

# VSX™ Self-Regulating Heating Cable

## Product Specifications

### Application . . .

#### Process Temperature Maintenance or Freeze Protection

High performance VSX self-regulating heating cables are designed specifically for process temperature maintenance or freeze protection where high maintain temperatures or high temperature exposure is required.

The heat output of VSX cable varies in response to the surrounding temperature by reducing its thermal output with increasing temperature. With its high self-regulating characteristic, VSX can be installed in hazardous areas requiring a T3 temperature class rating.

VSX cables are approved for use in ordinary (nonclassified) areas, hazardous (classified) areas, and Zone 1 and 2 classified areas.

### Ratings . . .

Available watt densities ..... 5, 10, 15, 20 w/ft @ 50°F  
(16, 33, 49, 66 w/m @ 10°C)

Supply voltages..... 110-120 or 208-277 Vac

Max. maintenance temperature .....300°F (149°C)

Max. exposure temperature)

Intermittent power-on.....450°F (232°C)

Intermittent power-off.....482°F (250°C)

Continuous power-off.....400°F (204°C)

Minimum installation temperature .....-60°F (-51°C)

Minimum bend radius

@ 5°F (-15°C) ..... 0.38" (10mm)

@ -76°F (-60°C)..... 1.25" (32 mm)

T-rating<sup>1</sup> .....T3 392°F (200°C)

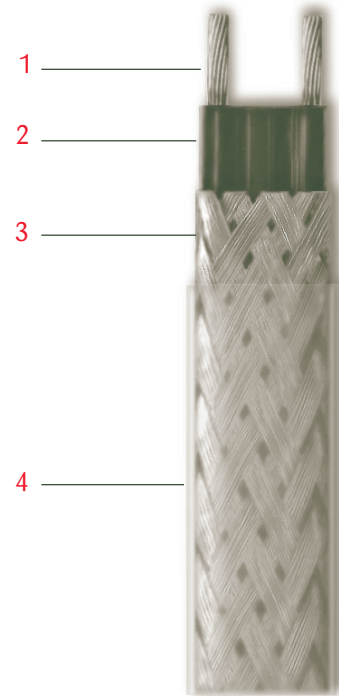
### Basic Accessories<sup>2</sup> . . .

**Power Connection:** All VSX cables require a Terminator, PCA or ECA power connection kit for terminating the circuit before connecting to power.

**End-of-Circuit Termination:** VSX cables require the ET-6 end cap for terminating at the end of the circuit.

### Notes . . .

1. T-rating per the National Electrical Code and Canadian Electrical Code.
2. Information on additional accessories to complete a heater circuit installation and to comply with approval requirements can be found in the "Self-Regulating Cables Systems Accessories" product specification sheet (Form TEP0010).



### 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 to cable and braid where exposure to chemicals or corrosives is expected.



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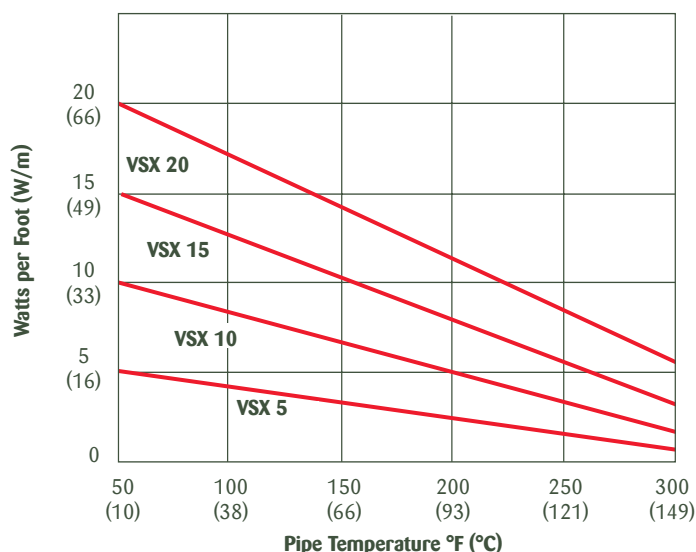
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### Power Output Curves<sup>1</sup> . . .

The power outputs shown apply to cable installed on insulated metallic pipe (using the procedures outlined in IEEE Standard 515-2004) at the service voltages stated below. For use on other service voltages, refer to Form TEP0013, "Complex Piping Design Guide."

