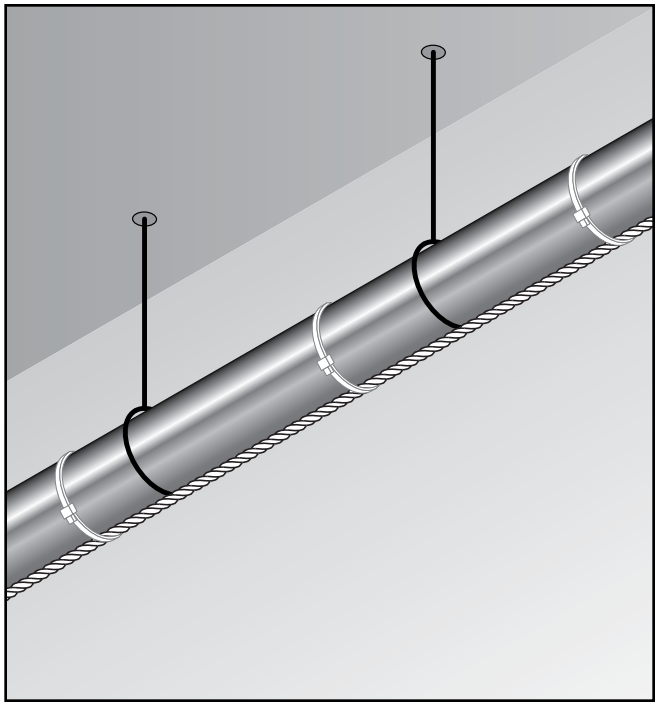
TT1100-OHP

Water Sensing Cable for Suspended Pipe



Installation Instructions

General Instructions

These Instructions explain the proper procedures for installing and testing TT1100-OHP sensing cables. TT1100-OHP is primarily intended for use on overhead, suspended piping where the wicking action of the outer braid material can catch and hold a small drip or trickle of water and assure that the cable is wetted along a short distance sufficient to generate a leak alarm. TT1100-OHP can also be used on floors, in drip pans, in sumps and trenches and similar flat surface applications, however TT1000 standard water detection cable may be better suited to flat surfaces.

Important Notes

TT1100-OHP must be attached to the pipe system at the lowest point where any water leak is most likely to drip from the pipe system. Usually this will be the 6 o'clock position on horizontal piping but other mounting locations and techniques may be necessary if site conditions are unusual. In particular, special consideration should be given to pipe supports, couplings, "T's", valves and other fittings. It is the responsibility of the installer to position the cable such that any leak will drip onto the cable.

The sensor cable cannot stop a leak. In some installations the materials or structures beneath the pipe system may be so critical or valuable, that a drip tray system should be considered in addition to the sensor cable installation. TT1100-OHP is intended to alert the user that a pipe or system is leaking but it cannot prevent collateral damage if the leak is not contained and repaired immediately.

Tools Required

• Wire cutters	Used to cut off extra tie wrap ends
• PTB-1000	Portable Test Box, battery powered instrument specifically designed for testing and trouble shooting TraceTek systems
• Ohmmeter with 20 M Ohm resistance or greater	Can be used as an alternative and supplement to the PTB 1000
• TT-MAPPING CAP-PC	Used to simulate leaks at connector points during commissioning and mapping process
• Extra TT-MLC-PC	Leader cable. Used with the ohmmeter to make easier connections to the sensor cable for resistance measurements
• Extra TT-MET-PC	End termination. Used during installation or trouble shooting to temporarily isolate a sub-section of sensor cable for resistance measurements

Additional Materials Required

• Tie wraps	Supplied by installer and sized to go around the pipe and sensor cable. Base quantity on one tie wrap per foot for horizontal run with extra wraps at fittings.
• Rags and appropriate cleaner	Use to wipe and clean bottom and side surfaces of pipe prior to cable installation.

General Notes: Do's and Don'ts:

DO:

- Store the cable in its original container in a clean, dry area until ready to install.
- Clean the pipe surface where the cable will be installed.
- Schedule the sensor cable installation as late as possible in the construction schedule to avoid risk of damage or contamination by other contractors or construction tasks.
- Remove cable from the pipe if any thread cutting, welding, soldering or similar pipe fitting work will be performed.

