

LEADER IN INDUSTRIAL PROCESS HEATING SOLUTIONS



TUBE BUNDLE HEATING SOLUTIONS PRODUCTS AND ACCESSORIES

2023 EDITION

a degree above | www.Thermon.com



OUR MISSION



Provide safe, reliable and innovative mission critical industrial process heating solutions that create value for our customers.



SAFETY

Safety is a core value at Thermon. We operate in a manner that helps protect our employees, contractors, customers and the communities where we operate. Our approach to safety includes identifying possible risks, implementing measures to prevent potential incidents, and educating employees about unsafe behaviors. Our Incident Management System (Progress) has established a set of worldwide expectations for addressing risks and serves as the foundation for communicating leading and lagging indicators.

Thermon(s) 2020 total recordable workforce (employees and contractors) incident rate per 200,000 work hours was 0.20, similar to our performance in 2019. When compared to our NAICs industry workforce benchmark of 2.3, Thermon continues to be among the industry leaders in safety performance.

CONTENTS

5-11
ELECTRIC HEAT TRACE CABLES

12-15
LOW-TEMPERATURE, SELF-REGULATING TUBE BUNDLES

16-21
HIGH-TEMPERATURE, SELF-REGULATING TUBE BUNDLES

22-29
LIGHT STEAM TRACE BUNDLES

30-35
HEAVY STEAM TRACE BUNDLES

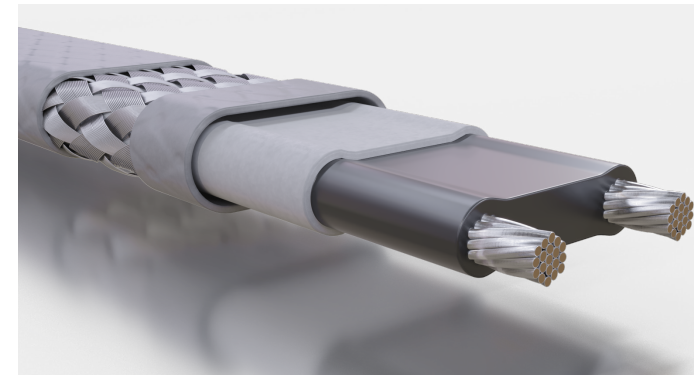
36-39
TUBE BUNDLE PRODUCT REFERENCE LEGENDS

40-43
HEAT TRACE ACCESSORIES, HEATED TUBING BUNDLE CONNECTION KITS

44-49
TRAINING & SERVICES

HEAT TRACING | ELECTRIC HEAT TRACING

SELF-REGULATING HEAT TRACING



BSX™

- Freeze Protection and Temperature Maintenance to 65°C (150°F)
- Maximum Exposure Temperature: 85°C (185°F)
- Available Watt Densities: 10, 16, 26, 33 W/m @ 10°C (3, 5, 8 & 10 W/ft @ 50°F)
- Available Voltages: 110-120 or 208-277 V
- Available With Fluoropolymer Overjacket (FOJ)



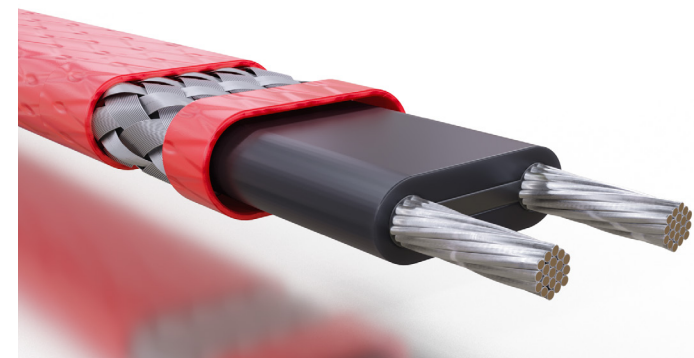
HTSX™

- Freeze Protection and Temperature Maintenance up to 150°C (302°F)
- Maximum Exposure Temperature up to 250°C (482°F)
- Withstands Temperatures Associated With Steam Purging
- Available Watt Densities: 10, 20, 30, 33, 39, 49, 66 W/m @ 10°C (3, 6, 9, 10, 12, 15, & 20 W/ft @ 50°F)
- Available Voltages: 110-120, 208-277 or 380-480 V



VSX™-HT

- Freeze Protection and Temperature Maintenance up to 200°C (392°F)
- Maximum Exposure Temperature: 250°C (482°F)
- Withstands Temperatures Associated with Steam Purging
- Available Watt Densities: 16, 33, 49, 66 W/m @ 10°C (5, 10, 15, & 20 W/ft @ 50°F)



USX™

- Freeze Protection and Temperature Maintenance to 240°C (464°F)
- Maximum Exposure Temperature: 250°C (482°F)
- Withstands Temperatures Associated With Steam Purging
- Available Watt Densities: 10, 20, 30, 39, 49, 66 W/m @ 10°C (3, 6, 9, 12, 15, & 20 W/ft @ 50°F)
- Available Voltages: 110-120 or 208-277 V

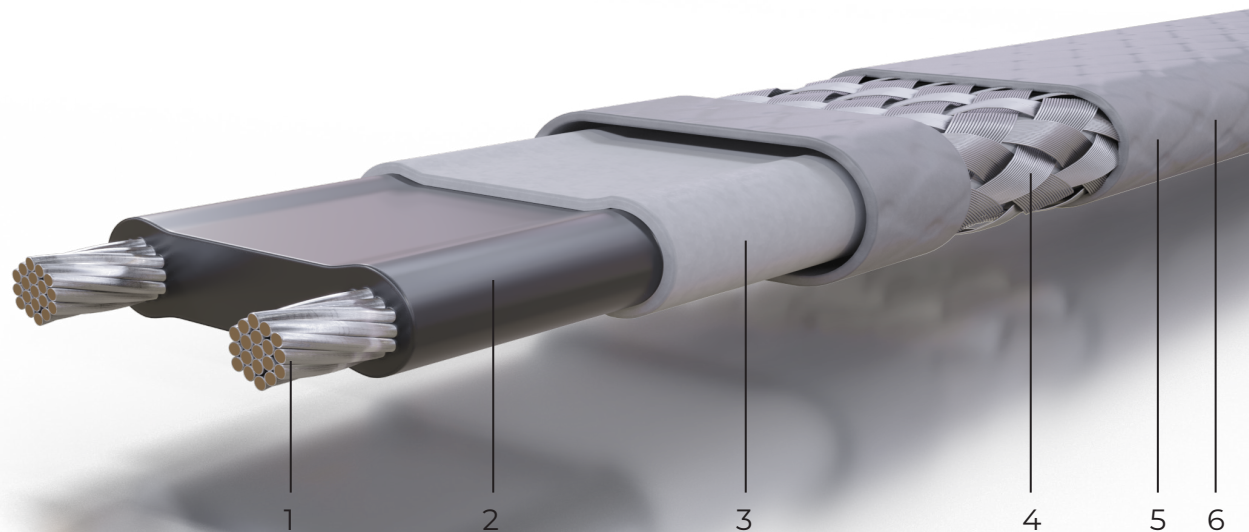
FEATURES:

- Semiconductive Self-Regulating Heating Matrix
- Cut-to-Length Parallel Circuitry
- Nickel-Plated Copper Bus Wires
- Metallic Braid for Grounding Purposes

- Polyolefin or Fluoropolymer Overjacket
- Unique Monolithic Co-Extrusion Processing of HTSX, VSX-HT, and USX for Optimal Performance
- Worldwide Approvals



PRODUCT DATASHEET
BSX™
SELF-REGULATING HEAT TRACING



APPLICATION

BSX self-regulating heating cables are designed to provide freeze protection or process temperature maintenance to metallic and nonmetallic piping, tanks and equipment. The heat output of BSX cable varies in response to the surrounding conditions along the entire length of a circuit. Whenever the heat loss of the insulated pipe, tank or equipment increases (as ambient temperature drops), the heat output of the cable increases. Conversely, when the heat loss decreases (as the ambient temperature rises or product flows), the cable reacts by reducing its heat output. BSX cables are approved for use in ordinary (nonclassified) areas and hazardous (classified) areas.

RATINGS

Available watt densities.....10, 16, 26, 33 W/m @ 10°C
(3, 5, 8, 10 W/ft @ 50°F)
Supply voltages.....110-120 or 208-277 Vac
Max. maintenance temperature..... 65°C (150°F)
Max. continuous exposure temperature
Power-off.....85°C (185°F)
Minimum installation temperature -51°C (-60°F)
Minimum bend radius
@ -15°C (5°F) 10 mm (0.38")
@ -60°C (-76°F)..... 32 mm (1.25")
T-rating¹
10, 16, 26 W/m (3, 5, 8 W/ft).....T6 85°C (185°F)
33 W/m (10 W/ft) T5 100°C (212°F)

Notes

1. T-rating per the National Electrical Code and Canadian Electrical Code.

CONSTRUCTION

- 1 Nickel-plated copper bus wires (16 AWG)
- 2 Radiation cross-linked semiconductive heating matrix
- 3 Radiation cross-linked dielectric insulation
- 4 Tinned copper braid
- 5 Polyolefin overjacket provides additional protection for cable and braid where exposure to aqueous inorganic chemicals is expected.

OPTIONS

- 6 FOJ Fluoropolymer overjacket over tinned copper braid provides additional protection to cable and braid where exposure to organic chemicals or corrosives is expected.

BASIC ACCESSORIES

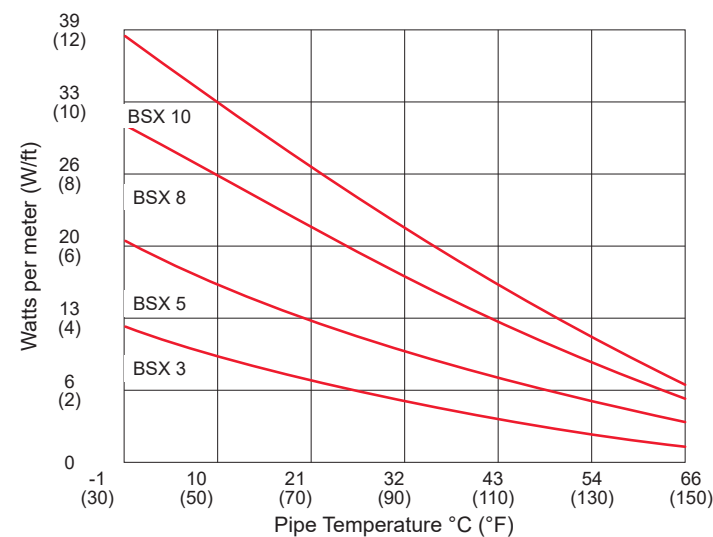
Thermon offers system accessories designed specifically for rapid, trouble-free installation of Thermon heating cables.

All cables require a connection kit to comply with approval requirements. Information on accessories to complete a heater circuit installation can be found in the "Heating Cable Systems Accessories" product specification sheet (Form TEPO010).

POWER OUTPUT CURVES¹

The power outputs shown apply to cable installed on insulated metallic pipe (using the procedures outlined in IEEE 515) at the service voltages stated below. For use on other service voltages, contact Thermon.

Catalog Number 120 Vac Nominal	Catalog Number 240 Vac Nominal	Power Output at 10°C (50°F) W/m (ft)
BSX 3-1	BSX 3-2	10 (3)
BSX 5-1	BSX 5-2	16 (5)
BSX 8-1	BSX 8-2	26 (8)
BSX 10-1	BSX 10-2	33 (10)



CERTIFICATIONS/APPROVALS

- 0344 Certificate Sira 19ATEX3074 in accordance with the EU ATEX Directive 2014/34/EU
- International Electrotechnical Commission IEC Certification Scheme for Explosive Atmospheres CSA 19.0009
- Factory Mutual Research Ordinary and Hazardous (Classified) Locations
- Underwriters Laboratories Inc. Hazardous (Classified) Locations

BSX has additional hazardous area approvals including: DNV · Lloyd's · TIIS · CCE/CSIR · GOST-R
Contact Thermon for additional approvals and specific information.

Notes

1. For more precise power output values as a function of pipe temperature, refer to CompuTrace®.
2. Based on the trip current characteristic of Type QOB or Type QO equipment protection devices. For devices with other trip current characteristics, contact Thermon.
3. The maximum circuit length is for one continuous length of cable, not the sum of segments of cable. Refer to CompuTrace® design software or contact Thermon for current loading of segments.

CIRCUIT BREAKER SIZING²

Maximum circuit lengths for various circuit breaker amperages are shown below. 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.

Type B Circuit Breakers

Product Type	Start-Up Temperature ² °C (°F)	Max. Circuit Length ³ vs. Breaker Size Metres (ft)		
		16 A	25 A	32 A
BSX 3-2	10 (50)	191 (627)	220 (722)	220 (722)
	0 (32)	191 (627)	220 (722)	220 (722)
	-20 (-4)	156 (512)	220 (722)	220 (722)
	-40 (-40)	127 (417)	199 (653)	220 (722)
BSX 5-2	10 (50)	117 (384)	176 (577)	176 (577)
	0 (32)	117 (384)	176 (577)	176 (577)
	-20 (-4)	98 (322)	153 (502)	176 (577)
	-40 (-40)	80 (262)	126 (413)	161 (528)
BSX 8-2	10 (50)	93 (305)	146 (479)	147 (482)
	0 (32)	93 (305)	146 (479)	147 (482)
	-20 (-4)	74 (243)	116 (381)	147 (482)
	-40 (-40)	61 (200)	95 (312)	122 (400)
BSX 10-2	10 (50)	66 (217)	104 (341)	132 (433)
	0 (32)	58 (190)	91 (299)	117 (384)
	-20 (-4)	46 (151)	71 (233)	92 (302)
	-40 (-40)	37 (121)	58 (190)	75 (246)

Type C Circuit Breakers

Product Type	Start-Up Temperature ² °C (°F)	Max. Circuit Length ³ vs. Breaker Size Metres (ft)		
		16 A	25 A	32 A
BSX 3-2	10 (50)	191 (627)	220 (722)	220 (722)
	0 (32)	191 (627)	220 (722)	220 (722)
	-20 (-4)	156 (512)	220 (722)	220 (722)
	-40 (-40)	127 (417)	199 (653)	220 (722)
BSX 5-2	10 (50)	117 (384)	176 (577)	176 (577)
	0 (32)	117 (384)	176 (577)	176 (577)
	-20 (-4)	98 (322)	153 (502)	176 (577)
	-40 (-40)	80 (262)	126 (413)	161 (528)
BSX 8-2	10 (50)	93 (305)	146 (479)	147 (482)
	0 (32)	93 (305)	146 (479)	147 (482)
	-20 (-4)	74 (243)	116 (381)	147 (482)
	-40 (-40)	61 (200)	95 (312)	122 (400)
BSX 10-2	10 (50)	77 (253)	120 (394)	132 (433)
	0 (32)	71 (233)	111 (364)	132 (433)
	-20 (-4)	55 (180)	87 (285)	111 (364)
	-40 (-40)	45 (148)	71 (233)	91 (299)

Notes

1. Maximum circuit lengths shown are based on an instantaneous trip current characteristic per IEC 60898 at the referenced start-up temperature and a 10°C maintenance temperature. For maximum circuit lengths with other trip current characteristics contact Thermon.
2. While a heat tracing system is generally designed to keep the contents of a pipe at the desired maintain temperature, the cable may be energized at lower temperatures. For design data with lower start-up temperatures than represented above contact Thermon for design assistance.
3. The maximum circuit length is for one continuous length of cable, not the sum of segments of cable. Refer to CompuTrace® design software or contact Thermon for current loading of segments.



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.

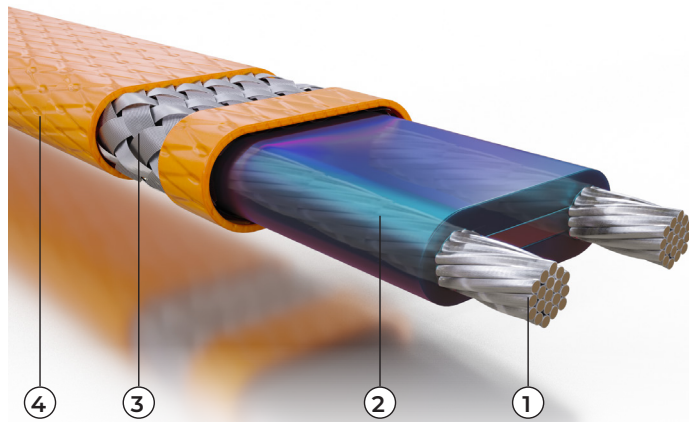
HTSX trace heaters are approved for use in ordinary (nonclassified) areas and in potentially explosive atmospheres in accordance with the ATEX Directive and the IECEx Scheme.

RATINGS

- Available power densities.....
-10, 20, 24³, 33, 39, 40³, 49, 57³, 66 W/m @ 10°C
- Supply voltages..... 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-rating¹
- 3-2, 6-2, 9-2, 10-4, 12-2, 15-2, 15-4.....
-T3/T200°C
- 20-2, 20-4.....T2/T230°C
- Based on stabilized design².....T3 to T6

Notes

1. T-rating per internationally recognized testing agency guidelines.
2. Thermon trace heaters are approved for the listed T-ratings using the stabilized design method. This enables the trace heater 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. 24, 40, and 57 W/m available only with 400 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 ZS/ZE or ZE-B kits.

NOTE:

"Z" Kits Zone 1 Areas

CERTIFICATIONS/APPROVALS



CSANe 20ATEX3059 Ex 60079-30-1 IIC T* Gb
IECEx CSA 20.0006 Ex 60079-30-1 IIC T* Gb

* T3 for EPL Gb; T200°C for EPL Db for HTSX 3-2, 6-2, 9-2, 10-4, 12-2, 15-2, 15-4

* 230°C (T2) for EPL Gb; T230°C for EPL Db; for HTSX 20-2, 20-4

HTSX has additional hazardous area approvals including:
DNV · Lloyd's · TIIS · CCE/CSIR · TRCU
Contact Thermon for additional approvals and specific information.

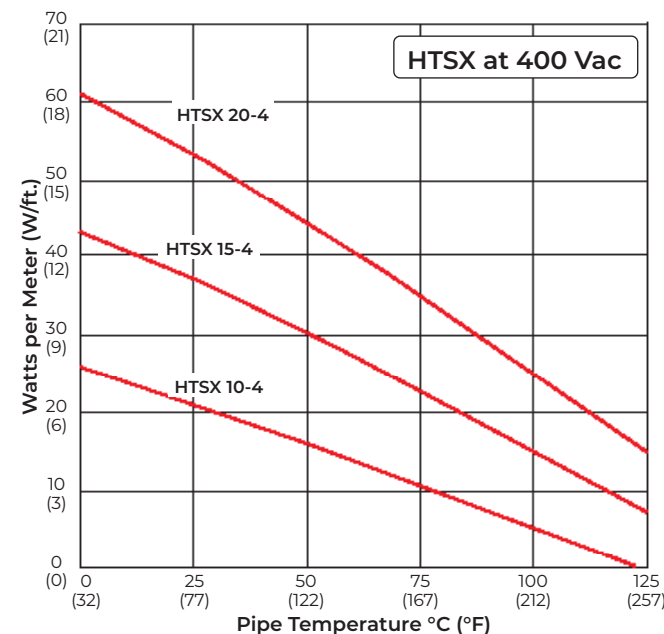
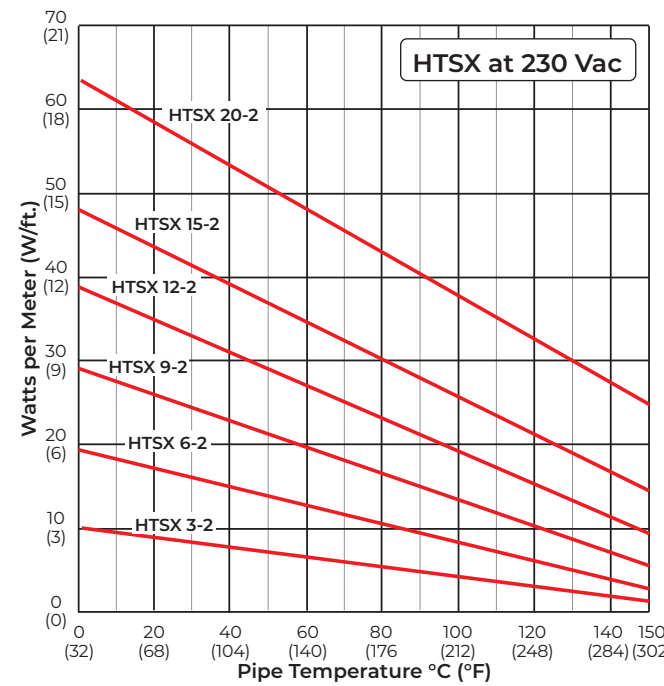
Specific Conditions of Use:

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.

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	Power Output at 10°C (50°F) W/m (W/ft)	Catalog Number	Power Output at 10°C (50°F) W/m (W/ft)
HTSX 3-2	10 (3)	HTSX 10-4	24 (7)
HTSX 6-2	20 (6)	HTSX 15-4	40 (12)
HTSX 9-2	30 (9)	HTSX 20-4	57 (17)
HTSX 12-2	39 (12)		
HTSX 15-2	49 (15)		
HTSX 20-2	66 (20)		



CIRCUIT BREAKER SIZING²

Circuit breaker sizing and earth-fault protection should be based on applicable local codes. For information on design and performance on other voltages, contact Thermon. Earth-fault protection of equipment should be provided for each branch circuit supplying electric heating equipment.

