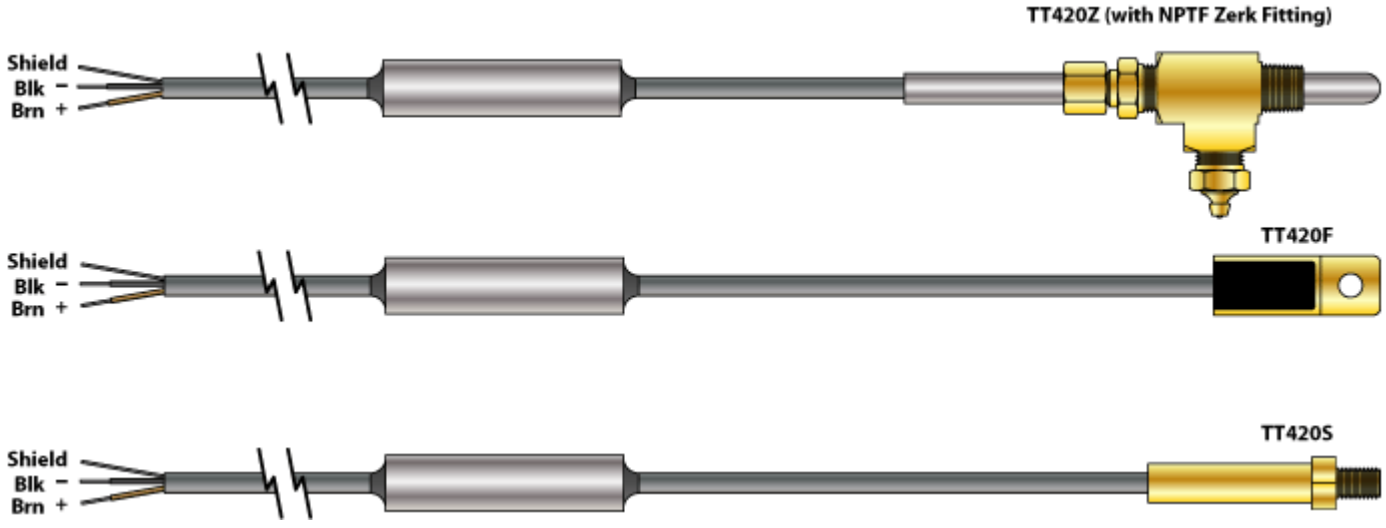
TT420

Temperature Sensor/Transmitters

USERS MANUAL

(with I.S. control drawing)



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Description

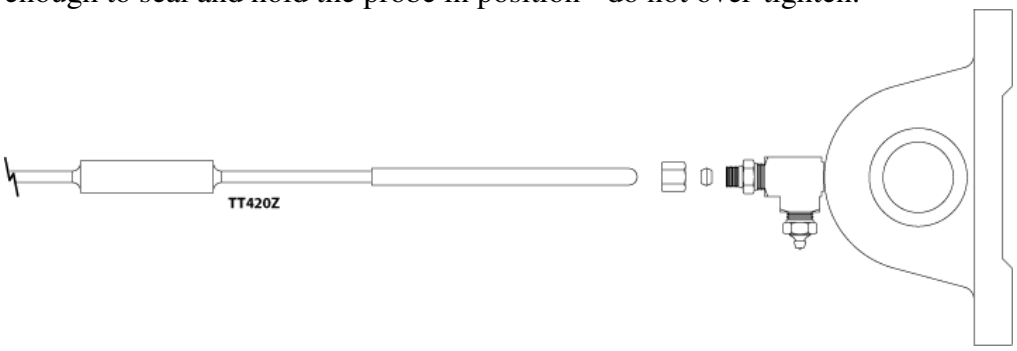
TT420 temperature sensor/transmitters combine a temperature sensor, signal conditioning and 2-wire loop-powered 4-20mA transmitter into one package.
All models are compatible with standard I.S. barriers and PLC analog inputs and are identical with the exception of the measurement probe.
Measurement probe options are optimized for bearing temperature measurement and grain elevator belt alignment (brass rub-block temperature measurement).
The TT420Z mounts into 1/8 or 1/4 NPT grease-fitting (zerk) taps.
The TT420F mounts onto the rear surface of a brass rub-block with a #10 screw.
The TT420S screws into a brass rub-block with a 1/4-28 tap.
All models come ready to use, requiring no user calibration.

Installation

See dimensions

TT420Z

TT420Z zerk fittings replace existing bearing grease zerks. The fittings adapt the TT420 probe to the bearing housing with a compression fitting.
Unscrew the existing zerk from the housing and replace it with the TT420 zerk fitting. Assemble the TT420Z into the fitting as shown using the brass compression ring or the rubber o-ring. Before tightening the hex cap, push the TT420Z probe all the way in until it touches the bearing race and then back it out slightly (0.1 in). Tighten the nut enough to seal and hold the probe in position - do not over-tighten.



