

High-temperature power-limiting heating cables

VPL is a family of power-limiting heating cables designed for pipe and equipment heat tracing in industrial applications. VPL can be used for freeze protection and process-temperature maintenance requiring high power output and/or high temperature exposure up to 455°F (230°C) and can withstand routine steam purges and temperature excursions to 482°F (250°C) with power off.

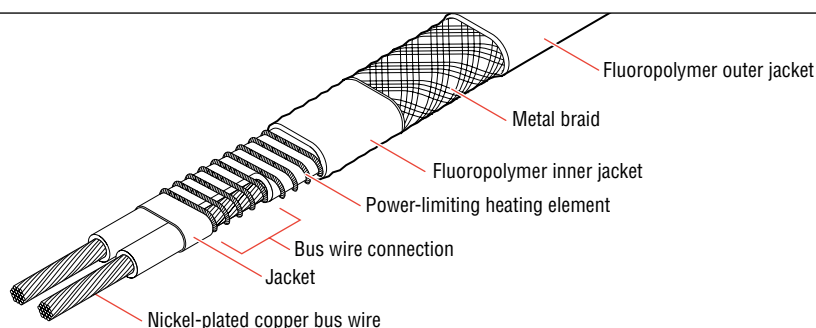
Power-limiting cables are parallel heaters formed by a coiled resistor alloy heating

element wrapped around two parallel bus wires. The distance between conductor contact points forms the heating zone length. This parallel construction allows the cable to be cut to length and terminated on site. The power output of VPL heating cables decreases with increasing temperature. VPL heating cables can be overlapped. The relatively flat power temperature curve of VPL ensures a low start-up current and high output at elevated temperatures.

VPL cables are approved for use in non-hazardous and hazardous locations. Approvals are listed below.

Raychem® VPL cables meet the requirements of the U.S. National Electrical Codes and the Canadian Electrical Code. For additional information contact your Tyco Thermal Controls representative or call Tyco Thermal Controls at (800) 545-6258.

Heating Cable Construction



Application

Area classification	Nonhazardous and hazardous locations
Traced surface type	Metal
Chemical resistance	Organic and aqueous inorganic chemicals and corrosives

Temperature rating

Maximum maintain temperature (power on)	300°F (150°C) for 20VPL-CT (others defined in table)
Maximum exposure temperature (power off)	482°F (250°C)

Maximum maintain (power on) temperature table

Cable	208 V	230 V	240 V	277 V	Cable	120 V
5VPL2-CT	455°F (235°C)	445°F (230°C)	445°F (230°C)	435°F (225°C)	5VPL1-CT	445°F (230°C)
10VPL2-CT	425°F (220°C)	410°F (210°C)	400°F (205°C)	380°F (195°C)	10VPL1-CT	400°F (205°C)
15VPL2-CT	390°F (200°C)	355°F (180°C)	320°F (160°C)	220°F (105°C)	15VPL1-CT	320°F (160°C)

Temperature I.D. no. (T-rating)

To be established using the principles of stabilized design. Use TraceCalc® Pro design software or contact Tyco Thermal Controls for assistance.

