TRACETEK TT-FFS AND TT-FFS-WR



FAST FUEL SENSORS



PRODUCT OVERVIEW

nVent RAYCHEM TraceTek Fast Fuel Sensors (FFS) are fast acting sensors designed to detect hydrocarbon fuel. The sensor ignores water, but detects a thin film of fuel floating on the surface.

Reaction time for the sensor is typically a few seconds for light or middle weight fuels such as gasoline, jet fuel, and diesel. It is also responsive to crude oil and some heavier weight fuels and heating oils but becomes progressively slower as the fuel volatility decreases.

In many cases the FFS sensor will reset after the sensor is removed from contact with the spill and the fuel is allowed to evaporate. Some heavier fuels require that the sensor be soaked in isopropyl alcohol or naphtha in order to clear the heavier fuel residuals.

The sensor may be used repeatedly without replacement until it will no longer reset. The sensor fails in the "alarm" state so there is no ambiguity when it is necessary to replace the sensor.

TT-FFS sensors are designed to work only with nVent RAYCHEM TraceTek leak detection instruments, and are not suitable for use with other non-nVent RAYCHEM TraceTek circuits. Speak with your local nVent representative to find out more about options for controllers and alarm panels. The sensor may be periodically tested using a small amount naphtha (lighter fluid). The sensor resets when the naphtha evaporates.

Design features

- · Fast response to small amount of fuel
- Resets for multiple uses
- Easily tested
- Compatible with nVent RAYCHEM TraceTek Instruments
- Intermix up to 3 FFS sensors with nVent RAYCHEM TT5000 sensor cable per TTSIM to form hybrid cable and sensor systems
- Suitable for installation in CID1 (Zone 0) with appropriate safety barrier
- SIL-2 Rated Safety System Component

Standard Version

The standard version (TT-FFS sensor) meets the FM 7745 Approval Standard for Diesel Leak Detectors for detecting Diesel Fuel leaks in commercial buildings. It improves the safety of diesel generators used for back-up electrical power, reducing the risk of fire if a leak were to occur. The TT-FFS sensor may be used for the same purpose near oil storage tanks used to fuel boilers or other heating related equipment in commercial buildings.

| Recommended Part Numbers for Dry Area Applications | | | | |
|--|-----------------|-------------------------|--|--|
| TT-FFS Sensors without Connectors on Leader Cable | | TT-FFS Sensors with - M | TT-FFS Sensors with – MC Series Metal Connectors on Leader Cable | |
| Part number | Catalog number | Part number | Catalog number | |
| P000000984 | TT-FFS-100-L-1 | P00000990 | TT-FFS-100-MC-1 | |
| P000000985 | TT-FFS-100-L-3 | P000000991 | TT-FFS-100-MC-3 | |
| P000000986 | TT-FFS-100-L-10 | P000000992 | TT-FFS-100-MC-10 | |
| P000000987 | TT-FFS-250-L-1 | P000000993 | TT-FFS-250-MC-1 | |
| P000000988 | TT-FFS-250-L-3 | P000000994 | TT-FFS-250-MC-3 | |
| P000000989 | TT-FFS-250-L-10 | P000000995 | TT-FFS-250-MC-10 | |

Water Resistant Version

The water resistant version (TT-FFS-WR sensor) is effective at detecting overflow leaks in hydrocarbon storage tanks in tank farms. It is also an ideal solution for monitoring hydrocarbon contamination on water or in sumps using a float assembly.

| Recommended Part Numbers for Wet Area Applications | | | | |
|--|--------------------|--------------------------|---|--|
| TT-FFS-WR Sensors without Connectors on Leader Cable | | TT-FFS-WR Sensors with - | TT-FFS-WR Sensors with – MC Series Metal Connectors on Leader Cable | |
| Part number | Catalog number | Part number | Catalog number | |
| P000002304 | TT-FFS-WR-100-L-10 | P000002306 | TT-FFS-WR-100-MC-3 | |
| P000002289 | TT-FFS-WR-250-L-10 | P000002305 | TT-FFS-WR-100-MC-10 | |
| | | P000002303 | TT-FFS-WR-250-MC-3 | |
| | | P000002290 | TT-FFS-WR-250-MC-10 | |