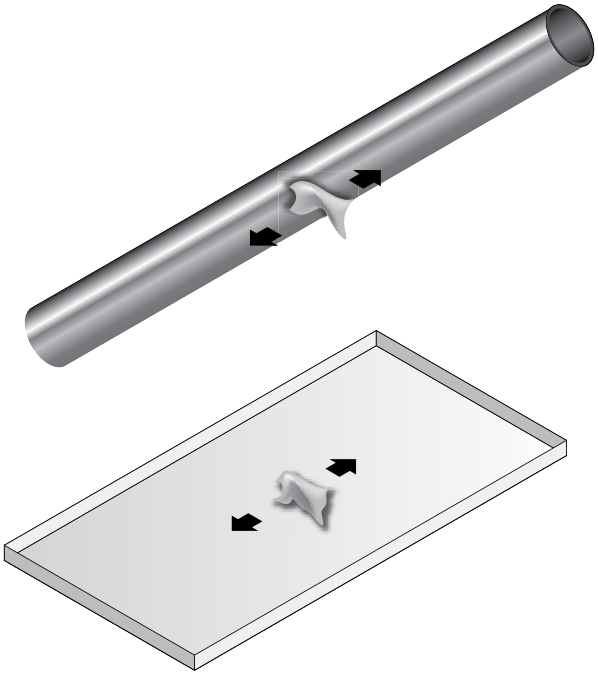
DON'T:

- Drag the cable through water, paint, solvents, oil or other contaminants.
- Install damaged or contaminated sensing cable.
- Allow the cable to become wet or contaminated after installation.
- Exceed the maximum pulling force of 100 kg (220 lb).
- Use the cable as a rope for lifting or securing any object.
- Allow tools or heavy objects to fall on cable.

Installation

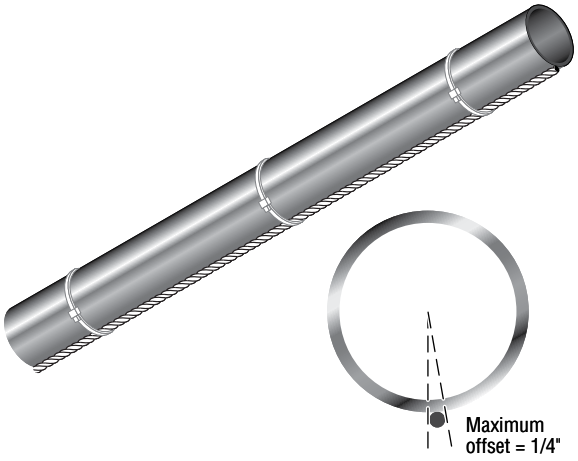
1

- Clean and prepare the pipe or area where the cable will be installed.
  - Verify that major construction is complete.
  - Clean the bottom and sides of the pipe where the cable will be installed to remove any dirt, moisture, oil or other contamination.
  - If the cable will be placed in drip trays, make sure to wipe the surface of the drip tray and remove any debris.



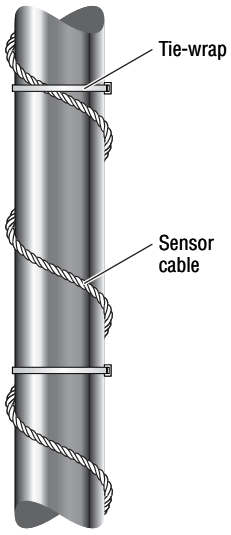
2

- Position the cable along the bottom of the pipe and use nylon tie wraps secure the cable at the 6 o'clock position.
  - Tie wraps should be long enough to go around the pipe and the sensor cable.
  - Use one tie wrap every 12" to 18" (300 to 450 mm) along the pipe with extra tie wraps at fittings or bends as needed.



Important Note:
It is the installer's responsibility to position the sensor cable correctly. The cable must trace the lowest point of the pipe or fittings such that any water leaking from the pipe or fittings will drip onto the cable surface as it drips off the bottom of the pipe or fitting. **Do not** install the cable on the top or side surface of a pipe.

