TRANS-HEAT, LLC.
heat tracing specialists

106 Twin Terrace Way
Spring Branch, Texas 78070-6288

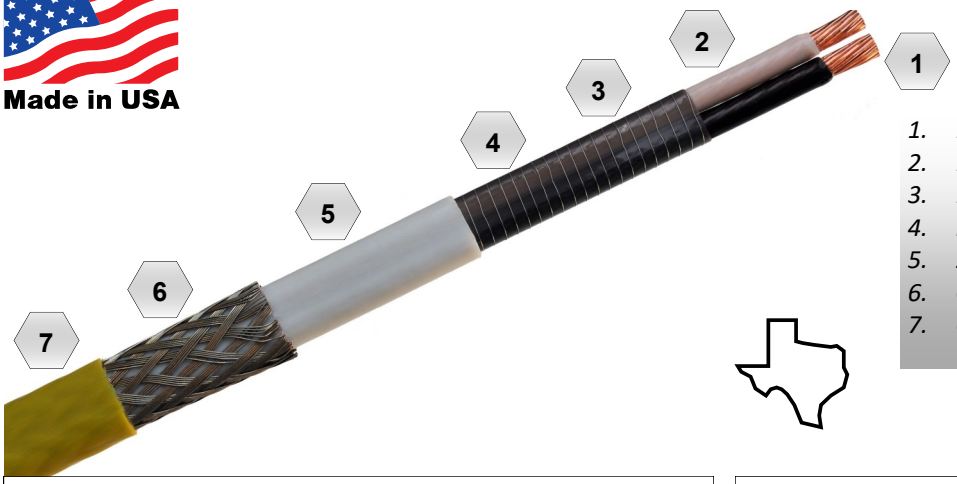
Phone: 830-438-3808
Email: sales@trans-heat.com
Web: trans-heat.com

Romans 10:11 For whosoever believes on Him shall not be ashamed.

FEP

CONSTANT WATTAGE

Made in USA



1. 12 AWG Buss Wires
2. 10 mils Insulation
3. 10 mils Insulation
4. Resistance Wire
5. 22 mils Insulation
6. Ground Braid
7. Optional 15 mil Overjacket

Heat Trace

DESCRIPTION

FEP constant wattage heater cables are parallel-resistance electric heaters that provide constant power output along the entire length of cable. FEP constant wattage heater cables are constructed of 12 AWG bright copper buss wires which allow for long circuit lengths and support maintenance temperatures up to 200°F. The fluoropolymer dielectric protects the cable from exposure temperatures up to 400°F when de-energized. This is suitable for process pipes that are periodically steam purged (150PSIG).

FEP heater cables are perfectly safe in wet areas and provide excellent protection from impact and abrasion. The ground braid provides essential grounding protection and the optional fluoropolymer overjacket protects the braid in heavily corrosive environments from organic and inorganic compounds. FEP heater cables can be completely customized to meet specific customer needs including, flexible outputs up to 15 W/Ft. and service voltages to meet site specific needs without sacrificing performance.

Unlike self-regulating cables, constant wattage is not encumbered by inrush current and typically lasts up to 4X as long and comes with a standard 10 year warranty. FEP heater cables can be cut to length in the field using standard electrical tools and should not be overlapped.

APPLICATIONS

FEP heater cables are ideally suited for all freeze protection and low to mid temperature process maintenance applications where the flow of fluid is essential. In areas requiring electric tracing such as, but not limited to: pipelines carrying chemicals, crude, lubricants, grease, water, fire suppression and de-icing of roofs and downspouts. FEP cables are also an ideal solution for frost heave prevention, natural gas compression, tank batteries, semiconductor, LNG, ammonia storage, agriculture, mining, power generation and so much more.

CSA:
Ordinary locations 2(B, E) 3C
Hazardous locations
Class 1 Div. 2 (Groups A, B, C, D)
Class 2 Div. 2 (Groups E, F, G)
Class 3 Div. 2
UL Standard 515
UL Standard 1673

C US

Note: For heater cable applications refer to National Electric Code Article 427 Fixed electric heating for pipelines and vessels.

ORDERING INFO

Example Configuration		FEP 9-277 TC		
FEP	Wattage	Voltage	Braid/Jacket	Weight/1,000'
	1-15	1=120V	TC=Tinned Copper	80 Lbs.
		2=240V	NP=Nickel Plated Copper	79 Lbs.
T Rating	T-3	4=480V	SS=Stainless Steel	80 Lbs.
			TCOJ=Fluoropolymer Jacket	90 Lbs.

Note: For other voltages not listed above (i.e. 208, 220, 277) please specify full voltage when ordering. Maximum permissible watt density, 15 W/Ft.

ALT VOLTAGE OUTPUT

Typical Heaters	110 VAC	120 VAC	208 VAC	240 VAC	277 VAC
FEP 4-1	3.3	4.0	12.0	16.0	—
FEP 6-1	5.0	6.0	18.0	—	—
FEP 9-1	7.5	9.0	—	—	—
FEP 10-2	2.1	2.5	7.5	10.0	13.3
FEP 15-2	3.1	3.8	11.3	15.0	20.0

Note: Dashed lined indicates cable failure imminent.

*To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with **National Electric Code (NEC) Article 427.22** requirements, agency certifications, and local codes, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection. Ground fault protection is the responsibility of the end user and should be installed by a certified electrician.*

It is highly recommended that all heat trace systems be connected to a control device to limit inrush potential and circuit breaker issues. Control devices also extend the life of all heat trace systems.

ACCESSORIES

PL-1	Power Connection Kit
EC-1CW	End Termination Kit
ESK-12	Inline Splice Kit
TSK-12	Tee Splice Kit
AL-1	Aluminum Tape
FG-1	Fiberglass Tape
TD-1	Snap Action Thermostat
TF115	Ambient Sensing Thermostat
TRF115	Line Sensing Thermostat

Note: Not all accessories are listed. See catalog for additional listings.

MAX CIRCUIT LENGTH

Sample Heaters	0 Ft.	50 Ft.	100 Ft.	150 Ft.	200 Ft.	250 Ft.	300 Ft.	400 Ft.	500 Ft.
FEP 3-1	3.0	2.99	2.98	2.94	2.90	2.85	2.79	2.64	2.46
FEP 5-1	5.0	4.98	4.93	4.84	4.73	4.59	4.42	4.04	3.62
FEP 3-2	3.0	3.0	3.0	2.99	2.98	2.96	2.95	2.90	2.85
FEP 8-2	8.0	7.99	7.96	7.90	7.83	7.73	7.63	7.35	7.03
FEP 15-2	15.0	14.96	14.84	14.65	14.39	14.08	13.68	—	—
FEP 4-277	4.0	3.99	3.99	3.98	3.96	3.95	3.92	3.87	3.80
FEP 8-277	8.0	7.98	7.96	7.92	7.86	7.79	7.71	7.50	7.25

Note: Dashed line indicates drop off exceeds output minimums or amperage exceeds conductor limitations.