 Leader cable length (ft)

 MC = connector; L = no connector

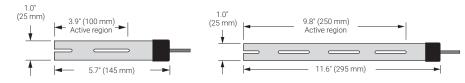
 Active sensor element length in mm

 WR = water resistant version for wet area applications; blank = standard version for dry area applications

ACCESSORIES

| Part number | Catalog number | Product description |
|-------------|-------------------------|--|
| P000001040 | TT-FFS-MOUNTING-BRACKET | Stainless steel L-shaped mounting bracket to hold FFS onto floor |
| P000001048 | TT-FFS PROBE TESTER | TT-FFS series hand held, battery powered fast fuel sensor test unit |
| 1244-004251 | TT-FFS-FLOAT-1M | TT-FFS series float assembly 1 meter long |
| 1244-004252 | TT-FFS-FLOAT-2M | TT-FFS series float assembly 2 meters long |
| P000001142 | TT-FFS-EEC-100 | TT-FFS-100 series extreme environment cover for added protection from dirt, sand, etc. |
| P000001143 | TT-FFS-EEC-250 | TT-FFS-250 series extreme environment cover for added protection from dirt, sand, etc. |

DIMENSIONS



| PRODUCT CHARACTERISTI | CS |
|-----------------------|--|
| External diameter | 1 inch (25.4 mm) |
| Color | Orange |
| Tube material | Polypropylene with static charge reduction additive |
| Leader cable | 4 x 22 AWG, polyurethane jacketed, fuel resistant |
| Connector | nVent RAYCHEM Tracetek "MC" series compatible with all nVent RAYCHEM Tracetek MC components and cable Note: FFS is wired in "End Termination" configuration |

| OPERATING ENVIRONMENT INFORMATION | | | |
|---|--|--|--|
| Operating/storage temperature -40°F to 185°F (-40°C to 85°C) | | | |
| Operating temperature of TT-FFS-WR water resistant version when immersed in water | 33°F - 185°F (1°C - 85°C) | | |
| Salt water immersion | Tested for 30 days in 3% salt water at 20°C without failure or degraded response | | |
| Hot water immersion | Tested for 30 days in 60°C water without failure or degraded response | | |
| Acid resistant | 24 hours in 10% H2SO4 or 10% HNO3 without failure or degraded response | | |

Note: The above water immersion test information is intended as a guide to the TT-FFS-WR sensor's water resistant capabilities.

RESPONSE TIME

| Representative materials detected | Typical response time at 20°C |
|-----------------------------------|-------------------------------|
| Gasoline | Less than 5 seconds |
| Jet A fuel | Less than 5 seconds |
| Diesel | Less than 5 seconds |
| Naphtha | Less than 5 seconds |
| MTBE (Methyl Tert-Butyl Ether) | 12 seconds |
| Biodiesel (B100) | 45 seconds |
| Crude oil | 3 mins |

Note: Time to alarm observed in the field is dependent on equipment configuration and field conditions.

APPROVALS



IS/Class I, Div. 1, Groups A, B, C, D/T4; Class I Zone 0, AEx ia IIC T4 NI/Class I, Div. 2. Groups A, B, C, D/T4; Class I Zone 2, Group IIC T4



IEC 61508 Safety Integrity Level -2 (when used with TTC-1) Ref BN/PTX/CB859/1580190/06/R/216/0

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Ex ia IIC T4 Ga (-40° C \le ta \le +85° C) (U_{i} = 15V) Ex ia IIA T4 Ga (-40° C \le ta \le +85° C) (U_{i} = 28V)

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