



PRODUCT SPECIFICATIONS

# TubeTrace<sup>®</sup> Type SE/ME

## ELECTRICALLY HEATED INSTRUMENT TUBING

### with FP™ Constant Watt Heat Tracing

#### APPLICATION

TubeTrace, with “cut-to-length” FP constant watt heat tracing, is designed to provide freeze protection or temperature maintenance for tubing from 40°F (5°C) to 200°F (93°C)

The construction of FP heat trace makes it exceptionally durable and suitable for emissions and process analyzer applications.

FP constant watt heat tracing provides:

- Consistent watt density per unit length
- Not subject to high inrush current on start-up
- No need for oversizing circuit breakers
- Approved for use in hazardous (classified) areas
- Long circuit lengths

#### RATINGS

BSX	Ratings
Available watt densities	2.5, 5, and 10 W/ft 8, 16, and 33 W/m
Supply voltages	120, 208 and 240 Vac Nominal
Tube temperature range	40°F to 200°F (5°C to 93°C)
Max. continuous exposure Power-off	400°F (204°C)
T-rating 2 Based on stabilized design	T3: 392°F (200°C) to T6: 185°F (85°C)

#### CERTIFICATIONS/APPROVALS



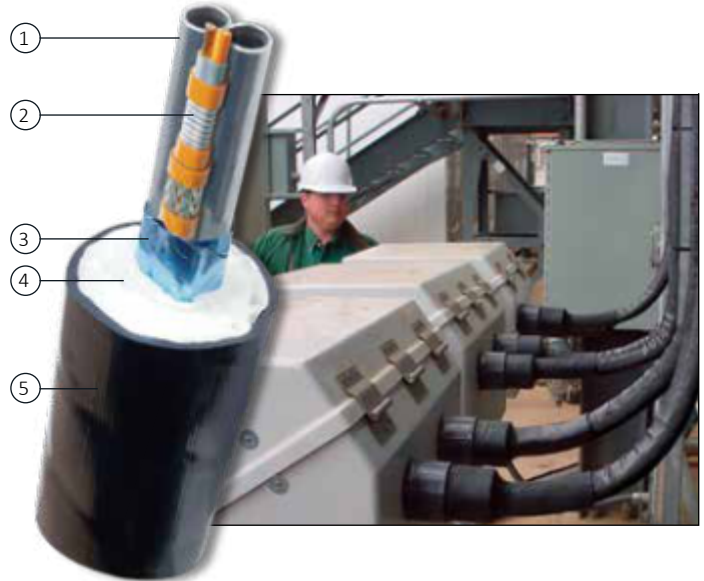
FM Approvals  
Ordinary Locations  
Hazardous (Classified) Locations  
Class I, Division 2, Groups A, B, C and D  
Class II, Division 2, Groups and G  
Class III, Divisions 1 and 2  
Class I, Zones 1 and 2, AEx e II



Underwriters Laboratories Inc.  
Ordinary Locations  
Hazardous (Classified) Locations  
Class I, Division 2, Groups A, B, C and D  
Class II, Division 2, Groups F and G  
Class III, Divisions 1 and 2



Canadian Standards Association  
Ordinary Locations  
Hazardous (Classified) Locations  
Class I, Divisions 1 and 2, Groups A, B, C and D  
Class II, Divisions 1 and 2, Groups E, F and G  
Ex e II



#### CONSTRUCTION

- 1 Process tube
- 2 FP constant watt electrical heat tracing
- 3 Heat reflective tape
- 4 Non-hygroscopic glass fiber insulation
- 5 Polymer outer jacket (ATP or TPU available)

#### TUBETRACE ACCESSORIES

A variety of termination kits and accessories for TubeTrace SE/ME bundles are available and can be found on Form CLX0020.

#### ELECTRICAL HEAT TRACE ACCESSORIES

Power connection and termination kits for FP constant watt heat trace (Form CLX0024) and a variety of controls are all available for heated instrument tubing applications. For additional information on FP see Form TEPO016. For information on other Thermon heat tracing products and services, visit [www.thermon.com](http://www.thermon.com).

#### Notes

1. Higher operating voltages between 277 to 600Vac may be possible with special FP heat trace construction: contact TC-E for design assistance.
2. For hazardous (classified) areas, FP constant-watt electrical heat trace can be designed using stabilized design method. This enables the heat trace to operate without limiting thermostats.