Catalog Number	Start-Up Temp ³ °C (°F)	Max. Circuit Length ⁴ vs. Breaker Size - m (ft)					
		Type B			Type C		
		16 A	25 A	32 A	16 A	25 A	32 A
HTSX 3-2	10 (50)	177 (581)	215 (705)	215 (705)	177 (581)	215 (705)	215 (705)
	0 (32)	177 (581)	215 (705)	215 (705)	177 (581)	215 (705)	215 (705)
	-20 (-4)	171 (561)	215 (705)	215 (705)	171 (561)	215 (705)	215 (705)
	-40 (-40)	134 (440)	215 (705)	215 (705)	134 (440)	215 (705)	215 (705)
HTSX 6-2	10 (50)	114 (374)	152 (499)	152 (499)	114 (374)	152 (499)	152 (499)
	0 (32)	114 (374)	152 (499)	152 (499)	114 (374)	152 (499)	152 (499)
	-20 (-4)	114 (374)	152 (499)	152 (499)	114 (374)	152 (499)	152 (499)
	-40 (-40)	95 (312)	152 (499)	152 (499)	95 (312)	152 (499)	152 (499)
HTSX 9-2	10 (50)	82 (269)	123 (404)	123 (404)	82 (269)	123 (404)	123 (404)
	0 (32)	82 (269)	123 (404)	123 (404)	82 (269)	123 (404)	123 (404)
	-20 (-4)	82 (269)	123 (404)	123 (404)	82 (269)	123 (404)	123 (404)
	-40 (-40)	72 (236)	120 (394)	123 (404)	73 (240)	123 (404)	123 (404)
HTSX 12-2	10 (50)	65 (213)	106 (348)	106 (348)	65 (213)	106 (348)	106 (348)
	0 (32)	65 (213)	106 (348)	106 (348)	65 (213)	106 (348)	106 (348)
	-20 (-4)	64 (210)	106 (348)	106 (348)	65 (213)	106 (348)	106 (348)
	-40 (-40)	57 (187)	94 (308)	106 (348)	58 (190)	96 (315)	106 (348)
HTSX 15-2	10 (50)	47 (154)	77 (253)	94 (308)	47 (154)	77 (253)	94 (308)
	0 (32)	45 (148)	74 (243)	94 (308)	47 (154)	77 (253)	94 (308)
	-20 (-4)	41 (135)	67 (220)	89 (292)	47 (154)	76 (249)	94 (308)
	-40 (-40)	37 (121)	60 (197)	79 (259)	42 (138)	69 (226)	91 (299)
HTSX 20-2	10 (50)	34 (112)	55 (180)	73 (240)	39 (128)	64 (210)	81 (266)
	0 (32)	33 (108)	52 (171)	69 (226)	39 (128)	64 (210)	81 (266)
	-20 (-4)	30 (98)	48 (157)	62 (203)	36 (118)	59 (194)	78 (256)
	-40 (-40)	27 (89)	43 (141)	57 (187)	33 (108)	53 (174)	70 (230)

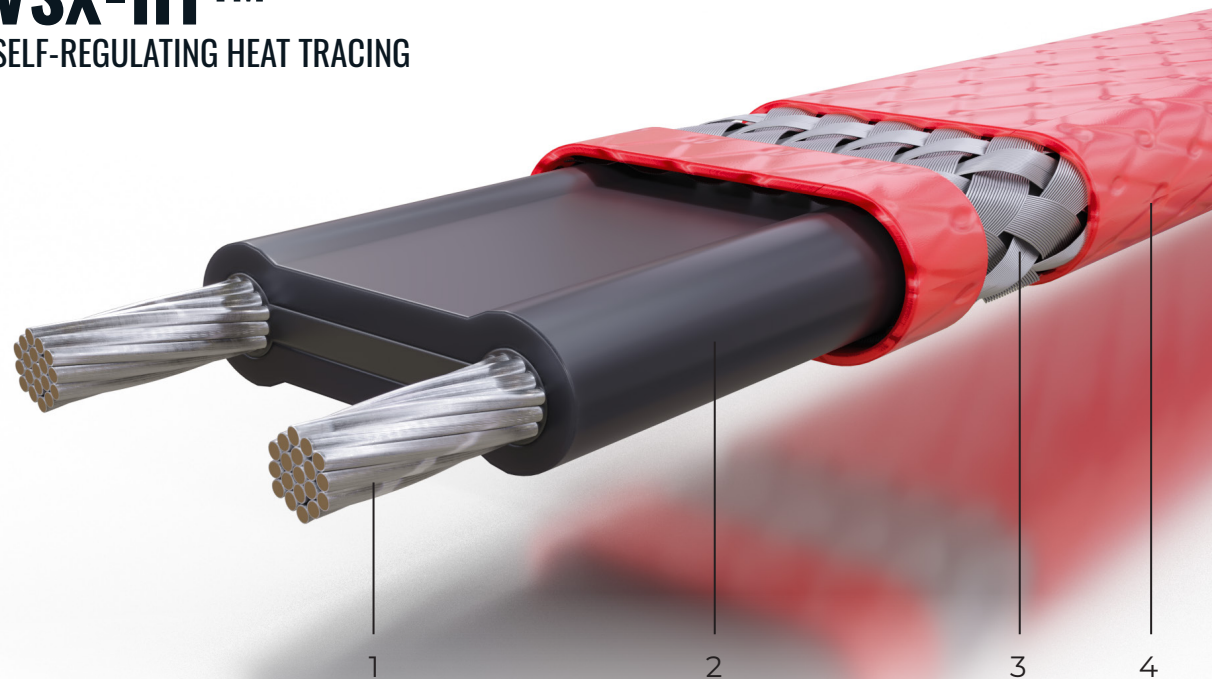
Catalog Number	Start-Up Temp ³ °C (°F)	Max. Circuit Length ⁴ vs. Breaker Size - m (ft)					
		Type B			Type C		
		16 A	25 A	32 A	16 A	25 A	32 A
HTSX 10-4	10 (50)	134 (440)	204 (669)	204 (669)	134 (440)	204 (669)	204 (669)
	0 (32)	126 (413)	204 (669)	204 (669)	134 (440)	204 (669)	204 (669)
	-20 (-4)	114 (374)	194 (637)	204 (669)	130 (427)	204 (669)	204 (669)
	-40 (-40)	107 (351)	180 (591)	204 (669)	122 (400)	204 (669)	204 (669)
HTSX 15-4	10 (50)	80 (262)	132 (433)	150 (492)	80 (262)	132 (433)	150 (492)
	0 (32)	76 (249)	125 (410)	150 (492)	76 (249)	125 (410)	150 (492)
	-20 (-4)	70 (230)	115 (377)	150 (492)	70 (230)	115 (377)	150 (492)
	-40 (-40)	66 (217)	108 (354)	145 (476)	66 (217)	108 (354)	145 (476)
HTSX 20-4	10 (50)	66 (217)	108 (354)	123 (404)	66 (217)	108 (354)	123 (404)
	0 (32)	63 (207)	103 (338)	123 (404)	63 (207)	103 (338)	123 (404)
	-20 (-4)	58 (190)	95 (312)	123 (404)	58 (190)	94 (308)	123 (404)
	-40 (-40)	55 (180)	89 (292)	119 (390)	55 (180)	89 (292)	119 (390)

Notes:

1. For more precise power output values as a function of pipe temperature, refer to CompuTrace®.
2. Maximum circuit lengths shown are based on an instantaneous trip current characteristic per IEC 60898 at the referenced start-up temperature and a 10°C maintenance temperature. For maximum circuit lengths with other trip current characteristics contact Thermon.
3. While a heat tracing system is generally designed to keep the contents of a pipe at the desired maintain temperature, the trace heater may be energized at lower temperatures. For design data with lower start-up temperatures than represented above contact Thermon for design assistance.
4. 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.



PRODUCT DATASHEET
VSX-HT™
 SELF-REGULATING HEAT TRACING



APPLICATION

High performance VSX-HT self-regulating heat tracers are designed specifically for process temperature maintenance or freeze protection applications where high maintain temperatures or high temperature exposures are required.

The heat output of VSX-HT cable varies in response to the surrounding temperature by reducing its thermal output with increasing temperature.

VSX-HT is approved for use in ordinary (nonclassified) areas, hazardous (classified) areas, and Zone 1, 2, 21, and 22 areas.

RATINGS

Available watt densities.....16, 33, 49, 66 w/m @ 10°C
 (5, 10, 15, 20 w/ft @ 50°F)
 Supply voltages.....110-120 or 208-277 Vac
 Max. maintenance temperature.....200°C (392°F)
 Max. exposure temperature
 Intermittent power-on or off.....250°C (482°F)
 Minimum installation temperature -51°C (-60°F)
 Minimum bend radius
 @ 5°F (-15°C) 10 mm (0.38")
 @ -76°F (-60°C) 32 mm (1.25")
 T-rating¹.....
 16, 33 w/m (5, 10 W/ft) T3 200°C (392°F)
 49, 66 w/m (15, 20 W/ft) T2C 230°C (446°F)
 Based on stabilized design².....T2 to T6

Notes

1. T-rating per the National Electrical Code and Canadian Electrical Code.
2. Thermon heat tracers are approved for the listed T-ratings using the stabilized design method. This enables the tracer 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.

CONSTRUCTION

- 1 Nickel-plated copper bus wires (14 AWG)
- 2 Semiconductive heating matrix and fluoropolymer dielectric insulation
- 3 Nickel-plated copper braid
- 4 Fluoropolymer overjacket provides additional protection for cable 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 heat tracers require a connection kit to comply with approval requirements. Information on accessories to complete a heater circuit installation can be found in the "Heating Trace Systems Accessories" product specification sheet (Form TEPO010).

Hot end terminations > 220°C (428°F) must be completed using the Terminator DS/DE, ZS/ZE, DE-B, ZE-B kits.

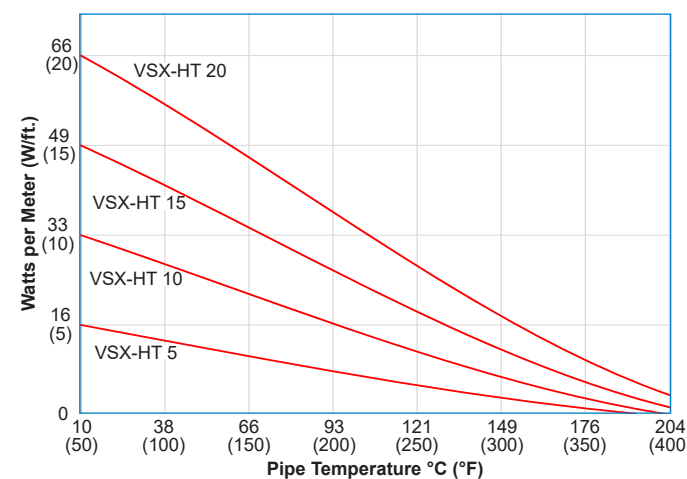
Note:

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

POWER OUTPUT CURVES¹

The power outputs shown apply to heat tracers 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	Power Output at 10°C (50°F) w/ m (ft)
VSX-HT 5-1	VSX-HT 5-2	16 (5)
VSX-HT 10-1	VSX-HT 10-2	33 (10)
VSX-HT 15-1	VSX-HT 15-2	49 (15)
VSX-HT 20-1	VSX-HT 20-2	66 (20)



CERTIFICATIONS/APPROVALS

Certificate FM 18ATEX0009X
 In accordance with the ATEX Directive 2014/34/EU
 II 2 G Ex 60079-30-1 IIC T* Gb
 II 2 D Ex 60079-30-1 IIIC T* Db
 International Electrotechnical Commission
 IEC Certification Scheme for Explosive Atmospheres
 FMG 18.0002X
 Ex 60079-30-1 IIC T* Gb
 Ex 60079-30-1 IIIC T* Db

*** Temperature Class using Product Classification:**
 T3 (for Gb) and T200°C (for Db) for VSX-HT 5-1, 5-2, 10-1, 10-2
 230°C (T2) (for Gb) and T230°C (for Db) for VSX-HT 15-1, 15-2, 20-1, 20-2

*** Temperature Class using Systems Approach:**
 T6...T2 for Gases and T85°C...T300°C for Dusts

VSX-HT has additional hazardous area approvals including:
 DNV • Lloyd's • JIS • CCE/CMRS • GGTN • CSA • TR CU • TR-Fire
 ABS • CIMFR • CQST • CLASS NK • JIS • KOSHA RM RS • TIIS
 Contact Thermon for latest status of approvals and specific information.

CIRCUIT BREAKER SIZING²

Maximum circuit lengths for various circuit breaker amperages are shown below. 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.

Type B Circuit Breakers						
Product Type	230 Vac Service Voltage	Start-Up Temperature ² °C	Max. Circuit Length ³ vs. Breaker Size - Meters			
			16 A	25 A	32 A	40 A
VSX-HT 5-2		10	98	167	203	203
		0	98	167	203	203
		-20	98	167	203	203
		-40	98	167	203	203
VSX-HT 10-2		10	64	105	144	144
		0	64	105	144	144
		-20	63	105	144	144
		-40	59	98	144	144
VSX-HT 15-2		10	40	65	86	114
		0	39	62	82	109
		-20	36	58	76	101
		-40	34	54	72	94
VSX-HT 20-2		10	28	45	60	77
		0	28	44	57	74
		-20	26	41	53	69
		-40	24	39	51	65

Type C Circuit Breakers						
Product Type	230 Vac Service Voltage	Start-Up Temperature ² °C	Max. Circuit Length ³ vs. Breaker Size - Meters			
			16 A	25 A	32 A	40 A
VSX-HT 5-2		10	98	167	203	203
		0	98	167	203	203
		-20	98	167	203	203
		-40	98	167	203	203
VSX-HT 10-2		10	64	105	144	163
		0	64	105	144	163
		-20	64	105	144	163
		-40	62	103	144	163
VSX-HT 15-2		10	46	76	102	139
		0	46	76	102	139
		-20	44	72	97	132
		-40	42	68	91	124
VSX-HT 20-2		10	36	58	77	102
		0	35	56	74	98
		-20	32	52	69	91
		-40	31	49	65	85

Notes

1. Maximum circuit lengths shown are based on an instantaneous trip current characteristic per IEC 60898 at the referenced start-up temperature and a 10°C maintenance temperature. For maximum circuit lengths with other trip current characteristics contact Thermon.
2. While a heat tracing system is generally designed to keep the contents of a pipe at the desired maintain temperature, the heat tracer may be energized at lower temperatures. For design data with lower start-up temperatures than represented above contact Thermon for design assistance.
3. The maximum circuit length is for one continuous length of heat tracer, not the sum of segments of heat tracer. Refer to CompuTrace® design software or contact Thermon for current loading of segments.



PRODUCT DATASHEET
USX™
SELF-REGULATING HEAT TRACING

APPLICATION

USX self-regulating heat tracing is specifically engineered for critical process maintenance and freeze protection applications where ultra high temperature ratings are required. USX enables the use of ambient sensing controls for applications with continuous exposure temperatures up to 240°C (464°F). Constructed using Thermon's unique and proven monolithic co-extrusion process, USX advances self-regulating heat tracing technology to the ultimate frontiers of performance and reliability.

The heat output of USX heat tracing 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.

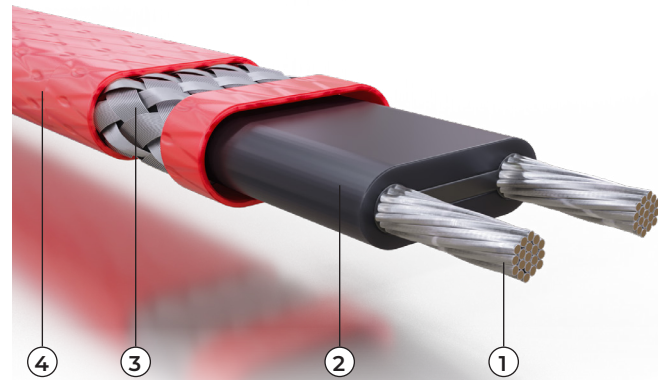
USX heat tracing is approved for use in ordinary (nonclassified) areas and in potentially explosive atmospheres in accordance with the ATEX Directive and the IECEx Scheme.

RATINGS

- Available power densities.....
- 10, 20, 30, 39, 49, 66 W/m @ 10°C
- (3, 6, 9, 12, 15, 20 W/ft @ 50°F)
- Supply voltages ¹.....230 Vac
- Max. operating temperature
- Continuous (power-on).....240°C (464°F)
- Max. exposure temperature
- Intermittent (power-on or off).....250°C (482°F)
- Continuous (power-off).....240°C (464°F)
- Minimum installation temperature.....-60°C (-76°F)
- Minimum bend radius
- @ -15°C (5°F).....10 mm (0.38")
- @ -60°C (-76°F).....32 mm (1.25")
- T-rating ².....
- 3-2, 6-2, 9-2, 12-2, 15-2.....T3/T200°C (392°F)
- 20-2.....T2/T230°C (572°F)
- Based on stabilized design ³.....T3 to T6

Notes

1. Heat tracing may be energized at other voltages; contact Thermon for design assistance.
2. T-rating per internationally recognized testing agency guidelines.
3. Thermon heat tracing is approved for the listed T-ratings using the stabilized design method. This enables the cable 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.



CONSTRUCTION

- 1 Nickel-plated copper bus wires 1.3 mm²
- 2 Monolithic co-extruded semiconductive heating matrix and fluoropolymer dielectric insulation
- 3 Nickel-plated copper braid
- 4 Fluoropolymer overjacket provides additional protection 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 heat tracing requires a suitably certified connection kit to comply with approval requirements.

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

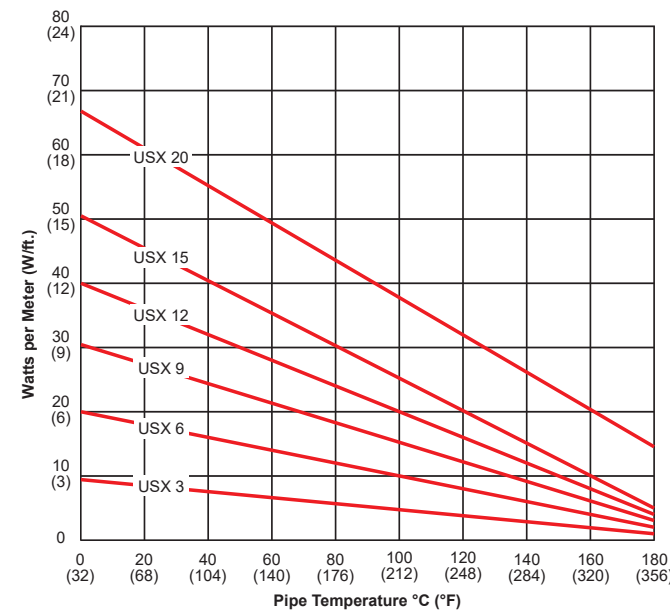
Specific Conditions of Use:

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.

POWER OUTPUT CURVES¹

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

Product Type 230 Vac Nominal	Power Output at 10°C W/m
USX 3-2	9
USX 6-2	19
USX 9-2	29
USX 12-2	38
USX 15-2	48
USX 20-2	64



CERTIFICATIONS/APPROVALS



CSANe 20ATEX3059
IECEX CSA 20.0006

Ex 60079-30-1 IIC T* Gb
Ex 60079-30-1 IIIC T* Db

* T3 for EPL Gb; T200°C for EPL Db for USX 3-2, 6-2, 9-2, 12-2, 15-2

* 230°C (T2) for EPL Gb; T230°C for EPL Db; for USX 20-2

Note

1. For more precise power output values as a function of pipe temperature, refer to CompuTrace®.
2. Maximum circuit lengths shown are based on an instantaneous trip current characteristic per IEC 60898 at the referenced start-up temperature and a 10°C maintenance temperature. For maximum circuit lengths with other trip current characteristics contact Thermon.
3. While a heat tracing system is generally designed to keep the contents of a pipe at the desired maintain temperature, the cable may be energized at lower temperatures. For design data with lower start-up temperatures than represented above contact Thermon for design assistance.
4. The maximum circuit length is for one continuous length of cable, not the sum of segments of cable. Refer to CompuTrace® design software or contact Thermon for current loading of segments.

CIRCUIT BREAKER SIZING AND TYPE²

Maximum circuit lengths for various circuit breaker amperages are shown below. Circuit breaker sizing and earth-fault protection should be based on applicable local codes. For information on design and performance on other voltages, contact Thermon.

Earth-fault protection of equipment should be provided for each branch circuit supplying electric heating equipment.

Type B Circuit Breakers

230 Vac Service Voltage	Product Type	Start-Up Temperature ³ °C	Max. Circuit Length ⁴ vs. Breaker Size Metres		
			16 A	25 A	32 A
USX 3-2		10	177	215	215
		0	177	215	215
		-20	171	215	215
USX 6-2		-40	134	215	215
		10	114	152	152
		0	114	152	152
USX 9-2		-20	114	152	152
		-40	95	152	152
		10	82	123	123
USX 12-2		0	82	123	123
		-20	82	123	123
		-40	72	120	123
USX 15-2		10	65	106	106
		0	65	106	106
		-20	64	106	106
USX 20-2		-40	57	94	106
		10	47	77	94
		0	45	74	94
		-20	41	67	89
		-40	37	60	79
		10	34	55	73
		0	33	52	69
		-20	30	48	62
		-40	27	43	57

Type C Circuit Breakers

230 Vac Service Voltage	Product Type	Start-Up Temperature ³ °C	Max. Circuit Length ⁴ vs. Breaker Size Metres		
			16 A	25 A	32 A
USX 3-2		10	177	215	215
		0	177	215	215
		-20	171	215	215
USX 6-2		-40	134	215	215
		10	114	152	152
		0	114	152	152
USX 9-2		-20	114	152	152
		-40	95	152	152
		10	82	123	123
USX 12-2		0	82	123	123
		-20	82	123	123
		-40	73	123	123
USX 15-2		10	65	106	106
		0	65	106	106
		-20	65	106	106
USX 20-2		-40	58	96	106
		10	47	77	94
		0	47	77	94
		-20	47	76	94
		-40	42	69	91
		10	39	64	81
		0	39	64	81
		-20	36	59	78
		-40	33	53	70



PRODUCT SPECIFICATIONS TUBETRACE® TYPE SE/ME

ELECTRICALLY HEATED INSTRUMENT TUBING WITH BSX™ SELF-REGULATING HEAT TRACE

APPLICATION

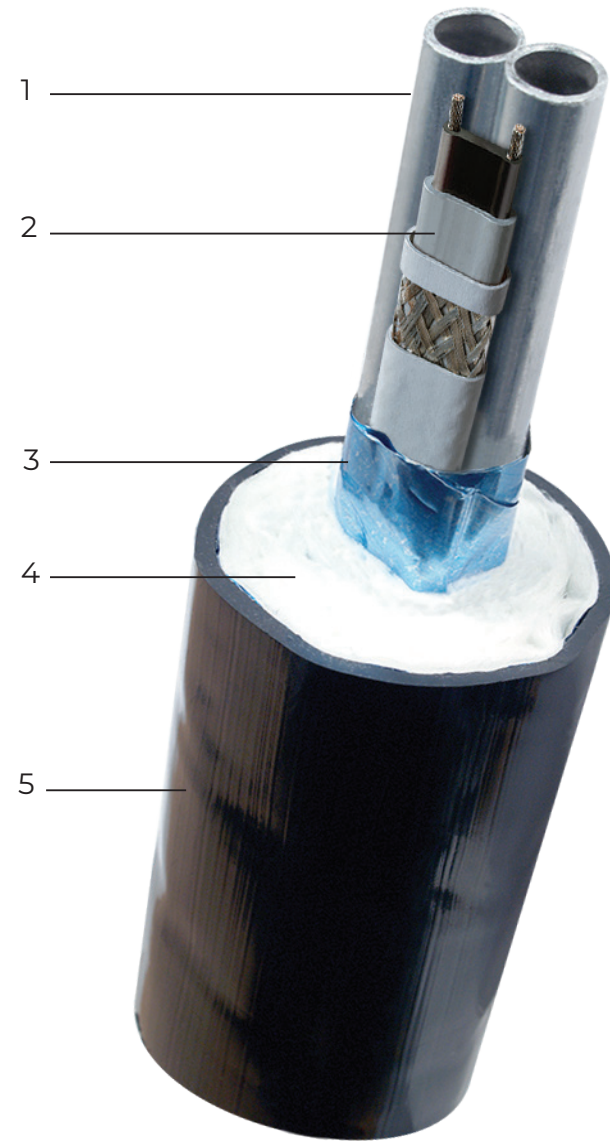
TubeTrace, with “cut-to-length” BSX self-regulating heat tracing, is designed to provide freeze protection or temperature maintenance from 40°F (5°C) to 150°F (65°C) for tubing where no “steam out” of the tubing is possible. BSX withstands temperature exposures of 185°F (85°C).

