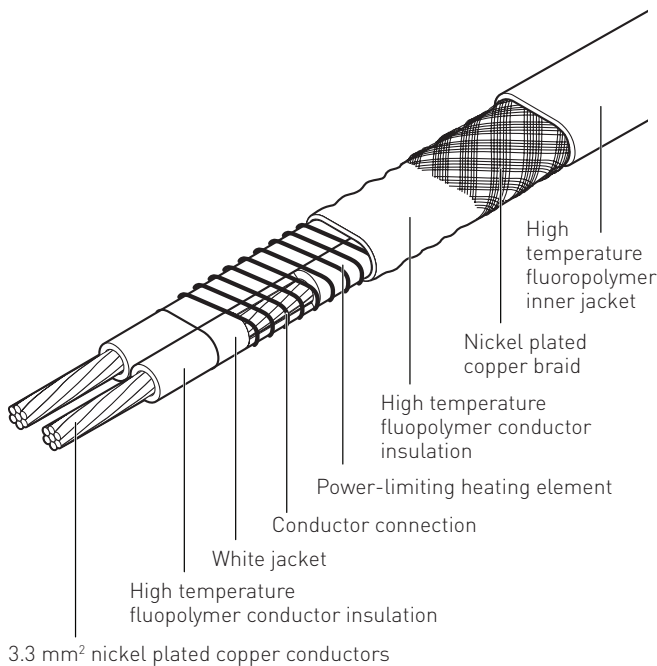


Raychem VPL

HIGH-TEMPERATURE POWER-LIMITING HEATING CABLE

HEATING CABLE CONSTRUCTION



VPL is a family of power limiting heating cables designed for pipe and equipment heat-tracing in industrial applications.

VPL can be used for frost protection and process temperature maintenance requiring high power output and/or high temperature exposure. VPL can provide process temperature maintenance up to 235°C (depending on cable type) and can withstand routine steam purges and temperature exposure to 260°C with power off.

Power-limiting cables are parallel heaters formed by a coiled resistor alloy heating element wrapped around two parallel conductors. The distance between conductor contact points forms the heating zone length. This parallel construction allows it 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 once. 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 hazardous areas. Approvals are listed below.


APPLICATION

Area classification	Hazardous, Zone 1, Zone 2 (Gas), Zone 21, Zone 22 (Dust) Ordinary
Traced surface type	Carbon steel Stainless steel Painted or unpainted metal
Chemical resistance	Organics and corrosives For aggressive organics and corrosives consult your local Pentair representative


SUPPLY VOLTAGE

VPL2:	208-277 Vac
VPL4:	400-480 Vac

APPROVALS

The VPL heating cables are approved for use in hazardous areas by Baseefa Ltd. Baseefa06ATEX0188X & IECExBAS06.0048X
 II 2GD & Exe II T* (see schedule) Ex tD A21 IP66
 Ex e II T* (see schedule) Ex tD A21 IP66
 *By design. Temperature classification (T-rating) has to be established by using the principles of stabilized design or the use of a temperature limiting device. Use TraceCalc design software or contact Pentair.

The VPL heating cables are approved by DNV for use on ships and mobile off-shore units. DNV Certificate No. E-11181

 (Russia, Kazakhstan, Belarus)
 For other countries contact your local Pentair representative.

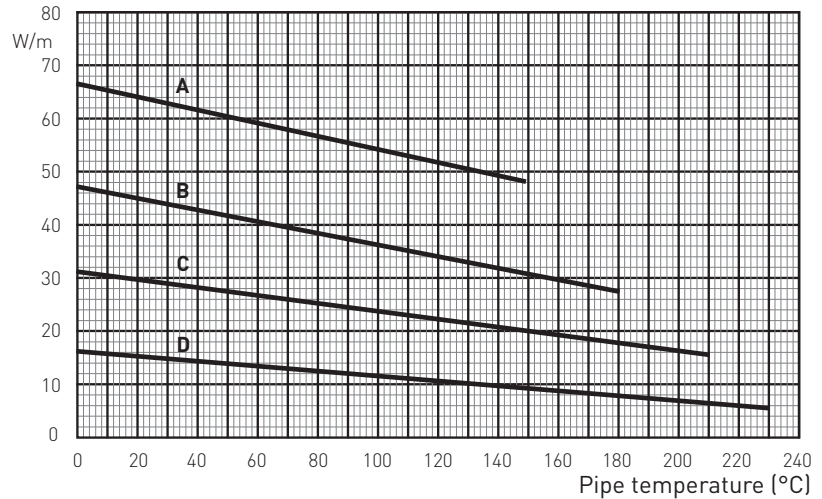
SPECIFICATIONS

	Cable	208 V	230 V	254 V	277 V	400 V	480 V
Maximum maintain or continuous exposure temperature (power on)	5VPL2-CT	235°C	230°C	225°C	225°C	-	-
	10VPL2-CT	220°C	210°C	200°C	195°C	-	-
	15VPL2-CT	200°C	180°C	145°C	105°C	-	-
	20VPL2-CT	150°C	150°C	-	-	-	-
	5VPL4-CT	-	-	-	-	230°C	230°C
	10VPL4-CT	-	-	-	-	215°C	205°C
	15VPL4-CT	-	-	-	-	195°C	160°C
	20VPL4-CT	-	-	-	-	150°C	150°C
Maximum continuous exposure temperature (power off)	260°C						
Temperature classification	To be established using the principles of stabilized design or the use of a temperature limiting device. Use TraceCalc design software or contact Pentair for assistance.						
Minimum installation temperature	-60°C						
Minimum bend radius	at -60°C: 20 mm at +20°C: 20 mm						
Minimum clearance	15mm						

