Foundation Heating
FP Constant Watt Heating Cable

Application . . .

FrostHeave Protection
Thermon FP parallel resistance constant watt heating cables are designed to provide frostheave protection of cryogenic storage vessels. With cut-to-length parallel circuitry, FP cables can be field fabricated, eliminating the need for specific circuit lengths to be provided for the application.

FP cable construction, with its unique fiberglass overlay, provides the needed cyclic reliability for foundation heating not found in other cables of this type. The fluoropolymer overjacket provides corrosion resistance, durability for installation in conduit, and lowers the friction factor for pulling.

Because FP cables are not subject to the inrush current associated with self-regulating heating cables, the need for oversizing power distribution equipment is eliminated.

FP cables are approved for use in ordinary (nonclassified) areas, hazardous (classified) areas and Categories 2 and 3 ATEX classified areas.

Ratings . . .
Nominal watt density ........................................16-33 W/m (5-10 W/ft)
Available supply voltage ..............................120-575 Vac nominal
Minimum installation temperature ......................-60°C (-76°F)
Minimum bend radius ................................... 19 mm (0.75")
Pull strength ...................................................500 N (112 lbf)
Friction coefficient ................................................. 0.25-0.35
Weight ........................................... 0.181 kg/m (0.055 lb/ft)

Basic Accessories . . .

Power Connection/End of Circuit Termination:
All FP cables for foundation heating require the use of the FHT1-F-10 Power and End Termination Kit. The kit is designed to fabricate (10) power connections and (10) end connections.

Along with these components, Thermon has a complete line of installation accessories specifically for foundation heating applications.

Construction . . .

1 Nickel-Plated Copper Bus Wires 3.3 mm² (12 AWG)
2 Nichrome Heating Element
3 Fiberglass Overlay
4 Fluoropolymer Dielectric Insulation
5 Tinned Copper Braid
6 Fluoropolymer Overjacket

Certifications/Approvals . . .

CENELEC European Organisation for Electrotechnical Standardisation
Hazardous (Classified) Locations
II 2 G Ex e II T3 to T6, II 2 D Ex d A21 T200°C to T85°C
FM 07ATEX0016

International Electrotechnical Commission
IEC Certification Scheme for Explosive Atmospheres
FMG 06.0008

FM Approvals
Hazardous (Classified) Locations

Underwriters Laboratories Inc.
Hazardous (Classified) Locations

FP cable has additional hazardous area approvals including:
  • CCE/CMRS  •  CSA

Contact Thermon for additional approvals and specific information.
Power Output

The rated power output of FP cables for voltages typically used in foundation heating is shown in the Table 1. The heating zone length is the distance between bus wire connections.

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Service Voltage</th>
<th>Power Output W/m (W/ft)</th>
<th>Zone Length cm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FP 8-2</td>
<td>230</td>
<td>24 (8)</td>
<td>102 (40)</td>
</tr>
<tr>
<td></td>
<td>240</td>
<td>26 (8)</td>
<td>102 (40)</td>
</tr>
<tr>
<td>FP 8-4</td>
<td>400</td>
<td>18 (6)</td>
<td>152 (60)</td>
</tr>
<tr>
<td></td>
<td>480</td>
<td>26 (8)</td>
<td>152 (60)</td>
</tr>
<tr>
<td>FP 10-2</td>
<td>230</td>
<td>30 (9)</td>
<td>76 (30)</td>
</tr>
<tr>
<td></td>
<td>240</td>
<td>33 (10)</td>
<td>76 (30)</td>
</tr>
<tr>
<td>FP 10-4</td>
<td>400</td>
<td>23 (7)</td>
<td>137 (54)</td>
</tr>
<tr>
<td></td>
<td>480</td>
<td>33 (10)</td>
<td>137 (54)</td>
</tr>
</tbody>
</table>

Circuit Breaker Sizing and Circuit Length

Maximum circuit lengths for FP cables at rated voltages are shown below. Circuit breaker sizing should be based on local regulations. Ground-fault protection of equipment should be provided for each branch circuit supplying electric heating equipment.

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Service Voltage</th>
<th>Max. Circuit Length m (ft)</th>
<th>Current Draw A/m (A/ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FP 8-2</td>
<td>230</td>
<td>185 (610)</td>
<td>0.115 (0.035)</td>
</tr>
<tr>
<td></td>
<td>240</td>
<td>185 (610)</td>
<td>0.120 (0.037)</td>
</tr>
<tr>
<td>FP 8-4</td>
<td>400</td>
<td>350 (1150)</td>
<td>0.050 (0.015)</td>
</tr>
<tr>
<td></td>
<td>480</td>
<td>350 (1150)</td>
<td>0.060 (0.018)</td>
</tr>
<tr>
<td>FP 10-2</td>
<td>230</td>
<td>155 (510)</td>
<td>0.132 (0.040)</td>
</tr>
<tr>
<td></td>
<td>240</td>
<td>155 (510)</td>
<td>0.138 (0.042)</td>
</tr>
<tr>
<td>FP 10-4</td>
<td>400</td>
<td>310 (1020)</td>
<td>0.058 (0.018)</td>
</tr>
<tr>
<td></td>
<td>480</td>
<td>310 (1020)</td>
<td>0.069 (0.021)</td>
</tr>
</tbody>
</table>

Temperature Control

From both energy saving and operational standpoints, the heating system should include an effective and versatile temperature control system. Contact Thermon for recommendations on a suitable control system.

Power and End Termination Kit

FHT1-F-10 contains components to fabricate 10 power connections and 10 end terminations for FP foundation heating cable. (Components for a single circuit shown.)

Kit includes:
- (10) Ring terminals
- (10) ET End caps
- (10) TBX Power connection boots
- (10) 3” (76 mm) Polyolefin shrink tubes
- (10) 4-3/4” (121 mm) Polyolefin shrink tubes
- (1) Rolls of Teflon® tape
- (3) Rolls of mastic tape
- (10) RTV silicone tubes

Note
1. Power outputs and voltages other than those shown on the tables above (i.e. 208, 220, 277, etc.) are available, contact Thermon.
2. Circuit length is dependent on ampacity of the circuit breaker. Contact Thermon for design assistance.