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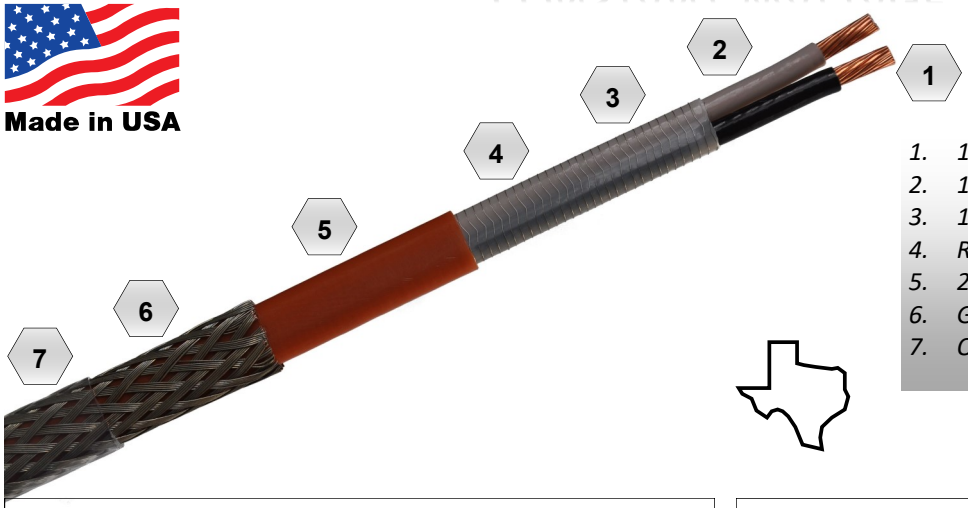
FEP-LT

CONSTANT WATTAGE

Heat Trace

Made in USA



1. 14 AWG Buss Wires
2. 10 mils Insulation
3. 10 mils Insulation
4. Resistance Wire
5. 22 mils Insulation
6. Ground Braid
7. Optional 15 mil Overjacket

DESCRIPTION

FEP-LT constant wattage heater cables are parallel-resistance electric heaters that provide constant power output along the entire length of cable. FEP-LT constant wattage heater cables are constructed of 14 AWG bright copper buss wires which allow for long circuit lengths and support maintenance temperatures up to 150°F. The fluoropolymer dielectric protects the cable from exposure temperatures up to 400°F when de-energized. This is suitable for process lines that are periodically steam purged (150 PSIG).

FEP-LT heater cables are perfectly safe in wet areas and provide excellent protection from impact and abrasion. The ground braid provides essential grounding protection and the optional fluoropolymer overjacket protects the braid in heavily corrosive environments from organic and inorganic compounds. FEP-LT heater cables can be custom tailored to meet specific customer needs including, flexible power outputs up to 7 W/Ft., flexible service voltages up to 277V and broad choice in colors for identification or aesthetic purposes.

Unlike self-regulating heater cables, FEP-LT cables are not limited to predetermined voltages and do not exhibit inrush. FEP -LT cables typically last up to 4X as long as self-regulating heater cables and come with a standard 10 year warranty. FEP-LT heater cables can be cut to length in the field using standard electrical tools and should not be overlapped.

APPLICATIONS

FEP-LT heater cables are ideally suited for all freeze protection and low temperature process maintenance applications where the flow of fluid is essential. In areas requiring electric tracing such as, but not limited to: pipelines carrying chemicals, lubricants, water, fire suppression and de-icing of roofs and downspouts. FEP cables are also an ideal solution for frost heave prevention, spiral freezers, vessel heating, ammonia storage, agriculture, mining, power generation and so much more.

CSA:
Ordinary locations 2(B, E) 3C
Hazardous locations
Class 1 Div. 2 (Groups A, B, C, D)
Class 2 Div. 2 (Groups E, F, G)
Class 3 Div. 2
UL Standard 515
UL Standard 1673

C US

Note: For heater cable applications refer to National Electric Code Article 427 Fixed electric heating for pipelines and vessels.

ORDERING INFO

Example Configuration		FEP-LT 6-208 TCOJ		
FEP-LT	Wattage	Voltage	Braid/Jacket	Weight/1,000'
	1-8	1=120V	TC=Tinned Copper	80 Lbs.
		2=240V	NP=Nickel Plated Copper	79 Lbs.
T Rating	T-3		SS=Stainless Steel	80 Lbs.
			TCOJ=Fluoropolymer Jacket	90 Lbs.

Note: For other voltages not listed above (i.e. 208, 220, 277) please specify full voltage when ordering. Maximum permissible watt density, 7 W/Ft.

ALT VOLTAGE OUTPUT

Typical Heaters	110 VAC	120 VAC	208 VAC	240 VAC	277 VAC
FEP-LT 4-1	3.3	4.0	—	—	—
FEP-LT 6-1	5.0	6.0	—	—	—
FEP-LT 7-1	5.8	7.0	—	—	—
FEP-LT 4-2	—	—	3.0	4.0	5.3
FEP-LT 6-2	—	—	4.5	6.0	8.0
FEP-LT 7-2	—	—	5.2	7.0	9.3

Note: Dashed lined indicates cable failure imminent or no appreciable output.

ACCESSORIES

PL-1	Power Connection Kit
EC-1CW	End Termination Kit
ESK-14	Inline Splice Kit
TSK-14	Tee Splice Kit
AL-1	Aluminum Tape
FG-1	Fiberglass Tape
A419	Snow Melt Controller
TF115	Ambient Sensing Thermostat
TRF115	Line Sensing Thermostat

Note: Not all accessories are listed. See catalog for additional listings.

*To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with **National Electric Code (NEC) Article 427.22** requirements, agency certifications, and local codes, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection. Ground fault protection is the responsibility of the end user and should be installed by a certified electrician.*

It is highly recommended that all heat trace systems be connected to a control device to limit inrush potential and circuit breaker issues. Control devices also extend the life of all heat trace systems.

MAX CIRCUIT LENGTH

Sample Heaters	0 Ft.	50 Ft.	100 Ft.	150 Ft.	200 Ft.	250 Ft.	300 Ft.	400 Ft.	500 Ft.
FEP-LT 4-1	4.0	3.98	3.93	3.86	3.75	3.62	3.47	3.13	—
FEP-LT 6-1	6.0	5.96	5.85	5.68	5.45	5.17	4.87	—	—
FEP-LT 8-1	8.0	7.93	7.74	7.44	7.04	—	—	—	—
FEP-LT 3-2	3.0	3.00	2.99	2.98	2.96	2.94	2.92	2.86	2.78
FEP-LT 6-2	6.0	5.99	5.96	5.92	5.78	5.68	5.58	5.45	5.18
FEP-LT 4-277	4.0	3.99	3.98	3.97	3.95	3.92	3.89	3.81	3.71
FEP-LT 8-277	8.0	7.98	7.94	7.88	7.80	7.69	7.57	7.26	6.90

Note: Dashed line indicates drop off exceeds output minimums or amperage exceeds conductor limitations.

