



PRODUCT DATASHEET

HTSX™

SELF-REGULATING HEAT TRACING

APPLICATION

HTSX self-regulating trace heaters are designed specifically for process temperature maintenance or freeze protection where high temperature exposure capability is required. HTSX withstands the temperature exposures associated with steam purging. Constructed using Thermon's unique and proven monolithic co-extrusion process, HTSX is the market leading self-regulating heat tracing technology.

The heat output of HTSX varies in response to the surrounding temperature. Variations in the ambient temperature or heat lost through the thermal insulation are compensated for automatically along the entire length of a heat-traced pipe.

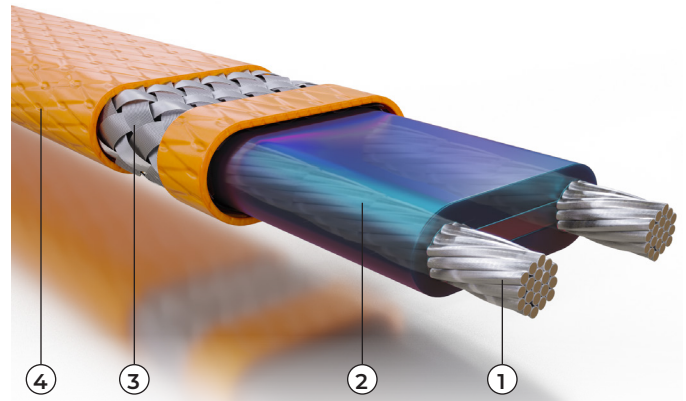
HTSX trace heaters are approved for use in ordinary (nonclassified) areas and hazardous (classified) areas.

RATINGS

| | |
|---|---|
| Available power densities..... | 10, 20, 30, 33 ³ , 39, 49, 66 W/m @ 10°C |
| | (3, 6, 9, 10 ³ , 12, 15, 20 W/ft @ 50°F) |
| Supply voltages..... | 110-120, 208-277, or 380-480 Vac |
| Max. maintenance temperature | |
| (110-277 Vac) | 150°C (302°F) |
| (380-480 Vac) | 121°C (250°F) |
| Max. exposure temperature | |
| Intermittent power-on or off | |
| (110-277 Vac)..... | 250°C (482°F) |
| (380-480 Vac) | 204°C (400°F) |
| Continuous power-off..... | 204°C (400°F) |
| Minimum installation temperature | -60°C (-76°F) |
| Minimum bend radius | |
| @ 5°F (-15°C) | 10 mm (0.38") |
| @ -76°F (-60°C)..... | 32 mm (1.25") |
| T-rating ¹ | |
| 3-1, 3-2, 6-1, 6-2, 9-1, 9-2, 10-4, 12-1, 12-2, 15-2, 15-4..... | T3 200°C (392°F) |
| 15-1 and 20-1..... | T2D 215°C (419°F) |
| 20-2, 20-4 | T2C 230°C (446°F) |
| Based on stabilized design ² | T3 to T6 |

Notes

1. T-rating per the National Electrical Code and Canadian Electrical Code.
2. Thermon trace heaters are approved for the listed T-ratings using the stabilized design method. This enables the trace heaters to operate in hazardous areas without limiting thermostats. The T-rating may be determined using CompuTrace® Electric Heat Tracing Design Software or contact Thermon for design assistance.
3. 33 W/m (10 W/ft) available only with 480 Vac nominal voltage.



CONSTRUCTION

1. Nickel-plated copper bus wires 1.3 mm² (16 AWG)
2. Semiconductive heating matrix and fluoropolymer dielectric insulation
3. Nickel-plated copper braid
4. Fluoropolymer overjacket provides additional protection to core, insulation, and braid where exposure to chemicals or corrosives is expected.

BASIC ACCESSORIES

Thermon offers system accessories designed specifically for rapid, trouble-free installation of Thermon heat tracing.

All trace heaters require a suitably certified connection kit to comply with approval requirements.

