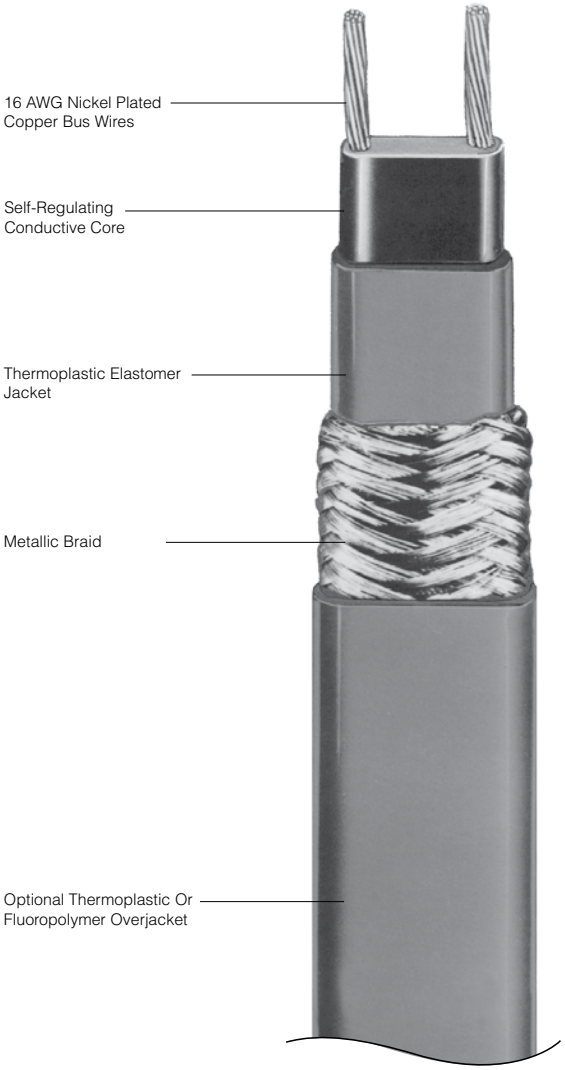
DELTA-THERM

INDUSTRIAL SERIES (IN)

120 And 240 Volts 3, 5, 8 and 10 Watts/Ft. Above Standard Ratings Are Heat Output At 50°F (10°C) For Pipe Tracing



DESCRIPTION

Delta-Therm self-regulating heating cable increases heat output as pipe temperature decreases, and conversely, decreases heat output as pipe temperature increases. This cable is intended for use on metal and plastic pipes.

Industrial Series cables contain two parallel bus wires electrically connected by a web of PTC (positive temperature coefficient) conductive polymer. A thermoplastic elastomer jacket surrounds the cable to provide mechanical protection and electrical isolation. A tinned copper (CB) or stainless steel (SB) braid provides additional mechanical protection as well as a ground path for fault currents. IN Series cables can also be specified with either a thermoplastic (T) overjacket to protect against non-organic corrosives or a fluoropolymer (F) overjacket to protect against organic corrosives. A monitor wire option is also available for continuous monitoring of both bus wires for continuity.

APPLICATIONS

External Pipe Tracing

APPROVALS

Ordinary: IN Series cables are FM approved and CSA certified for pipe tracing when used with a PCK-IN connection kit (FM) or PCK-INC (CSA).

Hazardous: IN Series CB or SS cables (regardless of overjacket) are FM approved and CSA certified for pipe tracing in the following categories:

CSA	FM
Class I, Div. 1 And 2, Grps. A, B, C And D	Class I, Div. 2, Grps B, C, And D
Class II, Div. 1 And 2, Grps. E, F, And G	Class II, Div. 2, Grps F And G
Class III, Div. 1 And 2	Class III, Div. 2
For CSA Certification, Use PCK-HLC.	For FM Approval, Use PCK-IN.

WARNING

WARNING: This cable is designed for commercial applications and must be installed by a qualified electrician. Improper installation can result in property damage, serious injury, and/or death due to electric shock and fires.

