

# TubeTrace<sup>®</sup> Type SE/ME

## Electrically Heated Instrument Tubing with FP<sup>™</sup> Constant Watt Heat Tracing

### Product Specifications

#### Application . . .

#### Freeze Protection or Process Temperature Maintenance Range: 5°C to 93°C

TubeTrace, with “cut-to-length” FP constant watt heat tracing, is designed to provide freeze protection or temperature maintenance for tubing.

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

FP constant watt heat tracing provides:

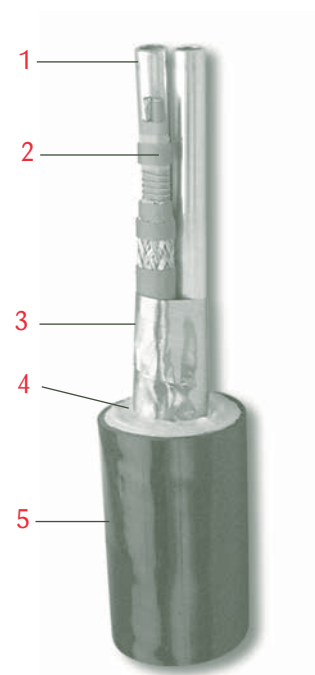
- Consistent watt density per unit length.
- Not subject to high inrush current on start-up
- No need for oversizing circuit breakers.
- Approved for use in hazardous (classified) areas.
- Long circuit lengths.

#### Ratings/Specifications . . .

FP Contant Watt Heat Tracing	Ratings
Available watt densities	8, 16, and 33 W/m
Supply voltages <sup>1</sup>	230 Vac Nominal
Tube temperature range	5°C to 93°C
Max. continuous exposure Power-off	204°C
T-rating <sup>2</sup> Based on stablized design	T3: 200°C to T6: 85°C

#### Note . . .

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



#### Construction . . .

- 1 Process Tube(s)
- 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 CLX0020U.

#### Electrical Heat Trace Accessories . . .

Power connection and termination kits for FP constant watt heat trace and a variety of controls are all available for heated instrument tubing applications. For additional information on FP see Form TEP0016. For information on other Thermon heat tracing products and services, visit [www.thermon.com](http://www.thermon.com).



**THERMON . . . The Heat Tracing Specialists<sup>®</sup>**

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### 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 Thermon before connecting cable to voltages other than those shown in this chart.

Product Type	Operating Voltage	Zone Length cm	Power Output W(m)
FP 2.5-2	230	137	8
FP 5-2	230	102	15
FP 8-2	230	102	24
FP 10-2	230	76	30
FP 8-4	400	152	18
FP 10-4	400	137	23
FP 10-5	575	168	33

### Circuit Breaker Sizing and Type . . .

Maximum circuit lengths for FP cables at rated voltages are shown below. Circuit breaker sizing should be based on local codes. For information on design and performance on other voltages, contact Thermon.

Ground-fault protection of equipment shall be provided for each branch circuit supplying electric heating equipment.

Product Type	Operating Voltage	Absolute Max. Circuit Length <sup>1</sup> m	Current Draw A/m
FP 2.5-2	230	375	0.035
FP 5-2	230	257	0.065
FP 8-2	230	195	0.130
FP 10-2	230	170	0.130
FP 8-4	400	370	0.045
FP 10-4	400	351	0.058
FP 10-5	575	393	0.056

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>2 = 1/4" 3 = 3/8" 4 = 1/2" 6 = 6 mm 8 = 8 mm 10 = 10 mm 12 = 12 mm</p>	<p><b>Process Tube Material<sup>1</sup></b></p> <p>A = 316L SS Welded As = 316Ti SS Welded B = B68 Copper C = PFA Teflon<sup>2</sup> D = Monel<sup>3</sup> E = Titanium F = 316L SS Seamless Fs = 316Ti SS Seamless G = 304 SS Welded H = 304 SS Seamless J = Hastaloy C276 K = Alloy 825 M = FEP Teflon P = Polyethylene T = PTFE 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>ATP<sup>4</sup> 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) 1 = 1 mm 1.5 = 1.5 mm</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.

### Heat Trace Certifications/Approvals . . .



**Factory Mutual Research**  
Ordinary and Hazardous (Classified) Locations



**Underwriters Laboratories Inc.**  
Hazardous (Classified) Locations



II 2 G Ex e II T3 to T6, II 2 D Ex tD A21 IP66/IP67  
T200°C to T85°C FM 07ATEX0016



**International Electrotechnical Commission**  
IEC Certification Scheme for Explosive Atmospheres  
FMG 06.0008

FP has additional hazardous area approvals including:

- CCE/CMRS

Contact Thermon for additional approvals and specific information.