TT420Z installation

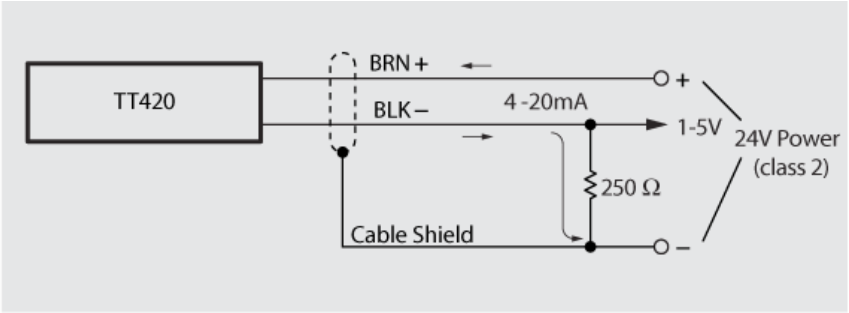
TT420S

The TT420S screws into 1/4-28 tap. With the cable unconnected (to prevent twisting) screw the brass probe all the way into the threaded tap.

TT420F

The TT420F mounts onto a flat surface with a #10 screw.

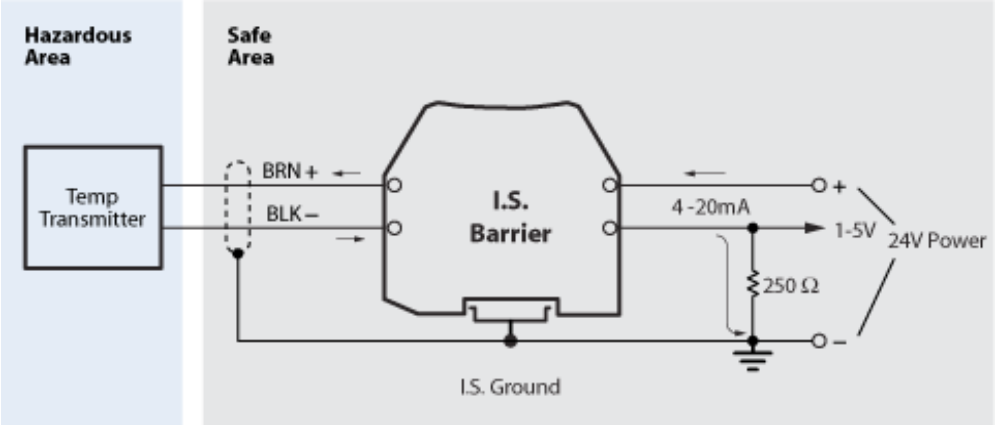
Wiring Diagram (non I.S.)



I.S. Control Drawing

Entity Parameters

Vmax	30 Vdc
Imax	100 mA
Pmax	0.75 W
Ci	0.03 uF
Li	0 uH



I.S. Requirements

Equip	Barrier	Notes
Vmax ≥	Voc	Voc is the barrier max open-circuit voltage
I max ≥	Isc	Isc is the barrier max short-circuit current
Pmax ≥	Po	If Po is not known, use Po = (Voc * Isc)/4
Ci + Cc ≤	Ca	Cc = (cable pF/ft) * length (in ft), Ca is the barrier max allowed external capacitance
Li + Lc ≤	La	Lc = (cable µH/ft) * length (in ft), La is the barrier max allowed external inductance

Selected barriers must be third party approved as providing intrinsically safe circuits for the application.

The transmitter-barrier cable length is limited by the Cc, Lc restrictions given above. If the cable pF/ft and/or µH/ft values are unknown, use 60 pF/ft and/or 0.2µH/ft.

The DIN rail (I.S. Ground) must be insulated from the surrounding cabinet (and all other potentials) and connected to earth ground at the 24V supply only. See NEC Article 504, CEC Section 18.

Barrier output current must be limited by a resistor such that the output voltage-current plot is a straight line drawn between open-circuit voltage and short-circuit current.

Barriers must be installed in accordance with barrier manufacturer's control drawing and Article 504 of the National Electrical Code, ANSI/NFPA 70, for installation in the United States, or Section 18 of the Canadian Electrical Code for installations in Canada.