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with FP™ Constant Watt Heat Tracing

### POWER OUTPUT

The rated power output of FP heat trace is shown in the table below for the voltages indicated. The heating zone length is the distance between bus connections and represents the minimum circuit length for this type of heat trace. For maximum possible circuit lengths, see table to the right. Contact TC-E before connecting cable to voltages other than those shown in this chart.

Catalog Number	Service Voltage (Vac)	Power Output W/ft (W/m)	Zone Length in (cm)
FP 2.5-1	120	2.5 (8)	30 (76)
FP 5-1	120	5 (16)	24 (61)
FP 10-1	120	10 (33)	24 (61)
FP 2.5-2	240	2.5 (8)	54 (137)
	277	3.3 (11)	54 (137)
FP 5-2	208	3.8 (12)	40 (102)
	240	5 (16)	40 (102)
	277	6.7 (22)	40 (102)
FP 10-2	208	7.5 (25)	30 (76)
	240	10 (33)	30 (76)

### MAXIMUM CIRCUIT LENGTH AND CURRENT DRAW

The National Electrical Code and Canadian Electrical Code require ground-fault protection of equipment for each branch circuit supplying electric heating equipment. Check local codes for specific ground-fault protection requirements.

Catalog Number	Service Voltage Vac	Max. Circuit Length ft (m)	Current Draw A/ft (A/m)
FP 2.5-1	120	605 (184)	0.021 (0.069)
FP 5-1	120	410 (125)	0.042 (0.138)
FP 10-1	120	270 (82)	0.083 (0.272)
FP 2.5-2	240	1215 (370)	0.010 (0.033)
	277	1200 (366)	0.012 (0.039)
FP 5.2	208	840 (256)	0.018 (0.059)
	240	825 (251)	0.021 (0.069)
	277	805 (245)	0.024 (0.079)
FP 10-2	208	565 (172)	0.036 (0.118)
	240	545 (166)	0.042 (0.138)

For circuit breaker sizing, consider the circuit length and multiply by the current draw. Although there is no inrush current, maximum design current must be below 80% of the breaker rating, or as otherwise defined in local code.

### HOW TO SPECIFY

**SE-4F1-04-7-ATP-035** (X defined as required)

<p><b>Bundle Type</b></p> <p>SE = Single Tube ME = Multiple Tubes</p>	<p><b>Process Tube O.D.</b></p> <p>1 = 1/8" 2 = 1/4" 3 = 3/8" 4 = 1/2" 5 = 5/8" 6 = 3/4" 8 = 1"¹</p>	<p><b>Process Tube Material</b></p> <p>A = 316 SS Welded B = #122 Copper C = PFA Teflon² D = Monel³ E = Titanium F = 316 SS Seamless G = 304 SS Welded H = 304 SS Seamless J = Alloy C276 K = Alloy 825 L = Alloy 20 M = FEP Teflon N = Nylon P = Polyethylene T = TFE Teflon X = Special</p>	<p><b>Number of Tubes</b></p> <p>1 2 3 4</p>	<p><b>Heat Trace Type</b></p> <p>00 = FP 2.5 w/ft. 120 Vac 01 = FP 5 w/ft. 120 Vac 02 = FP 10 w/ft. 120 Vac 03 = FP 2.5 w/ft. 240 Vac 04 = FP 5 w/ft. 240 Vac 13 = FP 10 w/ft. 240 Vac</p>	<p><b>Heat Trace Option</b></p> <p>7 = OJ/Fluoropolymer</p>	<p><b>Bundle Jacket</b></p> <p>ATP⁴ TPU</p>	<p><b>Process Tube(s) Wall Thickness</b></p> <p>028 = .028" (SS Only) 030 = .030" 032 = .032" (Copper Only) 035 = .035" 040 = .040" (Plastic Only) 047 = .047" (Plastic Only) 049 = .049" 062 = .062" (Plastic Only) 065 = .065" 083 = .083" (SS Only)</p>
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**Notes**

- Contact factory for availability of long length coils 1" O.D.
- Teflon is a trademark of E.I. du Pont de Nemours & Co., Inc.
- Monel and Inconel are trademarks of Inco Alloys International, Inc.
- Black ATP is standard: other jacket materials are available.