Self-regulating BSX heat tracing:

- Varies in response to the surrounding conditions along the entire length of a circuit.
- Lower risk of overheating the tube or product.
- Installed cost is lower because “cut-to-length” BSX makes end connections easy with minimal waste.
- BSX is approved for use in ordinary (non-classified) areas and hazardous (classified) areas.

RATINGS

BSX	Ratings
Available watt densities	3, 5, 8, 10 w/ft @ 50°F 10, 16, 26, 33 w/m @ 10°C
Supply voltages	110-120 or 208-277 Vac
Tube temperature range	40°F to 150°F (5°C to 65°C)
Max. continuous exposure temperature Power-off	185°F (85°C)
T-rating	T6 185°F (85°C)



CONSTRUCTION

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

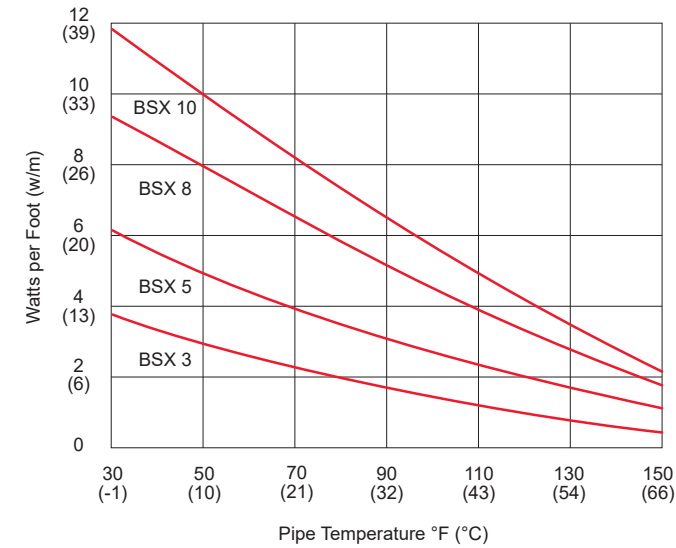
PRODUCT FEATURES

- Self-regulating
- “Cut-to-length”
- Hazardous area approvals

For additional information on BSX and other Thermon heat tracing products and services, visit www.thermon.com.

POWER OUTPUT CURVES

The power outputs shown apply to cable installed on insulated metallic pipe (using the procedures outlined in IEEE Standard 515) at the service voltages stated below. For use on other service voltages, contact Thermon.



HOW TO SPECIFY

SE-6A1-41-3-ATP-1-M

Bundle Type	SE = Single Tube ME = Multiple Tubes	Process Tube O.D.	2 = 1/4" 3 = 3/8" 4 = 1/2" 6 = 6 mm 8 = 8 mm 10 = 10 mm 12 = 12 mm	Process Tube Material ¹	A = 316L SS Welded As = 316Ti SS Welded B = B68 Copper C = PFA Teflon ² D = Monel ³ 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	Number of Tubes	1 2 3 4	Heat Trace Option	3 = OJ/Polyolefin 7 = FOJ/Fluoropolymer	Bundle Jacket	ATP ⁴ PE TPU	Heat Trace Type	41 = BSX 3 (9 W/m) @ 230Vac 43 = BSX 5 (15 W/m) @ 230 Vac 45 = BSX 8 (25 W/m) @ 230 Vac 47 = BSX 10 (32 W/m) @ 230 Vac	M or I Metric or Imperial Indication	Process Tube(s) Wall Thickness	030 = .030" 032 = .032" (B68 Copper) 035 = .035" 040 = .040" (Plastic Only) 047 = .047" (Plastic Only) 049 = .049" 062 = .062" (Plastic Only) 065 = .065" (316/316L SS Seamless Only) 1 = 1 mm 1.5 = 1.5 mm
-------------	-----------------------------------------	-------------------	--------------------------------------------------------------------------------------	------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------	------------------	-------------------	--------------------------------------------	---------------	-------------------------------	-----------------	---------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------	-----------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Notes . . .

1. Seamless tubing has a standard quality K3, other qualities are available on special request. Tubing meets the ASTM standards, tubing that meets DIN standards is available on special request.
2. Teflon is a trademark of E.I. du Pont de Nemours & Co., Inc.
3. Monel and Inconel are trademarks of Inco Alloys International, Inc.
4. Black ATP is standard, other jacket materials are available.

CERTIFICATIONS/APPROVALS

Certificate FM13 ATEX 0052 in accordance with the EU ATEX Directive 94/9/EC
International Electrotechnical Commission
IEC Certification Scheme for Explosive Atmospheres
FMG 13.0020



BSX has additional hazardous area approvals including:
• DNV • Lloyd's • TIIS • CCE/CSIR • GOST-R
Contact Thermon for additional approvals and specific information.



FM Approvals
Ordinary and Hazardous (Classified) Locations



Underwriters Laboratories Inc.
Hazardous (Classified) Locations



PRODUCT SPECIFICATIONS TUBETRACE® TYPE SE/ME

ELECTRICALLY HEATED INSTRUMENT TUBING WITH VSX™-HT SELF-REGULATING HEAT TRACE

APPLICATION

TubeTrace, with “cut-to-length” VSX-HT self-regulating heat tracing, is designed to provide freeze protection or temperature maintenance from 5°C (40°F) to 200°C (392°F) for tubing where high temperature exposure capability is possible. VSX-HT withstands intermittent temperature exposures of 250°C (482°F).

Self-regulating VSX-HT heat tracing:

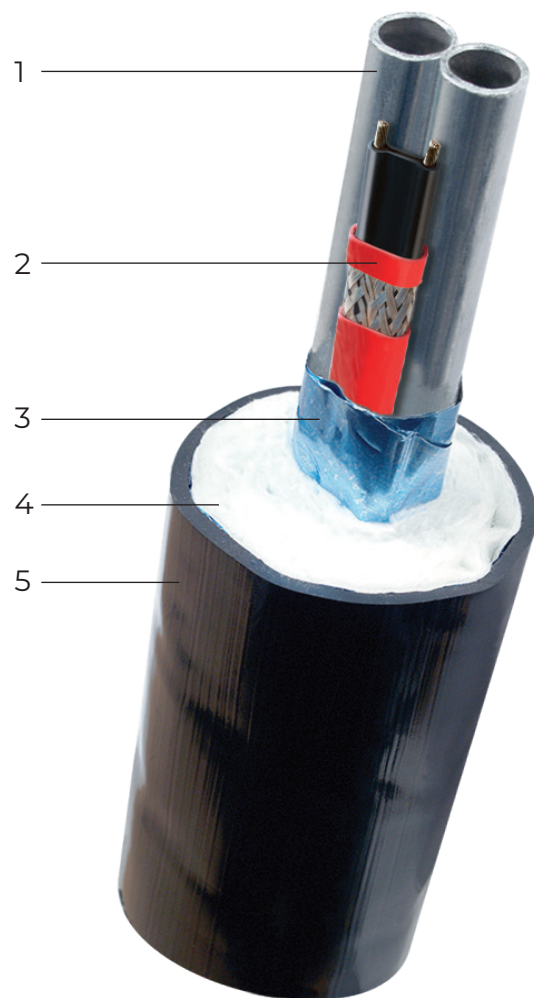
- Varies in response to the surrounding conditions along the entire length of a circuit.
- Lower risk of overheating the tube or product.
- Installed cost is lower because “cut-to-length” VSX-HT makes end connections easy with minimal waste.
- VSX-HT is approved for use in ordinary (non-classified) areas and hazardous (classified) areas.

RATINGS

VSX-HT	Ratings
Available watt densities	16, 33, 49, 66 W/m @ 10°C 5, 10, 15, 20 W/ft @ 50°F
Supply voltages	110-120 or 208-277 Vac
Tube temperature range	5°C to 200°C (40°F to 392°F)
Max. exposure temperature ¹ Intermittent power-on or off	250°C (482°F)
T-rating 16, 33 W/m (5, 10 W/ft.) 49, 66 W/m (15, 20 W/ft.) Based on stabilized design ²	T3 200°C (392°F) T2C 230°C (446°F) T2 to T6

Note

1. This reflects maximum exposure for heater. If bundle jacket is to remain below 60°C (140°F) in 27°C (+80°F) ambient (in consideration of personnel burn risk) tube temperature must remain below 205°C (400°F). Alternative designs to keep jacket below 60°C (140°F) in higher ambients and/or with higher tube temperatures are available. Contact Thermon.
2. Thermon heating cables are approved for the listed T-ratings using the stabilized design method. This enables the cable 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. Maintenance temperature and tube temperature range are maximum values for VSX-HT.



CONSTRUCTION

- 1 Process tube(s)
- 2 VSX-HT self-regulating electrical heat tracing
- 3 Heat reflective tape
- 4 Non-hygroscopic glass fiber insulation
- 5 Polymer outer jacket (ATP or TPU available)

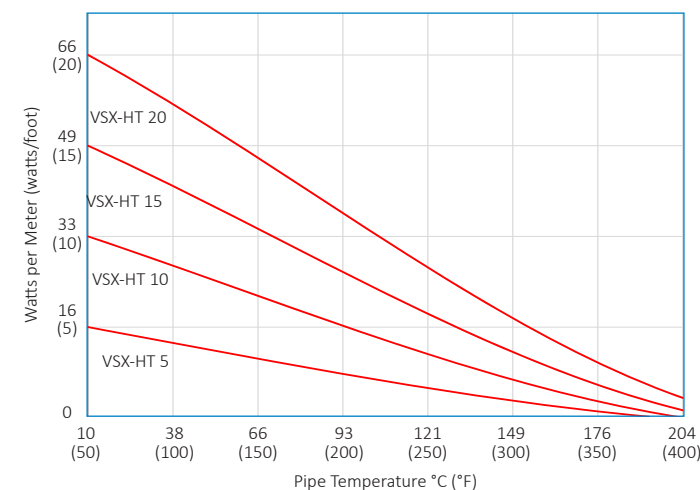
PRODUCT FEATURES

- Self-regulating
- “Cut-to-length”
- Hazardous area approvals

For additional information on VSX and other Thermon heat tracing products and services, visit www.thermon.com.

POWER OUTPUT CURVES

The power outputs shown apply to cable installed on insulated metallic pipe (using the procedures outlined in IEEE Standard 515) at the service voltages stated below. For use on other service voltages, contact Thermon.



HOW TO SPECIFY

SE-4F1-97-7-ATP-035-5

Bundle Type SE = Single Tube ME = Multiple Tubes	Process Tube O.D. Metric 6 = 6 mm 8 = 8 mm 10 = 10 mm 12 = 12 mm Imperial 1 = 1/8" 2 = 1/4" 3 = 3/8" 4 = 1/2" 5 = 5/8" 6 = 3/4" 8 = 1" ¹	Process Tube Material A = 316 SS Welded B = #122 Copper C = PFA Teflon ² D = Monel ³ 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 = Specia	Number of Tubes 1 2 3 4	Heat Trace Option 7 = OJ/Fluoropolymer	Heat Trace Type 91 = VSX-HT 16 W/m 230 Vac 93 = VSX-HT 33 W/m 230 Vac 95 = VSX-HT 49 W/m 230 Vac 97 = VSX-HT 66 W/m 230 Vac	M or I Metric or Imperial	Bundle Jacket ATP ⁴ TPU	Process Tube(s) Wall Thickness 025 = .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 ⁵
---------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------	--------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------	-------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Notes

1. Contact factory for availability of long length coils 1" O.D.
2. Teflon is a trademark of E.I. du Pont de Nemours & Co., Inc.
3. Monel and Inconel are trademarks of Inco Alloys International, Inc.
4. Black ATP is standard, other jacket materials are available.
5. Ensure distinction between metric and imperial tubing are noted.

CERTIFICATIONS/APPROVALS

CE 0344 Ex

Certificate FM 18ATEX0009X
In accordance with the ATEX Directive 2014/34/EU
II 2 G Ex 60079-30-1 IIC T* Gb
II 2 D Ex 60079-30-1 IIIC T* Db
International Electrotechnical Commission
IEC Certification Scheme for Explosive Atmospheres
FMG 18.0002X
Ex 60079-30-1 IIC T* Gb
Ex 60079-30-1 IIIC T* Db

IEC Ex

- * **Temperature Class using Product Classification:**
T3 (for Gb) and T200°C (for Db) for VSX-HT 5-1, 5-2, 10-1, 10-2
230°C (T2) (for Gb) and T230°C (for Db) for VSX-HT 15-1, 15-2, 20-1, 20-2
- * **Temperature Class using Systems Approach:**
T6...T2 for Gases and T85°C...T300°C for Dusts

VSX-HT has additional hazardous area approvals including:
DNV • Lloyd's • JIS • CCE/CMRS • GGTN • CSA • TR CU • TR-Fire
ABS • CIMFR • CQST • CLASS NK • JIS • KOSHA RM RS • TIIS
Contact Thermon for latest status of approvals and specific information.

HEAT TRACING

INSTRUMENT TUBING BUNDLES

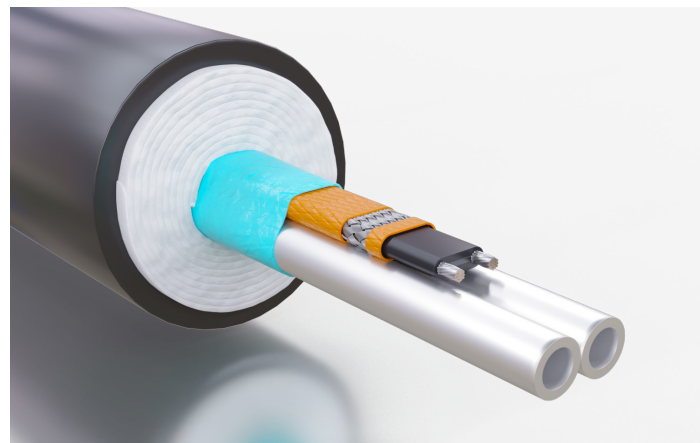
ELECTRICALLY HEATED INSTRUMENT TUBING FOR FREEZE PROTECTION AND TEMPERATURE MAINTENANCE

TubeTrace® Type SE/ME

Approved for hazardous (classified) locations, including options for Class I, Division 1 or Zone 1.

TubeTrace with HTSX™ Self-Regulating Heat Trace

- Use where temperature exposure to steam purge is expected
- Tube Temperature Range: 5°C to 150°C (40°F to 302°F)
- Maximum Exposure Temperature: 250°C (482°F)

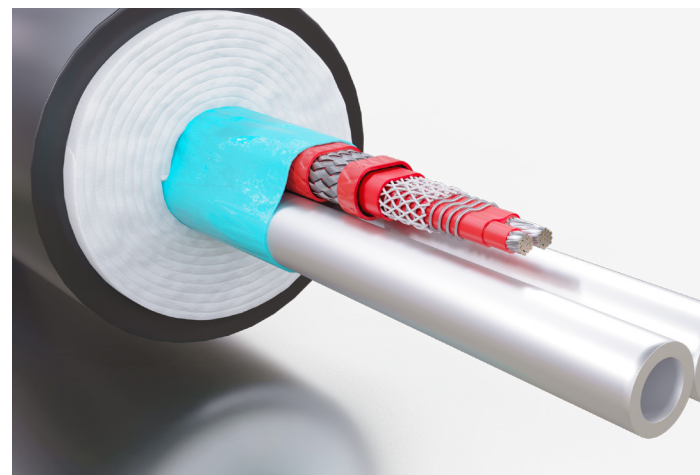


TubeTrace with VSX-HT™ Self-Regulating Heat Trace

- Use where high temperature exposure is a consideration.
- Tube Temperature Range: 5°C to 200°C (40°F to 392°F)
- Maximum Exposure Temperature: 250°C (482°F)

TubeTrace with HPT™ Power-Limiting Heat Trace

- A “cut-to-length” heat tracing for higher temperature maintenance. Also used for freeze protection where high temperature exposure is a factor. HPT represents the best choice for maintaining temperatures up to 204°C (400°F) that can be “cut-to-length” in the field.
- Tube Temperature Range: 5°C to 204°C (40°F to 400°F)
- Maximum Exposure Temperature: 260°C (500°F)



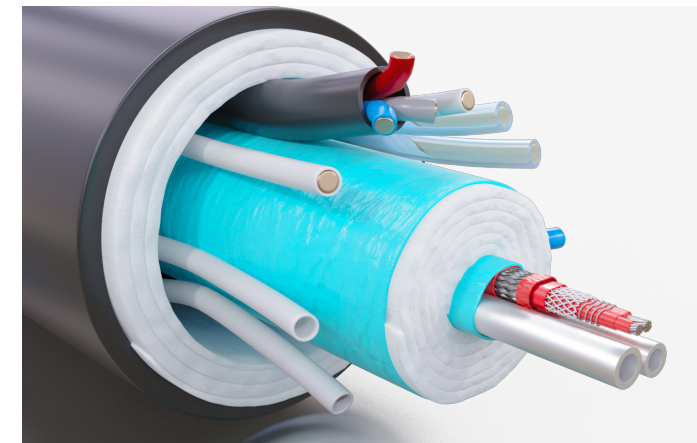
TubeTrace with BSX™ Self-Regulating Heat Trace

- Use for water freeze protection and low temperature maintenance.
- Tube Temperature Range: 5°C to 65°C (40°F to 150°F)
- Maximum Exposure Temperature: 85°C (185°F)

CUSTOM GEMS AND ANALYZER BUNDLES

INSTRUMENT TUBING BUNDLES

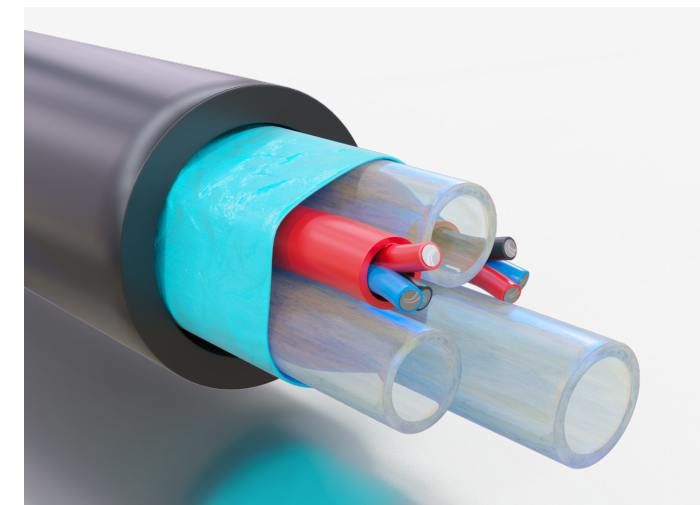
Many analyzer applications have specialty tubing requirements, all of which Thermon can provide within our instrument tubing bundles. Examples of tube materials and finishes available include:



- Fluoropolymer tubing, 316 and 304 stainless, welded or seamless, Monel, Titanium, Inconel 825, and Alloy 20.
- Optional Electropolished (EP), Chemical Passivation (CP), and performance coatings such as SilcoNert2000 are also available on stainless steel tubing.
- Multiple tube materials can be provided in a common bundle

“NI” Non-Insulated (and Non-Heated) Bundle and Other TubeTrace Options Can Include:

- Auxiliary Conductors
- Unheated Tubes
- Factory Installed Temperature Sensor(s)
- Special Markings And Identification As Required



NOTES:

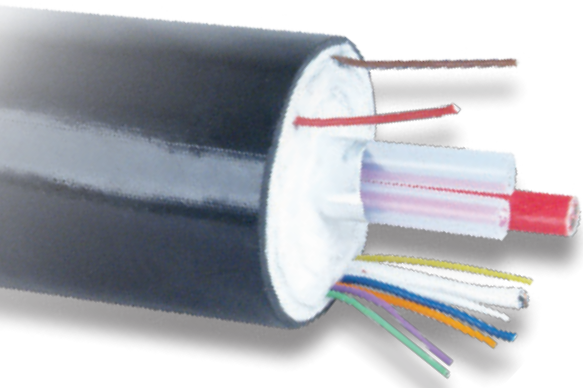
1. Reflects maximum exposure temperature of heater.
2. Monel and Inconel are trademarks of Special Metals Corporation, Inc. Trade name of SilcoTek™, formerly a division of Restek Performance Coatings. SilcoNert™ 1000 replaces Silcosteel®. SilcoNert™ 2000 replaces Sulfinert®/Siltek®.



PRODUCT SPECIFICATIONS

CUSTOM CEMS AND ANALYZER BUNDLES

TUBETRACE® HEATED INSTRUMENT TUBING



APPLICATION

Your CEMS and Analyzer sample lines will be cost-effective and reliable with Thermon. Thermon's flexible manufacturing process can include auxiliary conductors, non-heated tubes, factory installed temperature sensors, a variety of heat tracing options, special markings and identification as required.

TUBE MATERIALS AND FINISHES

- 316 and 304 stainless, welded or seamless, Monel, titanium, and Alloy 825 are available.
- Optional Electropolished (EP) finishes and chemical passivation (CP), (including SilcoNert1000, SilcoNert2000, and Dursan) 1 are also available.
- Double containment tubing and/or multiple tube materials can be provided in a common bundle.
- Fluoropolymer tubing (including PFA, TFE, and FEP), nylon, polyethylene, composite filament-wound tubing and most any other tubing material is also available.
- Electrically Heated TubeTrace® - Thermon electrical heat tracing is approved for hazardous (classified) locations, including options for Class I, Division 1 (NEC/CEC) and Zone 1 (IEC).
- SX self-regulating and HPTTM power-limiting heat tracing can be "cut-to-length" in the field maintaining temperatures up to 177°C.

Note:
SilcoNert1000, SilcoNert2000 and Dursan are trade names of SilcoTek.

