75F® Differential Pressure Sensor™


- Measures pressure differential in variety of applications
- Enables alerts when AHU filters need to be changed
- VAV flow measurement based on ASHRAE Guideline 36

# 75F® Differential Pressure Sensor™

75F's suite of sensor offerings gives building owners the power of IoT-connected devices for optimal efficiency and comfort in spaces where it matters most. Measure airflow rates in VAV boxes for advanced DCV sequences, learn when AHU filters need to be changed, and more with the 75F® Differential Pressure Sensor™.

## OVERVIEW

The 75F Differential Pressure Sensor is a high-precision pressure sensor that enables energy-saving functions like advanced demand control ventilation sequences and VAV flow measurement based on ASHRAE Guideline 36, all right out of the box.

Our rugged sensor connects to the 75F Smart Node digital sensor bus seamlessly with the Facilisight suite of applications. Thoughtful design touches include large cutouts for easy installation when wearing thick gloves. The DPS dramatically cuts down installation time and commission applications.

## KEY FEATURES

- Measures airflow rates in VAV boxes for fast and easy compliance with advanced DCV sequences
- Significantly decreases the time of install
- Compact, rugged design means the sensor can be mounted on VAV boxes, hard supporters or rafters

## ADDITIONAL FEATURES

- Can be daisy-chained with other sensors to provide extensible sensor network
- Proprietary communications protocol to communicate with a master device such as the 75F® Smart Node™
- Large sensor cutouts make installing easy, even when wearing gloves

## APPLICATIONS

- 75F® Dynamic Airflow Balancing™
- 75F® Smart VAV with Reheat™
- 75F® Single-Stage Equipment Controls™