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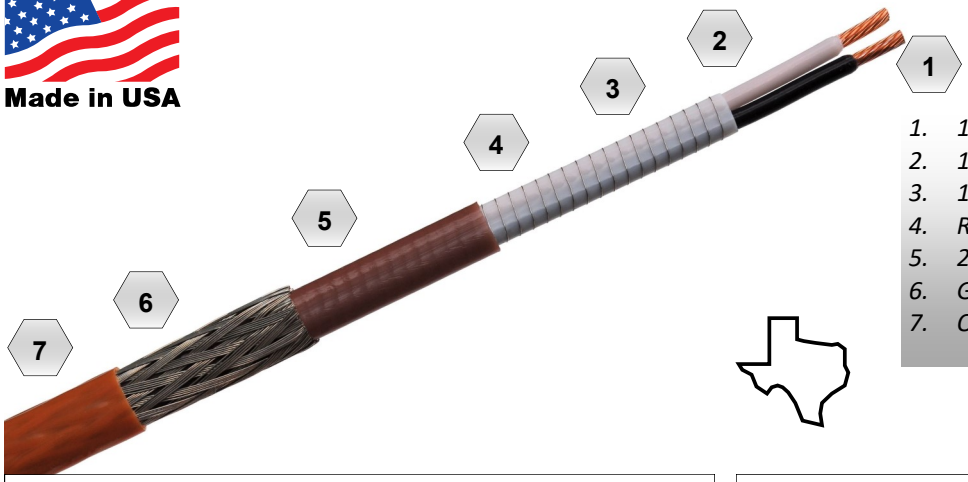
FEP-M

CONSTANT WATTAGE

Made in USA



1. 16 AWG Buss Wires
2. 10 mils Insulation
3. 10 mils Insulation
4. Resistance Wire
5. 22 mils Insulation
6. Ground Braid
7. Optional 15 mil Overjacket

Heat Trace

DESCRIPTION

FEP-M constant wattage heater cables are parallel-resistance electric heaters that provide constant power output along the entire length of cable. FEP-M constant wattage heater cables are constructed of 16 AWG bright copper buss wires which allow for long circuit lengths and support maintenance temperatures up to 150°F. The fluoropolymer dielectric protects the cable from exposure temperatures up to 400°F when de-energized. This is suitable for process lines that are periodically steam purged (150 PSIG).

FEP-M heater cables are perfectly safe in wet areas and provide excellent protection from impact and abrasion. The ground braid provides essential grounding protection and the optional fluoropolymer overjacket protects the braid in heavily corrosive environments from organic and inorganic compounds. FEP-M heater cables can be custom tailored to meet specific customer needs including, flexible power outputs up to 7 W/Ft., flexible service voltages up to 277V and broad choice in colors for identification or aesthetic purposes.

Unlike self-regulating heater cables, FEP-M cables are not limited to predetermined voltages and do not exhibit inrush characteristics. FEP-M cables typically last up to 4X as long as self-regulating heater cables and come with a standard 10 year warranty. FEP-M heater cables can be cut to length in the field using standard electrical tools and should not be overlapped.

APPLICATIONS

FEP-M constant wattage heater cables are excellent for all types of low-process temperature and freeze protection applications. FEP-M heater cables can be used in a wide variety of applications including pipe freeze protection, de-icing of freezer doors, condensate drains, radiant heating. FEP-M heater cables provide outstanding mechanical properties, ease of in-field fabrication and complete freeze protection at an affordable price.

CSA:
Ordinary locations 2(B, E) 3C
Hazardous locations
Class 1 Div. 2 (Groups A, B, C, D)
Class 2 Div. 2 (Groups E, F, G)
Class 3 Div. 2
UL Standard 515
UL Standard 1673

C US

Note: For heater cable applications refer to National Electric Code Article 427 Fixed electric heating for pipelines and vessels.

ORDERING INFO

Example Configuration		FEP-M 7-277 TCOJ		
FEP-M	Wattage	Voltage	Braid/Jacket	Weight/1,000'
	1-7	1=120V	TC=Tinned Copper	54 Lbs.
		2=240V	NP=Nickel Plated Copper	53 Lbs.
T Rating	T-3		SS=Stainless Steel	54 Lbs.
			TCOJ=Fluoropolymer Jacket	61 Lbs.

Note: For other voltages not listed above (i.e. 208, 220, 277) please specify full voltage when ordering. Maximum permissible watt density, 7 W/Ft.

ALT VOLTAGE OUTPUT

Typical Heaters	110 VAC	120 VAC	208 VAC	240 VAC	277 VAC
FEP-M 3-1	2.52	3.00	9.01	—	—
FEP-M 5-1	4.20	5.00	—	—	—
FEP-M 7-1	5.88	7.00	—	—	—
FEP-M 3-2	—	0.75	2.25	3.00	3.99
FEP-M 5-2	—	1.25	3.76	5.00	6.67
FEP-M 7-2	—	1.75	5.25	7.00	9.32

Note: Dashed lined indicates cable failure imminent or no appreciable output.

ACCESSORIES

PL-1	Power Connection Kit
EC-1CW	End Termination Kit
ESK-14	Inline Splice Kit
TSK-14	Tee Splice Kit
AL-1	Aluminum Tape
FG-1	Fiberglass Tape
TD-1	Snap Action Thermostat
TF115	Ambient Sensing Thermostat
TRF115	Line Sensing Thermostat

Note: Not all accessories are listed. See catalog for additional listings.

*To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with **National Electric Code (NEC) Article 427.22** requirements, agency certifications, and local codes, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection. Ground fault protection is the responsibility of the end user and should be installed by a certified electrician.*

It is highly recommended that all heat trace systems be connected to a control device to limit inrush potential and circuit breaker issues. Control devices also extend the life of all heat trace systems.

MAX CIRCUIT LENGTH

Sample Heaters	0 Ft.	50 Ft.	100 Ft.	150 Ft.	200 Ft.	250 Ft.	300 Ft.	400 Ft.	500 Ft.
FEP-M 3-1	3.00	2.98	2.94	2.86	2.77	2.65	2.52	2.20	1.90
FEP-M 5-1	5.00	4.98	4.83	4.63	4.37	4.08	3.75	—	—
FEP-M 7-1	7.00	6.92	6.68	6.30	5.83	5.29	4.74	—	—
FEP-M 3-2	3.00	3.00	2.99	2.98	2.96	2.94	2.91	2.85	2.77
FEP-M 7-2	7.00	6.98	6.92	6.81	6.68	6.50	6.30	5.83	—
FEP-M 3-277	3.00	3.00	2.99	2.99	2.98	2.96	2.95	2.91	2.86
FEP-M 7-277	7.00	6.95	6.95	6.88	6.79	6.68	6.55	6.23	5.85

Note: Dashed line indicates drop off exceeds output minimums or amperage exceeds conductor limitations.

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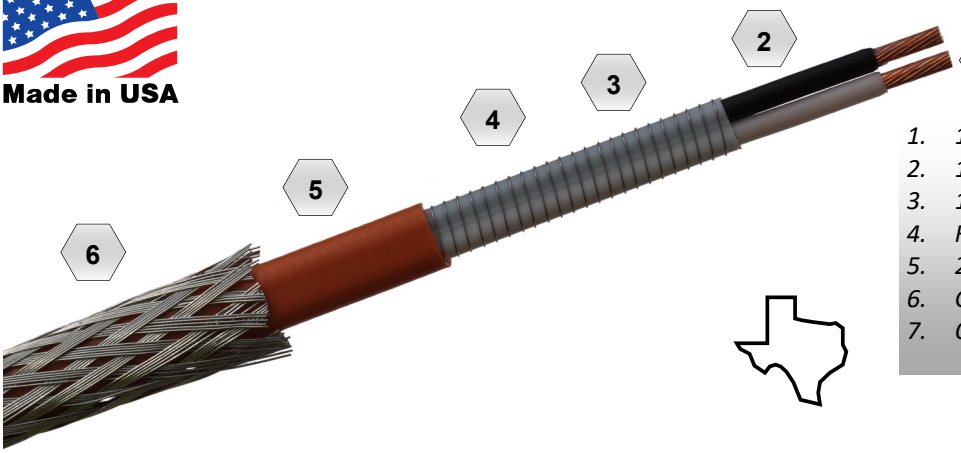
FEP-LV