EMBEDDED TEMPERATURE SENSORS

To accurately sense temperatures in one or more locations, factory installed temperature sensors (RTD, Thermocouple, or Thermistor) with insulated leads rated 260°C are available.

CONTROL AND MONITORING

To accurately control temperatures for sensitive analytical applications, consider Thermon's TC control and monitoring systems. Utilizing 3-wire RTD temperature sensors, Thermon TC controllers are available with single-point or multi-circuit configurations, that provide monitoring for temperature and electrical current, including ground leakage protection as required by code. For a local, single point controller and power junction box, consider Thermon's ECM electronic control module.

NON-INSULATED AND NON-HEATED TUBING BUNDLES

To accurately control temperatures for sensitive analytical applications, consider Thermon's TC control and monitoring systems. Utilizing 3-wire RTD temperature sensors, Thermon TC controllers are available with single-point or multi-circuit configurations, that provide monitoring for temperature and electrical current, including ground leakage protection as required by code. For a local, single point controller and power junction box, consider Thermon's ECM electronic control module.

PRODUCT SPECIFICATIONS

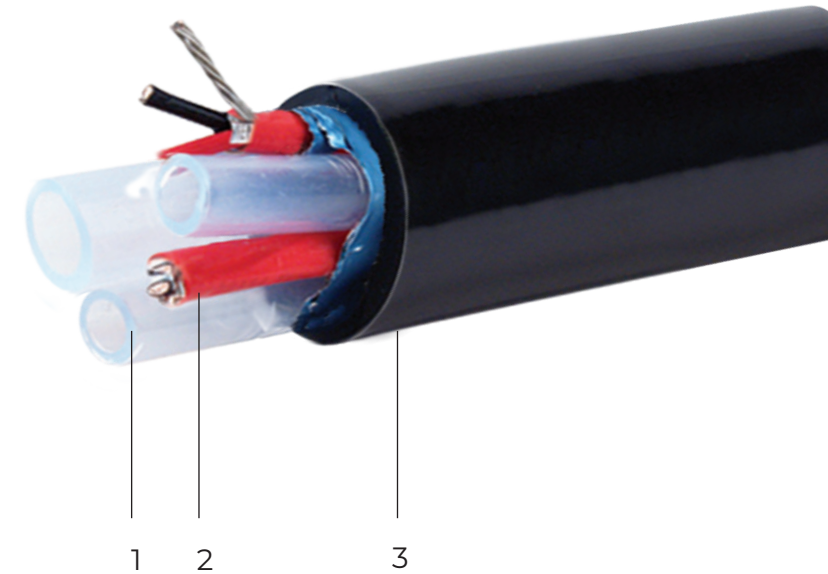
TYPE NI: NON-INSULATED AND NON-HEATED TUBING

APPLICATION

Type NI non-insulated instrument tubing is designed for instrument air, the transmission of hydraulic or pneumatic signals, or process and analytical instrumentation. NI bundles are convenient and economical for protecting tubing from the environment and reduce installed costs of uninsulated instrument tubing. Communication or power supply wires may be included to allow electrical connection of equipment.

RATINGS

Range of Available Tube Sizes (User specified wall thickness)	1/8" through 3/4"
Standard Jacket Material	ATP ³
Minimum Installation Temperature	-40°F (-40°C)
Maximum Jacket Exposure Temperature	221°F (105°C)



HOW TO SPECIFY

NI-4B435-ATP-3/22

Bundle Type	Tube O.D.	Tube(s) Material	Number of Tube(s)	Tube Wall Thickness	Jacket Option Type	Number of Wires	Wire Size ⁴
NI = Non-insulated	1 = 1/8"	A = 316 SS Welded	1-20	28 = .028 (SS Only)	ATP ³	1-20	22 = 22 AWG
	2 = 1/4"	B = #122 Copper		30 = .030			TPU
	3 = 3/8"	C = PFA Teflon ¹		32 = .032 (Copper Only)	40 = .040 (Plastic Only)	16 = 16 AWG	
	4 = 1/2"	D = Monel ²		47 = .047 (Plastic Only)	49 = .049	14 = 14 AWG	
	5 = 5/8"	E = Titanium		62 = .062 (Plastic Only)	65 = .065	12 = 12 AWG	
	6 = 3/4"	F = 316 SS Seamless		83 = .083 (SS Only)		10 = 10 AWG	
		G = 304 SS Welded					
		H = 304 SS Seamless					
		J = Alloy C276					
		K = Alloy 825					
		L = Alloy 20					
		M = FEP Teflon					
		N = Nylon					
		P = Polyethylene					
		X = Special					

Notes

1. Teflon is a trademark of E. I. duPont de Nemours Co., Inc.
2. Monel is a trademark of Inco Alloys International, Inc.
3. Black ATP is standard. Other jacket materials are available.
4. Other wire sizes and types available, contact factory.

HEAT TRACING

INSTRUMENT TUBING BUNDLES

ELECTRICALLY HEATED INSTRUMENT TUBING FOR FREEZE PROTECTION OF HIGH TEMPERATURE STEAM LINES

Isolated “cut-to-length” heat trace for high temperature exposure, suitable for ambient sensing control.

TubeTrace® Type SEI/MEI - HT

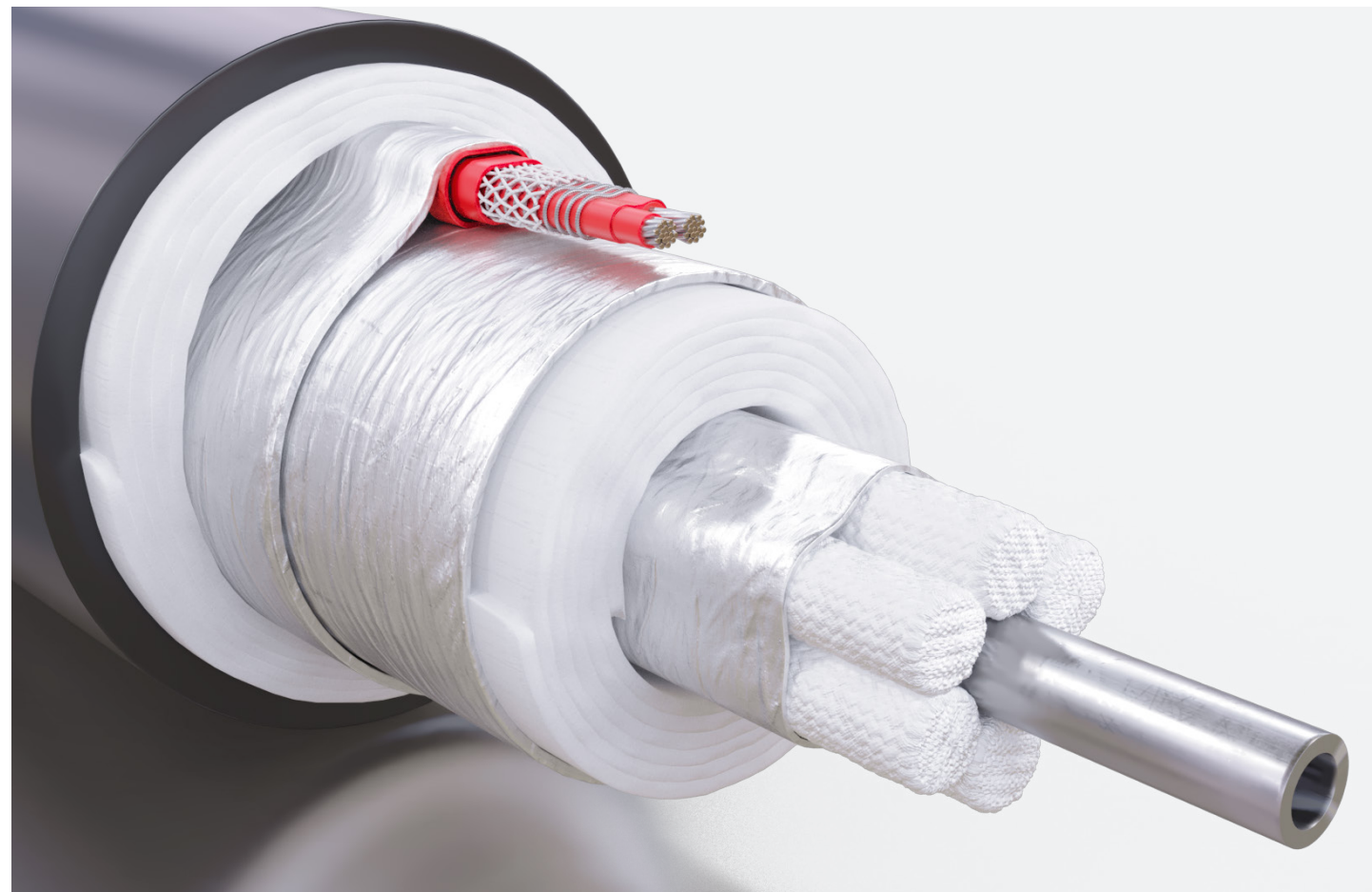
- Maintain: 5°C (40°F)
- Continuous Exposure: 399°C (750°F)

TubeTrace® Type SEI/MEI - HTX

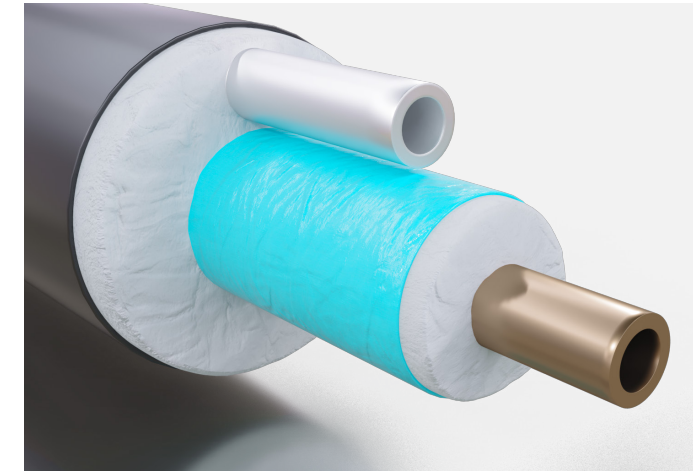
- Maintain: 5°C (40°F)
- Continuous Exposure: 593°C (1100°F)

TubeTrace® Type SEI/MEI - HTX2

- Maintain: 5°C (40°F)
- Intermittent Exposure: 593°C (1100°F)

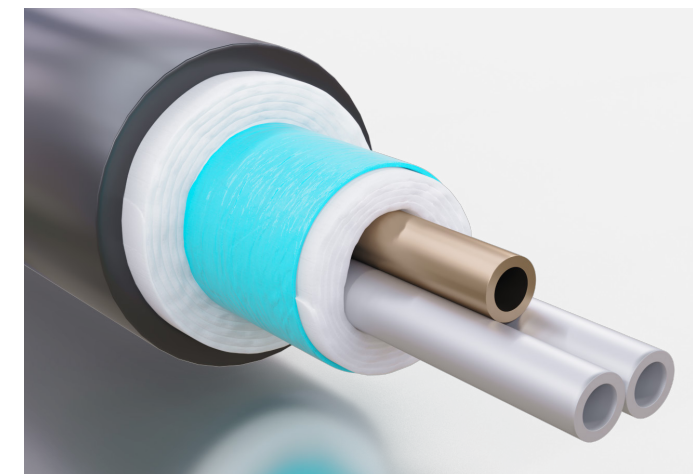


STEAM OR FLUID HEATED INSTRUMENT TUBING FOR FREEZE PROTECTION AND TEMPERATURE MAINTENANCE



Steam or Fluid “Light Traced” (SI/MI)

- For freeze protection and lower temperature maintenance. The tracer tube is isolated from the process tube(s), so process tube temperatures will be significantly lower than the tracer tube temperature.
- Tube Temperature Range: 5°C to 121°C (40°F to 250°F)
- Maximum Exposure: 205°C (400°F) *



Steam or Fluid “Heavy Traced” (SP/MP)

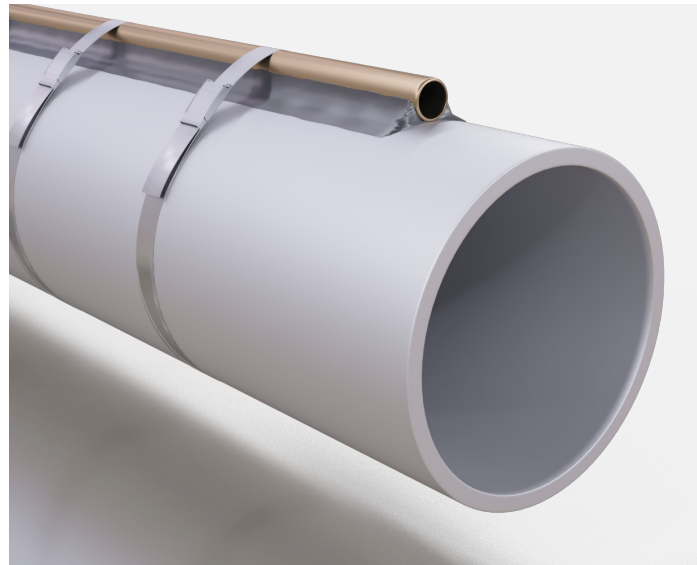
- For freeze protection and process maintenance. The tracer tube is in direct contact with the process tube(s), so process tube temperatures will be very close to the tracer tube temperature.
- Standard Tracer Temperature Range: 5°C to 205°C (40°F to 400°F)
- Maximum Exposure: 205°C (400°F) *

HEAT TRACING STEAM TRACING

HEAT TRANSFER COMPOUNDS TO MAINTAIN HIGH TEMPERATURES

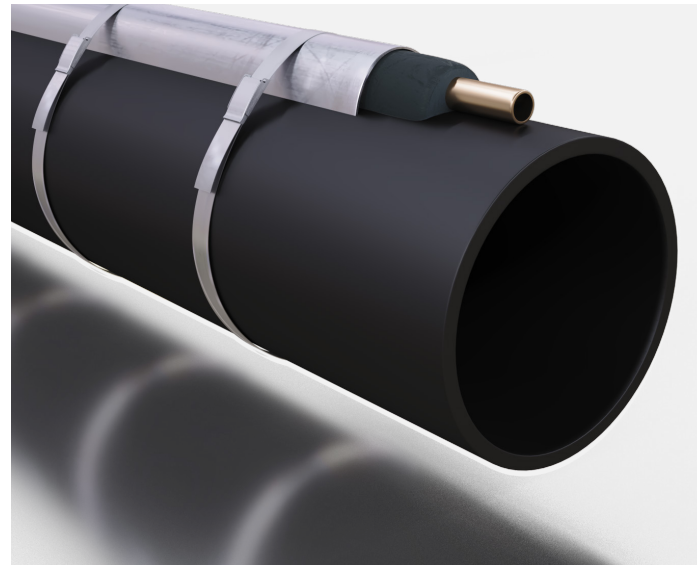
“Thermonized” With Thermon Heat Transfer Compounds

- Consistent Heat Transfer Properties
- Less Than 20% of Cost for Steam Jacketing



SnapTrace®
Preformed Extrusions For
Straight Piping

- Available in 1.22 m (4 ft) lengths
- Significantly Reduces Installation Time
- No Surface Preparation Required
- Use With Up to 232°C (450°F) Fluid/Steam



**HT Compounds for Piping, Valves
& Irregular Surfaces**
(Maximum temperature ratings shown)

- T-3: 454°C (850°F)
- T-99: 1204°C (2,200°F)
- T-85: 232°C (450°F)

ISOLATED STEAM TRACERS FOR LOWER MAINTAIN TEMPERATURES

SafeTrace™ Provides Increased Safety

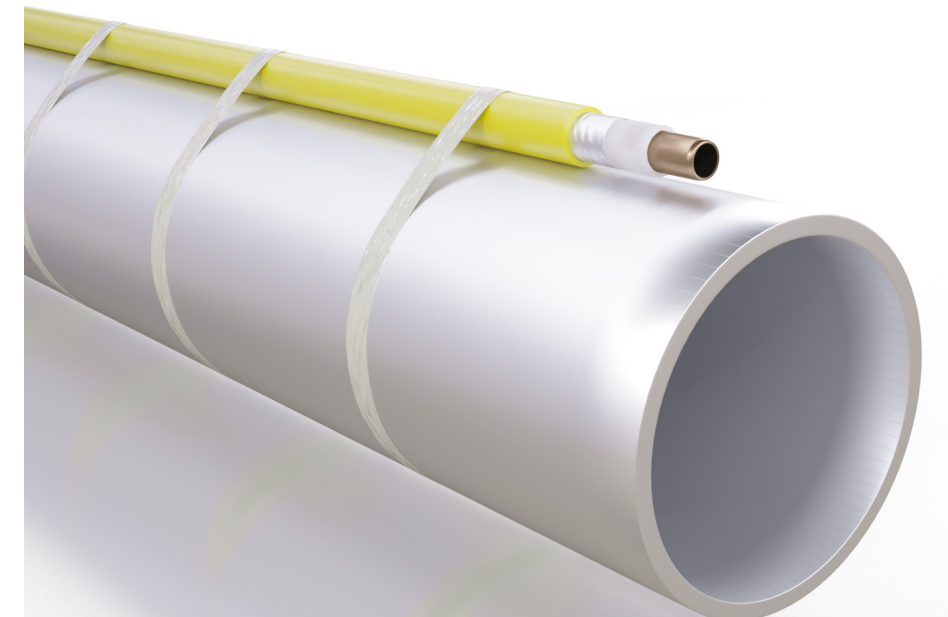
- SafeTrace Tracers Comply With Tests for Skin Exposure (per ASTM Std C-1005/1057)
- Safety Yellow Jacket Alerts Plant Personnel to Potentially Dangerous Conditions

SafeTrace™ Provides Predictable Heat Transfer

- Permits Winterization for Any Size Pipe
- Eliminates Hot/Cold Spots Associated With Bare Tubing and Spacer Blocks
- Suitable for Temperature-Sensitive Processes

Medium Maintain Temperatures

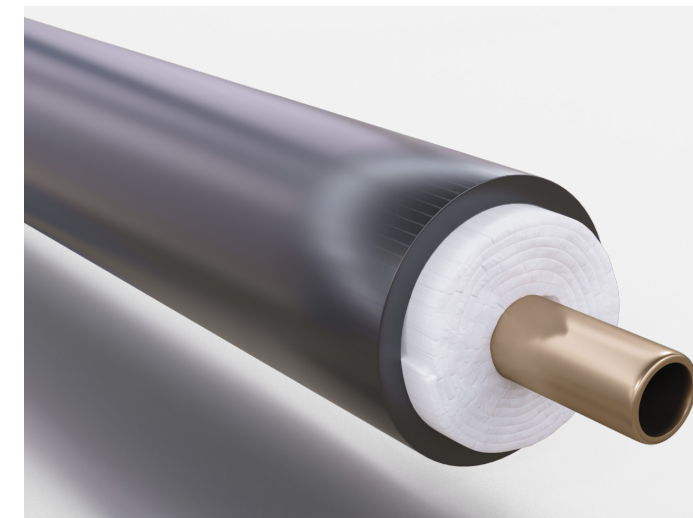
- **SafeTrace™ BTS:** 38°C to 121°C (100°F to 250°F)



SafeTrace™ SLS-IT:
24°C to 93°C (75°F to 200°F)

SafeTrace™ DLS-IT:
5°C to 54°C (40°F to 130°F)

STEAM SUPPLY/CONDENSATE RETURN LINES

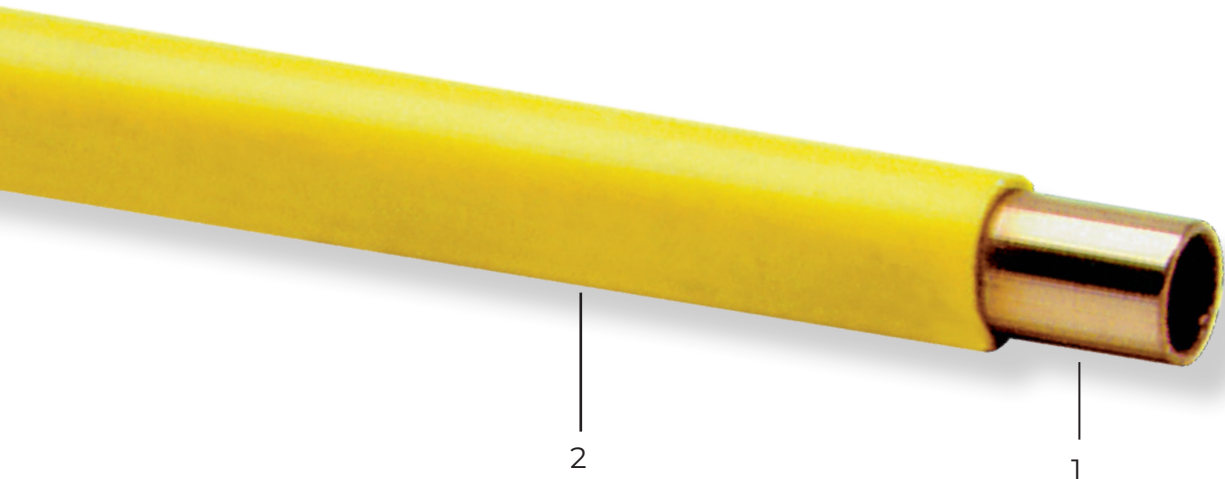


ThermoTube® Pre-Insulated Tubing

- Ideally Suited to Transport Liquids, Gases or Refrigerants
- Non-hygroscopic Glass Fiber Insulation for Efficiency
- Protective Outer Jacket Resists Weather and Moisture
- ThermoTube Can be Installed in Cable Trays, Angles, Channels, Struts and on I-Beams
- All Tubing Types Available
- Continuous Temperature Range: Service to 205°C (400°F) *
- ThermoTube ratings to 593°C (1100°F) also available *



PRODUCT SPECIFICATIONS
SAFETRACE™
 BTS STEAM TRACER



APPLICATION

SafeTrace BTS is a metallic tracer tube covered with a special high temperature polymer jacket¹. The SafeTrace BTS jacket provides a measure of personnel burn protection without sacrificing thermal performance when compared to bare metal tube tracers installed on a pipe. SafeTrace BTS tracers utilize a safety yellow identification jacket² to signify materials potentially dangerous such as steam per ASME/ANSI A13.1-1996.

SafeTrace BTS is supplied in long length coils and may be installed anywhere bare tracing is specified.