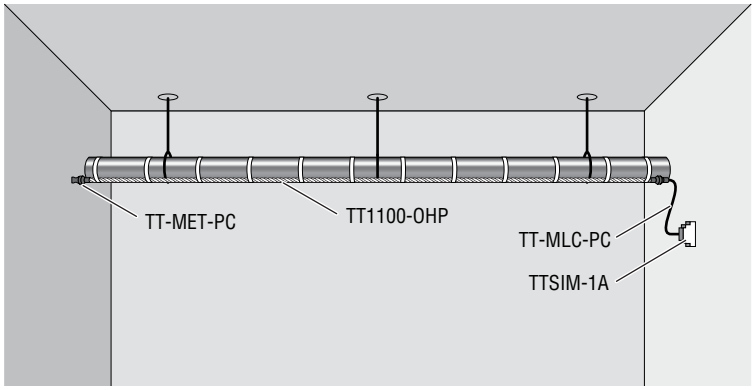
Exception:
If the cable is used to trace vertical pipe, the cable should be spiraled around the pipe and secured with tie-wraps.



3

- Connect the cable sections, branch connectors, jumper cable and end terminations as needed to fully trace the pipe system and branch lines.

Note: All components of the system have male or female plastic connectors or both. The male connectors are oriented toward the instrument panel. As new sections of cable are added to the main leg or branch, each newly added section should end with an open female connector. The end of each branch or main leg is terminated with a male end termination (See paragraph "D" below).



Complete System Connections and Layout

A. TT1100-OHP is available in a variety of pre-cut and terminated lengths. Each cable has a female plastic connector on one end and a male plastic connector on the opposite end. Cable sections plug together like extension cords.

B. (Optional) A branch connector (P/N TT-MBC-PC) is used to connect and branch of "T" lines. The branch connector has one male connector and two female connectors. For mapping purposes, the cable connected to the center leg of the branch connector will be counted first, then the distance measurements will continue from the second female connector and continue along the rest of the system. A dead band of 15 ft (5 m) is inserted at the beginning and end of each branch to avoid any location ambiguity.

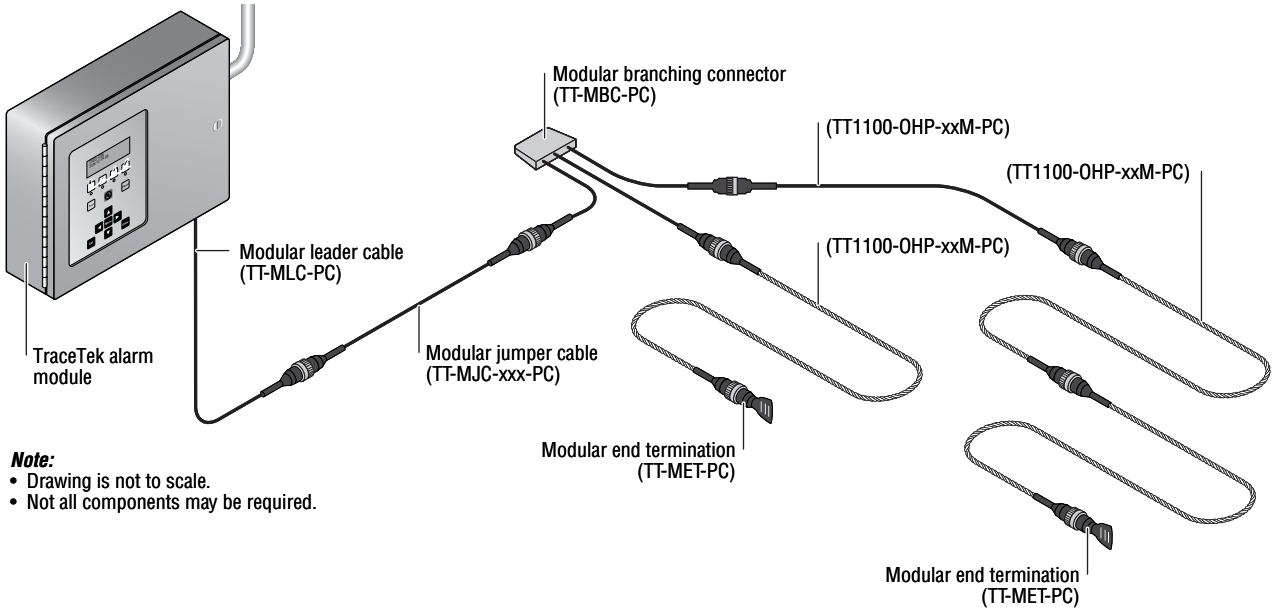
C. (Optional) It is permissible to have multiple nested sub-branches as needed to fully trace the pipe system.

