

# CERTIFICATE OF CONFORMITY



- HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
- Certificate No:** FM18US0209X
- Equipment:** TraceTek® Diesel Leak Detection System  
**(Type Reference and Name)**
- Name of Listing Company:** nVent Thermal LLC
- Address of Listing Company:** 899 Broadway St,  
Redwood City, CA 94063  
USA
- The examination and test results are recorded in confidential report number:  
  
3038815 dated 7<sup>th</sup> June 2010
- FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:  
  
FM Class 3600:2018, FM Class 3610:2010, FM Class 3611:2004, FM Class 7745:2019,  
FM Class 3810:2018, ANSI/NEMA 250:2003, ANSI/IEC 60529:2004
- If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
- This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
- Equipment Ratings:**  
  
TraceTek® Leak Detection System. System consists of TTDM-128 or TTDM-128-24V Leak Detection Master Module. Optional TTSIM-x-y (x= 1A or 2; y = 12VDC, 24VDC, 24, 120 or 230) Sensor Interface Module for network of up to 128 addressable points. TTxxxx Series cables for system interconnection, suitable for operation in ambient temperatures from -4° to 122°F (-20° to 50°C). Surge suppression required on detection circuits for installations that may be exposed to surge transients. TTDM-128 and TTSIM suitable for operation in

**Certificate issued by:**

J. E. Marquedant  
VP, Manager - Electrical Systems

4 October 2019  
Date

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

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# SCHEDULE



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ambient temperatures from 32° to 122°F (0° to 50°C), TT-FFS probes suitable for operation in ambient temperatures from -40° to 185°F (-40° to 85°C), TTDM-128 rated Type 12, IP54. TTSIM Sensor Interface Module is Associated Non-incendive Field Wiring (NIFW) apparatus providing connections for Class I, Division 2, Group A, B, C and D; Class I, Zone 2, Group IIC hazardous (classified) locations ( Voc = 15V, Isc = 8 mA, Ca = 2.6uF, La = 7.75mH).

Hydrocarbon Leak Detection:

TraceTek TT-FFS-a-b-c-d-e Fast Fuel Sensor  
FM18US0137X

TT-FFS-a-b-c-d-e (a = WR or not used, b =100 or 250; c = MC or L; d = leader length in feet, e = l or not used)  
TT-FFS probes suitable for operation in ambient temperatures from -40° to 185°F (-40° to 85°C)

TT-FFS hydrocarbon leak detection probes are suitable for use as Intrinsically safe for Class I, Division 1, Groups A, B, C and D and Class I, Zone 0, Group IIC, temperature Class T4 at an ambient of 60°C, nonincendive for Class I, Division 2, Groups A, B, C and D and Class I, Zone 2, Group IIC, temperature Class T4 at an ambient of 60°C when installed in accordance with the Nonincendive Field Wiring concept and Control Drawing 1027-5000.

Nonincendive field wiring parameters  
Vmax = 15V Ci = 0.28µF Li = 0

Specific Conditions of Use:

1) WARNING: Do not clean with dry cloth

Water Leak Detection:

TT1000-SC, TT1000-a-PC (a = Length xxM/xxFT)  
TT1000 cable suitable for operation in ambient temperatures from 14°F to 167°F (-10°C to 75°C)

TT1100-OHP-SC, TT1100-OHP-a-PC (a = Length xxM)  
TT1100-OHP cable, suitable for operation in ambient temperatures from 14°F to 176°F (-10°C to 80°C)

TT3000-SC, TT3000-a-MC (a = Length xxM/xxFT)  
TT3000 cable suitable for operation in ambient temperatures from 14°F to 194°F (-10°C to 90°C)

TT-FLAT PROBE, suitable for operation in ambient temperatures from -32°F to 122°F (0°C to 50°C)

TT-MINI-PROBE suitable for operation in ambient temperatures from 0°F to 194°F (-18°C to 90°C)

11. The marking of the equipment shall include:

Intrinsically Safe for Class I, Division 1, Groups A, B, C and D T4 Ta=+60°C

Intrinsically Safe for Class I, Zone 0, AEx ia IIC T4 Ta=+60°C

Class I, Division 2, Groups A, B, C and D T4 Ta=+60°C; NIFW;1027-5000

Class I, Zone 2, Group IIC T4 Ta=+60°C; NIFW; 1027-5000

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## 12. Description of Equipment:

**General** - The TTDM-128 control directly monitors a network of up to 128 remote TTDM-128 controls or TTSIM modules. When liquid is detected on any of the sensors, the TTDM-128 sounds an alarm, closes relay contacts, turns on a front panel LED and displays the circuit identification and location of the leak on the alphanumeric display. The leak detection event is logged to a non-volatile event history file. Each sensor circuit detects, locates and tracks leaks independently from any other circuits connected to the TTDM-128. The TTDM-128 has three relays, for service, leak, and fault. Each relay provides two Form-C relay contacts, and normally open and normally closed contacts are both provided. The relays are de-energized to indicate an alarm condition.