CONSTANT WATTAGE

Made in USA

Heat Trace



1. 16 AWG Buss Wires
2. 10 mils Insulation
3. 10 mils Insulation
4. Resistance Wire
5. 22 mils Insulation
6. Ground Braid
7. Optional 15 mil Overjacket

DESCRIPTION

FEP-LV low volt constant wattage heater cables are parallel-resistance electric heaters that provide constant power output along the entire length of cable using 12V or 24V power. FEP-LV low volt cables are the only choice for mobile operations or where regular line voltages are unavailable in rural settings such as shale plays. FEP-LV is constructed of 16 AWG bright copper buss wires which offer exceptional flexibility and small surface area for confined spaces while supporting maintenance temperatures up to 150°F. The fluoropolymer dielectric can withstand exposure temperatures up to 400°F while de-energized and is perfectly safe in wet areas and provides excellent protection from impact, abrasion and UV. The ground braid facilitates grounding & provides mechanical protection. An optional overjacket further protects the braid in heavily corrosive environments against organic/inorganic compounds. And like all constant wattage type heating cables, FEP-LV cables are immune to inrush current & last up to 4X as long as self-regulating cables offering a much greater return-on-investment. FEP-LV low volt heater cables can be cut to length in the field using standard electrical tools and are approved for use in ordinary & Class 1 Division 2 hazardous locations.

APPLICATIONS

FEP-LV low volt heater cables are ideally suited for freeze protection and some mild process temperature applications. Common applications are pipelines, natural gas & oil well-sites, automation & control instrumentation, skid units, de-icing of remote radio/telecomm & meteorological instrumentation, mobile fluid transport, agricultural & much more!

ORDERING INFO

Example Configuration		FEP-LV 5-1 TC		
FEP-LV	Watts/Foot	Voltage	Braid/Jacket	Weight/1,000'
	3,5,7	1=12V	TC=Tinned Copper	40 Lbs.
		2=24V	NP=Nickel Plated Copper	42 Lbs.
T Rating	T-3		TCOJ=Fluoropolymer Jacket	50 Lbs.
Note: AC or DC voltages are permissible depending on power source. Custom outputs available upon review/approval. 500 Ft. minimum order.				

ALT VOLTAGE OUTPUT

Typical Heaters	12VDC	24VDC
FEP-LV 3-1	3.0	12.0
FEP-LV 3-2	0.75	3.0
FEP-LV 5-1	5.0	—
FEP-LV 5-2	1.25	5.0
FEP-LV 7-1	2.1	—
FEP-LV 7-2	1.75	7.0
Note: Dashed lined indicates cable failure imminent or no appreciable output.		

ACCESSORIES

PL-1	Power Connection Kit
EC-1CW	End Termination Kit
ESK-14	Inline Splice Kit
TSK-14	Tee Splice Kit
AL-1	Aluminum Tape
FG-1	Fiberglass Tape
TD-1	Snap Action Thermostat
TF115	Ambient Sensing Thermostat
TRF115	Line Sensing Thermostat

Note: Not all accessories are listed. See catalog for additional listings.

MAX CIRCUIT LENGTH

Sample Heaters	0 Ft.	5 Ft.	10 Ft.	15 Ft.	20 Ft.	25 Ft.	30 Ft.	35 Ft.	40 Ft.
FEP-LV 3-1	3.0	2.95	2.84	2.66	2.45	2.21	1.96	—	—
FEP-LV 3-2	3.0	2.99	2.96	2.91	2.84	2.78	2.67	2.57	2.46
FEP-LV 5-1	5.0	4.98	4.65	4.19	3.65	—	—	—	—
FEP-LV 5-2	5.0	4.96	4.87	4.75	4.60	4.37	4.16	3.89	3.60
FEP-LV 7-1	7.0	6.76	6.16	5.36	4.48	—	—	—	—
FEP-LV 7-2	7.0	6.94	6.78	6.53	6.20	5.11	5.4	4.96	4.52
Note: Dashed line indicates drop off exceeds output minimums or amperage exceeds conductor limitations.									

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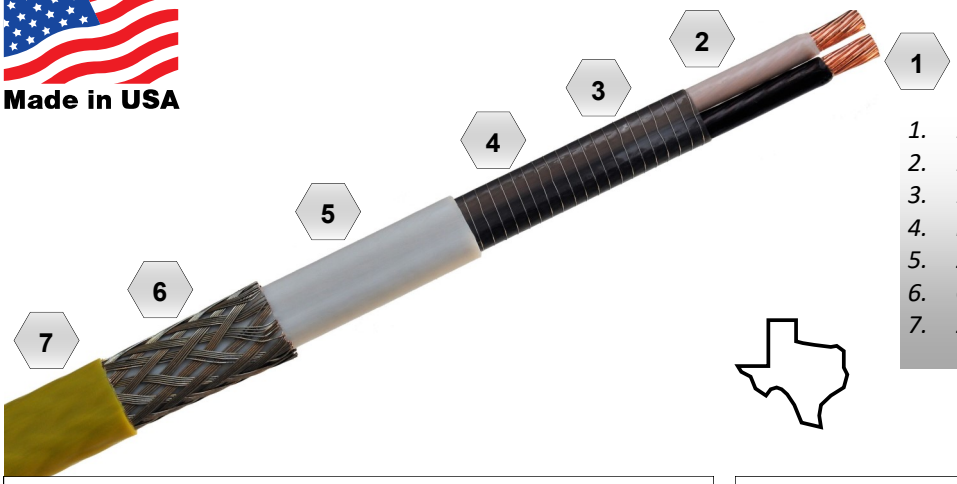
SM-C

CONSTANT WATTAGE SNOW MELT

Made in USA



1. 12 AWG Buss Wires
2. 10 mils Insulation
3. 10 mils Insulation
4. Resistance Wire
5. 22 mils Insulation
6. Ground Braid
7. 20 mils Overjacket

Heat Trace

DESCRIPTION

SM-C snow melting cable is a constant wattage, parallel-resistance electric heater that provides constant power output along the entire length of cable. SM-C snow melting cable is constructed of 12AWG bright copper buss wires which allow for exceptionally long circuit lengths. The fluoropolymer insulation protects the cable from high exposure temperatures which makes it ideal for all asphalt installations. It also sufficiently protects the cable during installation and when encapsulated in concrete/asphalt.

Unlike other snow melting brands on the market that use low temperature PVC for insulation SM-C cables offer extreme durability, ruggedness, and withstands the harshest conditions. SM-C cables offers mineral insulated type longevity for less than leading brand snow melting mats. The quality of SM-C cable is unparalleled and offers much more than typical mats. SM-C cables conform to any type area to be traced. Simply spool off cable, attach to mesh and terminate. No need for distributors to stock or order 15-20 different mat sizes.

SM-C cables generate 45W/Ft.² on 6" centers and can be spaced as far apart as 9" for an efficient radiating pattern that eliminates ice-ridging or striping of un-melted snow/ice. SM-C cables can be paired with any number of mechanical, electronic snow melting controls for an energy efficient, reliable system.

