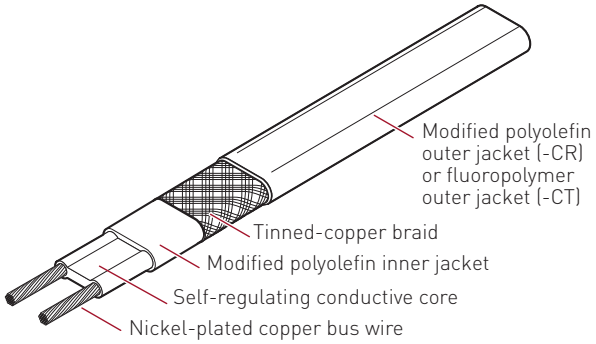
Raychem BTV
SELF-REGULATING HEATING CABLES

10 YEAR Product warranty

Electrical freeze protection for both nonhazardous and hazardous locations

Heating cable construction



PRODUCT OVERVIEW

The BTV family of self-regulating heating cables provides the solution to freeze-protection and process-temperature maintenance applications. BTV heating cables maintain process temperatures up to 150°F (65°C) and can withstand intermittent exposure to temperatures up to 185°F (85°C).

The heating cables are configured for use in nonhazardous and hazardous locations, including areas where corrosives may be present.

Raychem BTV cables meet the requirements of the U.S. National Electrical Code and the Canadian Electrical Code. For additional information, contact your Pentair Thermal Management representative or call (800) 545-6258.

APPLICATION

Area classification	Nonhazardous and hazardous locations
Traced surface type	Metal and plastic
Chemical resistance	• Exposure to aqueous inorganic chemicals: Use -CR (modified polyolefin outer jacket) • Exposure to organic chemicals or corrosives: Use -CT (fluoropolymer outer jacket) • For aggressive organics and corrosives: Consult your Pentair Thermal Management representative.

SUPPLY VOLTAGE

BTV1	100–130 Vac
BTV2	200–277 Vac

TEMPERATURE RATING

Maximum maintain or continuous exposure temperature (power on)	150°F (65°C)
Maximum intermittent exposure temperature, 1000 hours (power on)	185°F (85°C)
Minimum installation temperature	–40°F (–40°C)

TEMPERATURE ID NUMBER (T-RATING)

T6: 185°F (85°C)	Temperature ID numbers are consistent with North America national electrical codes.

APPROVALS

IECEx
IECEx BAS 06.0043X
Ex e IIC T6 Gb
Ex tD A21 IP66 T80°C

[1] BTV-CR is not CSA Certified for Division 1
[2] BTV-CT only

Hazardous Locations

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

SP -W
Class I, Div. 1[1] & 2, Groups A, B, C, D
Class II, Div. 1[1] & 2, Groups E, F, G
Class III

BTV heating cables also have many other approvals, including Baseefa, PTB, DNV, and ABS.

Zone Approvals

FM APPROVED
CLI, ZN1, AEx e II T6

SP -W
Ex e II T6[2]

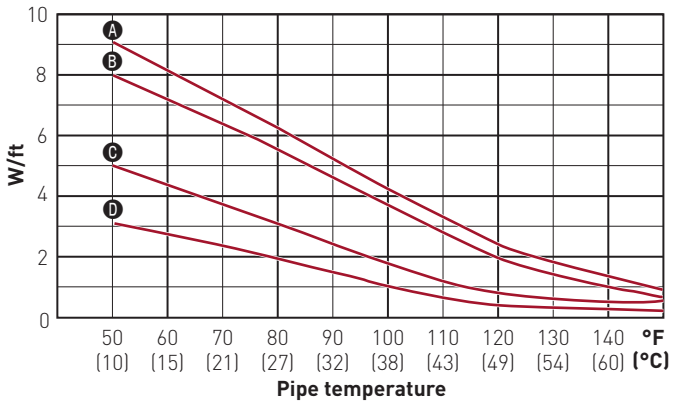
IEx
09-IEx-0004X
Ex e IIC T6 Gb

DESIGN AND INSTALLATION

For proper design and installation, use TraceCalc Pro design software or the Design section of the Advanced Industrial Solutions Heat-Tracing Products & Services Catalog (H56550). Also, refer to the Industrial Heat-Tracing Installation and Maintenance Manual (H57274). Literature is available via the Pentair Thermal Management website, www.pentairthermal.com.