**TTSIM Module:** The TTSIM-x-y (x= 1, 1A or 2; y = 12VDC, 24VDC, 24, 120 or 230) Sensor Interface Module can monitor a TT-FFS probe or monitors up to 150 meters (500 feet) of TraceTek sensing cable. When liquid is detected, the TTSIM-2-y unit indicates the leak, displays the location of the leak and switches a relay to provide local voltage-free contact closure. The TTSIM-2 can also communicate to a host monitoring system such as a TraceTek TTDM-128 or directly to a PLC or other host system using standard protocols. TTSIM-1A-y units are identical to TTSIM-2-y units except that there is no local display of leak location.

**TT-FFS TraceTek® Fast Fuel Sensor:** The sensor is a fast acting probe designed to detect hydrocarbon fuel floating on water, spreading on a flat surface or collecting in a sump. The probe ignores water, but detects a thin film of fuel floating on the surface. The probe is available in two lengths for fixed position installations and can also be fitted onto a float assembly if the water level is unpredictable. The sensor may be used repeatedly without replacement until it will no longer reset. The probe fails in the "alarm" state so there is no ambiguity when it is necessary to replace the probe. The probe resets when the naphtha evaporates.

**TT1000 Water Sensing Cable:** The TT1000 sensing cables provide distributed leak detection and location over a wide range of areas. The cable is available in a variety of lengths or bulk lengths (TT1000-SC). TT1000 sensing cable is supplied with factory-installed plastic connectors that plug together. The cable is designed for a range of applications, including data center subfloors, telecommunication rooms, HVAC equipment locations, pipes, electrical vaults, storage areas, tanks, and roofs. The cable is constructed of two sensing wires, an alarm signal wire, and a continuity wire embedded in a fluoropolymer carrier rod. The alarm module constantly monitors the sensing cable for continuity.

**T1100-OHP Water Sensing Cable for Suspended Pipe:** TT1100-OHP is supplied with an absorptive synthetic fiber braid designed to wick water along the cable even when the water leak is dripping from a single small pin hole or crack. The fiber is rapid drying so that once the leak is located and repaired, the cable can be ready for re-use. The TT1100-OHP is a distributed sensor that can be attached to the bottom of suspended piping with nylon tie-wraps.

**T3000 Sensing Cable for Conductive Liquids:** TT3000 sensing cable provides distributed leak detection and location over a wide range of areas. The cable is available in a variety of lengths or bulk lengths (TT3000-SC). TT3000 sensing cable is available with factory-installed metal connectors that plug together. The cable is designed for a variety of applications, including floor surfaces, subfloors, equipment locations, pipes, storage tanks, and trenches. The cable is small, lightweight, and flexible, allowing easy installation. The smooth design allows quick drying.

**TT-FLAT PROBE Water Leak Detection Probe:** The TT FLAT PROBE is a special purpose probe designed to detect water leaks in specific locations. It is intended to be floor or tray mounted, using either screw or adhesive attachment. The unit has an orange color to promote visibility in the installed location. When mounted on a

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metal surface (e.g. a drip pan), minimum water depths of approximately 0.2 in (5 mm) may be required for leak detection. The TT-FLAT PROBE can be interconnected with jumper cable to other TT-FLAT PROBE or TraceTek sensing cable segments.

TT-MINI-PROBE Liquid Leak Detection Probe: The TT-MINI-PROBE is for low point leak detection. It is a special purpose probe designed to detect water leaks in space limited locations. The TT-MINI-PROBE can also be used to detect leaks in drip trays or sumps, or low spots where TraceTek sensing cables are inappropriate. The TT-MINI-PROBE will detect leaks with as little as 3 mm (1/8 inch) of the probe electrodes exposed to liquid, but the probe can be installed in virtually any position to provide optimized leak sensitivity.

**13. Specific Conditions of Use:**

- 1. WARNING: Do not clean with dry cloth

**14. Test and Assessment Procedure and Conditions:**

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

**15. Schedule Drawings**

A copy of the technical documentation has been kept by FM Approvals.

**16. Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
7 <sup>th</sup> June 2010	Original Issue.
12 <sup>th</sup> July 2018	<u>Supplement 6:</u> Report Reference: RR214027 dated 12 <sup>th</sup> July 2018 Description of the Change: 1) Name change to nVent Thermal LLC. 2) Updated the address from Menlo Park, CA location to Redwood City, CA location. 3) Updated the year on FM Class 3600 standard to 2018 due to nontechnical changes in its latest edition.
8 <sup>th</sup> July 2019	<u>Supplement 7:</u> Report Reference: RR219232 dated 8 <sup>th</sup> July 2019 Description of the Change: Added new model TT-FFS "WR" option and reformatted listing.
4 <sup>th</sup> October 2019	<u>Supplement 8:</u> Report Reference: PR454145 dated 4 <sup>th</sup> October 2019. Description of the Change: Added Water Leak Detection.

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