Approvals

Hazardous Locations



Class I, Div. 2, Groups B, C, D
Class II, Div. 2, Groups F, G
Class III



Class I, Div. 1 and 2, Groups A, B, C, D
Class II, Div. 1 and 2, Groups E, F, G

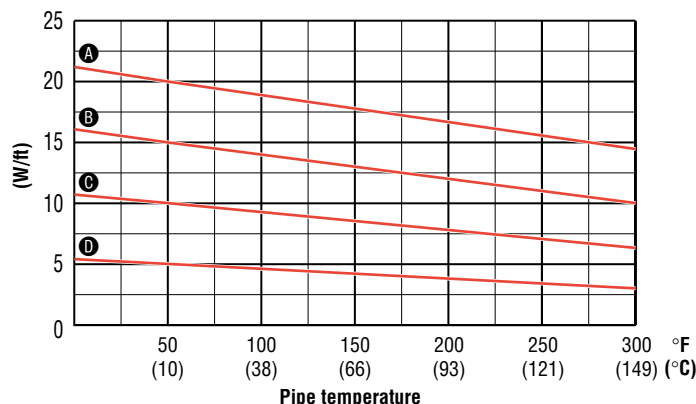
Design and installation

For proper design and installation, use TraceCalc® Pro software or the Design section of the *Industrial Product Selection and Design Guide*. Also, refer to the *Installation, Commissioning, and Operating Instructions for VPL Heating Cables* (H56286). Literature is available through the Tyco Thermal Controls Fax-on-Demand system and via the Tyco Thermal Controls Web site, www.tycothermal.com.

Nominal power output rating on metal pipes at 120 V and 240 V

Adjustment factors		
	Power output	Circuit length
208 V		
5VPL2-CT	0.77	0.89
10VPL2-CT	0.78	0.90
15VPL2-CT	0.79	0.91
20VPL2-CT	0.80	0.92
277 V		
5VPL2-CT	1.30	1.13
10VPL2-CT	1.28	1.11
15VPL2-CT	1.26	1.09
20VPL2-CT	not allowed	

- A 20VPL
- B 15VPL
- C 10VPL
- D 5VPL



To choose the correct heating cable for your application use the Design section in the *Industrial Product Selection and Design Guide*. For more detailed information, use TraceCalc Pro design software.

Maximum Circuit Length Based on Circuit Breaker Sizes

	Ambient temperature at startup	Maximum continuous circuit length (in feet) per circuit breaker									
		120 V					240 V				
		15 A	20 A	30 A	40 A	50 A	15 A	20 A	30 A	40 A	50 A
5VPL-CT	50°F (10°C)	260	350	370	—	—	525	685	740	—	—
	0°F (−18°C)	240	325	370	—	—	485	645	740	—	—
	−20°F (−29°C)	235	315	370	—	—	470	625	740	—	—
	−40°F (−40°C)	225	305	370	—	—	455	610	740	—	—
10VPL-CT	50°F (10°C)	130	175	260	—	—	260	350	525	—	—
	0°F (−18°C)	120	165	245	260	—	245	325	490	525	—
	−20°F (−29°C)	120	160	240	260	—	235	315	475	525	—
	−40°F (−40°C)	115	155	230	260	—	230	310	465	525	—
15VPL-CT	50°F (10°C)	85	115	175	215	—	175	230	350	430	—
	0°F (−18°C)	80	110	165	215	—	165	220	325	430	—
	−20°F (−29°C)	80	105	160	215	—	160	215	320	425	430
	−40°F (−40°C)	75	100	155	210	215	155	210	310	415	430
20VPL-CT	50°F (10°C)	65	85	130	175	185	130	175	260	350	370
	0°F (−18°C)	60	85	125	165	185	125	165	250	330	370
	−20°F (−29°C)	60	80	120	160	185	120	160	245	325	370
	−40°F (−40°C)	60	80	120	160	185	115	155	240	320	370

Note: Tyco Thermal Controls and national electrical codes require both ground-fault protection of equipment and a grounded metallic covering on all heating cables. Following are some of the ground-fault breakers that satisfy this equipment protection requirement: Square D Type QOB-EPD or QO-EPD; Raychem/Square D; Cutler Hammer (Westinghouse) Type QBGFEP.

Product Characteristics	5VPL1-CT 10VPL1-CT 15VPL1-CT 20VPL1-CT	5VPL2-CT 10VPL2-CT 15VPL2-CT 20VPL2-CT
Minimum bend radius	3/4 in	3/4 in
Supply voltage	100–120 Vac	200–277 Vac (20VPL2-CT 200–240 Vac only)
Bus wire size	12 AWG	12 AWG
Outer jacket color	Red	Red
Weight (lb per 10 ft, nominal)	1.4	1.4
Dimensions	0.46 x 0.31 in	0.46 x 0.31 in

Components

Tyco Thermal Controls offers a full range of components for power connections, splices and end seals. These components must be used to ensure proper functioning of the product and compliance with warranty, code, and approvals requirements.