DELTA-THERM Corporation, 6711 Sands Rd Suite A, Crystal Lake, IL 60014 (847) 526-2407 Fax (847) 526-4456 **(800) 526-7887**

TECHNICAL INFORMATION, INDUSTRIAL (IN) SERIES PIPE TRACING CABLE

IN Series - 120 VAC Breaker Size And Max. Circuit Lengths Ft. (m)

	15A	20A	30A	40A
IN120-3 If Started At				
50°F (10°C)	300' (91)	-	-	-
35°F (2°C)	270' (82)	300' (91)	330' (101)	-
0°F (-18°C)	200' (61)	270' (82)	330' (101)	-
-20°F (-29°C)	180' (55)	230' (70)	330' (101)	-
IN120-5 If Started At				
50°F (10°C)	230' (70)	270' (82)	-	-
35°F (2°C)	200' (61)	240' (73)	270' (82)	-
0°F (-18°C)	150' (46)	200' (61)	270' (82)	-
-20°F (-29°C)	130' (40)	175' (53)	260' (79)	270' (82)
IN120-8 If Started At				
50°F (10°C)	150' (46)	200' (61)	210' (64)	-
35°F (2°C)	130' (40)	175' (53)	200' (61)	210' (64)
0°F (-18°C)	95' (29)	125' (38)	190' (58)	210' (64)
-20°F (-29°C)	85' (26)	100' (31)	170' (52)	210' (64)
IN120-10 If Started At				
50°F (10°C)	115' (35)	150' (46)	180' (55)	-
35°F (2°C)	100' (31)	130' (40)	170' (52)	180' (55)
0°F (-18°C)	70' (21)	95' (29)	145' (44)	180' (55)
-20°F (-29°C)	60' (18)	85' (26)	120' (37)	165' (50)

IN Series - 240 VAC Breaker Size And Max. Circuit Lengths Ft. (m)

	15A	20A	30A	40A
IN240-3 If Started At				
50°F (10°C)	660' (201)	-	-	-
35°F (2°C)	580' (177)	610' (186)	660' (201)	-
0°F (-18°C)	410' (125)	560' (171)	660' (201)	-
-20°F (-29°C)	360' (110)	480' (146)	660' (201)	-
IN240-5 If Started At				
50°F (10°C)	460' (140)	540' (165)	-	-
35°F (2°C)	410' (125)	490' (149)	540' (165)	-
0°F (-18°C)	300' (91)	400' (122)	540' (165)	-
-20°F (-29°C)	260' (79)	345' (105)	520' (159)	540' (165)
IN240-8 If Started At				
50°F (10°C)	295' (90)	390' (119)	420' (128)	-
35°F (2°C)	260' (79)	340' (104)	410' (125)	-
0°F (-18°C)	195' (59)	250' (76)	375' (114)	420' (128)
-20°F (-29°C)	170' (52)	225' (69)	340' (104)	420' (128)
IN240-10 If Started At				
50°F (10°C)	230' (70)	305' (93)	360' (110)	-
35°F (2°C)	200' (61)	270' (82)	330' (100)	360' (110)
0°F (-18°C)	150' (46)	200' (61)	300' (91)	360' (110)
-20°F (-29°C)	130' (40)	175' (53)	260' (79)	360' (110)

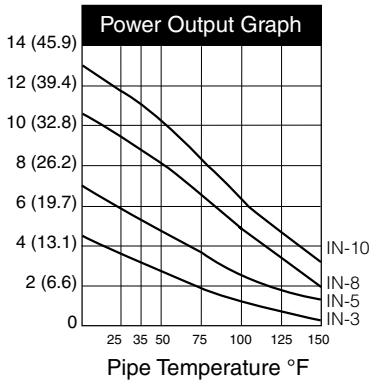
IN Series Conversion Table For Alternate Voltages