APPLICATIONS

SM-C snow melting cables can be used in all direct burial concrete applications where cable is 1-1/2"-2" below grade. SM-C cable is ideally suited for all asphalt installations where high exposure temperature is a concern. Most mat heaters, snow melting cables cannot withstand asphalt application temperatures which result in cable destruction or degraded system performance due to weakened dielectric. This is because other manufacturers use low cost insulating materials in their construction. SM-C cables can be used in all classes of snow melting!

Example Configuration		**SM-24C**	
SM-C	Voltage		Weight/Lbs.
	12=120V	27=277V	500'=47
	28=208V	37=347V	1,000'=92
	22=220V	48=480V	1,500'=140
	24=240V		
Note: Standard put-ups 500', 1,000', 1,500'. 120-277V/36" zones. 347-480V/48" zones. Min. order 500'.			

ORDERING INFO

Voltage	Table 4 **SM-C Circuit Lengths vs. Breaker Sizing (P)**				
	15A (23)	20A (22)	30A (21)	40A (20)	50A (18)
208VAC	**110**	**140**	**200**	**300**	**400**
240VAC	**120**	**170**	**250**	**350**	**450**
277VAC	**140**	**190**	**300**	**400**	**500**
Note: P=Heating cable output at the end-of-circuit. Determine spacing with these outputs. Circuit lengths are based on 20% breaker de-rating per National Electric Code.					

CIRCUIT LENGTH/BREAKER SIZE

SMC-TK	Termination Kit for SM-C
SMC-SK	Splice Kit for SM-C
CT-1	Cable Ties (50/Pack)
RPC-SM	Power Connection Kit for SM
RTC-SM	Multi-Entry Kit for SM
AIC-4	Snow Melting Control 10A
RSD4.5	Snow Melting Control 50A

ACCESSORIES

Note: Not all accessories are listed. See catalog for additional listings.

*To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with **National Electric Code (NEC) Article 427.22** requirements, agency certifications, and local codes, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection. Ground fault protection is the responsibility of the end user and should be installed by a certified electrician.*

It is highly recommended that all heat trace systems be connected to a control device to limit inrush potential and circuit breaker issues. Control devices also extend the life of all heat trace systems.

Heaters	**0'**	**50'**	**100'**	**150'**	**200'**	**250'**	**300'**	**350'**	**400'**	**500'**	**600'**	**650'**	**700'**	**800'**	**900'**
SM-12C	23.0	22.68	21.79	20.42	18.73	—	—	—	—	—	—	—	—	—	—
SM-28C	23.0	22.89	22.58	22.09	21.43	20.62	19.7	18.69	17.61	—	—	—	—	—	—
SM-22C	23.0	22.9	22.63	22.19	21.59	20.86	20.01	19.08	18.08	—	—	—	—	—	—
SM-24C	23.0	22.92	22.69	22.31	21.8	21.18	20.45	19.64	18.76	—	—	—	—	—	—
SM-27C	23.0	22.93	22.76	22.48	22.09	21.61	21.04	20.4	19.7	18.15	—	—	—	—	—
SM-48C	23.0	22.98	22.93	22.85	22.74	22.59	22.4	22.22	22.0	21.45	20.82	20.48	20.12	19.34	18.52
Note: Circuit lengths based on 50A breaker with 20% de-rating. Dashed line indicates drop off exceeds output minimums or amperage exceeds breaker safety envelope. To determine circuit lengths using smaller breaker sizes interpolate from chart and de-rate breaker by 20%.															

MAX CIRCUIT LENGTH

TRANS-HEAT, LLC.
heat tracing specialists

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Romans 10:11 For whosoever believes on Him shall not be ashamed.

TSL

SELF-REGULATING

Made in USA

1. 16 AWG Buss Wires
2. Conductive Core
3. Polyolefin Jacket
4. Tinned Copper Braid
5. Optional Overjacket

Heat Trace

DESCRIPTION

TSL low temperature self-regulating heater cable regulates it's heat output throughout the entire length of the circuit in response to ambient temperature changes. The self-regulating core increases its heat output as the ambient temperature drops; and decreases its output as the temperature rises. TSL self-regulating heater cables are constructed of industrial grade materials and are approved for use in Division 1* & 2 hazardous areas. TSL heater cables can maintain temperatures up to 150°F and have an intermittent exposure temperature of 185°F when energized. The optional thermoplastic R jacket offers corrosion resistance against certain inorganic chemicals, while the fluoro-polymer T jacket protects the cable from both organic and inorganic chemicals. Either jacket offers exceptional protection against impact damage, abrasion and wet environments. As with all parallel type heater cables TSL can be cut to length in the field using standard electrical tools and will not overheat or burnout when overlapped.

APPLICATIONS

TSL self-regulating heater cables provide freeze protection and process temperature maintenance for fluid transport and storage systems. TSL self-regulating heater cables are also ideal for roof & gutter, snow-melting/de-icing, cryogenic, fire suppression, domestic hot-water and various other applications. TSL cables are also safe for use on plastic pipes up to 5 W/Ft.*

* Use of conductive media such as foil tapes and heat transfer mastic highly recommended.

Factory Mutual:
Ordinary locations
Hazardous locations
- Class 1 Div. 1* & 2 (Groups B, C, D)
- Class 2 Div. 2 (Groups F, G)
- Class 3 Div. 1* & 2

CSA:
Ordinary locations 2E, 3(A, B, C), 5(A, B)
Hazardous locations
- Class 1 Div. 1* & 2 (Groups A, B, C, D)
- Class 2 Div. 1* & 2 (Groups E, F, G)
- Class 3 Div. 1* & 2

UL:
Roof & Gutter
Hot Water Maintenance

Note: For heater cable applications refer to National Electric Code Article 427 Fixed electric heating for pipelines and vessels.

ORDERING INFO

Example Configuration		TSL 8-1 R		Weight/1000'		Dimensions	
TSL	Wattage	Voltage	Braid/Jacket	3W-5W	8W-10W	3W-5W	8W-10W
*HTSL	3, 5, 8, 10	1=120V	C=Tinned Copper Braid	73 Lbs.	80 Lbs.		
T Rating	T-6 (3, 5, 8 W) T-5 (10 W)	2=240V	R=Rubber Jacket	87 Lbs.	94 Lbs.	.446"x.267"	.520"x.247"
			T=Fluoropolymer Jacket	93 Lbs.	100 Lbs.	.436"x.250"	.510"x.230"

** HTSL cables must be configured with a T jacket by default. Factory Mutual requires criteria form to be completed before ordering HTSL. T rating per 1999 NEC Table 500-5(d).*

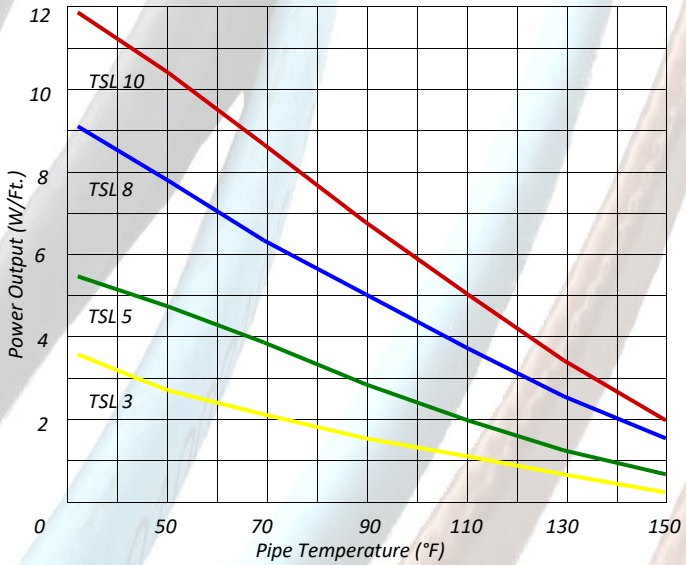
ACCESSORIES

RPC-X	Power Connection Kit
RSL-X	20-277V Monitor Light Kit
RTC-X	Multi-Entry Kit
A419	Snow Melt Controller
AL-1	Aluminum Tape
FG-1	Fiberglass Tape
TD-1	Snap Action Thermostat
TF115	Ambient Sensing Thermostat
TRF115	Line Sensing Thermostat

Note: Not all accessories are listed. See catalog for additional listings.