SPECIFICATIONS/RATINGS

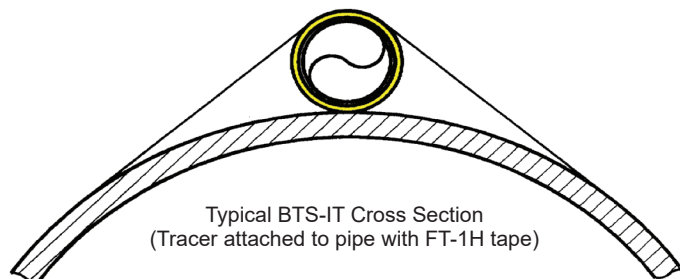
Available tube diameters 3/8" & 1/2" and 10 mm & 12 mm
 Available tube materials copper & stainless steel
 Typical pipe temperature range 100°F to 250°F (38°C to 121°C)
 Max. exposure temperature 420°F (215°C)
 Min. installation temperature -40°F (-40°C)
 Max. recommended steam pressure 250 psig (17 bar)

BENEFITS

- Significantly reduces risk of burns
- Superior corrosion resistance to most acids and alkalis
- Simple tape-on installation
- Quick delivery
- Free design assistance

CONSTRUCTION

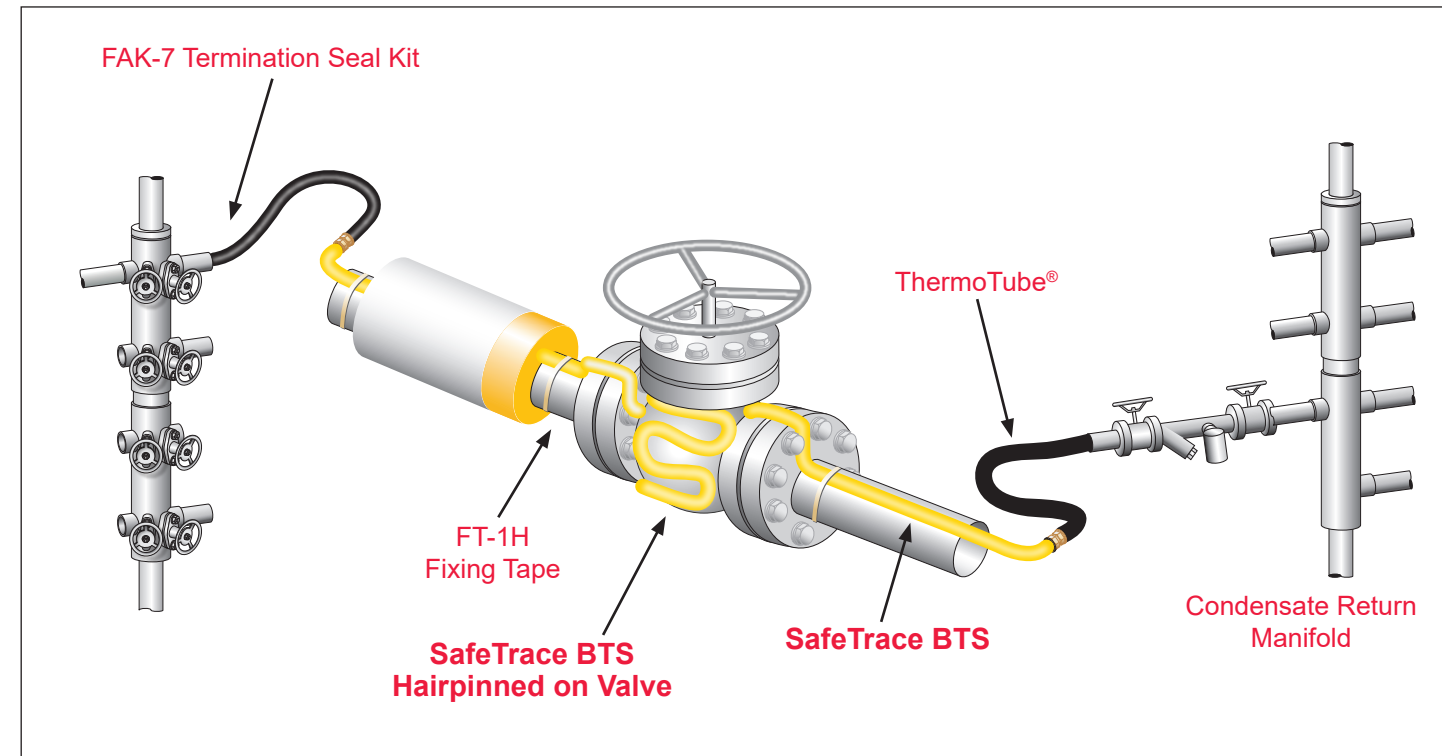
1. Copper or stainless steel tube
2. Safety yellow polymer jacket



Notes

1. U.S. Patent No. 6,131,617; Foreign Patents pending.
2. Thermon does not purport to address all safety issues, if any, associated with the use of Thermon products when handling steam or other potentially dangerous materials. It is the responsibility of the user to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

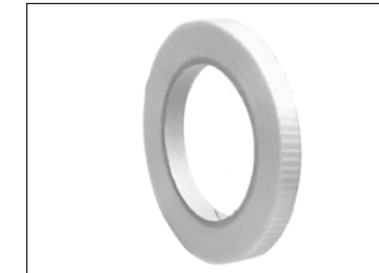
TYPICAL STEAM TRACING SYSTEM



PRODUCT CONFIGURATIONS

Catalog Number	Tube Material ¹	Tube Dia. (O.D.)	Wall Thickness ²
BTS-3B32	Copper	3/8"	0.032"
BTS-4B35	Copper	1/2"	0.035"
BTS-3A35	SS Welded	3/8"	0.035"
BTS-4A35	SS Welded	1/2"	0.035"
BTS-3F35	SS Seamless	3/8"	0.035"
BTS-4F35	SS Seamless	1/2"	0.035"
BTS-10B1	Copper	10 mm	1 mm
BTS-12B1	Copper	12 mm	1 mm
BTS-10A1	SS Welded	10 mm	1 mm
BTS-12A1	SS Welded	12 mm	1 mm
BTS-10F1	SS Seamless	10 mm	1 mm
BTS-12F1	SS Seamless	12 mm	1 mm

BASIC ACCESSORIES



FT-1H fixing tape for circumferential banding of SafeTrace tracer to piping every 12" (300 mm) or as required by code or specification. Tape is 1/2" (13 mm) wide x 108' (33 m) long.

Product Rating
 Max. Exposure Temp..... 500°F (260°C)
 Min. Installation Temp..... -40°F (-40°C)

RELATED MATERIALS

Connections between the steam and condensate headers and the SafeTrace BTS may be accomplished with ThermoTube preinsulated tubing. ThermoTube is available in a variety of configurations to meet the requirements of most applications. For information on ThermoTube preinsulated tubing, refer to Form TSP0009.

Notes

1. Copper tubing meets ASTM Std B68-B75. Stainless steel tubing meets ASTM Std A269.
2. All tracer tubes are available in 0.049" wall thickness; contact Thermon.



PRODUCT SPECIFICATIONS
SAFETRACE™
 SLS STEAM TRACER

APPLICATION

SafeTrace SLS-IT is a metallic tracer tube covered with composite materials¹ that lowers thermal conductance to reduce heat transfer. SafeTrace provides a reduced yet predictable heat output along a traced pipe to prevent hot spots and overheating. It replaces bare metallic tracers that often waste energy and stress pipe works by raising pipe temperatures much higher than necessary or desired.

SafeTrace SLS-IT tracers utilize a safety yellow identification jacket² to signify materials potentially dangerous such as steam per ASME/ANSI A13.1-1996. All SafeTrace IT tracers also comply with ASTM Std C-1055, which requires that human skin temperature be less than 136.4°F (58°C) when in contact with a hot surface for five seconds.³

SafeTrace SLS-IT is supplied in long length coils and may be run continuously from the steam supply manifold, along the pipe and over to the condensate return manifold.

SPECIFICATIONS/RATINGS

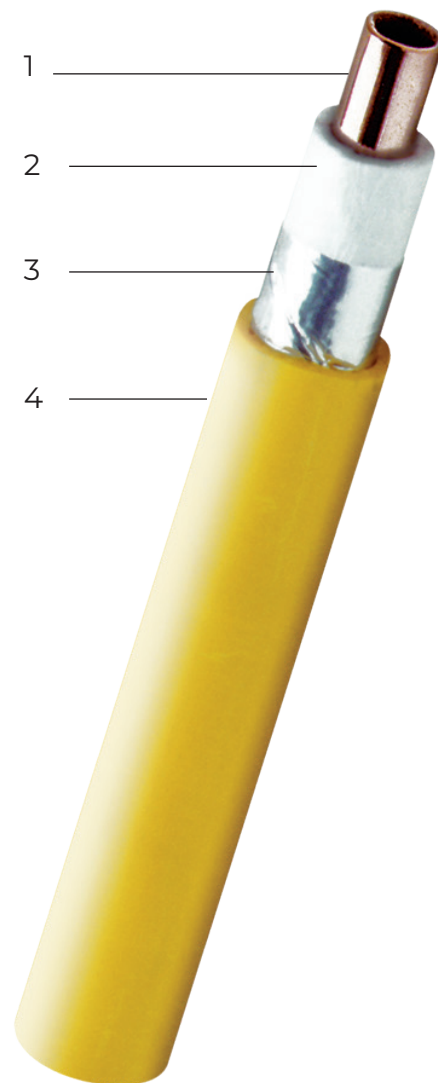
Standard tube diameters 3/8" and 10 mm
 Nominal O.D. 3/4" (19 mm)
 Available tube materials copper & 316 stainless steel
 Typical pipe temp. range ... 75°F to 200°F (24°C to 93°C)
 Max. exposure temperature 420°F (215°C)
 Min. installation temperature -40°F (-40°C)
 Max. recommended steam pressure 250 psig (17 bar)
 Typical max jacket temperature <136.4°F (58°C)³

BENEFITS

- Significantly reduces risk of burns
- Saves up to 35% of steam consumption compared to bare metal tube
- Predictable heat transfer—no hot spots or overheating
- Faster installation times—can be run continuously from the steam supply to the condensate collection system
- Longer circuit lengths—fewer traps
- Simple tape-on installation—not steel banding
- Quick delivery
- Free design assistance

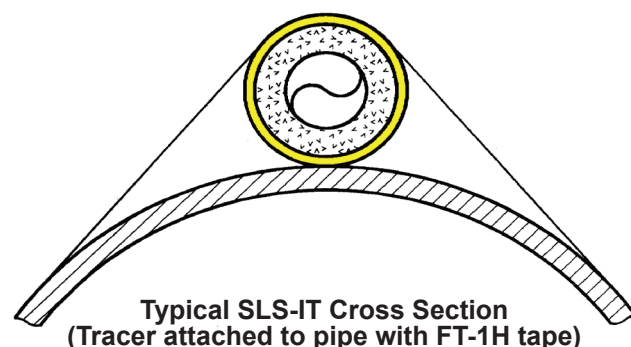
Notes

1. U.S. Patent No. 6,905,566 B1; Foreign Patents pending.
2. Thermon does not purport to address all safety issues, if any, associated with the use of Thermon products when handling steam or other potentially dangerous materials. It is the responsibility of the user to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.
3. Based on operating at maximum recommended steam pressure. Temperature derived in accordance with ASTM Std C-1055 and ASTM Std C-1057 (skin temperature after five-second contact)..

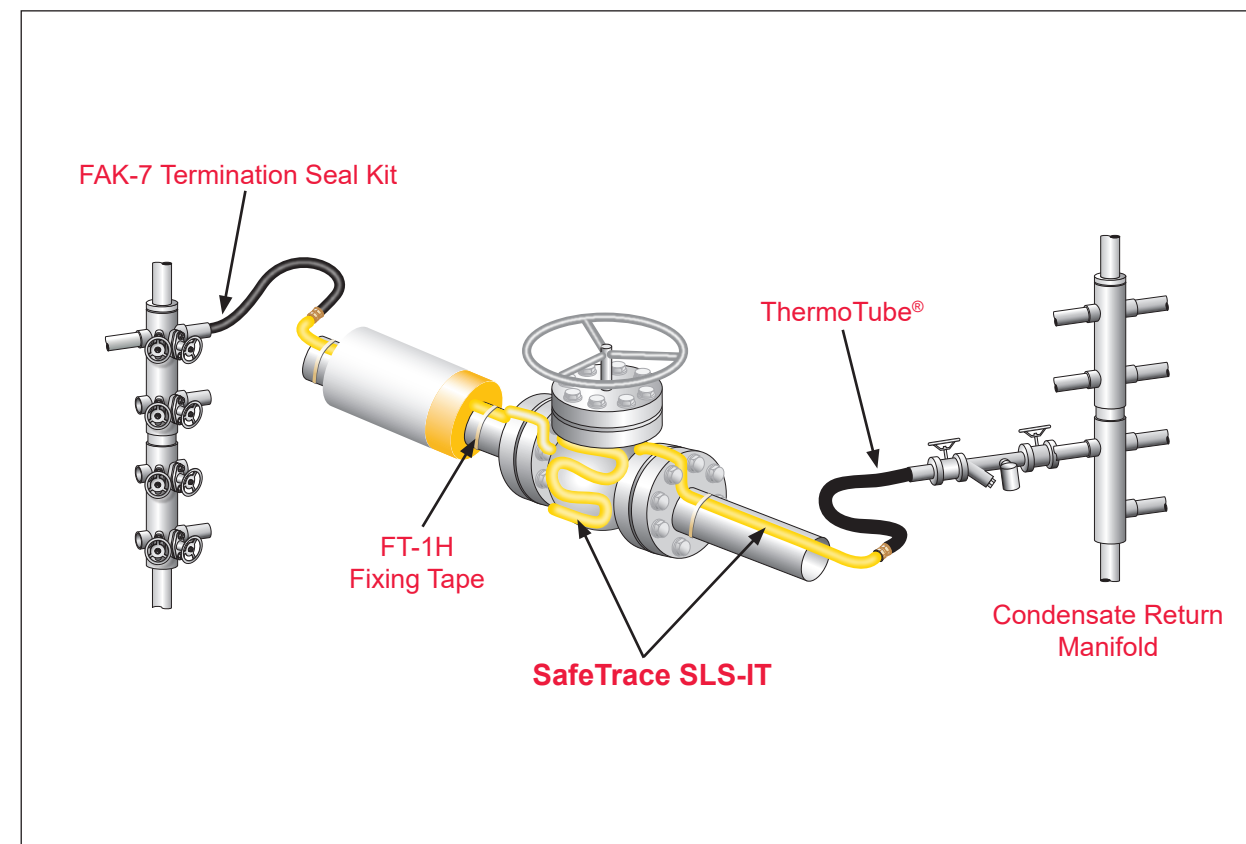


CONSTRUCTION

- 1 Copper or stainless steel tube
- 2 Thermal retardant
- 3 Heat reflective tape
- 4 Safety yellow polymer jacket



TYPICAL STEAM TRACING SYSTEM



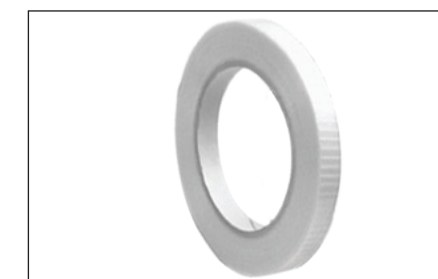
PRODUCT CONFIGURATIONS

Catalog Number	Tube Material ¹	Tube Dia. (O.D.)	Wall Thickness ²
SLS-IT-3B32	Copper	3/8"	0.032"
SLS-IT-3A35	SS Welded	3/8"	0.035"
SLS-IT-3F35	SS Seamless	3/8"	0.035"
SLS-IT-10B1	Copper	10 mm	1 mm
SLS-IT-10A1	SS Welded	10 mm	1 mm
SLS-IT-10F1	SS Seamless	10 mm	1 mm

Notes

1. Copper tubing meets ASTM Std B68-B75. Stainless steel tubing meets ASTM Std A269.
2. SLS also available with 1/2" and 12mm diameter tubing and in 0.049" wall thickness; contact Thermon.

BASIC ACCESSORIES



FT-1H fixing tape for circumferential banding of SafeTrace tracer to piping every 12" (300 mm) or as required by code or specification. Tape is 1/2" (13 mm) wide x 108' (33 m) long.

Product Rating
 Max. Exposure Temp..... 500°F (260°C)
 Min. Installation Temp..... -40°F (-40°C)

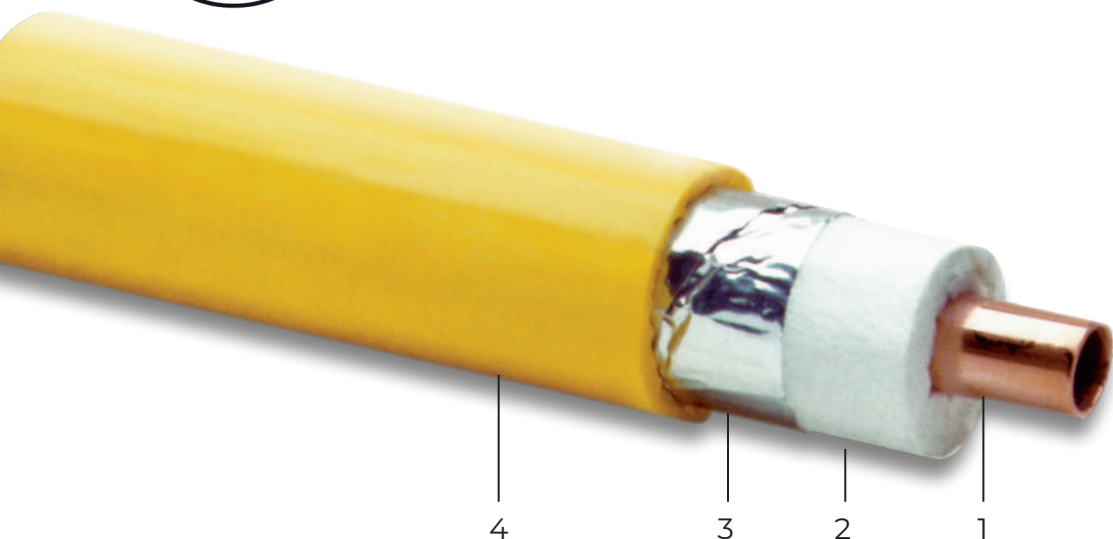


FAK-7 each kit contains a roll of self-vulcanizing silicone rubber tape and RTV sealant. The kit contains sufficient materials to waterproof approximately six terminations. No heat gun or special tools are needed for installation.

Product Rating
 Max. Exposure Temp..... 400°F (204°C)
 Min. Application Temp..... -64°F (-54°C)



PRODUCT SPECIFICATIONS
SAFETRACE™
DLS STEAM TRACER



APPLICATION

SafeTrace DLS-IT is a metallic tracer tube covered with composite materials¹ that lower thermal conductance to reduce heat transfer. SafeTrace provides a predictable heat output along a traced pipe to prevent hot spots and overheating. It replaces bare metallic tracers that often waste energy and stress pipe works by raising pipe temperatures much higher than desired.

SafeTrace DLS-IT tracers utilize a safety yellow identification jacket² to signify materials potentially dangerous, such as steam per ASME/ANSI A13.1-1996. All SafeTrace IT tracers also comply with ASTM Std C-1055, which requires that human skin temperature be less than 136.4°F (58°C) when in contact with a hot surface for five seconds.³

SafeTrace DLS-IT is supplied in long length coils and may be run continuously from the steam supply manifold, along the pipe and over to the condensate return manifold.

SPECIFICATIONS/RATINGS

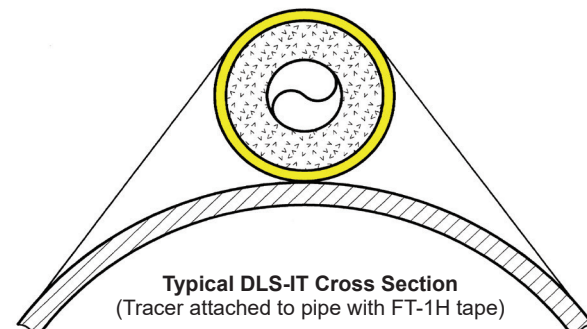
Available tube diameters 3/8" and 10 mm
Nominal O.D. 1" (25 mm)
Available tube materials copper & stainless steel
Typical pipe temp. range 40°F to 130°F (5°C to 54°C)
Max. exposure temperature 420°F (215°C)
Min. installation temperature -40°F (-40°C)
Max. recommended steam pressure 250 psig (17 bar)
Typical max. jacket temperature <136.4°F (58°C)³

BENEFITS

- Significantly reduces risk of burns
- Saves up to 50% of steam consumption compared to bare metal tube
- Predictable heat transfer—no hot spots or overheating
- Faster installation times—can be run continuously from the steam supply to the condensate collection system
- Longer circuit lengths—fewer steam traps
- Simple tape-on installation—not steel banding
- Quick delivery
- Free design assistance

CONSTRUCTION

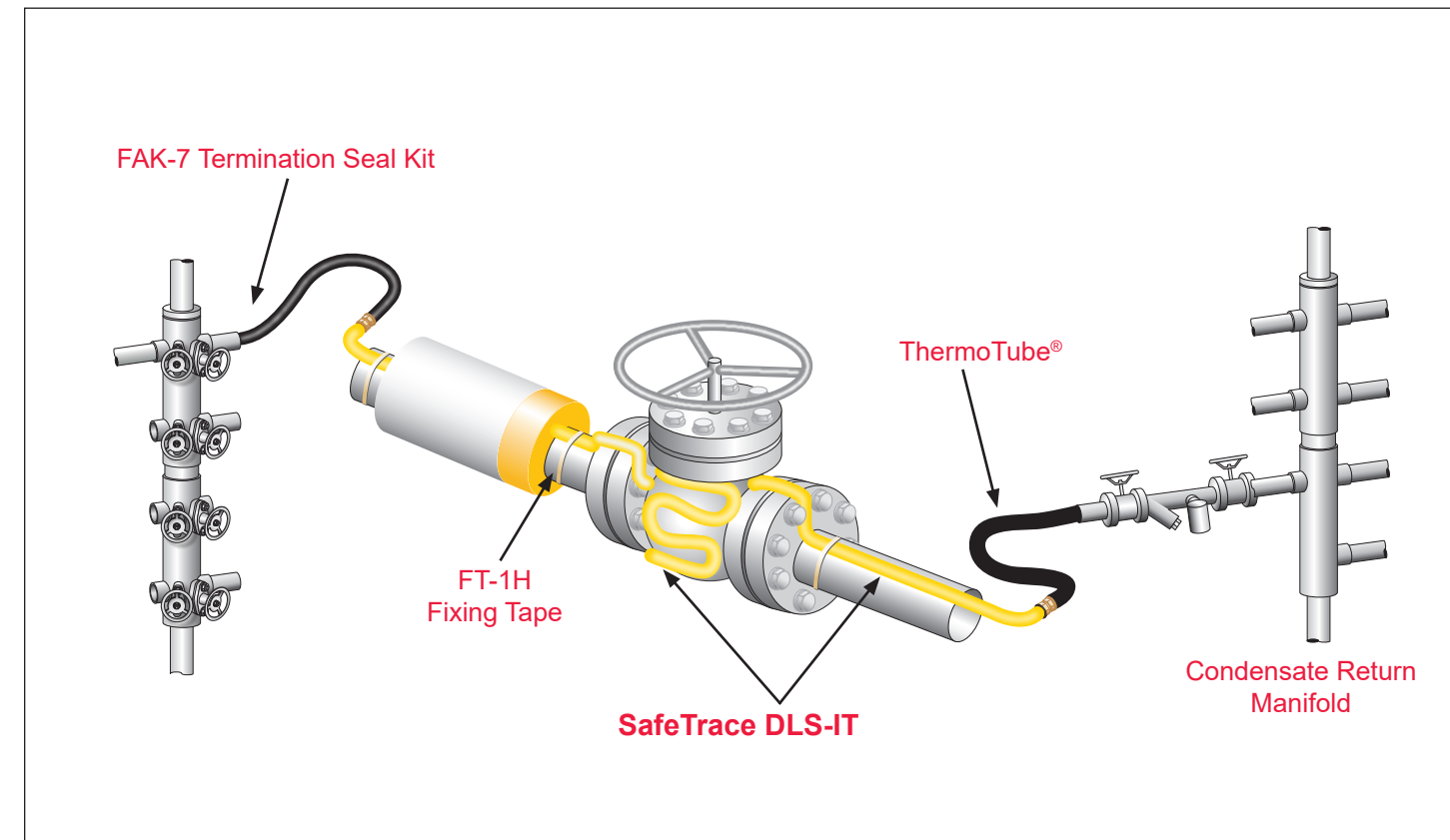
- 1 Copper or stainless steel tube
- 2 Thermal retardant
- 3 Heat reflective tape
- 4 Safety yellow polymer jacket



Notes

1. U.S. Patent No. 6,905,566 B1; Foreign Patents pending.
2. Thermon does not purport to address all safety issues, if any, associated with the use of Thermon products when handling steam or other potentially dangerous materials. It is the responsibility of the user to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.
3. Based on operating at maximum recommended steam pressure. Temperature derived in accordance with ASTM Std C-1055 and ASTM Std C-1057 (skin temperature after five-second contact).

