



# 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 hazardous (classified) areas.

#### RATINGS

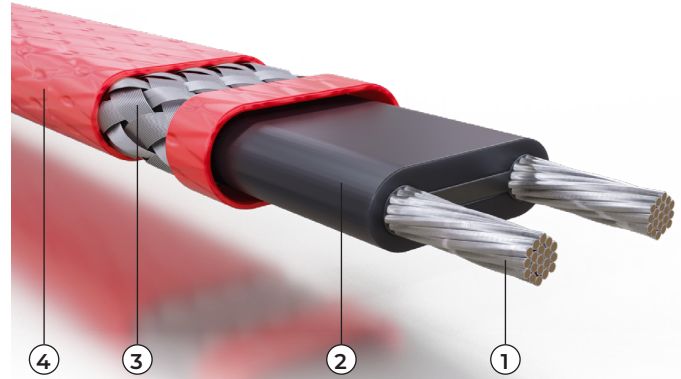
Available power densities...	10, 20, 30, 39, 49, 66 W/m @ 10°C
	(3, 6, 9, 12, 15, 20 W/ft @ 50°F)
Supply voltages.....	110-120 or 208-277 Vac
Max. operating temperature	
Continuous (power-on).....	240°C (464°F)
Max. exposure temperature	
Intermittent (power-on or off) .....	250°C (482°F)
Continuous (power-off) .....	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 <sup>1</sup> .....	
3, 6, 9, 12, 15-2 .....	T3 200°C (392°F)
15-1 and 20-1.....	T2D 215°C (419°F)
20-2.....	T2C 230°C (446°F)
Based on stabilized design <sup>2</sup> .....	T3 to T6

#### Notes

1. T-rating per the National Electrical Code and Canadian Electrical Code.
2. 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.

#### 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.



#### CONSTRUCTION

- 1 Nickel-plated copper bus wires (16 AWG)
- 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 DS/DE, ZS/ZE, DE-B, ZE-B kits.

#### NOTE:

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

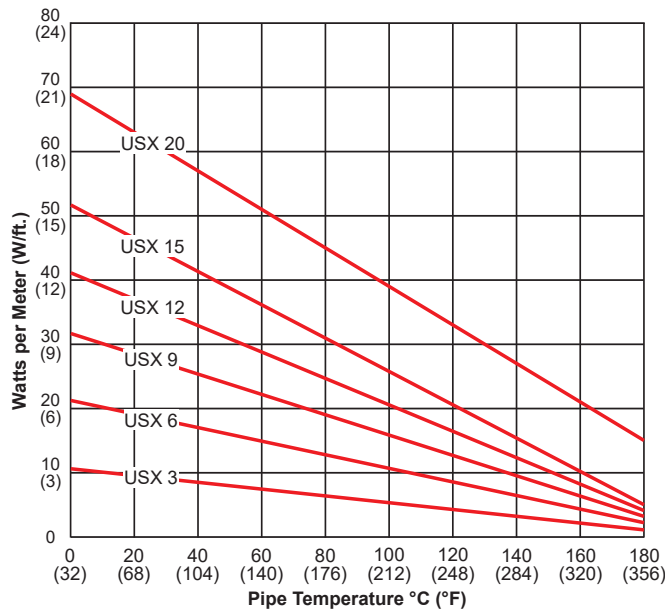


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 SELF-REGULATING HEAT TRACING

**POWER OUTPUT CURVES<sup>1</sup>**

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 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 (W/ft.)
USX 3-1	USX 3-2	10 (3)
USX 6-1	USX 6-2	20 (6)
USX 9-1	USX 9-2	30 (9)
USX 12-1	USX 12-2	39 (12)
USX 15-1	USX 15-2	49 (15)
USX 20-1	USX 20-2	66 (20)



**CERTIFICATIONS/APPROVALS**



**Canadian Standards Association**  
 Ordinary Locations  
 Hazardous (Classified) Locations

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

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

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

**CIRCUIT BREAKER SIZING<sup>2</sup>**

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.

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

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