Hot end terminations > 230°C (446°F) must be completed using the Terminator DS/DE, ZS/ZE, DE-B, ZE-B kits.

NOTE:

- "D" Kits Division 2 and Zone 2 Areas
- "Z" Kits Zone 1 Areas

CERTIFICATIONS/APPROVALS



Canadian Standards Association
Ordinary Locations
Hazardous (Classified) Locations

Canada:
Class I, Division 1, Groups A, B, C and D
Class II, Division 1, Groups E, F and G
Class III
EX 60079-30-1 IIC Gb
EX 60079-30-1 IIIC Db

US:
Class I, Division 2, Groups A, B, C and D
Class II, Division 2, Groups E, F and G
Class III
Class I Zone 1 AEx 60079-30-1 IIC Gb
Class II Zone 21 AEx 60079-30-1 IIIC Db



FM Approvals (120 VAC and 240 VAC only)
Ordinary Locations
Hazardous (Classified) Locations

US Only:
Class I, Division 2, Groups B, C and D
Class II, Division 2, Groups E, F and G
Class III

Specific Conditions of Use:

1. Heat tracing systems must be installed using the manufacturer's suitably rated accessory kits in accordance with the applicable instructions.
2. For insulated externally heated surfaces, lower T-class systems may be obtained by utilizing stabilized design of a trace heating system using methods described in IEC 60079-30-2, using CompuTrace® Electric Heat Tracing Design Software or by Thermon Engineering. The system design parameters, including the resulting T-class, shall be retained as a record of system documentation for each stabilized system design for as long as the system is in use. The parameters in the system documentation shall be checked during commissioning of the system.

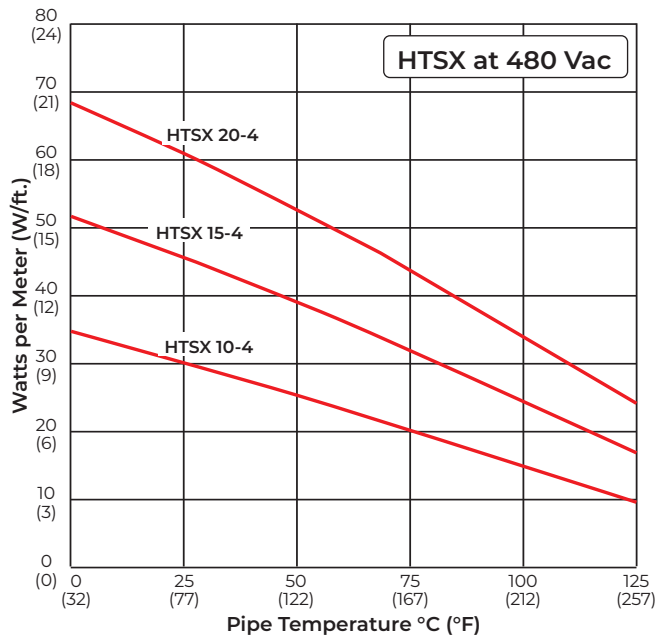
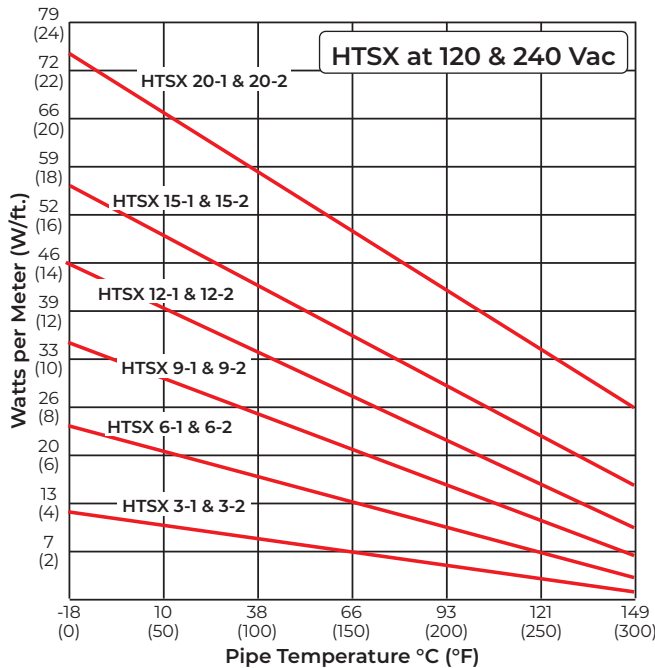


