SELF-REGULATING HEATING CABLES

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
- Worldwide Approvals

**BSX™**

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

**HTSX™**

Freeze Protection and Temperature Maintenance to 150°C (302°F)
Maximum Exposure Temperature 250°C (482°F)
Available Watt Densities: 3, 6, 9, 12, 15, & 20 w/ft @ 10°C (50°F)
Available Voltages: 110-120 or 208-277 Vac

**VSX™**

Freeze Protection and Temperature Maintenance up to 149°C (300°F)
Maximum Exposure Temperature 250°C (482°F)
Available Watt Densities: 3, 6, 9, 12, 15, & 20 w/ft @ 10°C (50°F)
Available Voltages: 110-120 or 208-277 Vac

POWER-LIMITING HEATING CABLES

Features:
- PTC Coiled Resistor Alloy Heating Element
- Cut-to-Length Parallel Circuitry
- Nickel-Plated Copper Bus Wires
- Metallic Braid for Grounding Purposes
- Fluoropolymer Overjacket
- Worldwide Approvals

**HPT™**

Freeze Protection and Temperature Maintenance up to 210°C (410°F)
Maximum Exposure Temperature 260°C (500°F)
Available Watt Densities: 5, 10, 15 & 20 w/ft @ 10°C (50°F)
Available Voltages: 120 and 240 Vac Nominal
*Additional voltages are available, contact Thermon

HEAT TRACING SYSTEMS ACCESSORIES
(See Pages 7 and 8)

Thermon Provides a Complete Range of:
- Power and Termination Kits
- Splice Kits
- Mechanical Thermostats
- Electronic Control and Monitoring Modules
- Power Distribution and Control Panels
- System Communications Software
CONSTANT WATT HEATING CABLES

Features:
- Nichrome Heating Element
- Cut-to-Length Parallel Circuitry
- 12 AWG Copper Bus Wires
- Metallic Braid for Grounding Purposes
- Fluoropolymer Overjacket
- Worldwide Approvals

MINERAL INSULATED HEATING CABLES

Features:
- High Temperature Magnesium Oxide Dielectric
- Seamless Alloy 825 Sheath
- Worldwide Approvals

SKIN EFFECT HEATING SYSTEMS

Features:
- Rugged Heat Tube to Generate Heat
- Circuit Lengths up to 24 Kilometers (15 Miles)
- Each System Fully Factory-Engineered

SERIES RESISTANCE HEATING CABLES

Features:
- Rugged Heat Tube to Generate Heat
- Circuit Lengths up to 24 Kilometers (15 Miles)
- Each System Fully Factory-Engineered

THERMTRAC™

Power Outputs .......... up to 50 W/ft
Operating Voltages ................. up to 5 KV
Maintenance Temperatures .......... up to 200°C (392°F)
Exposure Temperatures .......... up to 260°C (500°F)
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 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)

**TubeTrace with VSX™ Self-Regulating Heat Trace**
Use where high temperature exposure is a consideration.
Tube Temperature Range: 5°C to 149°C (40°F to 300°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 power-limiting cables represent 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)

CUSTOM CEMS AND ANALYZER 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 that are 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 SilcoNert® are also available on stainless steel tubing.
- Double containment tubing or 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 Inco Alloys International, Inc.
ELECTRICALLY HEATED INSTRUMENT TUBING FOR FREEZE PROTECTION OF HIGH TEMPERATURE STEAM LINES

**TubeTrace®** TYPE SEI/MEI - HT, HTX & HTX2
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)

INSTRUMENT TUBING ACCESSORIES
(See Pages 9 and 10)

Every type of tubing bundle requires proper termination to ensure reliable performance. Thermon offers a complete range of kits and accessories. Because Thermon manufactures the electrical heat tracing as well, all of the power connection and termination accessories are designed and approved for the specific application.

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

**TubeTrace®** TYPE SI/MI AND SP/MP

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)*

* Higher tube temperatures are possible with XNS-extra insulation, HT and HTX type designs.
Products And Accessories

Information Guide

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 208°C (406°F) Fluid/Steam

HT Compounds for Piping, Valves and Irregular Surfaces
(Maximum temperature ratings shown)
T-3: 371°C (700°F)
T-75: 425°C (800°F)
T-99: 1,000°C (1,832°F)
T-85: 190°C (375°F)
T-802: 135°C (275°F) Two part compound

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)

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 Temp. Range: Service to 205°C (400°F) *
ThermoTube ratings to 593°C (1100°F) also available *.

* Higher tube temperatures are possible with XINS-extra insulation HT and HTX type designs.
For steam heated instrument tubing, see Instrument Tubing Bundles.
TANK AND VESSEL HEATING

RT FlexiPanel® and RTF FlexiPanel®
Tank and Vessel Heating Units
- High Temperature Lead Wires (16 AWG)
- Protective Metal Jacket
- Parallel Circuit High Temperature Alloy Heating Element
- Heat-Laminated, High Temperature Silicone Rubber Insulation

Nominal Output
RT FlexiPanel 500 and 1,000 watts
RTF FlexiPanel 300 and 500 watts
Supply Voltage .............................. 120 or 240 Vac
Temperature Maintenance to ............ 121°C (250°F)
Maximum Exposure Temperature .......... 232°C (450°F)

HOPPER AND CHUTE HEATING

HT Module Hopper Heater
- Fluoropolymer Insulated High Temperature 16 AWG Lead Wires (with stress relief at connection)
- Parallel Circuit High Temperature Alloy Heating Element
- Temperature-Rated Insulation (directs energy towards surface to be heated)
- Aluminized Steel Protective Enclosure and Cover

