
REFRIGERANT SENSOR

MODEL TOX-REFRIG/ANA

REFRIGERANTS MONITORED:

R-11	R-22	R-123	R-141b	R-404	R-410
R-12	R-113	R-134a	R-152a	R-407	R-508
Many Others					

GENERAL DESCRIPTION:

TOXALERT's refrigerant sensor/transmitter is designed for use in conjunction with TOXALERT and other standard 4 to 20 mA loop or voltage controllers.

The TOX-Refrig/ANA refrigerant sensor is a metal oxide semi-conductor (solid state) cell with extremely long element life. The TOX-Refrig/ANA transducer requires 24 VDC power and has a 4 to 20 mA output current which is proportional to the refrigerant gas concentration. The cover plate inside the explosion proof enclosure contains: test points (which are receptacles for voltage meter probes) for measurement of sensor signal, heater voltage; visual indicator for sensor check; and potentiometers adjustments for zero and span.



TOX-REFRIG/ANA

BACKGROUND:

ANSI/ASHRAE Standard 15-2016, safety Code for Mechanical Refrigeration, lays out requirements for the monitoring of mechanical equipment rooms containing refrigeration equipment. Paragraph 8.11.2.1 reads in part:

“Each machinery room shall contain a detector, located in an area where refrigerant from a leak will concentrate, which shall actuate an alarm and mechanical ventilation in accordance with 8.11.4 at a value not greater than the corresponding TLV-TWA (or toxicity measure consistent therewith).”

STANDARD FEATURES:

- Sensitivity check indicator
- Low voltage circuits
- 4 to 20 on A output signal
- Meets ASHRAE Std. 15-2016
- Explosion Proof Housing
- Current output may be read as a voltage during calibration
- Sensor failure indicator
- Interfaces directly to DDC systems

REFRIG ID #	SAFETY CLASSIFIED	OEL
R-11	A-1	1000
R-12	A-1	1000
R-22	A-1	1000
R-113	A-1	1000
R-123	B-1	50
R-134a	A-1	1000
R-142b	A-2	1000
R-152a	A-2	1000
R-404a	A-1	1000
R-410b	A-1	990
R-717 (NH ₃)		
AMMONIA	B-2	25

(a) The Refrigerant designation number and Safety Classification are from ANSI/ASHRAE standard 34-2016

(b) The refrigerant safety group as defined in ANSI/ASHRAE standard 34-2016

(c) The OEL's are eight-hour TWA's as defined in section 3 of ANSI/ASHRAE standard 34-2016

TLV– Threshold Limit Value, established for industrial chemicals by American Conference of Government Industrial Hygienists, is the time weighted average concentration of an airborne chemical to which nearly all workers may be exposed during an 8 hour day, 40 hour week without adverse effect.

AEL-Acceptable Exposure Limit- TWA- 8 hours/day, 40 hours/week

PEL- Permissible Exposure Limit- TWA—8 hours/day, 40 hours/week

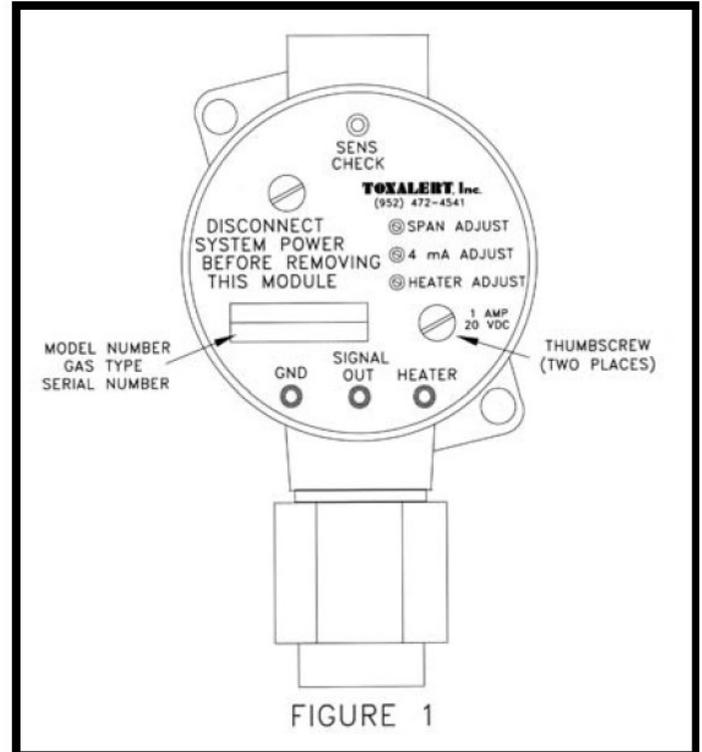
IDHL- (Immediately Dangerous to Life and Health) the maximum concentration from which unprotected persons are able to escape within 30 minutes without impairing symptoms or irreversible health effects.

UNIT INDICATORS:

Refer to Figure 1.

The Tox-Refrig/ANA has the following to assist in installation and system diagnostics:

1. Test points (which are receptacles for voltage meter probes):
 - Signal out (voltage)
 - Heater voltage
2. Visual indicator (LED) of sensor check
3. Potentiometer adjustments for
 - Zero
 - Span
 - Heater Voltage



SPECIFICATIONS:

Type: Metal oxide semi conductor sensor
Range: 10 to 500 PPM
Response Time: 80% in less than 30 seconds
Sensing Element Life: 4 years in normal service

Electrical Data

Input Voltage: 24VDC nominal (14-30 VDC)
Input Power: 2.1 Watts
Output Signal: 4-20 mA DC non-linear

Unit Construction

Housing: Division 1, Class 1, Group C & D
Physical: 6.75"H x 4" W x 3.5"D
(17.1cm x 10.2cm x 8.9cm)

Operating Temperature: 14°F to 104°F
(-10°C to 40°C)

Storage Temperature: -67°F to 185°F
(-55°C to 85°C)

Relative Humidity: 5 to 95% non-condensing

Loop Resistance: 800 ohms maximum
Input Current: 86 mA at 29VDC
Wiring: 3 wire non-isolated

Mounting Style: Surface

Weight: 2 lbs (0.9kg)

Material: Cast aluminum epoxy painted

SAMPLE GUIDE SPECIFICATIONS

Provide a refrigerant leak detection sensor(s) to monitor for R-xxx refrigerant leaks. The sensing element shall be solid state metal oxide semiconductor type and have a typical life of at least 4 years. The sensor shall be powered by 24 VDC and have a 4 to 20 mA output signal.

The sensor shall be housed in an industrial style, explosion proof housing and have explosion proof conduit connections to the housing to maintain system integrity.

NOTE:

- 1) Refrigerant R744 is Carbon Dioxide (CO₂) - Use a TOXALERT Air2000 sensor which has both a digital and a 4 to 20 mA output.
- 2) Refrigerant R717 is Ammonia (NH₃) - Use TOXALERT Tox-NH₃/ANA sensor which has a 4 to 20 mA output.
- 3) Refrigerant R764 is Sulfur Dioxide (SO₂) - Use a TOXALERT Tox45-10 sensor which has a 4 to 20 mA output.

HOW TO ORDER

Part #	Description
TOX-Refrig/xxx	Refrigerant Sensor

XXX= Refrigerant Identification No.

Example: TOX-REFRIG/134a R-134a Refrigerant Sensor

