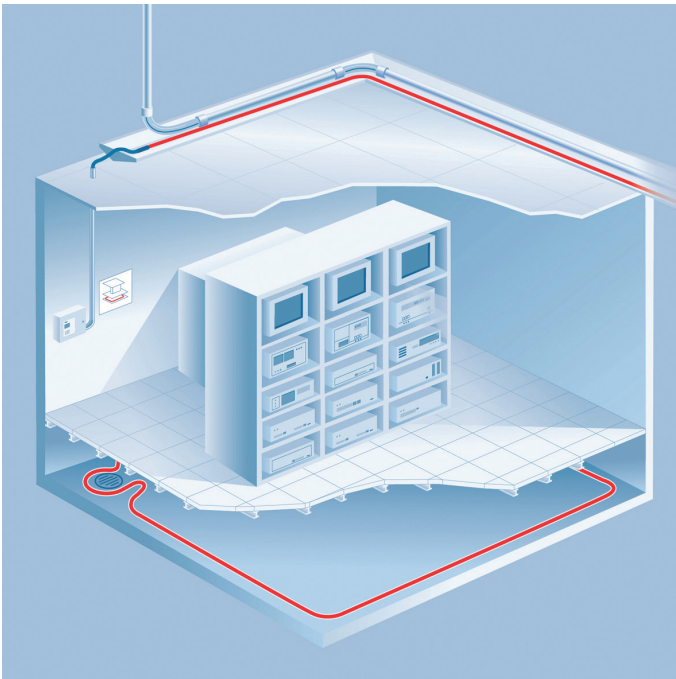


# WATER LEAK DETECTION

## SPECIFICATION GUIDELINE PINPOINT LOCATION SYSTEMS WITH TOUCH SCREEN USER INTERFACE



Furnish a complete system, including digital electronic alarm and locating modules, modular sensing cable/water detection probes, map, and auxiliary equipment as manufactured by nVent and known as the nVent RAYCHEM TraceTek leak detection and location system.

**SENSING CABLE:** The system shall provide pre-connectorised sensing cable and sensing cable components all with locking connectors. The sensing cable shall, for the majority of cases, be capable of being cleaned in situ with a damp cloth. The sensing cable shall be capable of withstanding all liquids within the designated areas, such that it can be reused after cleaning. The sensing cable and all interconnecting jumper cables shall comply with class 2 plenum rating for LSF (low smoke and fume). Polyethylene cable materials shall be prohibited due to smoke and fumes generated in case of fire. The sensing cable shall be vibrant yellow for easy identification within floor voids, drip trays and general service areas. The cable shall be of a four-wire construction, in order to provide continuous verification of sensing circuit integrity. The four wires shall have a fluoropolymer insulation or coating and be wound helically around a central fluoropolymer core. The sensing cable shall be of such construction that no metallic parts are exposed in order to avoid corrosion. The sensing cable system shall feature modular branching connectors in order to introduce tee splices into the layout. The sensing cable shall be nVent RAYCHEM Tracetek TT1000/TT1100.

**WATER DETECTION PROBES:** The system shall support several types of water sensing probes for leak detection at specific points. Each probe shall be provided with pre-installed connectors for connection into the TraceTek system.

**Floor/Wall Mount Probe** – Intended to be placed or mounted such that any water in a specific area shall be detected. The probe shall be capable of being floor or wall mounted. An orange epoxy powder coated, low profile guard plate will ensure that the probe will not fall over and bright colour give high visibility. The water sensing tips shall be of stainless steel to eliminate the chances of corrosion.

**Drain Probe** – Intended to be placed in a drain or a low point to detect collected water. The probe will be of diameter 0.70" or less to fit easily into drains or low points. The water sensing tips shall be of stainless steel to eliminate the chances of corrosion.

**Float Probe** – Intended to detect water level and report when the water reaches a defined level. This is to be used where the presence of water is normal or acceptable up to a certain point.

### ALARM PANEL

The digital alarm panel (nVent RAYCHEM Tracetek TT-TS12 or TT-TS12-E) shall be able to monitor up to 250 digital Sensor Interface Modules (TTSIM's with up to 1500 meter monitoring capability on each channel) with pinpoint location of the leak to within +/- 1 m.

The alarm panel shall have a 12" full color, SVGA TFT LCD display with touch screen capability for user interaction and control. Ingress protection shall be via front panel NEMA4, IP65, enclosure NEMA1, IP10.

