



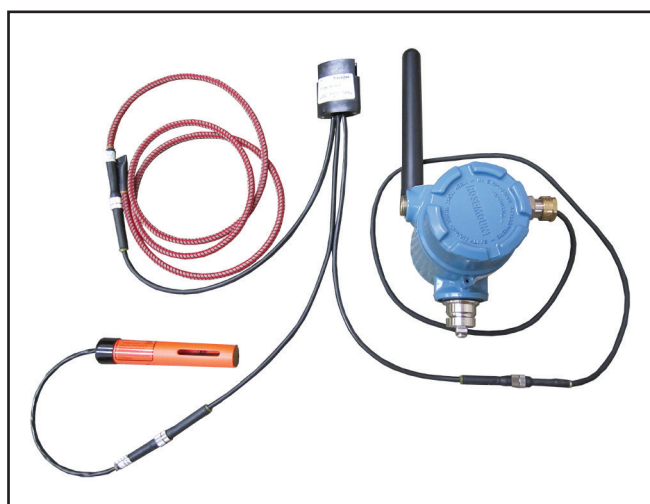
**RAYCHEM**

TraceTek

TT-EMR-DEMO-PACK-1

TT-EMR-DEMO-PACK-2

Demo Kits for Emerson Wireless and nVent RAYCHEM  
TraceTek Fuel Sensing components  
Demo Guideline Instructions



#### KIT CONTENTS

The nVent RAYCHEM TraceTek TT-EMR-DEMO-PACK-1 (P000001303) contains :

Qty	Part #	Part name	Description
1	133332-000	TT-MLC-MC-BLK	Leader cable, 12 ft long, connects to 702 transmitter
1	P000001182	TT-ZBC-MC-BLK	Three-leg branch fitting, allows both TT5000 and TT-FFS to be connected
1	673739-000	TT5000-1.5M/5FT-HSE-MC	5-ft long section of TT5000 fuel sensing cable with sealed end termination
1	P000000991	TT-FFS-100-3-MC	TraceTek Fast Fuel Sensor Probe, 100 mm body size, 3-ft cable
1	571293-000	TT-MET-MC	TraceTek end termination

#### GENERAL INSTRUCTIONS

Please read these instructions and keep them in a safe place. These instructions provide guidance to support the demonstration of Emerson Wireless and nVent RAYCHEM TraceTek Fuel Sensing components.

#### IMPORTANT NOTES

These instructions are not meant to provide guidance related to actual field installation of Emerson Wireless or TraceTek Fuel Sensing components. Please refer to the actual Installation Instructions for the specific products from each manufacturer. For more information, call nVent at (800) 545-6258.

#### STORAGE

Keep all parts in a dry place between uses. Avoid impacts that might damage individual parts.

#### ADDITIONAL MATERIALS REQUIRED

- Emerson Mesh Equipment, including Type 702 Hydrocarbon Leak Detection Transmitter and SMART Wireless Gateway
- Naphtha- lighter fluid (only if "wet" demo is required)

#### KIT CONTENTS

The TT-EMR-DEMO-PACK-2 (P000001304) contains :

Qty	Part #	Part name	Description
1	133332-000	TT-MLC-MC-BLK	Leader cable, 12 ft long, connects to 702 transmitter
1	673739-000	TT5000-1.5M/5FT-HSE-MC	5-ft long section of TT5000 fuel sensing cable with sealed end termination
1	P000000991	TT-FFS-100-3-MC	TraceTek Fast Fuel Sensor Probe, 100 mm body size, 3-ft cable
1	571293-000	TT-MET-MC	TraceTek end termination

## PARTS IDENTIFICATION

The photos below show each part associated with these nVent RAYCHEM TraceTek kits:

**TT-MLC-MC-BLK**



**TT-ZBC-MC-BLK**



**TT5000-1.5M/5FT-HSE-MC**



**TT-FFS-100-MC**



**TT-MET-MC**



## CONNECTING THE TRACETEK LEADER CABLE TO THE EMERSON 702 HYDROCARBON LEAK DETECTION TRANSMITTER

For more information, refer to the Rosemount 702 Quick Installation Guide (00825-0200-4702, rev CA)