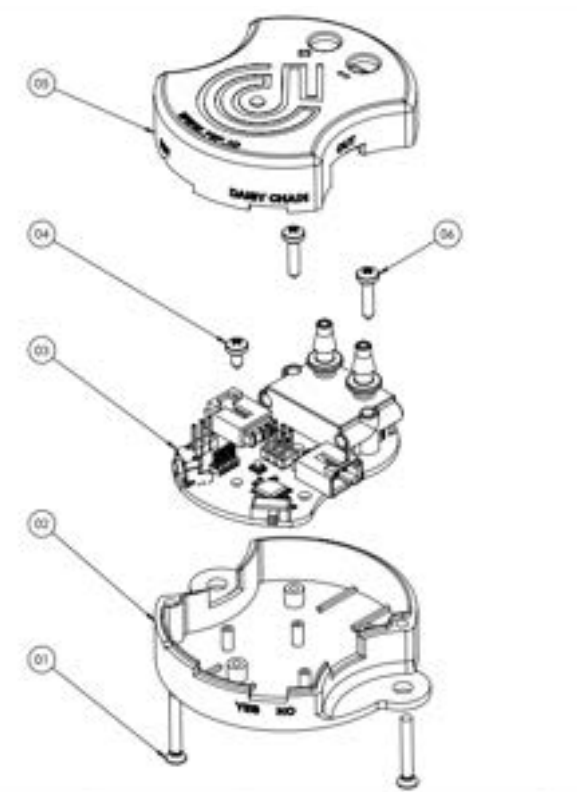
## INCLUDED

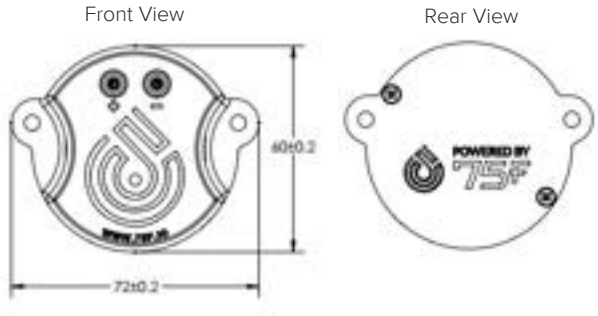
(1) Differential Pressure Sensor

# 75F® Differential Pressure Sensor™

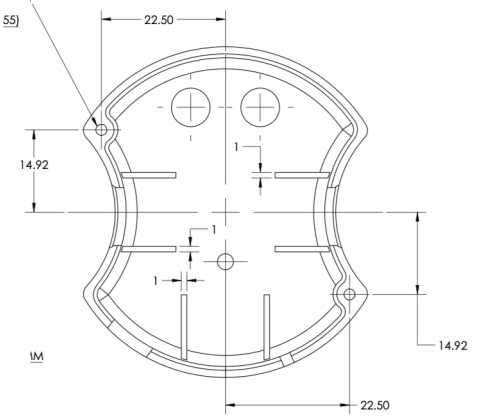
## SPECIFICATIONS

| | |
|---|---|
| **Pressure sensing** | 0-2” WC |
| **Communication** | 75F digital bus |
| **Zero-point accuracy** | 0.1 Pa |
| **Span shift due to temp variation** | < 0.5% of reading per 50°F (10°C) |
| **Flow step response time** | < 3ms |
| **Mounting** | On the VAV box |
| **Physical dimension** | 2.36” x 1.22” x 2.83” (60 mm x 31 mm x 72mm) |
| **Storage temperature** | 14°F – 140°F (-10°C – 60°C) |
| **Supply voltage** | 3.3V, max current limit of 10mA |
| **Electrical connection** | 75F 3-wire cable and connector |
| **Accuracy** | 3% of measured value |
| **Offset stability** | < 0.05 Pa/year |
| **Pressure medium** | Air non-condensing |
| **Housing material** | Lexan 945GG (flame retardant) |
| **Operating temperature** | 32°F to 122°F (0°C – 50°C) |
| **Relative humidity** | 0% to 95% RH, non-condensing |






Insert m2x0.4 Heat Set Inserts for Plastic, 2NOS
McMaster-94459A120



SPEC SHEET

# 75F® Wall Sensor™

Provides essential measurements of zone temperature and humidity.


- Accurate temperature readings
- Accurate humidity readings
- Sleek design, low impact aesthetics

# 75F® Wall Sensor™

75F's suite of sensor offerings gives building owners the power of loT-connected devices for optimal efficiency and comfort in spaces where it matters most. Measure to manage with the 75F Wall Sensor, a high-precision temperature and humidity sensor that pairs with the 75F Smart Node to deliver data that influences equipment control. This device can be daisy chained with other sensors to provide an extensible sensor network.

## OVERVIEW

The 75F Wall Sensor adds a high precision temperature and humidity sensor that is pre calibrated from the factory. The Wall Sensor is easily mounted on a wall by a single toggle bolt.

A Wall Sensor paired with a 75F® Smart Node™ results in a clean aesthetic in your space while minimizing installation times. The Wall Sensor provides accurate temperature and humidity values from your space and the Smart Node reports these values to the 75F® Central Control Unit™ (CCU).

## KEY FEATURES

- Accurate temperature readings (typical +/-0.2C)
- Accurate humidity readings (typical +/- 2% R.H.)
- Proprietary 1-wire protocol to communicate with a master device such as the 75F® Smart Node™
- Can be daisy-chained with other sensors to provide extensible sensor network

## ADDITIONAL FEATURES

- Sensor bus for power and communication
- Sleek design, low impact aesthetics
- Factory pre-calibrated
- Easily mounted

## APPLICATIONS

- 75F® Dynamic Airflow Balancing™
- 75F® Outside Air Optimization™
- 75F® Smart VAV with Reheat™
- 75F® Single Stage Equipment™
- Remote Sensing for HyperStat

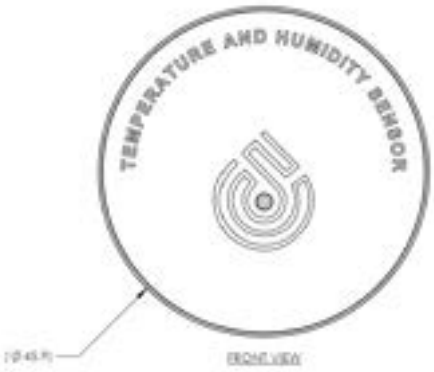
## INCLUDED

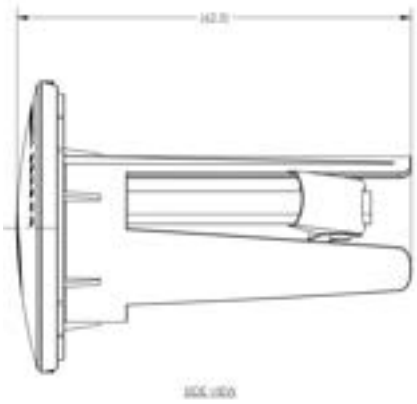
(1) Wall Sensor

# 75F® Wall Sensor™

## MECHANICAL

| | |
|---|---|
| **Dimensions** | Circumference: 1.8” (46mm)<br>Surface depth: 0.2” (5.6mm)<br>Length: 2.4” (62mm)<br>Backplate height: 1.0” (26mm) |
| **Mounting** | (1) toggle bolt, requires 1" hole in drywall |
| **Operating Temp** | 0°F - 122°F (-18°C – 50°C) |
| **Termination** | 3 pin connector |
| **Accuracy** | Humidity (typical +/- 2% RH), temperature (typical +/- 1°F or 0.2°C) |



## ELECTRICAL

| | |
|---|---|
| **Power** | 6.5V DC provided by Smart Node via 3 pin connectors |

## COMMUNICATIONS

| | |
|---|---|
| **Wired** | Sensor bus for power and communication; proprietary 1 wire protocol to communicate with a master device |