When a leak is detected on any of the nVent RAYCHEM Sensor Interface Modules (TTSIMs) the Alarm Panel shall:

- identify the reporting digital TTSIM module on the touch screen display
- display the digital value of the liquid location on the touch screen display
- actuate an output relay
- provide a visual Leak Map accessible via the touch screen display, which illuminates a flashing "LEAK" icon over a user designated background image
- sound an audible alarm
- Send an email or text message to designated personnel if desired by user.
- Record and store the leak event details in a log file which can be reviewed directly from the alarm panel.

The visual leak map background image may be a floor plan showing where the sensor cable has been installed, a pipe or tank plan, or up to 250 graphics or pictures of a single piece of equipment with each image having up to 100 "mapping points" so that multiple branch circuits or complex cable patterns are easily captured for future leak location displays. Mapping points are entered during initial start-up and commissioning services to provide the reference for leak location displays and can be displayed in English, French and German.

The nVent RAYCHEM Tracetek Alarm panel (TT-TS12 or TT-TS12-E) shall have a security password for access to the maintenance menus. It shall report date and time stamp, and record to non-volatile memory, all alarm events into an event history log. Onboard memory for up to 5000 events including exporting data to a USB memory stick in XML format for off-line analysis. All software updates shall be downloadable as they become available.

The alarm panel shall be capable of digitally communicating to host systems via RS 485 (2 Wire) DB-9 Connector in Modbus protocol or via Ethernet RJ41 connector in TCP/IP, at the user's option.

The digital alarm panel (TT-TS12 or TT-TS12-E) shall indicate the status of each digital locating module (TTSIM) with the following colour code: 'monitoring' (green), 'service required' (yellow), 'leak' (red), 'fault' (red). These shall result in an audible alarm, a leak LED signal on the face of the unit, and shall operate a relay for remote alarm. The location of the first water contact shall be retained on the display until the cable is dry and the module is reset. The current status of the system shall also be displayed.

## LOCATING MODULES

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The digital Sensor Interface Modules (TTSIM) shall detect that water has contacted the sensing cable and shall locate the origin of the leak to within +/- 1 m.

The digital Sensor Interface Modules (TTSIM) shall continue to monitor the sensor cable for spread or migration of the initial leak beyond a user adjustable dead band. It shall also be capable of monitoring the sensing cable for additional leak events that are spatially separated from the initial event. Upon detection of a second event or if the initial leak is determined to have spread beyond the dead band, the alarm panel shall re-alarm with an audible alarm, alphanumeric message and event logging.

The digital Sensor Interface Modules (TTSIM) shall continuously monitor the sensor cable for build-up of contaminants and alert the operator via the touch screen control panel if contamination is detected. Upon detection of a contamination event, the alarm panel shall cause an alphanumeric message; service needed relay actuation and event logging.

The digital Sensor Interface Modules (TTSIM) shall continuously monitor the sensor cable for continuity faults. The loss of continuity in any of the wires shall result in the actuation of a fault relay, an alphanumeric status message indicating fault and an event logged to non-volatile memory.

The digital Sensor Interface Modules (TTSIM) shall require no additional operator programming after commissioning and shall automatically calibrate whenever power is applied.

The alarm panel and the digital locating modules shall be Model TT-TS12 or TT-TS12-E with TTSIM-1/1A/2.

System and product approvals: all products should be manufactured within an ISO 9001 certified factory; copies of the certification should be available upon request.

**INSTALLATION:** The installation shall not take place until all construction work to the area of installation is completed, all debris and construction by products have been taken away and the area cleaned. The sensing cable system and alarm and locating modules shall be of the type that is simple to install, commission and maintain without the need for special tools, e.g. oscilloscopes, sine wave generators, etc. Sensing cable shall be removed should it be necessary to conduct any local building modifications and replaced when completed. The appointed contractor shall ensure that the system is installed by a TraceTek trained partner who shall create a graphic display map of the installation. The map shall be of good quality and show location of alarm and locating modules sensing cable layout, room landmarks. Upon completion of the installation the TraceTek system shall be commissioned in strict accordance with the manufacturer's instructions by the TraceTek trained partner to ensure compliance with the warranty requirements

The sensing cable system supplier shall provide a small portable test box for maintenance purposes. Features shall include measured current flow levels and exact location.

**United Kingdom**

Tel 0800 969 013  
Fax 0800 968 624  
salesthermalUK@nvent.com

**Ireland**

Tel 1800 654 241  
Fax 1800 654 240  
salesIE@nvent.com



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