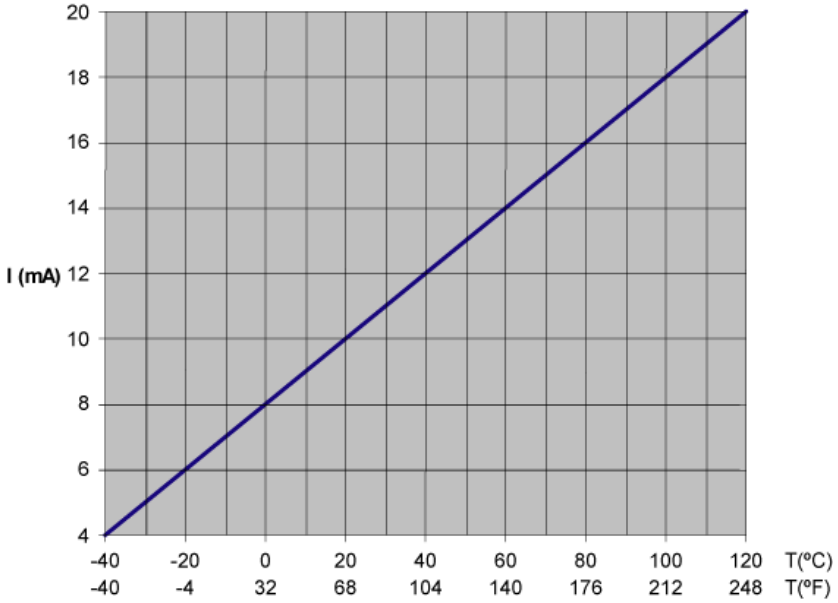
When required by the manufacturer's control drawing, the barrier must be connected to a suitable ground electrode per the National Electrical Code, ANSI/NFPA 70 or the Canadian Electrical Code, as applicable. The resistance of the ground path must be less than 1 ohm.

Control equipment must not use or generate more than 250 V rms or dc with respect to earth.

Warning: Substitution of components may impair intrinsic safety.

Warning: To prevent ignition of flammable or combustible atmospheres, read, understand and adhere to the manufacturer's procedures.

I(mA) / T Relationships	**Celsius**	**I = T(°C)/10 + 8mA**	**T(°C) = (I – 8mA) * 10**
	Fahrenheit	**I = T(°F)/18 + (56/9)mA**	**T(°F) = (I – 56/9mA) * 18**



Specifications

Vin (min → max)	8 → 30 Vdc
Operating Temp	-40 → 120 °C (measurement probe)
	-20 → 80 °C (ambient)
Accuracy	±1°C (at 25°C)
	±3°C (at -40°C, 120°C)

Cable

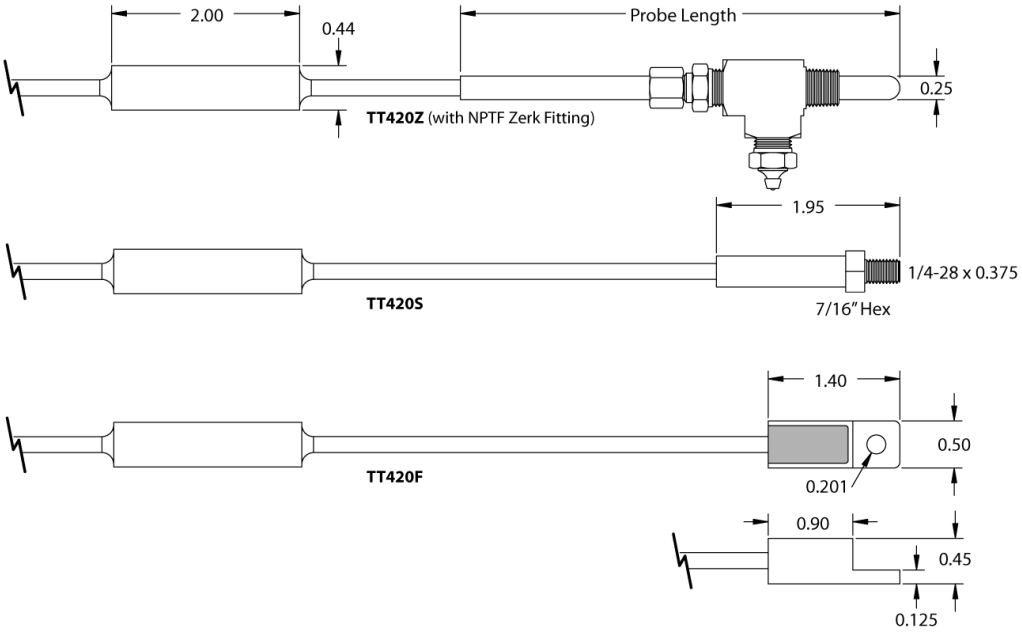
Color code	Brown (V+), Black (V-)
Length	10 ft

Protection Intrinsically safe for use in Class I (Grp C,D), Class II (Grp E, F, G)

c UL US LISTED

Reverse-wiring protected.

Dimensions



Models/p.n.

TT420Z (without zerk fitting)	800-001503 (4" probe)	-001500 (6" probe)
TT420Z (1/8 NPTF zerk fitting)	800-001504 (4" probe)	-001501 (6" probe)
TT420Z (1/4 NPTF zerk fitting)	800-001505 (4" probe)	-001502 (6"probe)
TT420F	800-001510	
TT420S	800-001520	