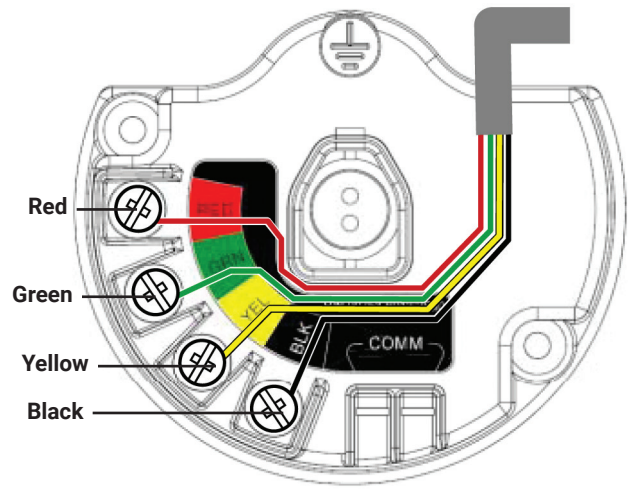
The TT-MLC-MC leader cable enters the Emerson 702 Transmitter through a type G4 gland, and wiring connections are made at the screw terminals. Remove the gland from the Transmitter body and feed the leader cable wires through the gland. Attach the TT-MET-MC to the end of the leader cable, so that the sensing circuit is properly terminated. This will avoid unnecessary LEAK SENSOR NOT CONNECTED error messages with Emerson software, or CABLE BREAK messages if using TraceTek TTDM-128 Alarm panel. Remove the Transmitter housing cover and power module (if necessary) to gain access to the screw terminals. Attach the 4-colored leader cable wires to the screw terminals at the labeled positions per the diagram at right.

Plug in the power module. Close the housing cover and tighten to safety specification.

Install the gland.

After the leader cable connection has been made, various TraceTek sensing components can be attached.

Screw Terminals with Color Code



## POSSIBLE DEMO CONFIGURATIONS

Depending on user preference, several different configurations of TraceTek sensing components can be made. Simply remove the TT-MET-MC from the leader cable, and connect the desired TraceTek component. Specific configurations are shown below:



702→TT-MLC→TT5000-HSE



702→TT-MLC→TT-FFS



702→TT-MLC→TT-ZBC→TT5000-HSE and TT-FFS  
(TT-EMR-DEMO-PACK-1 kit required)



## DISCUSSION POINTS RELATED TO POTENTIAL CONFIGURATIONS IN THE FIELD

1. The system limits are up to 500 feet of TT5000 sensor cable and/or three TT-FFS sensor probes.
2. Branching connectors (using TT-ZBC-MC-BLK) can be used to add more than one branch circuit or can even be nested to make branches within branches
3. TT5000 sensing cable is available with mating metal connectors so that it is easy to configure systems.
4. The main line and any branch must have an end termination or equivalent. There are three possible options:

**A. TT-MET-MC:**

When the main or branch circuit of TT5000 sensor cable ends with an open female connector, the TT-MET-MC provides the end-of-line connection necessary to terminate that branch of the circuit.

**B. TT-FFS:**

Any TT-FFS can be plugged into the end of TT-MLC leader cable, the end of the main circuit or at the end of any branch. The TT-FFS includes the end-of-line connections within its body.

**C. Pre-terminated TT5000 cable sections:**

Pre-terminated sections of cable (like the 5-ft demo length of TT5000-HSE included in this demo kit) also incorporate the end-of-line connection. Pre-terminated sections can be ordered in any length and are useful for one-way runs under tanks, sensing in sumps and vaults or other applications where the run of cable will not need to be extended.

## DEMONSTRATING THE CABLE BREAK DETECTION CAPABILITY

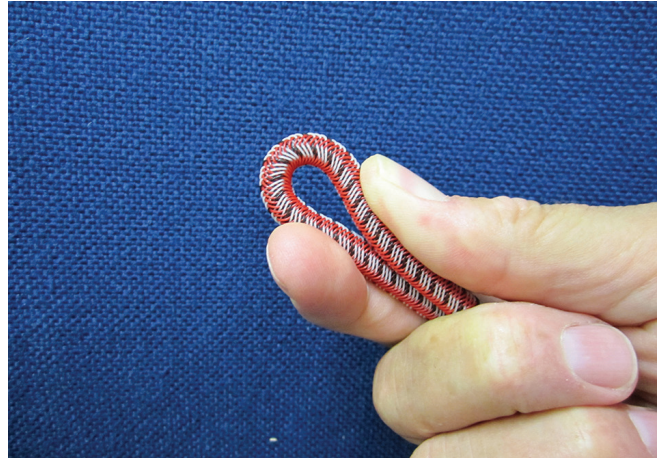
5. As soon as the sensor(s) are connected to the 702 transmitter in one of the above configurations, the 702 should indicate No Leak Detection Alarms and No Cable Breaks, or "SIM Normal" if using TTDM-128 alarm panel.
6. To demonstrate the cable break detection capability, simply disconnect any metal connector in the sensor system. The 702 transmitter will send a cable break alarm on the next update cycle.
7. Reconnect the metal connector to clear the cable break alarm.

