

# TRACETEK TT-FFS AND TT-FFS-WR



**RAYCHEM**

## 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

## ORDERING INFORMATION

### 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.

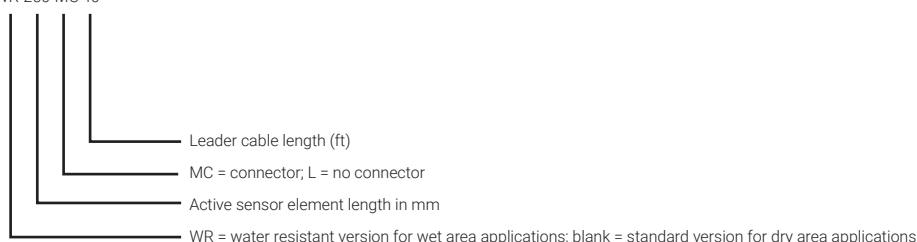
Recommended Part Numbers for Dry Area Applications			
TT-FFS Sensors without Connectors on Leader Cable		TT-FFS Sensors with – MC Series Metal Connectors on Leader Cable	
Part number	Catalog number	Part number	Catalog number
P000000984	TT-FFS-100-L-1	P000000990	TT-FFS-100-MC-1
P000000985	TT-FFS-100-L-3	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 – 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

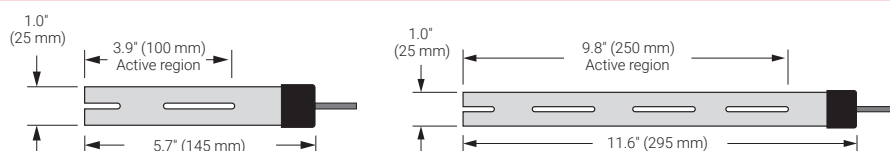
TT-FFS-WR-250-MC-10



## 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 CHARACTERISTICS

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
	<b>Note:</b> FFS is wired in "End Termination" configuration

## OPERATING ENVIRONMENT INFORMATION

Operating/storage temperature in dry areas	-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

Baseefa11ATEX0221X  
 IECEx BAS 11.0111X



Ex ia IIC T4 Ga (-40°C ≤ ta ≤ +85°C) (U<sub>i</sub> = 15V)  
 Ex ia IIA T4 Ga (-40°C ≤ ta ≤ +85°C) (U<sub>i</sub> = 28V)

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