D. Install an end termination (P/N TT-MET-PC) at the end of the main line and each branch line. (Note: A good check on the system design and bill of materials is that the total number of end terminations installed in the system should equal the number of branch connectors plus one)

E. (Optional) Install jumper cables (P/N TT-MJC-xx-PC) as needed to connect sensing cable sections if they are spatially separated. Jumper cable is available in various pre-cut and terminated lengths and is also available in bulk form for long distance runs between the sensor cable and the instrumentation point.

F. Install a leader cable (P/N TT-MLC-PC) between the sensor cable and the monitoring instrument. The factory standard length of leader cable is 12 ft (4 m). It has a female plastic connector on one end and four tinned leads on the opposite end for connection at the instrument's sensor cable terminal block. In some installations the distance between the instrument and the start of the sensor cable run will be much grater than 12 feet. In those cases a simple solution is to purchase a jumper cable of sufficient length, then cut off and discard the male connector and any extra cable. Bulk jumper cable and splicing kits is also available for lengths that exceed the longest available pre-cut jumper cable.

G. Use tie-wraps to neatly coil and secure any excess sensor cable, jumper cable, branch connectors, etc.



Note:
- Drawing is not to scale.
- Not all components may be required.

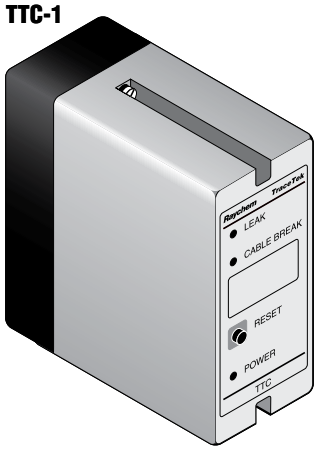
Initial Power-up and Test

1

Connect the cable to the selected instrument and test the system.

- Apply power to the TraceTek instrument and look for a "Normal" indication.
  - On TTC-1, TTSIM-1A or TTSIM-2 family, there will be a green LED and no other red or yellow LEDs. (On TTSIM-1A and TTSIM-2 the green LED will flicker off every 10 seconds.)
  - On TTSIM-1, Normal Condition is indicated by a steady green LED and a momentary flash of the RED LED every 10 seconds.
  - On TTDM-128 the alpha-numeric display will indicate a channel number and display the words SYSTEM NORMAL.
- If the Yellow LED is on in any of these instruments or the words "Cable Break" or "Loop Break" is displayed, then the cable system must be inspected for loose connections, missing end terminations until the cable continuity is established and the "Normal" condition is achieved.
- LEAK testing can be done with a mapping cap (TT-MAPPING CAP-PC). The MAPPING CAP simulates a leak at the location where it is inserted into the system.
  - For TTC-1, TTSIM-1 and TTSIM-2 a red LED will indicate that the simulated LEAK has been detected.
  - For TTSIM-2 and TTDM-128 a leak location will be displayed in feet or meters (as selected) in addition to the red LED indication
- For larger piping systems with TTDM-128 or TTSIM-2, the MAPPING CAP should be moved sequentially to each accessible connector. Note the distance displayed on the as-built drawings. This will become the basis for the system map.

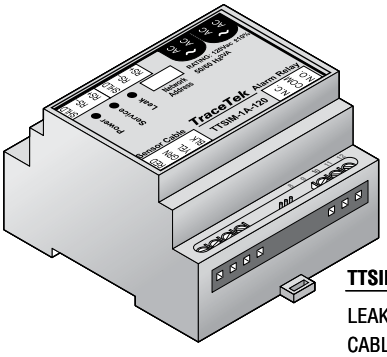
TTC-1



TTC-1 Indications:

LEAK LED	Red
CABLE BREAK LED	Yellow
Reset Button	Red
POWER LED	Green

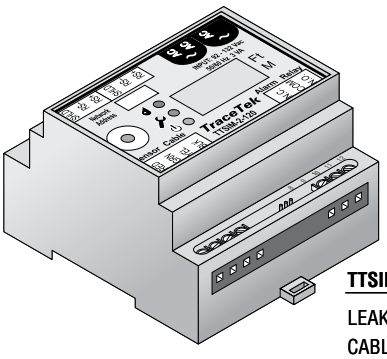
TTSIM-1A



TTSIM-1A Indications:

LEAK	Red
CABLE BREAK	Yellow
POWER LED	Green

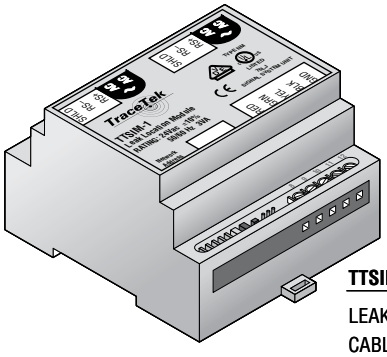
TTSIM-2



TTSIM-2 Indications:

LEAK	Red
CABLE BREAK	Yellow
POWER LED	Green

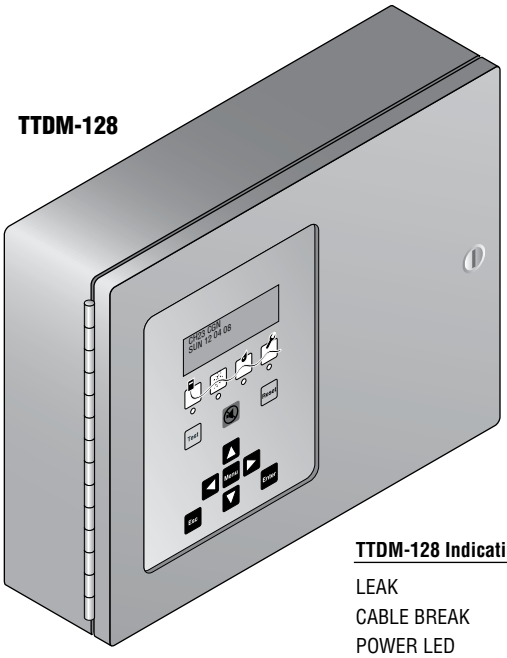
TTSIM-1



TTSIM-1 Indications:

LEAK	Red
CABLE BREAK	Flashing yellow
POWER LED	Green

TTDM-128



TTDM-128 Indications:

LEAK	Red
CABLE BREAK	Yellow
POWER LED	Green
Text message in 4x20 display	

Troubleshooting

Symptom	Possible Cause and Correction
Green LED not visible on TraceTek instrument	System is not powered. Check power wiring. Check circuit breakers that may have been tripped. On TTDM-128 check fuse and replace if necessary.
Yellow LED visible or TTC-1, TTSIM-1A, TTSIM-2 or flashing amber LED on TTSIM-1	Cable break indication. Check for loose connectors, missing end terminations, broken jumper wires or physical damage to the cable. Repair or replace cable if necessary. The TT-MET-PC, end termination, can be used to isolate a damaged section by working outward from the instrument using the end termination to establish a temporary end of the circuit then sequentially moving outward adding one cable segment at a time.
Red LED fails to turn off when leak is repaired	Cable and over-braid are still damp. Allow more time for cable to dry or investigate leak site to make sure that water is not pooling under or behind the sensor cable.
Leak locations seem inaccurate or unstable during mapping tests	Make sure that the simulated leak (MAPPING CAP) is kept in place for at least 30 seconds. The location circuitry in the instruments require a steady leak location in order to compute an accurate distance. Removing the simulated leak too quickly induces a large random error.
Leak location seems inaccurate in actual leak situation	More that one leak may be present or the cable may be contaminated in one or more locations. If the system is monitored by a TTDM-128, check the event history to see if there is an earlier indication of a nearby leak or a SERVICE NEEDED message. If necessary use the end termination to break the system into smaller segments and work outward to isolate each leak location in multiple leak scenarios.
“SERVICE NEEDED” message (TTDM-128 Only)	This is an early warning message from the TTDM panel indicating that the cable is becoming contaminated or damp, but not yet to the level that constitutes a leak. The TTDM panel may display a location in square brackets. If a location is displayed, that location should be investigated for possible sources of condensation drips, a buildup of other contaminants, etc. The square brackets indicated that the leak signal is not strong enough for an accurate location calculation, so the indicated locations may include some error.

Worldwide Headquarters
Tyco Thermal Controls
307 Constitution Drive
Menlo Park, CA 94025-1164
USA
Tel (800) 545-6258
Tel (650) 216-1526
Fax (800) 527-5703
Fax (650) 474-7711
info@tycothermal.com
www.tycothermal.com