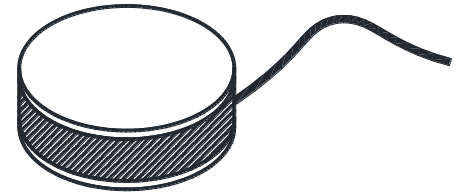


## TRM-IOS

## Industrial Oil Sensor



### Product Description

TRM-IOS-1 is designed to detect refined oils, dielectric oils, heat transfer fluids and similar non-conductive, non-fuel liquids. There are no tools needed for installation. Sensors are placed below oil filled equipment on the vault floor, in a drip pan or within a mini-containment where leaking liquid could accumulate.

Detection and alarm occurs when the puddle of leaking oil or fluid reaches the base of the sensor. In the normal state (no oil present) the internal sensor element has a low resistance <5000 ohms. Contact with transformer oil, hydraulic oil, heat transfer oil, etc. causes the sensor resistance to increase rapidly. There are no moving parts or active electronic components in the sensor. The detection mechanism is based on a conductive polymer film that chemically reacts to the presence of the targeted liquid. TRM-IOS works in conjunction with the TRM Relay Unit Type-CV. The Relay Unit operates on 12 Vdc and provides a Form-C dry contact output. Interface to other industrial monitoring devices is possible on a case by case basis either as a digital input or as input to a 0-5Vdc or 0-10Vdc analog interface.

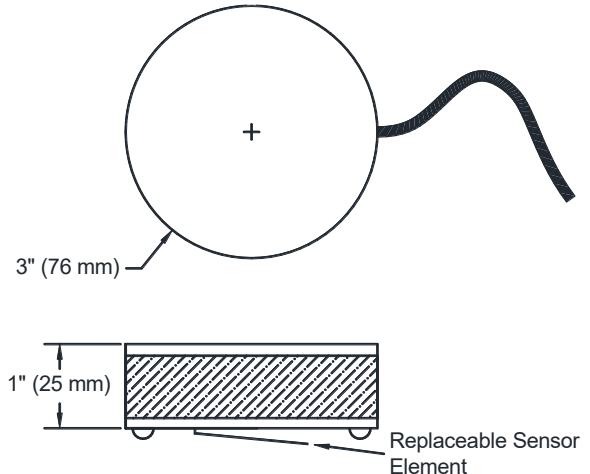
The TRM-IOS qualifies as "simple apparatus" per CSA/EN/IEC/UL 600779-11 Clause 5.7 a) & b). It may be installed in hazardous with zener barriers.

The TRM-IOS is not adversely impacted by water, but it should not be installed at the bottom of a potentially wet sump. If the sensor is submerged by accumulated water, any oil spill will float on the water surface and not come into contact with the sensor element.

The TRM-I ships with spare sensor elements that can be exchanged without tools to re-establish monitoring with little or no down time.

### Key Features

- Fast detection of leaking transformer oil, heat transfer fluid an hydraulic oil based transformer oil
- Simple monitoring options with TRM Relay Unit Type-CV and similar monitor devices
- No moving parts
- Sensor element can be replaced if necessary



### Product Specifications

- TRM-IOS-1 is a passive resistance device. Measurement voltage is supplied by monitoring instrument
- Response times at 70°F (21°C):
  - Mineral oil - less than 30 seconds
  - Hydraulic oil - less than 30 seconds
  - Dowtherm A - less than 30 seconds
- Qualifies as simple apparatus per CSA/EN/IEC/UL 600779-11 Clause 5.7 a) & b). May be installed in hazardous areas with appropriate zener barrier
- Dimensions: 1" thick x 3" dia. (25.4 mm x 76.2 mm dia.)
- Weight: Approx. 6 oz. (412 gm)
- Body material: hard rubber
- Operating Temperature: -40F to 140°F (-40°C to 60°C)
- Replaceable sensor elements supplied with sensor body and available for purchase
- Supplied with 2 m (6 ft.) of 2-wire leader cable. Other lengths of leader cable can be supplied on request.

Actual response times are a function of the target fluid and the alarm threshold of the monitoring device. Response time testing using a sample of the actual fluid of interest is recommended. Contact the factory at [info@trmsensors.com](mailto:info@trmsensors.com) for assistance.

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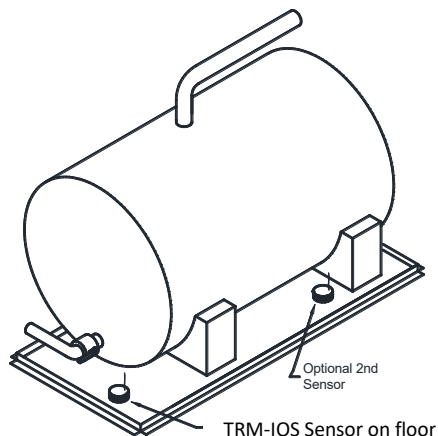
# TRM-IOS INSTALLATION AND CARE INSTRUCTIONS

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## Installation Instructions

1. Place sensors on the floor or in a drip pan near potential leak source including the area beneath transformer bushings, fittings and similar potential leak sources
2. Use multiple sensors for larger areas.
3. Assure that all sensors are resting flat on the floor or drip pan surface. If necessary, reposition the leader cable to remove any residual twist or tension.
4. TRM-IOS sensors are supplied with 2 meters (6 ft.) of leader cable. The installer may use up to 100 additional meters (330 feet) of similar jumper cable (minimum 22 AWG) to connect the sensor to the monitoring instrument.
5. TRM recommends using the TRM-DFS-3-SSHD hold down. The fixture can be permanently attached to the floor surface and allows the IOS-1 sensor to be easily removed and re-installed if service is required.
6. Connect the red and black wires to the appropriate terminals on the TRM Relay Unit Type-CV. (Note: With appropriate wiring it is possible to monitor the TRM-IOS with a direct connection to many PLC systems or similar DCS either as a digital input or as a 0-5 Volt or 0-10V input. Contact the factory for wiring details.)

\* For large floor areas or trenches a mini-containment or trench barrier can be fabricated with PVC angle and construction adhesive. (Grainger Items #1NTY2 and 2GXU5 or equivalents). Additional TRM-DFS-3 sensors may also be appropriate.



## Sensor Element Replacement:

Each TRM-IOS is shipped with a spare sensor elements.

If a spill occurs use this procedure to restore:

1. Loosen the thumb screw and remove the TRM-IOS-1 from the hold down fixture.
2. Pull the sensor element from the sensor body. The connection is a simple two-pin header. No tools are needed.
3. Wipe the base of the sensor body with a dry cloth to remove any oil clinging to the sensor body
4. Thoroughly clean the floor area beneath the sensor to remove any residual traces of spilled oil.
5. After clean-up is complete, install a replacement sensor element. No tools are required. There is no polarity to observe, but correct orientation will yield the best sensitivity. The element has a red-dot on one side. The side with the red dot is the surface that should contact the floor once the sensor is re-installed. Make sure to orient the sensor element so that when the sensor element is folded under the sensor body, the side marked "THIS SIDE DOWN" is in contact with the floor.
6. Once the sensor element has been replaced and the floor is clean, slip the sensor body into the SSHD hold down fixture and secure in place with the thumb screw.
7. Because of the oily nature of the industrial oils and fluids, cleaning and reset of the sensor element is not feasible. The oily sensor element should be discarded.

Additional replacements are available from TRM Sensors as p/n: TRM-IOS-1-RSE

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