Hopper and Chute Heating
Temperature Maintenance up to 427°C (800°F)
Maximum Exposure Temperature 538°C (1000°F)
Maximum Watt Density .................. 3 w/in² (4,650 w/m²)
Supply Voltages ............................ 120-600 Vac

HeetSheet® Tank and Vessel Heating Units
- Provides Predictable and Reliable Heating (or Cooling)
- Factory-Applied Non-Hardening Heat Transfer Compound Ensures Maximum Heat Transfer
- Waffle Pattern Permits Multiple Flow Paths for Heating and Cooling Media
- Provides 2 to 3 Times the Heat Transfer of Plate-Type Coils
- No Risk of Cross-Contamination with Process
- Light-weight Stainless Steel Construction for Easy Installation
- Stainless Steel Inlet and Outlet Tubing Provided from Factory
**POWER CONNECTION KITS**

- **Terminator DP and ZP** nonmetallic kits are designed to fabricate power connections of an electric heat trace circuit.
- **Terminator DL and ZL** nonmetallic kits are designed to fabricate power connections and provide visual indication of an energized heat trace circuit.
- **ECA-1** metallic kits are designed to fabricate power connections of an electric heat trace circuit.
- **PCA** nonmetallic kits are designed to fabricate power connections of an electric heat trace circuit.

**IN-LINE SPLICE KITS**

- **Terminator DS/DE and ZS/ZE** nonmetallic kits are designed to fabricate in-line splices of an electric heat trace circuit.
- **ECT-2** metallic kits are designed for splicing three electric heat trace cables together.
- **PCS** nonmetallic kits are designed to fabricate in-line splices of an electric heat trace circuit.

**T-SPLICE KITS**

- **Terminator DP and ZP** nonmetallic kits are designed to fabricate T-splice connections of an electric heat trace circuit.
- **PCA** nonmetallic kits are designed to fabricate T-splice connections of an electric heat trace circuit.

**END TERMINATION KITS**

- **Terminator DS/DE and ZS/ZE** nonmetallic kits are designed to fabricate an end termination of an electric heat trace circuit.
- **Terminator DE-B and ZE-B** nonmetallic kits are designed to provide visual indication of an energized heat trace circuit. (Also available in red)
- **PCS** nonmetallic kits are designed to fabricate an end termination 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 12” (30 cm) or as required by code or specification.
- **AL-20L, AL-20H, AL-30L, AL-30H** aluminum tape for continuous (longitudinal) covering.

• **Terminator “D”** kits Division 2 and Zone 2 Areas
• **Terminator “Z”** kits Zone 1 Areas.
CONTROL AND MONITORING

MECHANICAL THERMOSTATS

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

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

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

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

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

ELECTRONIC THERMOSTATS

TraceNet ECM is an electronic control module specifically designed for controlling electric heat trace circuits. Serves as both the temperature control as well as the sensor and power connection for a heat trace circuit.

ELECTRONIC CONTROLLERS

TraceNet TN Series provides control and monitoring for up to 180 electric heat trace circuits within one Can bus network.

TraceNet TCM18 provides control and monitoring for up to 18 electric heat trace circuits with input from single or dual RTD inputs.

TraceNet TCM2 provides control and monitoring for one or two heat tracing circuits with input from up to two RTDs per circuit.
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-1 Kit** for bulkhead entry of TubeTrace and ThermoTube bundles. The kit is designed to make a waterproof seal around the bundle.

**Terminator DP/FAK-1 and ZP/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.

**Terminator DE-B/FAK-1 and ZE-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.

T-SPLICE KITS

**T-Splice FAK-5 Kits** designed to make a waterproof seal over TubeTrace and ThermoTube splices.

**Terminator DP/FAK-5 and ZP/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.

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

**Terminator DS/FAK-5 and ZS/FAK-5 Kits** designed to fabricate outside in-line splices on insulated TubeTrace with electric heat tracing.

**90° ELBOW TRANSITION KITS**

**90° Elbow Transition FAK-2 Kits** are designed to make a waterproof seal over TubeTrace and ThermoTube splices.

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

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

IN-LINE SPLICE KITS

**In-line Splice FAK-4 Kits** are designed to make a waterproof seal over TubeTrace and ThermoTube splices.

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

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

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

**Terminator DS/FAK-2 and ZS/FAK-2 Kits** are designed to fabricate accessible outside the insulation in-line splices or end terminations on TubeTrace with electric heat tracing.
TERMINATION/SEAL KITS

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

FAK-10 Kits are designed to make a waterproof seal over the end of TubeTrace and ThermoTube. Kits include heat shrink seal.

HIGH TEMPERATURE SEAL KIT

FAK-7HTS is designed to make a seal over the end of TubeTrace and ThermoTube for high temperature applications.

ACCESSORIES FOR ELECTRIC HEAT TRACE TERMINATION

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

SCTK Splice connection kits are required when preparing splices with all Thermon parallel heating cables connection kits.

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.

ELECTRONIC THERMOSTATS

TraceNet ECM is an electronic control module specifically designed for controlling electric heat trace circuits. Serves as both the temperature control as well as the sensor and power connection for a heat trace circuit.

TraceNet ECM/FAK-1 is an electronic control module specifically designed for controlling electric heat trace circuits, for bulkhead entry of electrically heated TubeTrace bundles.

ELECTRONIC CONTROLLERS

TraceNet TN Series provides control and monitoring for up to 180 electric heat trace circuits within one Can bus network.

TraceNet TCM18 provides control and monitoring for up to 18 electric heat trace circuits with input from single or dual RTD inputs.

TraceNet TCM2 provides control and monitoring for one or two heat tracing circuits with input from up to two RTDs per circuit.