TYPICAL STEAM TRACING SYSTEM



PRODUCT CONFIGURATIONS

Catalog Number	Tube Material ¹	Tube Dia. (O.D.)	Wall Thickness ²
DLS-IT-3B32	Copper	3/8"	0.032"
DLS-IT-3A35	SS Welded	3/8"	0.035"
DLS-IT-3F35	SS Seamless	3/8"	0.035"
DLS-IT-10B1	Copper	10 mm	1 mm
DLS-IT-10A1	SS Welded	10 mm	1 mm
DLS-IT-10F1	SS Seamless	10 mm	1 mm

Notes

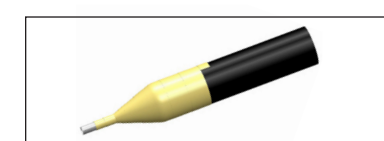
1. Copper tubing meets ASTM Std B68-B75. Stainless steel tubing meets ASTM Std A269.
2. All tracer tubes are available in 0.049" wall thickness; contact Thermon.

BASIC ACCESSORIES



FT-1H fixing tape for circumferential banding of SafeTrace tracer to piping every 12" (300 mm) or as required by code or specification. Tape is 1/2" (13 mm) wide x 108' (33 m) long.

Product Rating
Max. Exposure Temp. 500°F (260°C)
Min. Installation Temp. -40°F (-40°C)



FAK-7 each kit contains a roll of self-vulcanizing silicone rubber tape and RTV sealant. The kit contains sufficient materials to waterproof approximately six terminations. No heat gun or special tools are needed for installation.

Product Rating
Max. Exposure Temp. 400°F (204°C)
Min. Application Temp. -64°F (-54°C)



PRODUCT DATASHEET
THERMOTUBE® TYPE SL
 PREINSULATED TUBING

APPLICATION

ThermoTube is a single insulated tube ideally suited to transport hot or cold liquids or gases. It was specifically developed for steam supply and condensate return lines, and is also used as an unheated sample line.

ThermoTube is pre-insulated with non-hygroscopic glass fiber, complete with a heat reflective foil wrap and a weather-resistant outer jacket. ThermoTube can be manufactured with a variety of tube materials, wall thicknesses and outer jackets.

ThermoTube is supplied in long length coils and can be quickly and easily installed in existing cable trays, angles, channels, struts and I-beams. ThermoTube, along with its associated termination seal kits, provide a lower installed cost compared to field installed and insulated tubing.

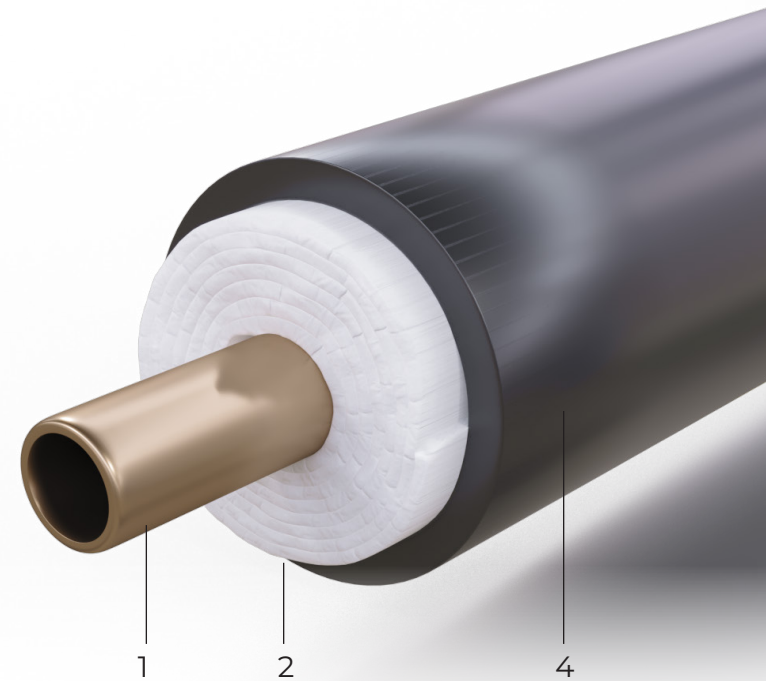
PRODUCT FEATURES

- Fast delivery and installation
- Long coils minimize waste
- Superior weather-proofing

ACCESSORIES

- See Form TSP0037 for basic accessories

HOW TO SPECIFY



CONSTRUCTION

- 1 Tube, per customer specifications
- 2 Non-hygroscopic glass fiber Insulation .
- 3 Heat reflective wrap (not shown)
- 4 Polymer outer jacket *

SL-4B135-ATP

Bundle Type SL = Single Tube	Tube O.D. 2 = 1/4" 3 = 3/8" 4 = 1/2" 6 = 6mm 8 = 8mm 10 = 10mm 12 = 12mm 20 = 20mm	Tube Material A = 316 SS Welded B = #122 Copper C = PFA Teflon ² D = Monel ³ 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 ² N = Nylon P = Polyethylene X = Special	Number of Tubes 1	Tube Wall Thickness 30 = .030" 32 = .032" (Copper Only) 35 = .035" 40 = .040" (Plastic Only) 47 = .047" (Plastic Only) 49 = .049" 62 = .062" (Plastic Only) 65 = .065" 83 = .083" (SS Only) 1 = 1mm 1.5 = 1.5mm	Jacket Option Type⁵ ATP ⁴ TPU
----------------------------------------	-------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------

Notes . . .

1. Contact factory for availability of 1" O.D. coils.
 2. Teflon is a trademark of E. I. duPont de Nemours Co., Inc. Not recommended for high temperature service.
 3. Monel is a trademark of Inco Alloys International, Inc.
 4. Black ATP is standard; other jacket materials are available, including black TPU.
 5. Maximum process exposure temperature 400°F (204°C), keeping the outer jacket at 140°F (60°C).
- * Standard product is rated up to 500°F (260°C), outer jacket will exceed the 140°F (60°C).
- * Product rated for process temperatures up to 1100°F (593°C) are available - contact factory.





PRODUCT SPECIFICATIONS
TUBETRACE® TYPE SI/MI
 "LIGHT" STEAM TRACED INSTRUMENT TUBING

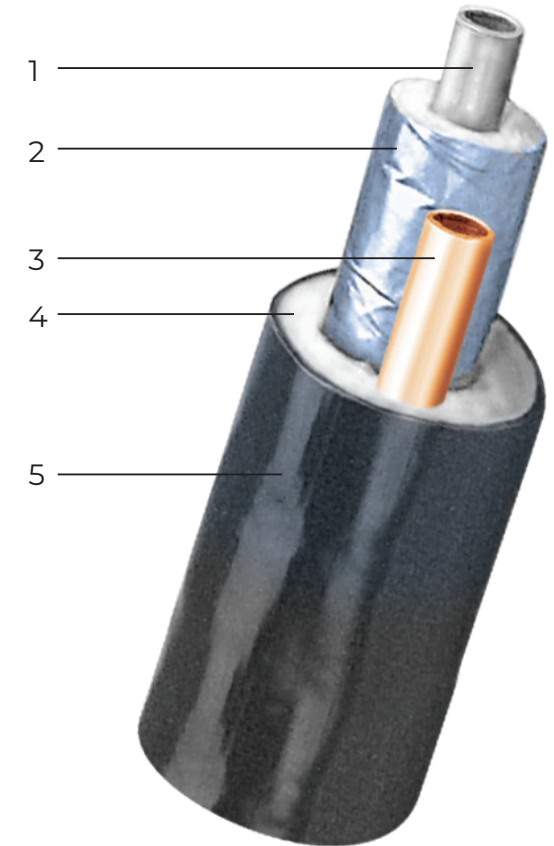


APPLICATION

Freeze protection or process temperature maintenance with a tube temperature range: 40°F (5°C) to 250°F (121°C). Designed to provide freeze protection or temperature maintenance for metallic and non-metallic tubing with "light" steam trace, TubeTrace Type SI/MI is suitable for use with process analyzers, emissions analyzers, and impulse lines to flow or pressure transmitters where steam or hot liquid is the preferred heating media.

TubeTrace Type SI/MI "light" steam trace is a metallic tracer tube that is isolated from direct contact with the process tube(s). The tracer tube and process tube(s) benefit from consistent heat transfer and performance along the entire length of the bundle.

Unlike field fabricated and insulated tubing, TubeTrace engineered pre-insulated tubing provides superior weather proofing and long term reliability.



RATINGS

SI and MI "Light" Trace	Ratings
Available Tracer Tube Diameters	1/4", 3/8" and 1/2"
Available Tracer Tube Materials	Copper and Stainless Steel
Typical Process Tube Temperature	40°F to 250°F (5°C to 121°C)
Maximum Steam Temperature *	400°F/235 psig (205°C/1690 kPa)
Typical Temperature Difference Tracer Tube vs. Process Tube	More Than 100°F (55°C) ⁴

PRODUCT FEATURES

- Consistent heat transfer and thermal performance
- Superior weather proofing
- Long coils minimize waste

CONSTRUCTION

- 1 Process tube(s)
- 2 Heat reflective tape
- 3 Tracer tube [isolated from process tube(s)]
- 4 Non-hygroscopic glass fiber insulation
- 5 Polymer outer jacket

Note

* If bundle jacket is to remain below 140°F (60°C) in +80°F (27°C) ambient (in consideration of personnel burn risk) tube temperature must remain below 400°F (205°C). Alternative designs to keep jacket below 140°F (60°C) in higher ambients and/or with higher tube temperatures are available. Contact Thermon.

HOW TO SPECIFY

SI - 4F1-3B1 - ATP - 035 / 035

<p>TubeTrace Type SI = Single Tube MI = Multiple Tubes</p>	<p>Process Tube(s) O.D. 1 = 1/8" 2 = 1/4" 3 = 3/8" 4 = 1/2" 5 = 5/8" 6 = 3/4"</p>	<p>Process Tube(s) Material A = 316 SS Welded C = PFA Teflon¹ D = Monel² 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 T = TFE Teflon X = Special</p>	<p>Number of Process Tube(s) 1 2 3</p>	<p>Tracer Tube O.D. 2 = 1/4" 3 = 3/8" 4 = 1/2"</p>	<p>Bundle Jacket ATP³ TPU</p>	<p>Process Tube(s) Wall Thickness 028 = .028" (SS Only) 035 = .035" 040 = .040" (Plastic Only) 047 = .047" (Plastic Only) 049 = .049" 062 = .062" (Plastic Only) 065 = .065" 083 = .083" (SS Only)</p>	<p>Tracer Tube(s) Wall Thickness 032 = .032" 035 = .035" 049 = .049" 065 = .065"</p>
---------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------

Notes . . .
 1. Teflon is a trademark of E. I. duPont de Nemours Co., Inc.
 2. Monel is a trademark of Inco Alloys International, Inc.
 3. Black ATP is standard; other jacket materials are available.
 4. Please contact factory for performance data when using for critical temperature applications.



PRODUCT SPECIFICATIONS
TUBETRACE® TYPE SP/MP
 "HEAVY" STEAM TRACE



APPLICATION

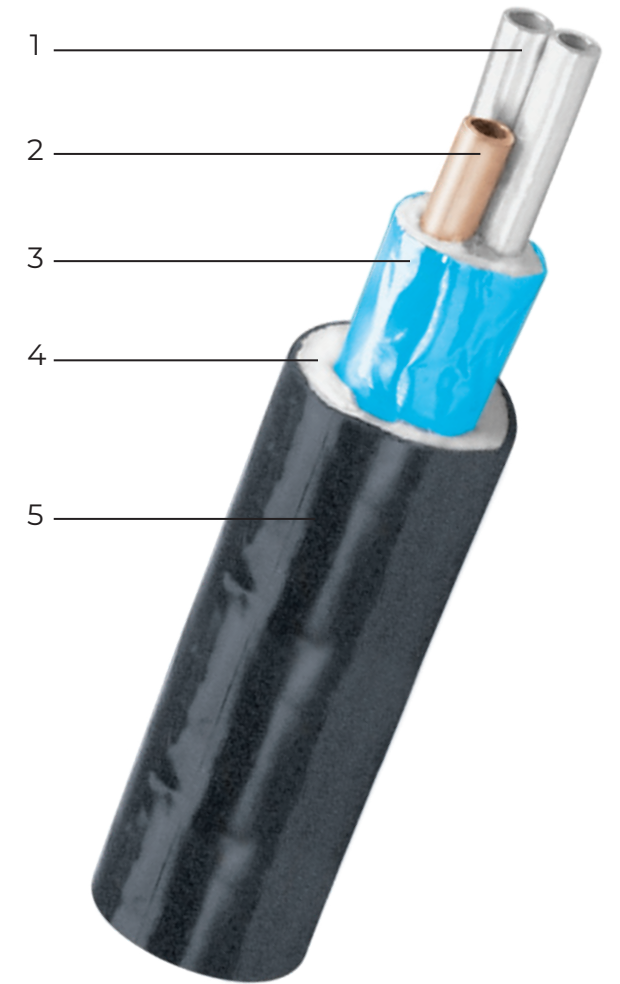
Freeze protection or process temperature maintenance with a tube temperature range: 40°F (5°C) to 400°F (205°C). Designed to provide freeze protection or temperature maintenance for metallic and non-metallic tubing with "heavy" steam trace, TubeTrace Type SP/MP is suitable for use with process analyzers, emissions analyzers, and impulse lines to flow or pressure transmitters where steam or hot liquid is the preferred heating media.

TubeTrace Type SP/MP "heavy" steam trace is a metallic tracer tube that is in direct contact with the process tube(s). The tracer tube and process tube(s) are cabled together thereby mechanically binding the tubes. This ensures consistent heat transfer and performance along the entire length by preventing separation or tube migration within the bundle.

Unlike field fabricated and insulated tubing, TubeTrace engineered pre-insulated tubing provides superior weather proofing and long term reliability.

RATINGS

SP and MP "Heavy" Trace	Ratings
Available Tracer Tube Diameters	1/4", 3/8" and 1/2"
Available Tracer Tube Materials	Copper and Stainless Steel
Typical Process Tube Temperature	40°F to 400°F (5°C to 205°C)
Maximum Steam Temperature	400°F/235 psig (205°C/1690 kPa)
Typical Temperature Difference Tracer Tube vs. Process Tube	Less Than 25°F (14°C) ⁴



PRODUCT FEATURES

- Consistent heat transfer and thermal performance
- Superior weather proofing
- Long coils minimize waste

CONSTRUCTION

- 1 Process tube(s)
- 2 Tracer tube
- 3 Heat reflective tape
- 4 Non-hygroscopic glass fiber insulation
- 5 Polymer outer jacket

HOW TO SPECIFY

SP - 4F1-3B1 - ATP - 035 / 035

<p>TubeTrace Type SP = Single Tube MP = Multiple Tubes</p>	<p>Process Tube(s) O.D. 1 = 1/8" 2 = 1/4" 3 = 3/8" 4 = 1/2" 5 = 5/8" 6 = 3/4"</p>	<p>Process Tube(s) Material A = 316 SS Welded C = PFA Teflon¹ D = Monel² 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 T = TFE Teflon X = Special</p>	<p>Number of Process Tube(s) 1 2 3</p>	<p>Tracer Tube O.D. 2 = 1/4" 3 = 3/8" 4 = 1/2"</p>	<p>Bundle Jacket ATP³ TPU</p>	<p>Process Tube(s) Wall Thickness 028 = .028" (SS Only) 035 = .035" 040 = .040" (Plastic Only) 047 = .047" (Plastic Only) 049 = .049" 062 = .062" (Plastic Only) 065 = .065" 083 = .083" (SS Only)</p>	<p>Tracer Tube(s) Wall Thickness 032 = .032" 035 = .035" 049 = .049" 065 = .065" 083 = .083" (SS Only)</p>
---------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Notes . . .

1. Teflon is a trademark of E. I. duPont de Nemours Co., Inc.
2. Monel is a trademark of Inco Alloys International, Inc.
3. Black ATP is standard; other jacket materials are available.
4. Please contact factory for performance data when using for critical temperature applications.

THERMON TUBETRACE® & THERMOTUBE®

PRODUCT REFERENCE LEGEND (METRIC UNITS)

For design assistance contact Thermon or visit www.thermon.com and download CompuTrace® IT Computer Design Software for Instrument Tubing

TYPICAL ELECTRICALLY HEAT TRACED BUNDLES

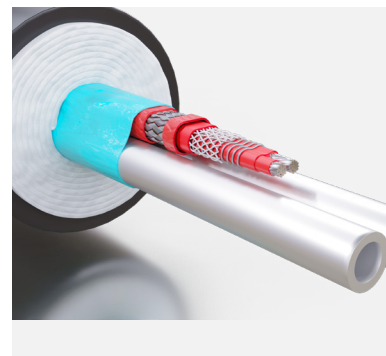
SE-12F1-63-7-ATP-1-M⁷

Bundle Type	Process Tube O.D.	Process Tube Material	Number of Tubes ⁶	Heater Cable Option	Jacket Type	Process Tube(s) Wall Thickness (inches)	M or I Metric or Imperial
SE= Single Tube ME= Multiple Tubes	<u>Metric</u> 6 = 6 mm 8 = 8 mm 10 = 10 mm 12 = 12 mm <u>Imperial</u> 1 = 1/8" 2 = 1/4" 3 = 3/8" 4 = 1/2" 6 = 3/4"	A = 316L SS Welded As = 316Ti SS Welded B = B68 Copper C = PFA Teflon ² D = Monel ³ 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	1 2 3 4	1 = BN (HPT Only) 3 = OJ (BSX Only) 7 = OJ/Fluoropolymer 8 = Division 1 Approved ⁴	ATP ⁵ TPU	030 = .030 032 = .032 (Copper Only) 035 = .035 040 = .040 (Plastic Only) 047 = .047 (Plastic Only) 049 = .049 062 = .062 (Plastic Only) 065 = .065 1 = 1 mm 1.5 = 1.5 mm ⁷	
Heat Trace Type (See Heat Trace Application Below)							
Self-Regulating Cables							
41 = BSX 9 W/m 230 V 43 = BSX 15 W/m 230 V 45 = BSX 25 W/m 230 V 47 = BSX 32 W/m 230 V 61 = HTSX 9 W/m 230 V 63 = HTSX 18 W/m 230 V 65 = HTSX 27 W/m 230 V 67 = HTSX 37 W/m 230 V 69=HTSX 48 W/m 230 V 71=HTSX 64 W/m 230 V 91=VSX-HT 16 W/m 230 V 93=VSX-HT 33 W/m 230 V 95 =VSX-HT 49 W/m 230 V 97=VSX-HT 66 W/m 230 V							
Power-Limiting Cables							
51 = HPT 15 W/m 230 V 53 = HPT 30 W/m 230 V 55 = HPT 46 W/m 230 V 57 = HPT 61 W/m 230 V							

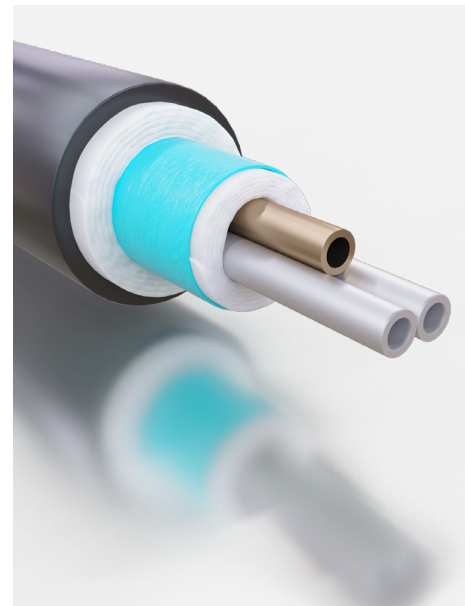
Notes

- Contact factory for options of tubing 25 mm (1") O.D. (not available in all materials).
- Teflon is a trademark of E.I. du Pont de Nemours & Co., Inc.
- Monel and Inconel are trademarks of Inco Alloys International, Inc.
- Contact factory for design review.
- Black ATP is standard, other jacket materials include TPU (Urethane)
- Maximum number of tubes dependent on tube size.
- Ensure distinction between metric and imperial tubing are noted.

