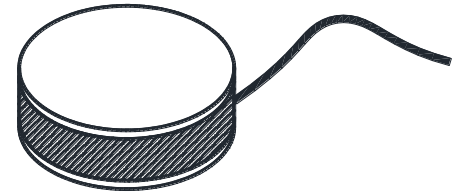


## TRM-DFS-3

### Fuel / Oil Sensor for flat surfaces



### Product Description

TRM-DFS-3 is designed for indoor use wherever diesel fuel or other hydrocarbon based liquids are stored or pumped. There are no tools needed for installation and the system is designed for immediate and simple installation by the end user. Sensors are placed on the floor, in a drip pan or within a mini-containment where leaking fuel will accumulate. The area beneath a pump or valve, underneath a day tank or below a filter body are typical application areas.

Detection and alarm occurs when the puddle of leaking fuel reaches the base of the sensor.

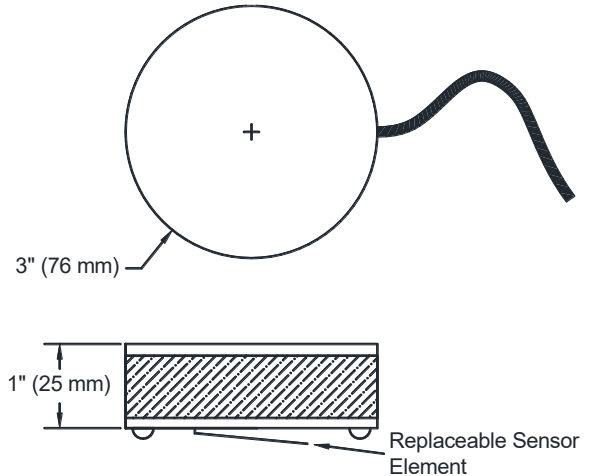
TRM-DFS-3 works in conjunction with the TRM Relay Unit Type-CV and with most Building Managements Systems, PLCs, RTUs or similar site monitoring equipment capable of monitoring a dry contact input. In the normal state (no fuel present) the sensor emulates a closed contact with resistance <100 ohms. Contact with diesel, gasoline, jet fuel and similar liquid hydrocarbons causes the sensor resistance to increase rapidly, simulating an open contact. "Alarm" resistance is > 5 meg-ohms.

There are no moving parts or active electronic components in the sensor. The TRM-DFS-3 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 DFS-3 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 fuel spill will float on the water surface and not come into contact with the sensor element.

### Key Features

- Fast detection of leaking diesel fuel or other hydrocarbon liquids
- Simple monitoring options with TRM Relay Unit Type-CV or as normally closed dry contact input to BMS, PLCs, RTUs and similar alarm systems
- No moving parts
- Sensor will typically reset once the fuel evaporates
- Sensor element can be replaced if necessary



### Product Specifications

- DFS-3 is a passive resistance device. Measurement voltage is supplied by monitoring instrument (maximum 24 Vdc, 1 mA)
- 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
- "Closed contact" resistance <100 ohms\*
- "Open contact" resistance (alarm state) > 5 meg-ohm
- 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)
- Resets after exposure to diesel or similar light hydrocarbons in most instances after fuel evaporates
- Replaceable sensor elements available
- Supplied with 2 m (6 ft.) of 2-wire leader cable. Other lengths of leader cable can be supplied on request.

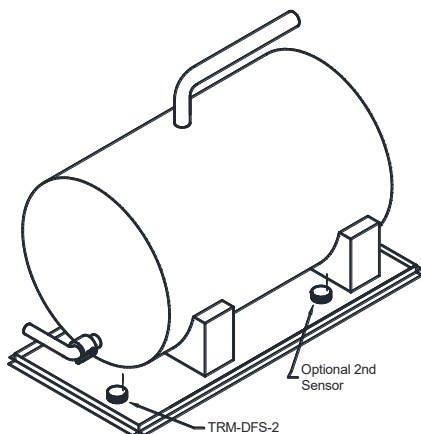
\* Most, but not all, PLC type devices will accept a "closed" contact resistance up to 100 ohms. If using an untested monitoring device check compatibility by connecting a 100 ohm resistor across the device's dry contact inputs and verify that the monitoring device reports a closed contact.

# TRM-DFS-3 INSTALLATION AND CARE INSTRUCTIONS

## Installation Instructions

1. Place sensors on the floor or in a drip pan near potential leak source including valves, pumps, filters, flex couplings, pipe unions, and other fittings.\*
2. Place one or more sensors under any day tank, preferably at low end of the tank and beneath fill and drain fittings.
3. Place sensors at low end of pipe trenches using PVC angle to deflect any spills to sensor position. On long trenches consider one or more additional mid-point sensors.\*
4. 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.
5. TRM-DFS-3 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. Or contact the TRM Sensors for custom lengths of leader cable installed at the factory.
6. TRM recommends using the TRM-DFS-3-SSHD hold down fixture in any area where there is foot traffic. The fixture can be permanently attached to the floor surface and allows the DFS-3 sensor to be easily removed and re-installed if service is required.

\* 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 Reset Instructions:

Each TRM-DFS-3 is shipped with a spare sensor element.

If a spill occurs use this procedure to restore service and reset the sensor element:

1. Remove the TRM-DFS-3 from the hold down fixture if installed
2. Remove the "wet" element and install the spare element.
3. After repairing the source of the leak and cleaning any residual diesel fuel from the floor area, replace the TRM DFS-3 sensor with its new element into its original position.
4. Take any necessary reset action at the alarm panel and verify that the system is back on line in "normal" condition.
5. Place the "wet" element on a paper towel with the sensor material facing up and allow it to air dry for 2 to 3 days. The diesel fuel will evaporate and the resistance of the sensor element will gradually return to a low value.
6. To speed up the process, try dipping the sensor element into a small quantity of liquid lighter fluid. (Can usually be obtained as traditional style Zippo or Ronsonol lighter fluid....not butane). Dip the sensor element in the naphtha for 10 to 20 seconds, then set aside on a paper towel to evaporate dry for 1 or 2 hours. Repeat the dip-and dry process 2 or 3 times if necessary.
7. Each leak detection / reset cycle will gradually increase the "normal" resistance of the sensor. Depending on the alarm threshold of the monitoring equipment. It may eventually be impossible to achieve a low enough resistance for the system to consider the sensor to be a 'closed contact.' Replace the sensor element if it cannot achieve a reset condition
8. DO NOT touch or wipe the black square of sensor material. If the black square of sensor material is delaminated or scraped away, the sensor element must be replaced.

Replacements are available from TRM Sensors as p/n: TRM-DFS-3-RSE

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