Catalog Number 120 Vac Nominal	Catalog Number 240 Vac Nominal	Power Output at 50°F (10°C) W/ft (m)
VSX 5-1	VSX 5-2	5 (16)
VSX 10-1	VSX 10-2	10 (33)
VSX 15-1	VSX 15-2	15 (49)
VSX 20-1	VSX 20-2	20 (66)



### Circuit Breaker Sizing and Type<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. For information on design and performance on other voltages, refer to Form TEP0013, "Complex Piping Design Guide."

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 specific ground-fault protection requirements.

Catalog Number	120 Vac Service Voltage Start-Up Temperature °F (°C)	Max. Circuit Length <sup>3</sup> vs. Breaker Size ft (m)			
		20A	30A	40A	50A
VSX 5-1	50 (10)	205 (63)	335 (102)	335 (102)	335 (102)
	0 (-18)	205 (63)	335 (102)	335 (102)	335 (102)
	-20 (-29)	195 (60)	335 (102)	335 (102)	335 (102)
	-40 (-40)	185 (56)	315 (97)	335 (102)	335 (102)
VSX 10-1	50 (10)	135 (41)	220 (66)	265 (80)	265 (80)
	0 (-18)	135 (41)	220 (66)	265 (80)	265 (80)
	-20 (-29)	125 (38)	210 (63)	265 (80)	265 (80)
	-40 (-40)	115 (36)	190 (58)	265 (80)	265 (80)
VSX 15-1	50 (10)	100 (30)	160 (48)	235 (71)	235 (71)
	0 (-18)	100 (30)	160 (48)	235 (71)	235 (71)
	-20 (-29)	95 (29)	155 (47)	230 (70)	235 (71)
	-40 (-40)	90 (27)	145 (44)	215 (65)	225 (69)
VSX 20-1	50 (10)	70 (21)	105 (32)	150 (45)	200 (62)
	0 (-18)	60 (18)	90 (28)	125 (39)	170 (52)
	-20 (-29)	55 (17)	85 (26)	120 (36)	160 (48)
	-40 (-40)	50 (16)	80 (25)	110 (34)	150 (45)

### Certifications/Approvals . . .



#### Factory Mutual Research

Ordinary Locations  
Hazardous (Classified) Locations  
Class I, Division 2, Groups B, C and D  
Class II, Division 2, Groups F and G  
Class III, Divisions 1 and 2  
Class I, Zones 1 and 2, AExe II



#### Underwriters Laboratories Inc.

Ordinary Locations  
Hazardous (Classified) Locations  
Class I, Division 2, Groups A, B, C and D  
Class II, Division 2, Groups F and G  
Class III, Divisions 1 and 2  
Class I, Zones 1 and 2, AExe II



#### Canadian Standards Association

Ordinary Locations  
Hazardous (Classified) Locations  
Class I, Division 1, Groups A, B, C and D  
Class II, Division 1, Groups E, F and G  
Class I, Division 2, Groups A, B, C and D  
Class II, Division 2, Groups E, F and G

### 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 cable, not the sum of segments of cable. Refer to CompuTrace® design software or contact Thermon for current loading of segments.

Catalog Number	240 Vac Service Voltage Start-Up Temperature °F (°C)	Max. Circuit Length <sup>3</sup> vs. Breaker Size ft (m)			
		20A	30A	40A	50A
VSX 5-2	50 (10)	415 (126)	685 (209)	685 (209)	685 (209)
	0 (-18)	415 (126)	685 (209)	685 (209)	685 (209)
	-20 (-29)	395 (120)	685 (209)	685 (209)	685 (209)
	-40 (-40)	365 (112)	630 (193)	685 (209)	685 (209)
VSX 10-2	50 (10)	270 (82)	435 (133)	565 (172)	565 (172)
	0 (-18)	255 (78)	420 (128)	565 (172)	565 (172)
	-20 (-29)	235 (72)	385 (117)	565 (172)	565 (172)
	-40 (-40)	220 (66)	350 (107)	535 (163)	565 (172)
VSX 15-2	50 (10)	200 (61)	315 (97)	465 (142)	530 (161)
	0 (-18)	175 (53)	275 (84)	405 (123)	525 (161)
	-20 (-29)	165 (50)	260 (79)	375 (115)	485 (148)
	-40 (-40)	155 (48)	245 (75)	355 (108)	450 (138)
VSX 20-2	50 (10)	145 (45)	230 (70)	325 (99)	405 (124)
	0 (-18)	125 (39)	195 (60)	275 (84)	375 (114)
	-20 (-29)	120 (37)	185 (56)	260 (79)	350 (106)
	-40 (-40)	115 (34)	175 (53)	245 (75)	325 (100)