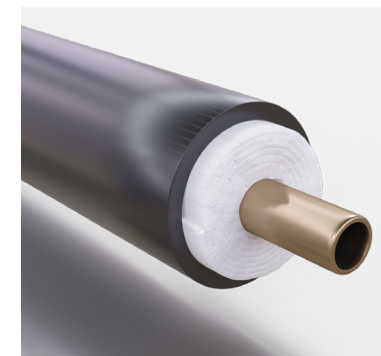
A complete line of accessories for TubeTrace and ThermoTube are available.



Typical TubeTrace Type ME



Typical TubeTrace Type MP



Typical ThermoTube Type SL

TYPICAL STEAM TRACED BUNDLES

SP-12F1-10F1-ATP-1/1-M⁷

Bundle Type	Process Tube(s) O.D.	Process Tube Material	Number of Process Tube(s) ⁶	Tracer Tube O.D.	Number of Tracer Tubes	Jacket Type	Process Tube(s) Wall Thickness	Tracer Tube(s) Wall Thickness (inches)	M or I (Metric or Imperial)
SI = Single Isolated Tube Light Steam Traced MI = Multiple Isolated Tubes Light Steam Traced SP = Single Tube Heavy Steam Traced MP = Multiple Tubes Heavy Steam Traced	<u>Metric</u> 6 = 6 mm 8 = 8 mm 10 = 10 mm 12 = 12 mm <u>Imperial</u> 1 = 1/8" 2 = 1/4" 3 = 3/8" 4 = 1/2"	A = 316L SS Welded As = 316Ti SS Welded B = B68 Copper C = PFA Teflon ² D = Monel ³ 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	1 2	Metric 6 = 6 mm 10 = 10 mm 12 = 12 mm <u>Imperial</u> 2 = 1/4" 3 = 3/8" 4 = 1/2"	1	ATP ⁵ TPU	035 = .035 040 = .040 (Plastic Only) 047 = .047 (Plastic Only) 049 = .049 062 = .062 (Plastic Only) 065 = .065 1 = 1 mm 1.5 = 1.5 mm ⁷	035 = .035 040 = .040 (Plastic Only) 047 = .047 (Plastic Only) 049 = .049 062 = .062 (Plastic Only) 065 = .065 1 = 1 mm 1.5 = 1.5 mm ⁷	

THERMOTUBE® TYPE SL PRE-INSULATED TUBING (FOR STEAM SUPPLY AND CONDENSATE RETURN-NOT HEATED)

SL-12B1-01-ATP-M⁷

Bundle Type	Tube O.D.	Tube Material	Number of Process Tubes	Tube Wall Thickness (inches)	Jacket Type	M or I (Metric or Imperial)
SL = Single Tube	<u>Metric</u> 6 = 6 mm 8 = 8 mm 10 = 10 mm 12 = 12 mm <u>Imperial</u> 2 = 1/4" 3 = 3/8" 4 = 1/2"	A = 316L SS Welded As = 316Ti SS Welded B = B68 Copper C = PFA Teflon ² D = Monel ³ 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	1	30 = .030 32 = .032 (Copper Only) 35 = .035 40 = .040 (Plastic Only) 47 = .047 (Plastic Only) 49 = .049 62 = .062 (Plastic Only) 65 = .065 1 = 1 mm 1.5 = 1.5 mm ⁷	ATP ⁵ TPU	

ELECTRICAL HEAT TRACE APPLICATION

For Freeze Protection or Maintain 65°C NO STEAM OUTS
Heat Trace Exposure* Limited to 85°C
BSX Self-Regulating Heat Tracing
(All BSX includes braid & overjacket. Standard overjacket is polyolefin, also available with an optional fluoropolymer overjacket.)

41 = BSX 9 W/m 230 V 45 = BSX 25 W/m 230 V 47 = BSX 32 W/m 230 V
43 = BSX 15 W/m 230 V

For Freeze Protection or Maintain 150°C
Heat Trace Exposure* to 215°C
HTSX Self-Regulating Heat Tracing
(All HTSX cables include braid & overjacket BNOJ)

61 = HTSX 9 W/m 230 V 65 = HTSX 27 W/m 230 V 69 = HTSX 48 W/m 230 V
63 = HTSX 18 W/m 230 V 67 = HTSX 37 W/m 230 V 71 = HTSX 64 W/m 230 V

For Freeze Protection or Maintain 200°C
Heat Trace Exposure* to 250°C
VSX-HT Self-Regulating Heat Tracing
(All VSX-HT cables include braid & overjacket BNOJ)

91 = VSX-HT 15 W/m 230 V 95 = VSX-HT 48 W/m 230 V 97 = VSX-HT 64 W/m 230 V
93 = VSX-HT 32 W/m 230 V

For Freeze Protection or Maintain 205°C
Exposure** to 260°C
HPT Power-Limiting Heat Tracing
(All HPT cables include BN braid & may include OJ)

51 = HPT 14 W/m 230 V 55 = HPT 42 W/m 230 V 57 = HPT 57 W/m 230 V
53 = HPT 28 W/m 230 V

*Exposure temperatures are generally with cable de-energized (off). Exceptions are for HTSX and VSX-HT self-regulating heat tracing ratings which allow intermittent exposure, on or off.



TUBETRACE[®] & THERMOTUBE[®]

PRODUCT REFERENCE LEGEND (IMPERIAL UNITS)

Bundle Type

SE = Single Tube
ME = Multiple Tubes

TYPICAL ELECTRICALLY HEAT TRACED BUNDLES

SE-4A1-62-7-ATP-035

Process Tube O.D.	Process Tube Material	Number of Tubes ⁶	Heat Trace Option	Jacket Type	Process Tube(s) Wall Thickness
1 = 1/8"	A = 316 SS Welded		1 = BN (HPT Only)	ATP ⁵	028 = .028"
2 = 1/4"	B = #122 Copper	1	3 = OJ (BSX Only)	TPU	030 = .030"
3 = 3/8"	C = PFA Teflon ²	2	7 = OJ/Fluoropolymer		032 = .032" (Copper Only)
4 = 1/2"	D = Monel ³	3	8 = Division 1 Approved ⁴		035 = .035"
5 = 5/8"	E = Titanium	4			040 = .040" (Plastic Only)
6 = 3/4"	F = 316 SS Seamless				047 = .047" (Plastic Only)
8 = 1"	G = 304 SS Welded				049 = .049"
	H = 304 SS Seamless				062 = .062" (Plastic Only)
	J = Alloy C276				065 = .065"
	K = Alloy 825				083 = .083" (SS Only)
	L = Alloy 20				
	M = FEP Teflon				
	N = Nylon				
	P = Polyethylene				
	T = PTFE Teflon				
	X = Special (i.e. passivated, polished, etc.)				

Heat Tracing Type (See Heat Trace Application Below). Contact Thermon for TubeTrace SE/ME instrument tubing bundles with alternative heat trace options such as parallel constant watt and series constant watt including mineral insulated heat tracing.

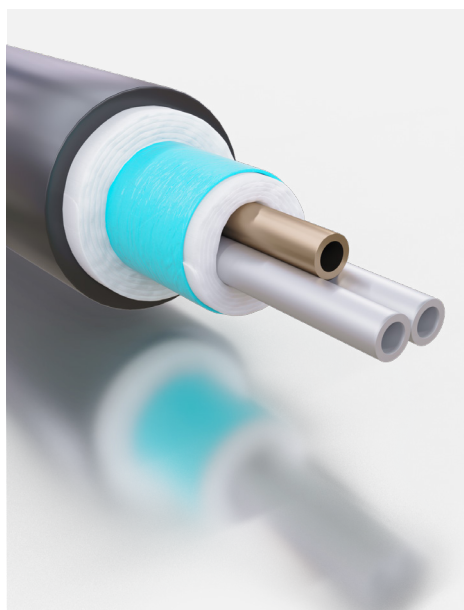
Self-Regulating Heat Trace

Power-Limiting Heat Trace

Process Tube O.D.	Process Tube Material	Number of Tubes ⁶	Heat Trace Option	Jacket Type	Process Tube(s) Wall Thickness
40 = BSX 3 W/ft. 120 Vac			60 = HTSX 3 W/ft. 120 Vac		
41 = BSX 3 W/ft. 240 Vac			61 = HTSX 3 W/ft. 240 Vac		
42 = BSX 5 W/ft. 120 Vac			62 = HTSX 6 W/ft. 120 Vac		
43 = BSX 5 W/ft. 240 Vac			63 = HTSX 6 W/ft. 240 Vac		
44 = BSX 8 W/ft. 120 Vac			64 = HTSX 9 W/ft. 120 Vac		
45 = BSX 8 W/ft. 240 Vac			65 = HTSX 9 W/ft. 240 Vac		
46 = BSX 10 W/ft. 120 Vac			66 = HTSX 12 W/ft. 120 Vac		
47 = BSX 10 W/ft. 240 Vac			67 = HTSX 12 W/ft. 240 Vac		
90 = VSX-HT 5 W/ft. 120 Vac			68 = HTSX 15 W/ft. 120 Vac		
91 = VSX-HT 5 W/ft. 240 Vac			69 = HTSX 15 W/ft. 240 Vac		
92 = VSX-HT 10 W/ft. 120 Vac			70 = HTSX 20 W/ft. 120 Vac		
93 = VSX-HT 10 W/ft. 240 Vac			71 = HTSX 20 W/ft. 240 Vac		
94 = VSX-HT 15 W/ft. 120 Vac					
95 = VSX-HT 15 W/ft. 240 Vac					
96 = VSX-HT 20 W/ft. 120 Vac					
97 = VSX-HT 20 W/ft. 240 Vac					



Typical TubeTrace Type ME



Typical TubeTrace Type MP



Typical ThermoTube Type SL

TYPICAL STEAM TRACED BUNDLES

Bundle Type	Process Tube(s) O.D.	Process Tube(s) Material	Number of Process Tube(s) ⁶	Tracer Tube O.D.	Tracer Tube Material	Jacket Type	Process Tube(s) Wall Thickness	Tracer Tube(s) Wall Thickness
SP = Single Tube Light Steam Traced	1 = 1/8"	A = 316 SS Welded	1	2 = 1/4"	A = 316 SS Welded	ATP ⁵	028 = .028"	035 = .035"
MI = Multiple Isolated Tubes Light Steam Traced	2 = 1/4"	C = PFA Teflon ²	2	3 = 3/8"	B = 122 Copper	TPU	035 = .035"	049 = .049"
SP = Single Tube Heavy Steam Traced	3 = 3/8"	D = Monel ³	1	4 = 1/2"	F = 316 SS Seamless		040 = .040" (Plastic Only)	065 = .065"
MP = Multiple Tubes Heavy Steam Traced	4 = 1/2"	E = Titanium	2		G = 304 SS Welded		047 = .047" (Plastic Only)	083 = .083" (SS Only)
	5 = 5/8"	F = 316 SS Seamless			H = 304 SS Seamless		049 = .049"	
		G = 304 SS Welded			J = Alloy C276		062 = .062" (Plastic Only)	
		H = 304 SS Seamless			K = Alloy 825		065 = .065"	
		J = Alloy C276			L = Alloy 20			
		K = Alloy 825			M = FEP Teflon			
		L = Alloy 20			T = PTFE Teflon			
		M = FEP Teflon			X = Special			
		T = PTFE Teflon						
		X = Special						

THERMOTUBE[®] TYPE SL PRE-INSULATED TUBING

(NOT HEATED)
SL-4B135-ATP

Bundle Type	Tube O.D.	Tube Material	Number of Tubes	Tube Wall Thickness	Jacket Type
SL = Single Tube	1 = 1/8"	A = 316 SS Welded	1	30 = .030"	ATP ⁵
	2 = 1/4"	B = #122 Copper		32 = .032" (Copper Only)	TPU
	3 = 3/8"	C = PFA Teflon ²		35 = .035"	
	4 = 1/2"	D = Monel ³		49 = .049"	
	5 = 5/8"	E = Titanium		65 = .065"	
	6 = 3/4"	F = 316 SS Seamless		83 = .083" (SS Only)	
	8 = 1"	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 = PTFE Teflon			
		X = Special			

Notes

1. Contact factory for options of 1" O.D. tubing (Not available in all materials.)
2. Teflon is a trademark of E.I. du Pont de Nemours & Co., Inc.
3. Monel is a trademark of Inco Alloys International, Inc.
4. Contact factory for design review.
5. Black ATP is standard, other jacket materials include TPU (Urethane).
6. Maximum number of tubes dependent on tube size.
7. Complete line of accessories for TubeTrace and ThermoTube are available.

ELECTRICAL HEAT TRACE APPLICATION

For Freeze Protection or Maintain 150°F (65°C)

NO STEAM OUTS

Heat Trace Exposure* Limited to 185°F (85°C)

BSX Self-Regulating Heat Tracing (All BSX includes braid & overjacket. Standard overjacket is polyolefin, also available with an optional fluoropolymer overjacket.)

40 = BSX 3 W/ft. 120 Vac	44 = BSX 8 W/ft. 120 Vac
41 = BSX 3 W/ft. 240 Vac	45 = BSX 8 W/ft. 240 Vac
42 = BSX 5 W/ft. 120 Vac	46 = BSX 10 W/ft. 120 Vac
43 = BSX 5 W/ft. 240 Vac	47 = BSX 10 W/ft. 240 Vac

For Freeze Protection or Maintain 250°F (121°C)

Heat Trace Exposure* to 420°F (215°C)

HTSX Self-Regulating Heat Tracing (All HTSX includes braid & overjacket BNOJ)

60 = HTSX 3 W/ft. 120 Vac	66 = HTSX 12 W/ft. 120 Vac
61 = HTSX 3 W/ft. 240 Vac	67 = HTSX 12 W/ft. 240 Vac
62 = HTSX 6 W/ft. 120 Vac	68 = HTSX 15 W/ft. 120 Vac
63 = HTSX 6 W/ft. 240 Vac	69 = HTSX 15 W/ft. 240 Vac
64 = HTSX 9 W/ft. 120 Vac	70 = HTSX 20 W/ft. 120 Vac
65 = HTSX 9 W/ft. 240 Vac	71 = HTSX 20 W/ft. 240 Vac

For Freeze Protection or Maintain 392°F (200°C)

Heat Trace Exposure* to 482°F (250°C)

VSX-HT Self-Regulating Heat Tracing (All VSX-HT includes braid & overjacket BNOJ)

90 = VSX-HT 5 W/ft. 120 Vac	94 = VSX-HT 15 W/ft. 120 Vac
91 = VSX-HT 5 W/ft. 240 Vac	95 = VSX-HT 15 W/ft. 240 Vac
92 = VSX-HT 10 W/ft. 120 Vac	96 = VSX-HT 20 W/ft. 120 Vac
93 = VSX-HT 10 W/ft. 240 Vac	97 = VSX-HT 20 W/ft. 240 Vac

For Freeze Protection or Maintain 400°F (205°C)

Exposure** to 500°F (260°C)

HPT Power-Limiting Heat Tracing (All HPT includes BN braid & may include OJ)

50 = HPT 5 W/ft. 120 Vac	54 = HPT 15 W/ft. 120 Vac
51 = HPT 5 W/ft. 240 Vac	55 = HPT 15 W/ft. 240 Vac
52 = HPT 10 W/ft. 120 Vac	56 = HPT 20 W/ft. 120 Vac
53 = HPT 10 W/ft. 240 Vac	57 = HPT 20 W/ft. 240 Vac

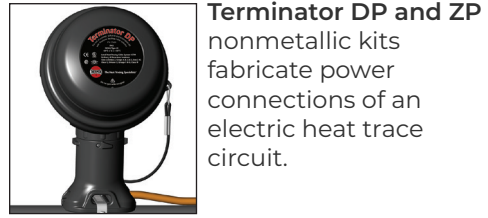
* Exposure temperatures are generally with heat trace de-energized (off). Exceptions are for HTSX and VSX-HT self-regulating heat trace ratings which allow intermittent exposure, on or off.

** Standard TubeTrace and ThermoTube bundles have a maximum tube temperature rating of 400°F (204°C) if outer jacket is to remain below 140°F (60°C) in a max ambient of 80°F (27°C) with no wind. Extra insulation (bundle option "XINS") may be considered if tube temperatures approach HPT Power-limiting limits of 500°F (260°C), power off. For higher exposures [up to 1100°F (588°C)] consider TubeTrace HT or HTX bundles.

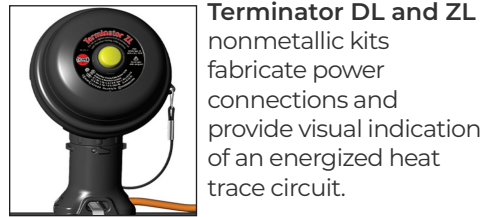
For design assistance contact Thermon or visit www.thermon.com and download CompuTrace[®] IT Computer Design Software for Instrument Tubing

HEAT TRACING ACCESSORIES

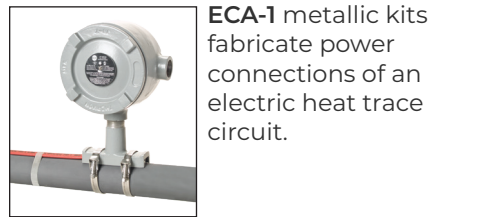
POWER CONNECTION KITS



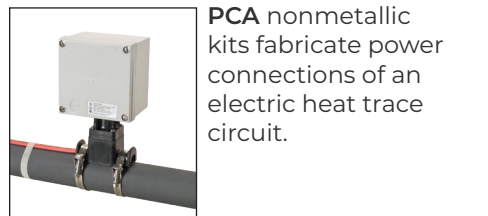
Terminator DP and ZP nonmetallic kits fabricate power connections of an electric heat trace circuit.



Terminator DL and ZL nonmetallic kits fabricate power connections and provide visual indication of an energized heat trace circuit.

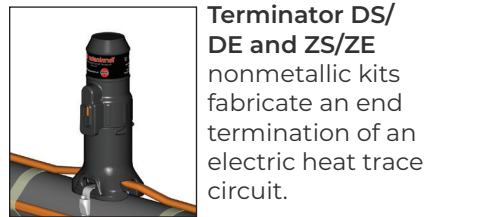


ECA-1 metallic kits fabricate power connections of an electric heat trace circuit.

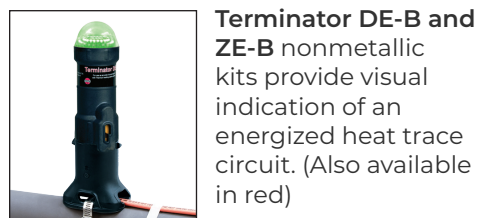


PCA nonmetallic kits fabricate power connections of an electric heat trace circuit.

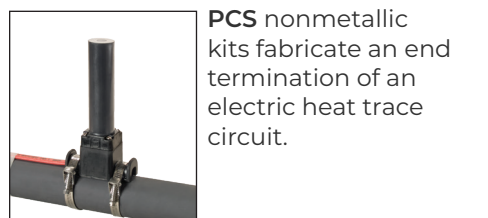
END TERMINATION KITS



Terminator DS/DE and ZS/ZE nonmetallic kits fabricate an end termination of an electric heat trace circuit.

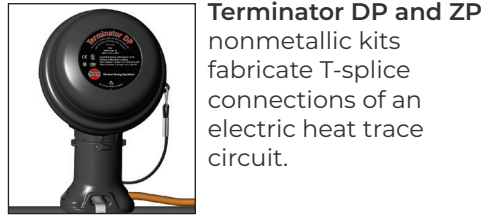


Terminator DE-B and ZE-B nonmetallic kits provide visual indication of an energized heat trace circuit. (Also available in red)

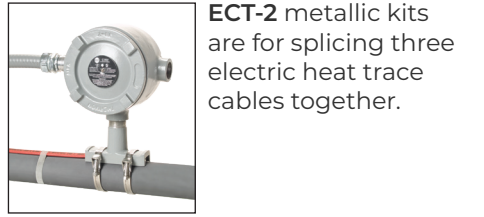


PCS nonmetallic kits fabricate an end termination of an electric heat trace circuit.

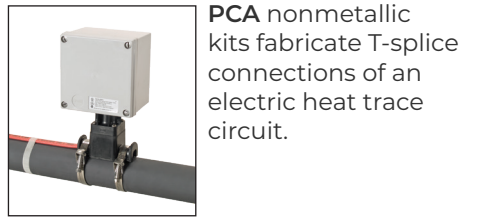
T-SPLICE KITS



Terminator DP and ZP nonmetallic kits fabricate T-splice connections of an electric heat trace circuit.

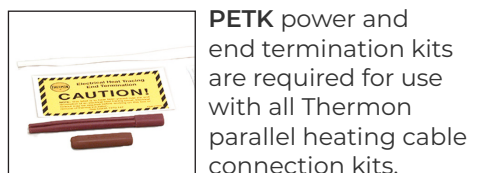


ECT-2 metallic kits are for splicing three electric heat trace cables together.



PCA nonmetallic kits fabricate T-splice connections of an electric heat trace circuit.

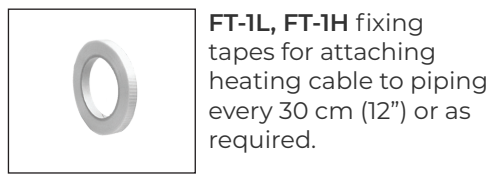
MISCELLANEOUS



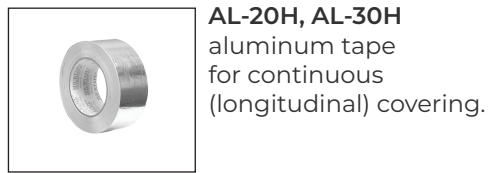
PETK power and end termination kits are required for use with all Thermon parallel heating cable connection kits.



SCTK splice connection kits are required when preparing splices with all Thermon parallel heating cable connection kits.



FT-1L, FT-1H fixing tapes for attaching heating cable to piping every 30 cm (12") or as required.



AL-20H, AL-30H aluminum tape for continuous (longitudinal) covering.

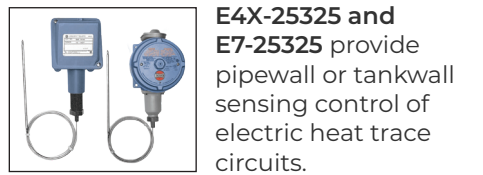
MECHANICAL THERMOSTATS



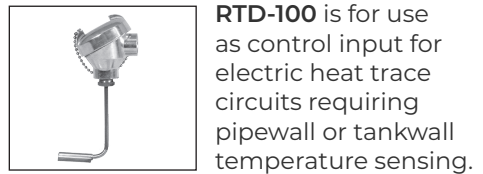
B4X-15140 and B7-15140 provide ambient sensing control of electric heat trace circuits.



