

Utility Hole Temperature Transducer

Offering advance warning of damaging steam conditions

The presence of steam in the outside plant underground environment causes a number of problems for telephone operating companies. A leaking steam pipe poses a major safety hazard for anyone having to work nearby, delaying scheduled maintenance and/or splicing activity. Steam can also contribute to the corrosion of utility hole splice closures and important air pressure equipment, such as air pipe manifolds and transducers. But most importantly, steam can penetrate a cable's protective sheath and, under certain circumstances, cause high resistance pair trouble in the cable. If not corrected in time, the trouble spreads and a potential loss of service can occur.

To provide early warning of a developing steam problem in the underground, System Studies has designed a Utility Hole Temperature Transducer (Part No. 9800-4440) which reads up to 212° Fahrenheit. The device, which can be directly mounted to a utility hole wall, is programmed to alarm at 110° F and clear when the temperature drops back down to 90° F. This early warning detection is critical in implementing the necessary procedures to protect cables from the damaging effects of steam.

Here's How it Works

Similar in appearance to the System Studies High Resolution Pressure Transducer™, the Utility Hole Temperature Transducer contains a small thermistor sensor that reads electrical resistance in the range of 2069 ohms to 885K ohms. As the temperature in the utility hole changes, the thermistor device senses the change and produces a resistive output. This value is read by a 289H LSS™ monitor and converted to temperature reading by the PressureMAP™ software. The transducer housing is pressurized to 10 Pounds per Square Inch (PSI) in the factory and sealed to withstand harsh utility hole environmental conditions. A single pair of conductors provides the electrical connection to the assigned device pair, which is wired to a 289H LSS monitor in the central office. The 289H LSS supplies voltage to the sensor in the range of 10 to 48 volts and takes an electrical resistance reading on the pair. The Utility Hole Temperature Transducer is programmed into the PressureMAP database as a "TE" device type. When PressureMAP scans the 289H LSS

for readings, it converts the resistance value supplied by the "TE" device to the equivalent temperature reading. A four star alarm is generated and distributed to the assigned Alarm Center(s) for any temperature reading above 110° F. Physical Description

The temperature sensor is a small, cylindrical device that is mounted inside the main body of a System Studies pressure transducer. The inlet ports for the housing's pneumatic connections are both sealed, preventing moisture or contaminants from enter the housing. A single pressure testing valve is supplied on the top of the transducer to check the device's internal, static pressure, if necessary.

The sensor's single conductor pair is fed through a 37° flared stainless steel fitting (designed for use with stainless steel, braided tubing). This pair, which is not polarity sensitive, is spliced to an assigned device pair. The transducer is supplied with a mounting bracket and installation assembly kit.

Transducer Specifications

Electrical The Utility Hole Temperature Transducer's internal sensor outputs electrical resistance readings in the range of 2069 ohms to 884.6K ohms. It operates on a single dedicated conductor pair (26 gauge, standard, blue/white). The device is not polarity sensitive. Measurement voltage: 10 to 48 volts DC.

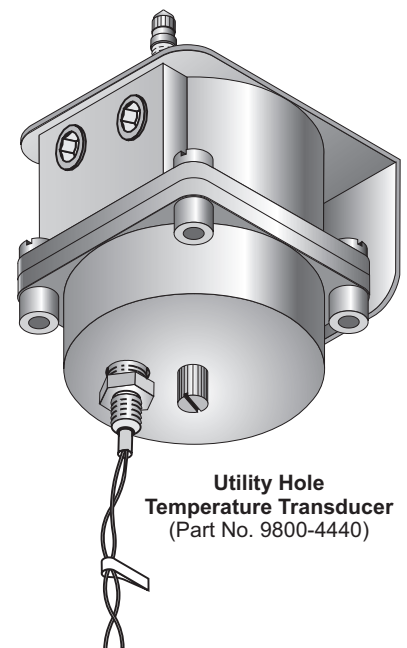
Construction Nickel-plated brass, mineral filled nylon center barrier plate. Physical Dimensions 2.5 inches x 2.625 inches (excluding pressure valve and conductor fitting).

Temperature Range
Measurement Output
40° F to 212° F

PressureMAP Device
Type TE

Monitor Compatibility
289H Loop
Surveillance System
(LSS)™.

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Utility Hole
Temperature Transducer
(Part No. 9800-4440)

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