## DEMONSTRATING THE NVENT RAYCHEM TRACETEK TT5000 SENSOR CABLE LEAK DETECTION CAPABILITY

1. The core of the TT5000 sensor cable contains two conductive polymer electrodes separated from the cable jacket by a small air gap.
2. In real-world applications the air gap is closed when fuel is absorbed into the cable wall. Closing the gap acts like an on/off switch that is monitored by the 702 Transmitter.
3. It is easy to simulate a leak by bending the TT5000 sensor cable tightly (see Figure 1) and holding it in place for at least one 702 update cycle.
4. Once the leak alarm is generated, the TT5000 sensor cable can be straightened out. The leak alarm will clear after the next 702 update cycle.
5. Optional 'wet' method:
  - A. Occasionally a customer may want to see an actual hydrocarbon alarm response.
  - B. We recommend using naphtha (Zippo or Ronson lighter fluid, painter's naphtha, Coleman camp fuel, charcoal lighter fluid, etc). Of these, the Ronson or Zippo lighter fluid smells the best for a customer conference room.

**⚠ WARNING: Fire Hazard. The demonstration fluid is highly flammable. Keep away from flames and other sources of ignition.**

- C. We recommend using a fuel resistant container made of glass, ceramic or metal. Avoid Styrofoam and polystyrene containers, since they are not fuel resistant.
- D. Loosely bend the TT5000 sensor cable into a 180 degree loop and insert it into a coffee mug or similar sized container. (Do not bend the cable too tightly you can induce a minimum bend radius alarm like Step 3 above). Verify a loop of cable is touching the bottom surface of the container (see Figure 2).
- E. Add sufficient naphtha so the fluid touches the bottom of the cable. It's not necessary to cover the cable with naphtha.
- F. Allow 10 to 15 minutes for the fluid to soak into the cable jacket.
- G. Once the fuel is detected the 702 transmitter will send a leak alarm signal on the next update cycle.
- H. Remove the TT5000 sensor cable from the naphtha. Disconnect the metal connector and install the TT-MET-MC termination in place of the TT5000 sensor cable. Place the TT5000 sensor cable on a paper towel or suspend it in air while the naphtha evaporates. Place the TT5000 sensor cable and the coffee cup/container containing naphtha fluid in an exhaust fume hood (or outdoors) during this evaporation process, to minimize human exposure. If no fume hood is immediately available, and naphtha smells are to be avoided, a large ziplock bag can be used to contain the wetted TT5000 sensor cable. Later the ziplock bag can be opened up, and the TT5000 sensor cable placed in fume hood (or outdoors) to allow naphtha evaporation.
- I. Typically the TT5000 sensor cable will 'reset' in one to two hours. Note that heavier fuels like jet, diesel or crude oil will not evaporate like naphtha. Gasoline is borderline. Generally TT5000 is a one shot sensor, but naphtha demos can often be repeated many times on the same length of cable if there is sufficient time allowed for the cable to fully out-gas between wet demos.



**Figure 1: Bending the TT5000 sensor cable tightly between fingers to simulate leak**



**Figure 2: Verify a loop of cable is touching the bottom surface of the container**

## DEMONSTRATING THE TT5000 SENSOR CABLE LEAK DETECTION CAPABILITY

1. The interior blade surface within the TT-FFS orange tube is coated with a thin layer of very sensitive and fast acting sensor film.
2. The film will not react to air, hydrocarbon vapor (except in nearly saturated conditions) or water. But it will react very quickly to the presence of liquid hydrocarbons anywhere along the interior blade.
3. We recommend using a fuel resistant container made of glass, ceramic or metal. Avoid Styrofoam and polystyrene containers, since they are not fuel resistant.
4. Place the TT-FFS in a glass container with the blade bottom contacting the container bottom surface. Add a small quantity of naphtha (about 2 milliliters is all that is necessary) into the bottom of the container so that it just contacts the center of the TT-FFS protective screen bottom. The 702 transmitter will send a leak alarm signal on its next update.

**⚠ WARNING: Fire Hazard. The demonstration fluid is highly flammable. Keep away from flames and other sources of ignition.**

5. If preferred, place the TT-FFS in a glass container and add enough tap water to cover the bottom inch or two (2 to 5 cm) of the TT-FFS. The TT-FFS will ignore the presence of water entirely.
6. Add a small quantity of naphtha onto the surface of the water (see Figure 3). The TT-FFS will react as soon as the "fuel spill" reaches the sensor blade. The 702 transmitter will send a leak alarm signal on its next update.
7. Usually the TT-FFS will reset with air drying in one to two hours after it is removed from the naphtha. For the first one or two resets, it is helpful to dip the TT-FFS into Isopropyl Alcohol (IPA), rubbing alcohol that can be purchased in any drug store. Let the TT-FFS sensor soak in the alcohol for 10 to 20 minutes, then air dry. This IPA reset procedure is more fully described in TraceTek document H58307 TT-FFS Care and Cleaning Instructions.



**Figure 3: Adding naphtha onto water surface**

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