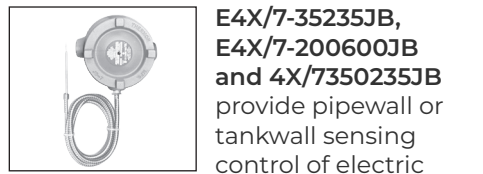
E4X-35235 and E4X-1 provide pipewall or tankwall sensing control of electric heat trace circuits.



E4X-25325 and E7-25325 provide pipewall or tankwall sensing control of electric heat trace circuits.

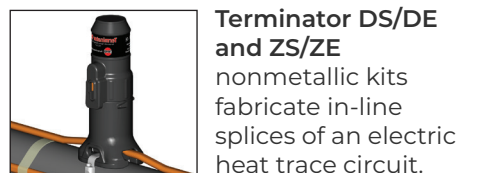


RTD-100 is for use as control input for electric heat trace circuits requiring pipewall or tankwall temperature sensing.

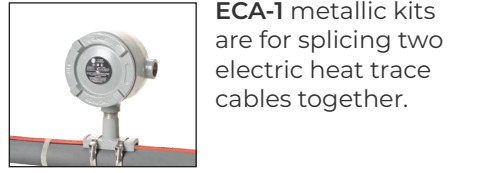


E4X/7-35235JB, E4X/7-200600JB and 4X/7350235JB provide pipewall or tankwall sensing control of electric heat trace circuits.

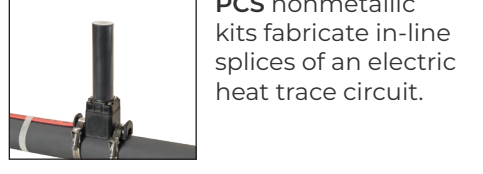
IN-LINE SPLICE KITS



Terminator DS/DE and ZS/ZE nonmetallic kits fabricate in-line splices of an electric heat trace circuit.



ECA-1 metallic kits are for splicing two electric heat trace cables together.



PCS nonmetallic kits fabricate in-line splices of an electric heat trace circuit.

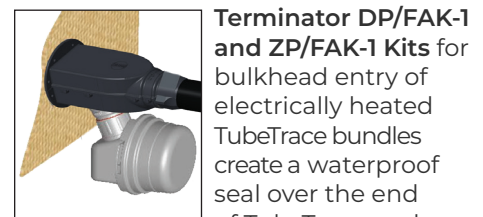
ENCLOSURE/SHELTER ENTRY KITS



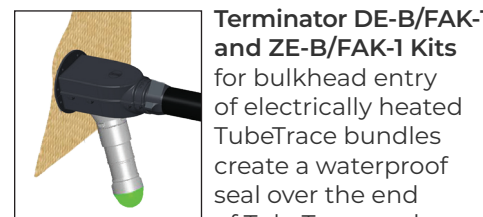
Bulkhead Entry Heat Shrink Seal FAK-9 Series provides an effective transition and strain relief when bundle passes through a wall 2.5 cm (1") thick or less.



FAK-1 Kit for bulkhead entry of TubeTrace and ThermoTube bundles. Creates waterproof seal around the bundle.



Terminator DP/FAK-1 and ZP/FAK-1 Kits for bulkhead entry of electrically heated TubeTrace bundles create a waterproof seal over the end of TubeTrace and terminate electric heat tracing.



Terminator DE-B/FAK-1 and ZE-B/FAK-1 Kits for bulkhead entry of electrically heated TubeTrace bundles create a waterproof seal over the end of TubeTrace and terminate electric heat tracing.

T-SPLICE KITS



T-Splice FAK-5 Kits create a waterproof seal over TubeTrace and ThermoTube splices.

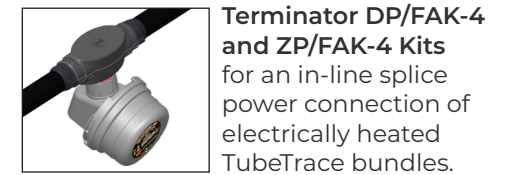


Terminator DP/FAK-5 and ZP/FAK-5 Kits for T-splice of electrically heated TubeTrace bundles. Creates a waterproof seal at T-splice connections of TubeTrace bundle with electric heat tracing.

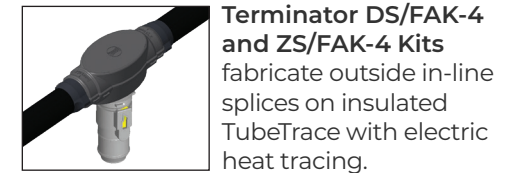
IN-LINE SPLICE KITS



In-line Splice FAK-4 Kits create a waterproof seal over TubeTrace and ThermoTube splices.



Terminator DP/FAK-4 and ZP/FAK-4 Kits for an in-line splice power connection of electrically heated TubeTrace bundles.



Terminator DS/FAK-4 and ZS/FAK-4 Kits fabricate outside in-line splices on insulated TubeTrace with electric heat tracing.

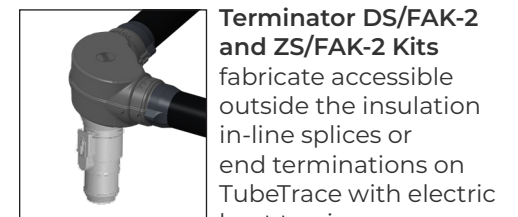


FAK-8 Kits create a waterproof seal over TubeTrace and ThermoTube splices.

90° ELBOW TRANSITION KITS



90° Elbow Transition FAK-2 Kits create a waterproof seal over TubeTrace and ThermoTube splices.

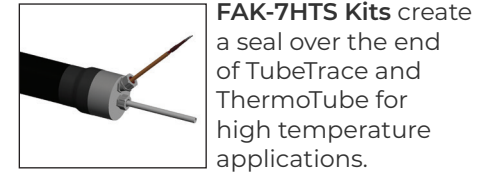


Terminator DS/FAK-2 and ZS/FAK-2 Kits fabricate accessible outside the insulation in-line splices or end terminations on TubeTrace with electric heat tracing.



Terminator DP/FAK-2 and ZP/FAK-2 Kits fabricate outside the insulation power connection, in-line splices or end terminations on TubeTrace with electric heat tracing.

HIGH TEMPERATURE SEAL KIT



FAK-7HTS Kits create a seal over the end of TubeTrace and ThermoTube for high temperature applications.

FIELD INSTALLED CONTROL SENSOR KITS

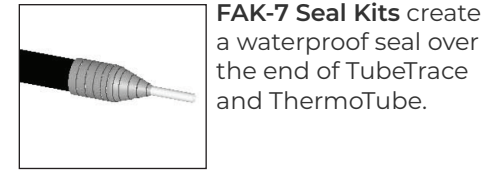


FAK-4T Kits provide a waterproof seal over TubeTrace for field installed thermostat.

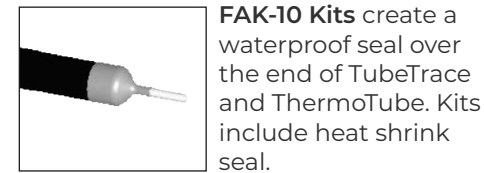


FAK-4S Kits provide a waterproof seal over TubeTrace for field installed sensor.

TERMINATION/SEAL KITS



FAK-7 Seal Kits create a waterproof seal over the end of TubeTrace and ThermoTube.

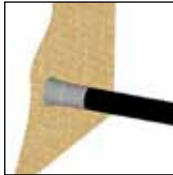


FAK-10 Kits create a waterproof seal over the end of TubeTrace and ThermoTube. Kits include heat shrink seal.

- Terminator "D" kits Division 2 and Zone 2 Areas
- Terminator "Z" kits Zone 1 Areas.
- Heat Trace power and end termination and splice connection kits purchased separately.

TUBETRACE® HEATED TUBING - BUNDLE CONNECTION KITS

Enclosure/Shelter Entry Kits



Bulkhead Entry Heat Shrink Seal provides an effective transition and strain-relief when bundle passes through a wall 1" thick or less.
FAK-9S (fits O.D. ¾" to 1½" bundles)
FAK-9 (fits O.D. ¾" to 2" bundles)
FAK-9L (fits O.D. 1¼" to 2¾" bundles)
FAK-9LX (fits O.D. 1½" to 3½" bundles)
 Kits include: heat-shrinkable bulkhead entry, sealant and "O"-ring gasket



FAK-1 Kit for bulkhead entry of TubeTrace bundles. The kit is designed to make a waterproof seal around the bundle.
FAK-1 (fits O.D. 1¼" to 2" bundles)
 Kits include: UV resistant ABS shell, glass fiber insulation, aluminum heat barrier, SS fasteners and RTV sealant. Tube fittings not included.



Terminator DP/FAK-1 Kit for bulkhead entry of electrically heated TubeTrace bundles. The kit is designed to make a waterproof seal over the end of TubeTrace and terminate Thermon electric heat tracing in an approved junction box. Kit will make one connection. (PETK termination kit for electric heat tracing required, order separately).

FAK-1 (fits O.D. 1¼" to 2" bundles)



Terminator DE-B/FAK-1 Kit for bulkhead entry of electrically heated TubeTrace bundles. The kit is designed to make a waterproof seal over the end of TubeTrace and terminate Thermon electric heat tracing in an approved DE-B. Kit will make one connection. (PETK termination kit for electric heat tracing required, order separately).

FAK-1 (fits O.D. 1¼" to 2" bundles)

90° Elbow Transition Kits



90° Elbow Transition Kits are designed to make a waterproof seal over TubeTrace splices.

FAK-2 (fits O.D. 1¼" to 2" bundles)
FAK-2L (fits O.D. 2¼" to 3½" bundles)
FAK-2LHT¹ (fits O.D. 2¼" to 3½" bundles)
 Kits include: UV resistant ABS shell, glass fiber insulation, aluminum heat barrier, SS fasteners & RTV sealant. Tube fittings not included.



Terminator DP/FAK-2 Kits are designed to fabricate outside the insulation power connection, in-line splices or end terminations on TubeTrace with electric heat tracing. Tube fittings not included. (PETK termination kit for electric heat tracing required, order separately).

DP/FAK-2 (fits O.D. 1¼" to 2" bundles)
DP/FAK-2L (fits O.D. 2¼" to 3½" bundles)
DP/FAK-2LHT¹ (fits O.D. 2¼" to 3½" bundles)



Terminator DS/FAK-2 Kits are designed to fabricate accessible outside the insulation in-line splices or end terminations on TubeTrace with electric heat tracing. Tube fittings not included. (SCTK termination kit for electric heat tracing required, order separately).

DS/FAK-2 (fits O.D. 1¼" to 2" bundles)
DS/FAK-2L (fits O.D. 2¼" to 3½" bundles)
DS/FAK-2LHT¹ (fits O.D. 2¼" to 3½" bundles)

In-Line Splice Kits



In-Line Splice Kits are designed to make a waterproof seal over TubeTrace splices.

FAK-4 (fits O.D. 1¼" to 2" bundles)
FAK-4L (fits O.D. 2¼" to 3½" bundles)
FAK-4LHT¹ (fits O.D. 2¼" to 3½" bundles)
 Kits include: UV resistant ABS shell, glass fiber insulation, aluminum heat barrier, SS fasteners and RTV sealant. Tube fittings not included. (If electric heat tracing splice is required, order separately).



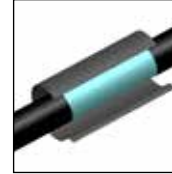
Terminator DS/FAK-4 Kits are designed to fabricate outside in-line splices on insulated TubeTrace with electric heat tracing.

DS/FAK-4 (fits O.D. 1¼" to 2" bundles)
DS/FAK-4L (fits O.D. 2¼" to 3½" bundles)
DS/FAK-4LHT¹ (fits O.D. 2¼" to 3½" bundles)
 Tube fittings not included. (SCTK termination kit for electric heat tracing required, order separately).



Terminator DP/FAK-4 Kits are designed for an in-line splice of electrically heated TubeTrace bundles. Tube fittings not included. (PETK termination kit for electric heat tracing required, order separately).

DP/FAK-4 (fits O.D. 1¼" to 2" bundles)
DP/FAK-4L (fits O.D. 2¼" to 3½" bundles)
DP/FAK-4LHT¹ (fits O.D. 2¼" to 3½" bundles)



FAK-8 Kits are designed to make a waterproof seal over TubeTrace splices.

FAK-8 (8" x 8")
FAK-8L (8" x 96")
 Kits include: self sealing rubber patch, glass fiber insulation, aluminum heat barrier. Tube fittings not included.

Field Installed Control Sensor Kits



FAK-4T Kits provide a waterproof seal over TubeTrace for field installed thermostat.

FAK-4T (fits O.D. 1¼" to 2" bundles)
FAK-4LT (fits O.D. 2¼" to 3½" bundles)
 Kits include: UV resistant ABS shell, glass fiber insulation tape, aluminum heat barrier tape, SS fasteners and RTV sealant. (Thermostat must be purchased separately.)



FAK-4S Kits provide a waterproof seal over TubeTrace for field installed sensor.

FAK-4S (fits O.D. 1¼" to 2" bundles)
FAK-4LS (fits O.D. 2¼" to 3½" bundles)
 Kits include: UV resistant ABS shell, glass fiber insulation, aluminum heat barrier, SS fasteners and RTV sealant. (Sensor and junction box must be purchased separately.)

T-Splice Kits



T-Splice Kits designed to make a waterproof seal over TubeTrace splices.

FAK-5 (fits O.D. 1¼" to 2" bundles)
FAK-5L (fits O.D. 2¼" to 3½" bundles)
FAK-5LHT¹ (fits O.D. 2¼" to 3½" bundles)
 Kits include: UV resistant ABS shell, glass fiber insulation, aluminum heat barrier, SS fasteners and RTV sealant. Tube fittings not included. (If electric heat tracing splice is required, order separately.)



Terminator DP/FAK-5 Kits for tee splice of electrically heated TubeTrace bundles. These kits are designed to make a waterproof seal at tee splice connections of Thermon TubeTrace bundle with electric heat tracing. Tube fittings not included. (PETK termination kit for electric heat tracing required, order separately).

DP/FAK-5 (fits O.D. 1¼" to 2" bundles)
DP/FAK-5L (fits O.D. 2¼" to 3½" bundles)
DP/FAK-5LHT¹ (fits O.D. 2¼" to 3½" bundles)

Accessories for Electric Heat Trace Termination



PETK circuit fabrication kit includes a power boot, end cap and RTV sealant.
SCTK splice connection/termination kit includes a power boot, wirenuts and RTV sealant.

PETK-1D/SCTK-1D BSX, RSX, VSX-HT
 PETK-2D/SCTK-2D HTSX
 PETK-3D/SCTK-3D FP, HPT

Termination and Seal Kits



FAK-7 Seal Kits are designed to make a waterproof seal over the end of TubeTrace.

FAK-7 is rated -65°F (-54°C) to 400°F (204°C). Includes: self vulcanizing tape and RTV sealant. Contains materials for six (6) terminations.
FAK-7-HT/HTX is rated -40°F (-40°C) to 1100°F (593°C). Includes: heat shrink, HT disk and sealant. Contains material for one (1) termination.



FAK-10 Kits are designed to make a waterproof seal over the end of TubeTrace tubing bundles. Kits include heat shrink seal. Temperature rating -67°F (-55°C) to 273°F (135°C).

FAK-10A (fits up to 1.95" O.D. bundles) Sleeve
FAK-10B (fits up to 1.95" O.D. bundles) 2- Hole
FAK-10C (fits up to 2.35" O.D. bundles) 3- Hole

Note: 1. HT kits are designed so that the outer jacket will not exceed 140°F (60°C) for high temperature bundles up to 1,100°F (593°C)



TRAINING AND SERVICES

THERMON PRODUCT TRAINING AND SERVICES

Thermon offers multiple levels of competitively-priced training to all of our valued customers. Students get a combination of practical and hands-on training—from basic operations of the many different controllers to the final connections of communications and supervisory software.

This highly recommended training gives site staff and contractors the confidence and ability to operate heat tracing systems to their full ability, saving time and money and preventing unnecessary down time due to failed equipment.

Splicing Services

- Thermon has some of the best service technicians in the industry, with many years of troubleshooting and repair experience. It takes years of practice to become proficient at splicing and finding failures, and with our expertise we are able to complete the job quicker than workers that are new to the process. Customers benefit by having a warranty on all work completed, complete documentation as well as fast, reliable service at the best possible price.
- Contracts - Thermon offers special pricing on service contracts. We work closely with customers to design a contract that meets their heat tracing needs.
- Rope access is available.

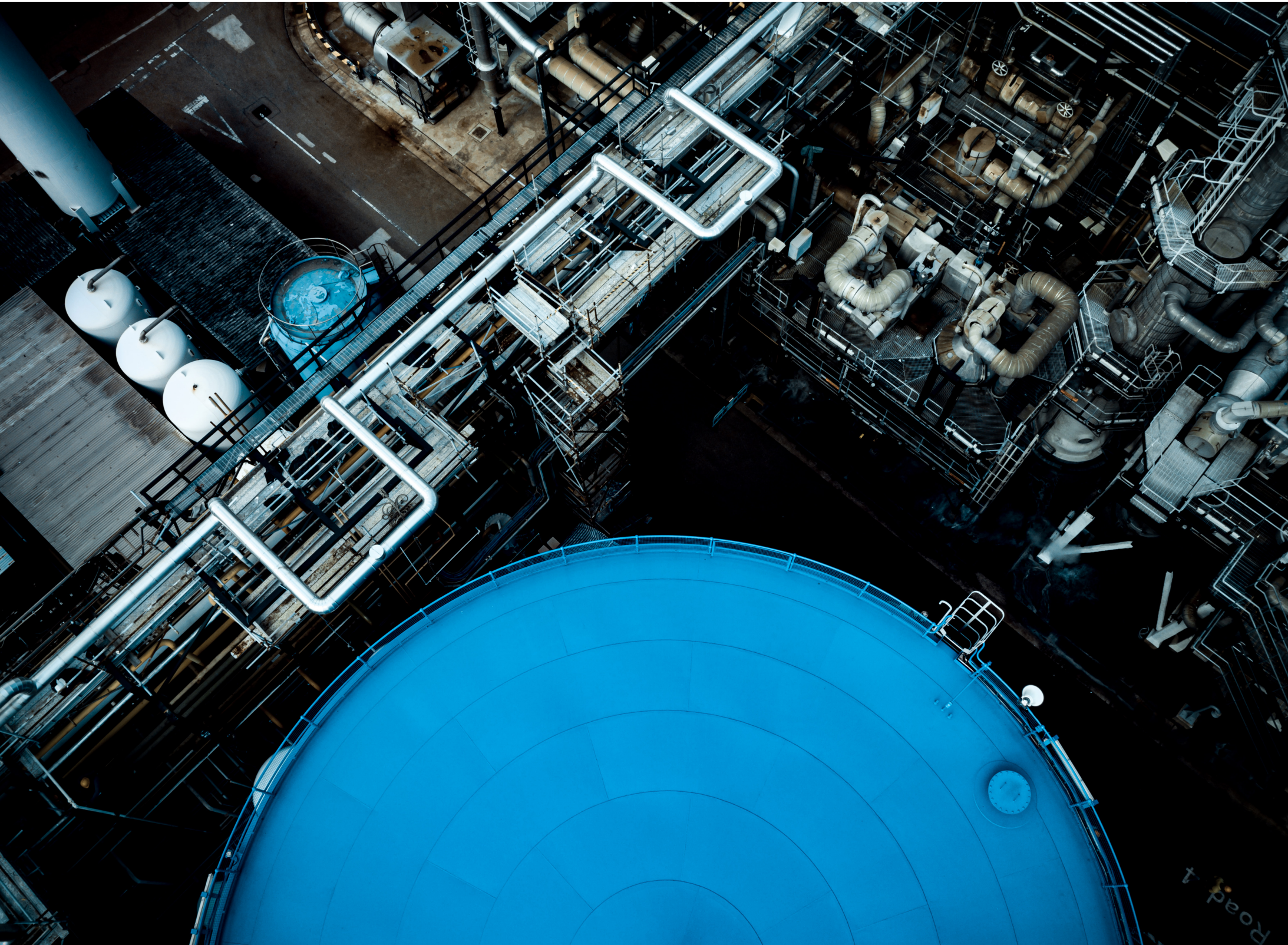
Panel Maintenance Program

- The panel Maintenance program is a good offering for late spring, summer, and early fall.
- Ensure your panels are in perfect operating condition for the winter season.
- Custom - built programs can include full health checks of all your EHT and operating systems, as well as alarm management.

On-Site Technicians Providing Service and Ongoing Support

- Installation Inspections—complete testing and inspections, with documentation, for peace of mind that your system is installed correctly.
- Inspection/Supervision for all work on EHT system changes—ensure factory warranties are kept intact by having Thermon oversee or inspect any work completed on its products.
- Ongoing on-site support for small or large projects assisting with all aspects of your EHT systems, from splicing to inspections and QA/QC.





Construction and Commissioning Services

- Complete EHT System Installation (SR/MI Cable, Tubing Bundles, Power/End Kits & JBs, RTDs, Controllers)
- QA/QC, Testing, Documentation & Support
- Comprehensive Controller, EHT, RTD and Communication Commissioning
- Baseline Testing & Design Confirmation
- Deficiency Management & Rectification
- Fielding Engineering and Design Support

EHT Audits

- Visual inspection and walk down of each circuit to inspect thermal insulation.
- Visual inspection of the heating system components.
- Inspection of controller settings and verification of dielectric insulation resistance.
- Verification and recording of heater supply voltage and heater circuit current readings.
- IR camera checks for cold sections (heat sinks) and heater circuit current readings.

On-Site Technicians Providing:

- Verification of set points for customer program data sheets and logging of any discrepancies.
- Re-torquing of all terminal blocks and relhardware.
- IR camera inspection and logging of any overheating relays.
- Panel out megger and resistance testing and logging of each circuit in the panels.
- Logging of displayed alarms.
- Recommendations and quoting for repair of identified issues.

THERMON
OFFICES WORLDWIDE



Thermon's global footprint with local presence. Thermon serves the global Energy, Power Generation, and Chemical markets to provide innovative solutions for industrial heating applications by deeply understanding our customers' needs.

UNITED STATES | CANADA | MEXICO | NETHERLANDS | UNITED KINGDOM | FRANCE | SPAIN | GERMANY | AUSTRALIA | MALAYSIA | CHINA | INDIA | JAPAN | SOUTH KOREA | BAHRAIN





INDUSTRIAL PROCESS HEATING SOLUTIONS

For the Thermon office nearest you, visit us at www.thermon.com

Corporate Headquarters: 7171 Southwest Parkway • Building 300, Suite 200 • Austin, TX 78735 • Phone: 512-690-0600
© Thermon, Inc. • Printed in U.S.A. • Information subject to change.

Form TMP0075U-0823