ALL VOLTAGE OUTPUT

Typical Heaters	208 VAC	220 VAC	240 VAC	277 VAC
TSL 3-2	2.25	2.65	3.00	3.84
TSL 5-2	4.30	4.67	5.00	5.80
TSL 8-2	7.28	7.66	8.00	8.80
TSL 10-2	9.30	9.67	10.0	10.8



*To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with **National Electric Code (NEC) Article 427.22** requirements, agency certifications, and local codes, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection. Ground fault protection is the responsibility of the end user and should be installed by a certified electrician.*

It is highly recommended that all heat trace systems be connected to a control device to limit inrush potential and circuit breaker issues. Control devices also extend the life of all heat trace systems.

MAX CIRCUIT LENGTH

Typical Heaters	50°F Start-Up (Ft.)				0°F Start-Up (Ft.)				-20°F Start-Up (Ft.)			
	15A	20A	30A	40A	15A	20A	30A	40A	15A	20A	30A	40A
TSL 3-1	300	NR	NR	NR	200	270	330	NR	180	230	330	NR
TSL 3-2	660	NR	NR	NR	410	560	660	NR	360	480	660	NR
TSL 5-1	230	270	NR	NR	150	200	270	NR	130	175	260	270
TSL 5-2	460	540	NR	NR	300	400	540	NR	260	345	520	540
TSL 8-1	150	200	210	NR	95	125	190	210	85	100	170	210
TSL 8-2	295	390	420	NR	195	250	375	420	170	225	340	420
TSL 10-1	115	150	180	NR	70	95	145	180	60	85	120	165
TSL 10-2	230	305	360	NR	150	200	300	360	130	175	260	360

NR= Not Required. Maximum circuit length has been achieved using smaller size breaker.

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TSL-M

SELF-REGULATING

Made in USA

1. 16 AWG Buss Wires
2. Conductive Core
3. Polyolefin Jacket
4. Tinned Copper Braid
5. Optional Overjacket

Heat Trace

DESCRIPTION

TSL-M medium temperature self-regulating heater cable regulates it's output throughout the entire length of the circuit in response to ambient temperature changes. The self-regulating core increases it's output as ambient temperature drops; and decreases it's output as ambient temperature rises. TSL-M self-regulating cables are constructed of industrial grade materials and are approved for use in Division 1 & 2 hazardous areas. TSL-M heater cables can maintain temperatures up to 250°F and have an intermittent exposure temperature of 366°F when energized. The optional fluoropolymer jacket offers corrosion and abrasion resistance against organic & inorganic chemicals. TSL-M cables can also withstand steam purging temperatures up to 150PSIG saturated on process lines. As with all parallel type heater cables, TSL-M can be cut to length in the field using standard electrical tools and will not overheat or burnout when overlapped.*

APPLICATIONS

TSL-M self-regulating heater cables provide freeze protection and process temperature maintenance for fluid transport and storage systems. TSL-M heater cables are also beneficial for use where periodic cleaning of process lines is performed and various other applications requiring high heat delivery.

Factory Mutual:
Ordinary locations
Hazardous locations
- *Class 1 Div. 1* & 2 (Groups B, C, D)*
- *Class 2 Div. 2 (Groups F, G)*
- *Class 3 Div. 1* & 2*

CSA:
Ordinary locations 2E, 3(A, B, C), 5(A, B)
Hazardous locations
- *Class 1 Div. 1* & 2 (Groups A, B, C, D)*
- *Class 2 Div. 1* & 2 (Groups E, F, G)*
- *Class 3 Div. 1* & 2*

Note: For heater cable applications refer to National Electric Code Article 427 Fixed electric heating for pipelines and vessels.

ORDERING INFO

Example Configuration		TSL-M 15-1 T			
TSL-M	Wattage	Voltage	Braid/Jacket	Weight/1,000'	Dimensions
* HTSL-M	5, 10, 15	1=120V	C=Tinned Copper Braid	100 Lbs.	.600"x.250"
T Rating	T-3	2=240V	T=Fluoropolymer Jacket	137 Lbs.	.607"x.260"

* HTSL-M cables must be configured with a T jacket by default. Factory Mutual requires criteria form to be completed before ordering HTSL-M. T rating per 1999 NEC Table 500-5(d).

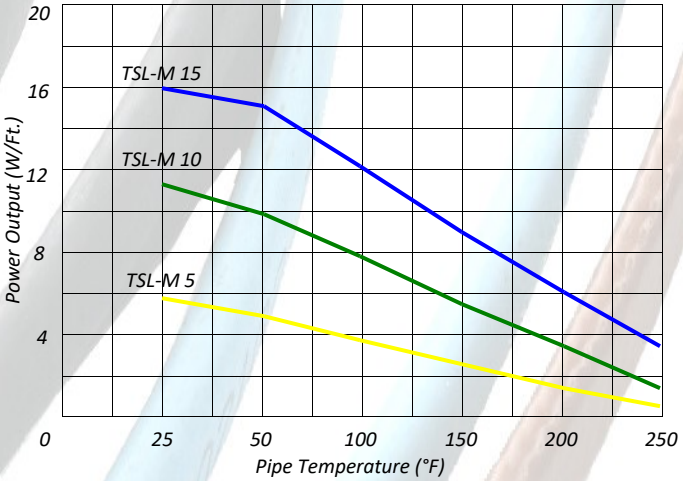
ACCESSORIES

RPC-X	Power Connection Kit
RSL-X	20-277V Monitor Light Kit
RTC-X	Multi-Entry Kit
A419	Snow Melt Controller
AL-1	Aluminum Tape
FG-1	Fiberglass Tape
TD-1	Snap Action Thermostat
TF115	Ambient Sensing Thermostat
TRF115	Line Sensing Thermostat

Note: Not all accessories are listed. See catalog for additional listings.

ALL VOLTAGE OUTPUT

Typical Heaters	208 VAC	220 VAC	240 VAC	277 VAC
TSL-M 5-2	3.90	4.43	5.00	6.25
TSL-M 10-2	8.60	9.40	10.0	11.6
TSL-M 15-2	13.8	14.2	15.0	16.3



To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with **National Electric Code (NEC) Article 427.22** requirements, agency certifications, and local codes, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection. Ground fault protection is the responsibility of the end user and should be installed by a certified electrician.

It is highly recommended that all heat trace systems be connected to a control device to limit inrush potential and circuit breaker issues. Control devices also extend the life of all heat trace systems.