THERMAL OUTPUT RATING

Nominal power output rating on insulated steel pipes at 240 V and 480 V (power output of VPL4 at 400 V will be lower)

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



To choose the correct heating cable for your application use the TraceCalc design software.

ADJUSTMENT FACTORS

		5VPL2-CT	10VPL2-CT	15VPL2-CT	20VPL2-CT
254 V	Power output	1.20	1.19	1.19	Not allowed
	Circuit length	1.05	1.04	1.04	Not allowed
277 V	Power output	1.30	1.28	1.26	Not allowed
	Circuit length	1.13	1.11	1.09	Not allowed
		5VPL4-CT	10VPL4-CT	15VPL4-CT	20VPL4-CT
400 V	Power output	0.72	0.73	0.74	0.75
	Circuit length	0.86	0.87	0.89	0.90
Nominal power output (W/m at 10°C)		5VPLx-CT	10VPLx-CT	15VPLx-CT	20VPLx-CT
VPL2 at 230 V		15	30	45	61
VPL2 at 240 V/VPL4 at 480 V		16	33	49	65
VPL4 at 400 V		12	24	36	49

PRODUCT DIMENSIONS (NOMINAL) AND WEIGHT

	5VPLx-CT	10VPLx-CT	15VPLx-CT	20VPLx-CT
Thickness (mm)	7.9	7.9	7.9	7.9
Width (mm)	11.7	11.7	11.7	11.7
Nominal cold lead/ heating zone length (m)	1.2 (VPL2)	0.9 (VPL2)	0.6 (VPL2)	0.5 (VPL2)
	2.4 (VPL4)	1.7 (VPL4)	1.3 (VPL4)	1.1 (VPL4)
Weight (g/m)	200	200	200	200

MAXIMUM CIRCUIT LENGTH BASED ON TYPE 'C' CIRCUIT BREAKERS ACCORDING TO EN 60898

VPL2 at 230 V		5VPL2-CT	10VPL2-CT	15VPL2-CT	20VPL2-CT
Electrical protection sizing	Start-up temperature	Maximum heating cable length per circuit (m) at 230 Vac			
16 A	-20°C	195	100	70	50
	+10°C	215	110	75	55
25 A	-20°C	220*	155*	105	80
	+10°C	220*	155*	115	85
32 A	-20°C	220*	155*	130*	100
	+10°C	220*	155*	130*	110*
40 A	-20°C	220*	155*	130*	110*
	+10°C	220*	155*	130*	110*
VPL4 at 480 V and 400 V		5VPL4-CT	10VPL4-CT	15VPL4-CT	20VPL4-CT
Electrical protection sizing	Start-up temperature	Maximum heating cable length per circuit (m) at 480 Vac and (at 400 Vac)			
16 A	-20°C	390 (335)	195 (170)	130 (115)	100 (90)
	+10°C	425 (365)	210 (185)	140 (125)	105 (95)
25 A	-20°C	450* (450)	310 (265)	205 (185)	155 (140)
	+10°C	450* (450)	320* (290)	220 (195)	165 (150)
32 A	-20°C	450* (450)	320* (320)	260* (235)	200 (180)
	+10°C	450* (450)	320* (320)	260* (250)	210 (190)
40 A	-20°C	450* (450)	320* (320)	260* (260)	225* (225)
	+10°C	450* (450)	320* (320)	260* (260)	225* (225)

*The maximum heating cable length must not exceed these values, even when voltage adjustment factors are used.

The above numbers are for circuit length estimation only. For more detailed information please use the Pentair TraceCalc software or contact your local Pentair representative.

Pentair requires the use of a 30 mA residual current device to provide maximum safety and protection from fire.

Where design results in higher leakage current, the preferred trip level for adjustable devices is 30 mA above any inherent capacitive leakage characteristic of the heater as specified by the trace heater supplier or alternatively, the next common available trip level for non adjustable devices, with a maximum of 300 mA. All safety aspects need to be proven.

ORDERING DETAILS

Part description	5VPL2-CT	10VPL2-CT	15VPL2-CT	20VPL2-CT
Part No.	451828-000	892652-000	068380-000	589252-000
Part description	5VPL4-CT	10VPL4-CT	15VPL4-CT	20VPL4-CT
Part No.	P000000678	P000000679	P000000680	P000000681

COMPONENTS

Pentair 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 electrical requirements.