



PRODUCT SPECIFICATIONS

**VSX™**

**SELF-REGULATING HEATING CABLE**

**APPLICATION**

High performance VSX self-regulating heating cables are designed specifically for process temperature maintenance or freeze protection applications 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 .....	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 .....	149°C (300°F)
Max. exposure temperature)	
Intermittent power-on .....	232°C (450°F)
Intermittent power-off .....	250°C (482°F)
Continuous power-off .....	204°C (400°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-rating <sup>1</sup> .....	T3 200°C (392°F)

**Notes**

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



**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 heating cables.

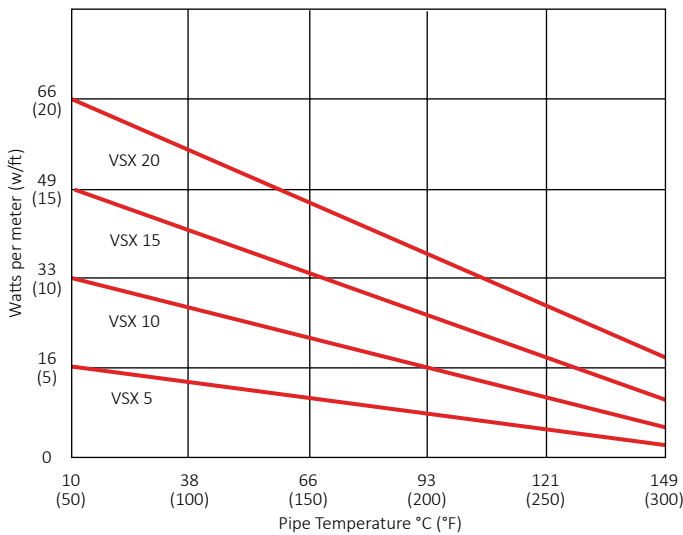
All cables require a connection kit to comply with approval requirements. Information on accessories to complete a heater circuit installation can be found in the "Heating Cable Systems Accessories" product specification sheet (Form TEP0010).



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

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)
VSX 5-1	VSX 5-2	16 (5)
VSX 10-1	VSX 10-2	33 (10)
VSX 15-1	VSX 15-2	49 (15)
VSX 20-1	VSX 20-2	66 (20)



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

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

**CERTIFICATIONS/APPROVALS**



FM Approvals  
 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  
 Ex e II

**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.