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POWER OUTPUT CURVES¹

The power outputs shown apply to trace heater installed on insulated metallic pipe (using the procedures outlined in IEC/IEEE 60079-30-1) at the service voltages stated below. For use on other service voltages, contact Thermon.

| Catalog Number 120 Vac Nominal | Catalog Number 240 Vac Nominal | Catalog Number 480 Vac Nominal | Power Output at 10°C (50°F) W/m (W/ft) |
|-----------------------------------|-----------------------------------|-----------------------------------|--|
| HTSX 3-1 | HTSX 3-2 | | 10 (3) |
| HTSX 6-1 | HTSX 6-2 | | 20 (6) |
| HTSX 9-1 | HTSX 9-2 | | 30 (9) |
| | | HTSX 10-4 | 33 (10) |
| HTSX 12-1 | HTSX 12-2 | | 39 (12) |
| HTSX 15-1 | HTSX 15-2 | HTSX 15-4 | 49 (15) |
| HTSX 20-1 | HTSX 20-2 | HTSX 20-4 | 66 (20) |



CIRCUIT BREAKER SIZING²

| 120 Vac Service Voltage | | Max. Circuit Length ³ vs. Breaker Size - m (ft) | | |
|-------------------------|-----------------------|--|-----------|-----------|
| Catalog Number | Start-Up Temp °C (°F) | 20 A | 30 A | 40 A |
| HTSX 3-1 | 10 (50) | 109 (360) | 109 (360) | 109 (360) |
| | -18 (0) | 109 (360) | 109 (360) | 109 (360) |
| | -29 (-20) | 109 (360) | 109 (360) | 109 (360) |
| | -40 (-40) | 109 (360) | 109 (360) | 109 (360) |
| HTSX 6-1 | 10 (50) | 71 (235) | 77 (250) | 77 (250) |
| | -18 (0) | 71 (235) | 77 (250) | 77 (250) |
| | -29 (-20) | 71 (235) | 77 (250) | 77 (250) |
| | -40 (-40) | 71 (235) | 77 (250) | 77 (250) |
| HTSX 9-1 | 10 (50) | 52 (170) | 62 (205) | 62 (205) |
| | -18 (0) | 52 (170) | 62 (205) | 62 (205) |
| | -29 (-20) | 52 (170) | 62 (205) | 62 (205) |
| | -40 (-40) | 50 (165) | 62 (205) | 62 (205) |
| HTSX 12-1 | 10 (50) | 41 (135) | 54 (175) | 54 (175) |
| | -18 (0) | 41 (135) | 54 (175) | 54 (175) |
| | -29 (-20) | 41 (135) | 54 (175) | 54 (175) |
| | -40 (-40) | 38 (125) | 54 (175) | 54 (175) |
| HTSX 15-1 | 10 (50) | 30 (100) | 48 (160) | 49 (160) |
| | -18 (0) | 29 (95) | 46 (150) | 49 (160) |
| | -29 (-20) | 27 (90) | 44 (145) | 49 (160) |
| | -40 (-40) | 26 (85) | 41 (135) | 49 (160) |
| HTSX 20-1 | 10 (50) | 26 (85) | 40 (130) | 42 (140) |
| | -18 (0) | 24 (80) | 37 (120) | 42 (140) |
| | -29 (-20) | 23 (75) | 35 (115) | 42 (140) |
| | -40 (-40) | 21 (70) | 33 (110) | 42 (140) |