NOMINAL POWER OUTPUT RATING ON METAL PIPES AT 120 V / 240 V

	Adjustment factors	
	Power output	Circuit length
208 V		
3BTV2-CR/CT	0.82	0.96
5BTV2-CR/CT	0.85	0.94
8BTV2-CR/CT	0.89	0.92
10BTV2-CR/CT	0.89	0.92
277 V		
3BTV2-CR/CT	1.13	1.08
5BTV2-CR/CT	1.12	1.09
8BTV2-CR/CT	1.08	1.11
10BTV2-CR/CT	1.08	1.11



Note: To choose the correct heating cable for your application, use the Design section of the Advanced Industrial Solutions Heat-Tracing Products & Services Catalog (H56550). For more detailed information, use TraceCalc Pro design software.

MAXIMUM CIRCUIT LENGTHS BASED ON CIRCUIT BREAKER SIZES

	Ambient temperature at start-up		Maximum circuit length (in feet) per circuit breaker							
			120 V				240 V			
			15 A	20 A	30 A	40 A	15 A	20 A	30 A	40 A
3BTV-CR/CT	50°F	(10°C)	330	330	330	330	660	660	660	660
	0°F	(–18°C)	200	265	330	330	395	530	660	660
	–20°F	(–29°C)	175	235	330	330	350	465	660	660
	–40°F	(–40°C)	155	205	310	330	310	410	620	660
5BTV-CR/CT	50°F	(10°C)	230	270	270	270	460	540	540	540
	0°F	(–18°C)	140	190	270	270	285	380	540	540
	–20°F	(–29°C)	125	165	250	270	250	330	500	540
	–40°F	(–40°C)	110	145	220	270	220	295	440	540
8BTV-CR/CT	50°F	(10°C)	150	200	210	210	300	400	420	420
	0°F	(–18°C)	100	130	200	210	200	265	400	420
	–20°F	(–29°C)	85	115	175	210	175	235	350	420
	–40°F	(–40°C)	80	105	155	210	155	210	315	420

MAXIMUM CIRCUIT LENGTHS BASED ON CIRCUIT BREAKER SIZES

	Ambient temperature at start-up		Maximum circuit length (in feet) per circuit breaker							
			120 V				240 V			
			15 A	20 A	30 A	40 A	15 A	20 A	30 A	40 A
10BTV-CR/CT	50°F	(10°C)	120	160	180	180	240	315	360	360
	0°F	(–18°C)	80	110	160	180	160	215	325	360
	–20°F	(–29°C)	70	95	140	180	145	190	285	360
	–40°F	(–40°C)	65	85	125	170	125	170	255	340

PRODUCT CHARACTERISTICS	3BTV, 5BTV	8BTV, 10BTV
Minimum bend radius	@68°F (20°C): 0.5 in (12.7 mm)	@68°F (20°C): 0.5 in (12.7 mm)
Weight (lb per 10 ft, nominal)	0.7	1.0
Bus wire size	16 AWG	16 AWG
Outer jacket color	Black	Black
Heating cable dimensions	0.46 in x 0.25 in (11.7 mm x 6.35 mm)	0.65 in x 0.26 in (16.5 mm x 6.6 mm)

CONNECTION KITS

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

GROUND-FAULT PROTECTION

To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with the requirements of Pentair Thermal Management, agency certifications, and national electrical codes, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection. Many DigiTrace control and monitoring systems meet the ground-fault protection requirement.

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