T3400 Series Refrigerant Leak Detection Sensor



Overview

Telaire's T3400 Series Refrigerant Leak Detection Sensors can identify refrigerant gas leaks by assessing the thermal conductivity of a specific gas mixture. In the event of a refrigerant discharge, the variation in refrigerant concentration in the air results in changes in the thermal conductivity of the gas mixture which can be measured by the micro TCD sensing element. As compared to competing detection technologies, thermal- conductivity-based detection offers the benefits of superior long-term reliability and resilience in harsh operating environments.

The T3400 Series uses second- generation MEMS thermal conductivity sensor featuring a patented "heat transfer cavity" that achieves highly sensitive and repeatable thermal conductivity measurement by eliminating possible occurrences of natural convection inside the cavity. Because the thermal conductivity measurement is accomplished completely inside the sensor chip, maximum miniaturization can be realized at the device level. To account for changes in thermal conductivity due to humidity and barometric pressure variations, the T3400 Series incorporates a relative humidity sensor and a barometric pressure sensor for compensation.

The fully calibrated T3400 Series sensors provide Mobus communication, packaged in a robust IP54 rated enclosure.

Features

- Long-term reliability: > 15-year lifetime
- Compact size.
- Fast response time: < 15s
- Accurate, stable, and repeatable measurement capability

Applications

- Residential and commercial air conditioning systems
- Heat pumps
- Refrigeration equipment

T3400 Series Specifications

Performance

Target gasses:
R454B, R32 (others available upon request)

Measurement Range
0 - 100 % LFL

Warm-up Time:
5s Typical

Response Time:
15s Typical
(per UL60335-2-40 Annex LL.3.2DV)

Accuracy:
+/- 2.5% LFL, ambient 15-25°C, 30-70% RH
+/- 5% LFL, across operating range

Alarm Setpoint:
10 % LFL - Typical, (default, configurable)

Communication:
RS485 Modbus RTU

Compliance:
UL 60335-2-40 Recognition
(ETL Intertek 5032462)

Electrical / Environmental

Supply Voltage:
3.3 - 5.5 Vdc, Typical: 5 Vdc

Operating Current - Peak:
Max.: 22 mA

Operating Temperature:
-40°C - 60°C

Storage Temperature:
-40°C - 90°C

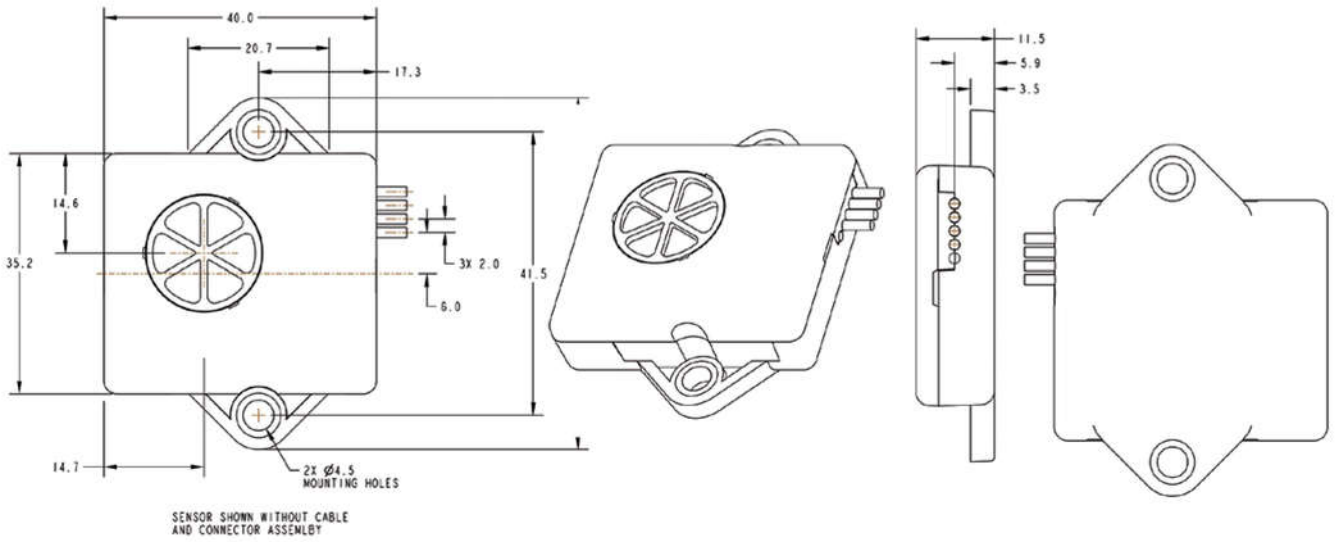
Operating Relative Humidity:
0-100 % RH

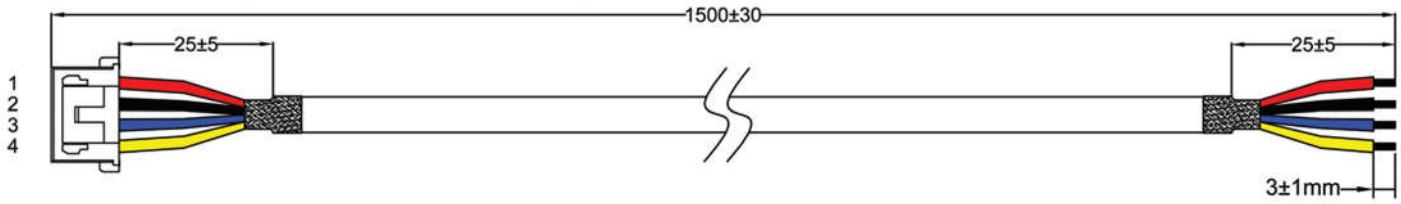
Operating Pressure:
70 - 120 kPa

Ingress Protection Rating:
IP54



T3400 Series Dimensions & Pinout





PIN	Description	Color
1	+5 Vdc	Red
2	Ground	Black
3	485B-	Blue
4	485A+	Yellow

T3400 Series refrigerant leak detection sensors / 4 Wires Wire Harness Connector - Zuch P/N HP2502J-B-4Y

Mating Connector / Header- Zuch P/N HW2502J-B-4A/Zuch P/N HWT2502J-B-4VA

T3400 Series Installation

T3400 Series Refrigerant Leak Detection Sensors must be exposed to measured air at all times. The location must be chosen so as to maximize air exchange; dead spaces must be avoided. Preferably, the vent in the module should be facing downward. If this is not possible, it should be vertical. It should never be facing upward, to prevent accumulation of dirt and water.

Part No.	Refrigerant Gas
T3400	R32
T3401	R454B

Eval Kits: (Optional)

The Telaire T3400 Series Refrigerant Leak Detection Sensor evaluation kits enable quick and easy operation of Telaire's T3400 Series sensors through a standard PC interface. The kit provides a cost-effective development tool and includes:

- USB drive with applicable software and user instructions
- RS485 to USB adaptor
- (1) T34xx Refrigerant Leak Detection Sensor

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