| 240 Vac Service Voltage | | Max. Circuit Length ³ vs. Breaker Size - m (ft) | | |
|-------------------------|-----------------------|--|-----------|-----------|
| Catalog Number | Start-Up Temp °C (°F) | 20 A | 30 A | 40 A |
| HTSX 3-2 | 10 (50) | 217 (710) | 217 (710) | 217 (710) |
| | -18 (0) | 214 (700) | 217 (710) | 217 (710) |
| | -29 (-20) | 187 (615) | 217 (710) | 217 (710) |
| | -40 (-40) | 162 (530) | 217 (710) | 217 (710) |
| HTSX 6-2 | 10 (50) | 143 (470) | 154 (505) | 154 (505) |
| | -18 (0) | 132 (435) | 154 (505) | 154 (505) |
| | -29 (-20) | 120 (390) | 154 (505) | 154 (505) |
| | -40 (-40) | 108 (355) | 154 (505) | 154 (505) |
| HTSX 9-2 | 10 (50) | 104 (340) | 125 (410) | 125 (410) |
| | -18 (0) | 95 (310) | 125 (410) | 125 (410) |
| | -29 (-20) | 88 (290) | 125 (410) | 125 (410) |
| | -40 (-40) | 81 (265) | 125 (410) | 125 (410) |
| HTSX 12-2 | 10 (50) | 82 (270) | 109 (355) | 109 (355) |
| | -18 (0) | 74 (245) | 109 (355) | 109 (355) |
| | -29 (-20) | 70 (230) | 109 (355) | 109 (355) |
| | -40 (-40) | 65 (215) | 104 (340) | 109 (355) |
| HTSX 15-2 | 10 (50) | 61 (200) | 96 (315) | 96 (315) |
| | -18 (0) | 53 (175) | 84 (275) | 96 (315) |
| | -29 (-20) | 51 (165) | 79 (260) | 96 (315) |
| | -40 (-40) | 48 (155) | 74 (245) | 96 (315) |
| HTSX 20-2 | 10 (50) | 48 (155) | 75 (245) | 84 (275) |
| | -18 (0) | 42 (140) | 65 (215) | 84 (275) |
| | -29 (-20) | 40 (130) | 62 (205) | 84 (275) |
| | -40 (-40) | 38 (125) | 59 (190) | 80 (265) |

| 480 Vac Service Voltage | | Max. Circuit Length ³ vs. Breaker Size - m (ft) | | |
|-------------------------|-----------------------|--|-----------|-----------|
| Catalog Number | Start-Up Temp °C (°F) | 20 A | 30 A | 40 A |
| HTSX 10-4 | 10 (50) | 166 (545) | 203 (665) | 203 (665) |
| | -18 (0) | 148 (485) | 203 (665) | 203 (665) |
| | -29 (-20) | 142 (465) | 203 (665) | 203 (665) |
| | -40 (-40) | 139 (455) | 203 (665) | 203 (665) |
| HTSX 15-4 | 10 (50) | 105 (345) | 160 (525) | 160 (525) |
| | -18 (0) | 94 (310) | 151 (495) | 160 (525) |
| | -29 (-20) | 91 (300) | 145 (475) | 160 (525) |
| | -40 (-40) | 88 (290) | 140 (460) | 160 (525) |
| HTSX 20-4 | 10 (50) | 88 (290) | 136 (445) | 136 (445) |
| | -18 (0) | 79 (260) | 126 (415) | 136 (445) |
| | -29 (-20) | 78 (255) | 122 (400) | 136 (445) |
| | -40 (-40) | 75 (245) | 119 (390) | 134 (440) |

Notes:

- For more precise power output values as a function of pipe temperature, refer to CompuTrace®.
- Breaker sizing should be based on the National Electrical Code, Canadian Electrical Code or any other applicable code. 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 ground-fault protection requirements.
- The maximum circuit length is for one continuous length of trace heater, not the sum of segments of trace heater. Refer to CompuTrace® design software or contact Thermon for current loading of segments.