MAX CIRCUIT LENGTH

Typical Heaters	50°F Start-Up (Ft.)				0°F Start-Up (Ft.)				-40°F Start-Up (Ft.)			
	15A	20A	30A	40A	15A	20A	30A	40A	15A	20A	30A	40A
TSL-M 5-1	150	200	240	NR	135	180	220	NR	130	170	210	NR
TSL-M 5-2	250	330	480	NR	230	305	440	NR	220	295	420	NR
TSL-M 10-1	90	120	180	NR	85	110	165	NR	80	105	160	NR
TSL-M 10-2	140	190	280	NR	130	175	260	NR	125	170	250	NR
TSL-M 15-1	70	90	130	NR	65	85	125	NR	60	80	120	NR
TSL-M 15-2	100	135	200	NR	95	125	185	NR	90	120	180	NR

NR= Not Required. Maximum circuit length has been achieved using smaller size breaker.

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TSL-H

SELF-REGULATING

Made in USA

1. *16 AWG Buss Wires*
2. *Conductive Core*
3. *Polyolefin Jacket*
4. *Tinned Copper Braid*
5. *Optional Overjacket*

Heat Trace

DESCRIPTION

TSL-H high temperature self-regulating heater cable regulates it's output throughout the entire length of the circuit in response to ambient temperature changes. The self-regulating core increases it's output as the ambient temperature drops; and decreases it's output as the temperature rises. TSL-H self-regulating heater cables are constructed of industrial grade materials and are approved for use in Division 1 & 2 hazardous areas. TSL-H heater cables can maintain temperatures up to 375°F and have an intermittent exposure temperature of 450°F when energized. The optional fluoropolymer jacket offers corrosion & abrasion resistance against organic & inorganic chemicals. TSL-H cables can also withstand steam purging temperatures up to 190PSIG saturated on process lines. As with all parallel type heater cables, TSL-H can be cut to length in the field using standard electrical tools and will not overheat or burnout when overlapped.*

APPLICATIONS

TSL-H heater cables are ideally suited for all freeze protection and mid temperature process maintenance applications where the flow of fluid is essential. In areas requiring electric tracing such as, but not limited to: pipelines carrying chemicals, crude, emulsions, steam lines, gas compression, semiconductor, LNG, mining, power generation, combined cycle, and so much more.

Factory Mutual:
Ordinary locations
Hazardous locations
- *Class 1 Div. 1* (Groups B, C, D)*
- *Class 1 Div. 2 (Groups A, B, C, D)*
- *Class 2 & 3 Div. 1* (Groups E, F, G)*
- *Class 2 & 3 Div. 2 (Groups F, G)*
- *Class 3 Div. 1* & 2*

CSA:
Ordinary locations 3(A, B, C), 5(A, B)
Hazardous locations
- *Class 1 Div. 1* & 2 (Groups B, C, D)*
- *Class 2 Div. 2 (Groups F, G)*

** Contact representative for more information.*
Note: For heater cable applications refer to National Electric Code Article 427 Fixed electric heating for pipelines and vessels.

ORDERING INFO

Example Configuration		TSL-H 15-1 T			
TSL-H	Wattage	Voltage	Braid/Jacket	Weight/1,000'	Dimensions
* HTSL-H	5, 10, 15, 20, 25, 30	1=120V	C=Tinned Copper Braid	85 Lbs.	.485"x.215"
T Rating	T-2C	2=240V	T=Fluoropolymer Jacket	113 Lbs.	.500"x.230"

* HTSL-H (Hazardous) cables must be configured with a T jacket by default. Factory Mutual requires criteria form to be completed before ordering. T rating per 1999 NEC Table 500-5(d). ± 10% random lengths, 200' min., 200'-500' range, 300' avg.

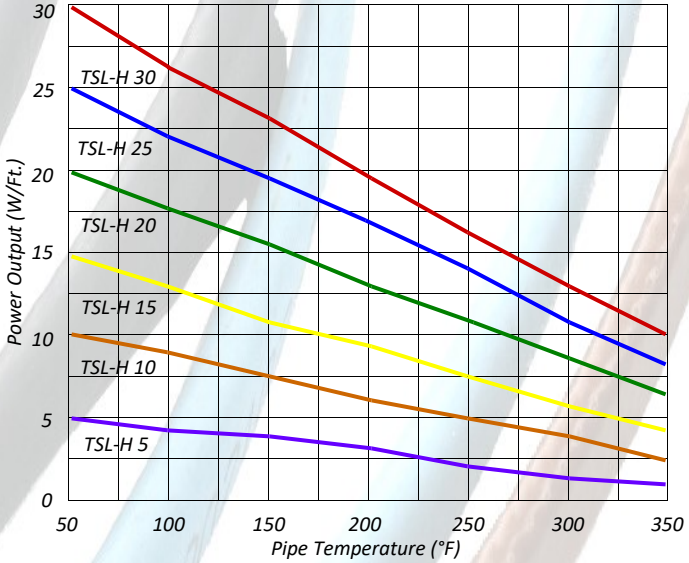
ACCESSORIES

RPC-X	Power Connection Kit
RSL-X	20-277V Monitor Light Kit
RTC-X	Multi-Entry Kit
A419	Snow Melt Controller
AL-1	Aluminum Tape
FG-3	Fiberglass Tape
TD-1	Snap Action Thermostat
TF115	Ambient Sensing Thermostat
TRF115	Line Sensing Thermostat

Note: Not all accessories are listed. See catalog for additional listings.

AT VOLTAGE OUTPUT

Typical Heaters	208 VAC	220 VAC	240 VAC	277 VAC
TSL-H 10-2	8.80	9.30	10.0	11.4
TSL-H 20-2	18.8	19.5	20.0	21.6
TSL-H 25-2	24.1	24.7	25.0	26.1
TSL-H 30-2	29.7	29.9	30.0	30.3



To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with **National Electric Code (NEC) Article 427.22** requirements, agency certifications, and local codes, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection. Ground fault protection is the responsibility of the end user and should be installed by a certified electrician.

It is highly recommended that all heat trace systems be connected to a control device to limit inrush potential and circuit breaker issues. Control devices also extend the life of all heat trace systems.

MAX CIRCUIT LENGTH

Typical Heaters	50°F Start-Up (Ft.)				0°F Start-Up (Ft.)				-40°F Start-Up (Ft.)			
	15A	20A	30A	40A	15A	20A	30A	40A	15A	20A	30A	40A
TSL-H 5-1	180	240	335	NR	165	220	330	NR	150	200	300	NR
TSL-H 5-2	360	480	540	NR	325	430	540	NR	290	385	540	NR
TSL-H 10-1	120	160	180	NR	105	140	180	NR	90	120	180	NR
TSL-H 10-2	240	320	360	NR	230	305	360	NR	225	300	360	NR
TSL-H 15-1	80	105	135	NR	70	90	135	NR	60	80	120	NR
TSL-H 15-2	160	210	270	NR	140	185	270	NR	120	160	240	NR
TSL-H 20-1	60	90	120	NR	55	70	110	NR	50	65	120	NR
TSL-H 20-2	115	150	230	NR	110	145	220	NR	105	140	210	NR
TSL-H 25-1	45	60	85	NR	40	50	80	NR	40	50	80	NR
TSL-H 25-2	90	120	170	NR	80	100	160	NR	80	100	160	NR
TSL-H 30-1	40	50	70	NR	35	45	70	NR	35	45	70	NR
TSL-H 30-2	80	100	140	NR	70	90	140	NR	70	90	140	NR

NR= Not Required. Maximum circuit length has been achieved using smaller size breaker.