Delta-Therm 240V self-regulating heating cable is multi-voltage. It can be used in 208V, 240V, and 277V applications. The conversion table below lists voltage with various power output ratings at 50°F (10°C)

Alternate Voltages	Nominal Watts/Ft. (Watts/m) At 50°F (10°C)			
	IN240-3	IN240-5	IN240-8	IN240-10
208	2.3 (7.5)	4.3 (14.1)	7.3 (24.7)	9.3 (31.4)
240	3.0 (10.1)	5.0 (16.9)	8.0 (27.0)	10.0 (33.8)
277	3.8 (12.5)	5.8 (19.6)	8.8 (29.74)	10.8 (36.5)

Accessories

ETK-IN	End Termination Kit - FM/CSA
PCK-HLC	Power Connection Kit (Hazardous Locations)- CSA
PCK-IN	Power Connection Kit - FM
PCK-INC	Power Connection Kit - CSA
PCK-IN/MC	Power Connection Kit - FM
ETK-IN-5	End Termination Kit - FM/CSA
SPK-IN	Splice Connection Kit - FM/CSA
SPK-IN-5	Splice Connection Kit - FM/CSA
CL-S/CL-L	Small And Large Caution Labels
PC1, PC2	Polycarbonate Junction Box
T-ALXXX	Aluminum Heat Distribution Tape
T-FXXX	Fiberglass Banding Tape



Circuit Breakers

Do not use magnetic-type circuit breakers. Delta-Therm recommends using the following thermal-magnetic circuit breakers (or equivalent) to prevent nuisance tripping caused by inrush currents:

Westinghouse:	Types BA, EB, EHB, FB, HFB
Gen. Electric:	Types TEB, THED
Square D:	Types EH, FA

Use of Ground Fault Protective Devices and Tinned Copper Metallic Overshield

NEC CODE 2005, ARTICLE 427-22:

Equipment Protection. Ground-fault protection of equipment shall be provided for electric heat tracing and heating panels. This requirement shall not apply in industrial establishments where there is alarm indication of ground faults and

(1) Conditions of maintenance and supervision ensure that only qualified persons service the installed systems.

(2) Continued circuit operation is necessary for safe operation of equipment or processes.

IN Series Electrical Specifications

	IN120-3	IN120-5	IN120-8	IN120-10	IN240-3	IN240-5	IN240-8	IN240-10
Voltage	120 VAC	120 VAC	120 VAC	120 VAC	240 VAC	240 VAC	240 VAC	240 VAC
Max. Circuit Length Ft. (m)	330' (100)	270' (82)	210' (64)	180' (55)	660' (201)	540' (165)	420' (128)	360' (110)
Thermal Rating at 50°F (10°C) Watts/Ft. (Watts/m)	3 (10)	5 (16)	8 (26)	10 (33)	3 (10)	5 (16)	8 (26)	10 (33)
Maximum Maint. Temp °F (°C)	150° (66°)	150° (66°)	150° (66°C)	150° (66°)	150° (66°)	150° (66°)	150° (66°)	150° (66°)
Maximum Exp. Temp. °F (°C)	185° (85°)	185° (85°)	185° (85°)	185° (85°)	185° (85°)	185° (85°)	185° (85°)	185° (85°)

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Series (IN)
Volts (120, 240)
Watts/Ft. (3, 5, 8, 10)
Braid (CB/SS)
Optional Overjacket (T/F)
Optional Monitor Wires (M2)

NEC CODE 2005, ARTICLE 427-23:

Grounded Conductive Covering. Electric heating equipment shall be listed and have a grounded conductive covering in accordance with 427.23(A) or (B). The conductive covering shall provide an effective ground path for equipment protection.

(A) Heating Wires or Cables. Heating wires or cables shall have a grounded conductive covering that surrounds the heating element and bus wires, if any, and their electrical insulation.

(B) Heating Panels. Heating panels shall have a grounded conductive covering over the heating element and its electrical insulation on the side opposite the side attached to the surface to be heated.

The metal covering shall provided an effective ground path.

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