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FLV

LOW VOLT SELF-REGULATING

Heat Trace

1. *16 AWG Buss Wires*
2. *Conductive Core*
3. *Polyolefin Jacket*
4. *Tinned Copper Braid*
5. *Optional Overjacket*

DESCRIPTION

FLV low voltage self-regulating heater cable is designed to operate off low voltage power sources such as 12VDC and 24VDC. FLV heater cable can be used for freeze protection and low process temperature in various applications.
FLV is ATEX approved for use in class 1 division 2 areas. FLV heater cables can maintain temperatures up to 150°F and have an intermittent exposure temperature of 185°F when de-energized. The standard thermoplastic R jacket offers corrosion resistance against certain inorganic chemicals, while the fluoropolymer T jacket protects the cable from both organic and inorganic chemicals. Either jacket offers exceptional protection against impact damage, abrasion and wet environments. As with all parallel type heater cables FLV can be cut to length in the field using standard electrical tools and will not overheat or burnout when overlapped.

APPLICATIONS

FLV low volt heater cables provide freeze protection and low temperature process for fluid transport and storage systems. FLV heater cables are ideal for off-grid heating of oil & gas automation, well sites, aerials, parabolic dishes, solar panels, agricultural, feed lots, mechanical, HVAC, gardening & nurseries, zoological, automotive DC systems for fluid control, de-icing and many other applications where line voltage is inaccessible.

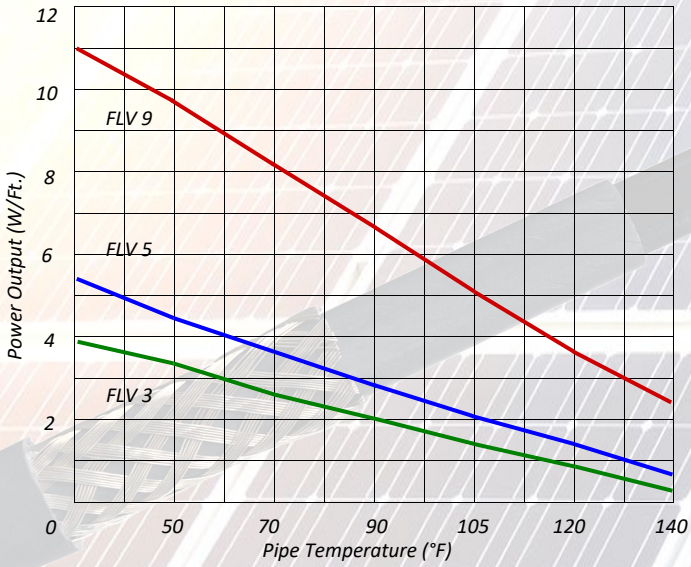
ATEX:
Certificates:
SIRA 12ATEX3113
SIRA 12ATEX3115

Note: For heater cable applications refer to National Electric Code Article 427 Fixed electric heating for pipelines and vessels.

ORDERING INFO

Example Configuration		FLV 5-1 R		Weight/1000'		Dimensions	
FLV	Wattage	Voltage	Braid/Jacket	3W-5W	9W	3W-5W	9W
	3, 5, 9*	1=12VAC/VDC	R=Rubber Jacket	69 Lbs.	79 Lbs.	0.41"x0.23"	0.51"x0.23"
T Rating	T-6	2=24VAC/VDC	T=Fluoropolymer Jacket	74 Lbs.	85 Lbs.	0.41"x0.23"	0.51"x0.23"

** FLV 9 used for special applications only. For details of circuit lengths and startup currents contact TAD & Associates, Inc. T rating per 1999 NEC Table 500-5(d).*



ACCESSORIES

PL-1SR	Power Connection Kit
EC-1SR	End Termination Kit
ESK-SR	Inline Splice Kit (14AWG)
TSK-14	Tee Splice Kit (14AWG)
AL-1	Aluminum Tape
FG-1	Fiberglass Tape

Note: Not all accessories are listed. See catalog for additional listings.

MAX CIRCUIT LENGTH

Typical Heaters	40°F Start-Up (Ft.)				0°F Start-Up (Ft.)				-40°F Start-Up (Ft.)			
	6A	10A	16A	20A	6A	10A	16A	20A	6A	10A	16A	20A
FLV 3-12	13	23	32	35	9	16	26	29	6	13	19	24
FLV 3-24	26	46	65	70	19	32	52	58	13	26	39	44
FLV 5-12	9	13	23	26	6	13	19	23	6	10	16	19
FLV 5-24	19	26	46	52	13	26	39	46	13	20	33	39
FLV 9-12	6	9	16	19	6	8	13	16	3	6	9	13
FLV 9-24	13	19	32	39	13	19	26	32	6	13	19	26

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RG

ROOF & GUTTER SELF-REGULATING

Made in USA

1. 16 AWG Buss Wires
2. Conductive Core
3. Polyolefin Jacket
4. Tinned Copper Braid
5. 16 mil Overjacket

Heat Trace

CSA FM UL

DESCRIPTION

RG roof & gutter self-regulating cable regulates it's output throughout the entire length of the circuit in response to ambient temperature changes. The self-regulating core increases its output as the ambient temperature drops; and decreases its output as the temperature rises. RG roof & gutter heating cables are constructed of industrial grade materials and are intended for use in roof & gutter and pipe tracing applications. RG cables can maintain temperatures up to 150°F and have an intermittent exposure temperature of 185°F when energized. RG heating cables come in 8W and 10W/Ft. configurations for those areas that experience heavy snowfall and require additional heating to maintain proper roof drainage. RG8 has the ability to produce 13-14 W/Ft. in snow/ice conditions while RG10 has the ability to generate 14-17 W/Ft. The standard polyolefin overjacket protects the ground braid from impact & abrasion and has built-in UV inhibitors to prevent degradation of insulating materials from continuous sun exposure. Due to their industrial grade construction, RG cables will outlast residential/commercial grade imports up to 5X as long, drastically reducing replacement costs and installation. When combined with snow melt controls, RG cables can save users up to 80% on utility costs compared to stand-alone installations. An additional 50-60% efficiency can be achieved using the Ice Cutter system. RG cables, like all self-regulating cables, can be cut-to-length in the field and will not overheat or burnout when overlapped.*

APPLICATIONS

*RG self-regulating heater cables are perfect for snow removal & de-icing of roofs, eaves, gutters, downspouts, troughs, drain baskets, hoppers, silos, aerials, parabolic dishes, pipe-tracing and much more. RG cables can be used in conjunction with the Ice Cutter system to reduce the amount of cable and energy needed and installs under the roofing material for an invisible and appealing look. *See Ice Cutter data sheet for more details.*

Factory Mutual:
Ordinary locations
Hazardous locations
- *Class 1 Div. 2 (Groups B, C, D)*
- *Class 2 Div. 2 (Groups F, G)*
- *Class 3 Div. 2*

CSA:
Ordinary locations 2E, 3(A, B, C), 5(A, B)
Hazardous locations
- *Class 1 Div. 2 (Groups A, B, C, D)*
- *Class 2 Div. 2 (Groups E, F, G)*
- *Class 3 Div. 2*

UL:
Roof & Gutter

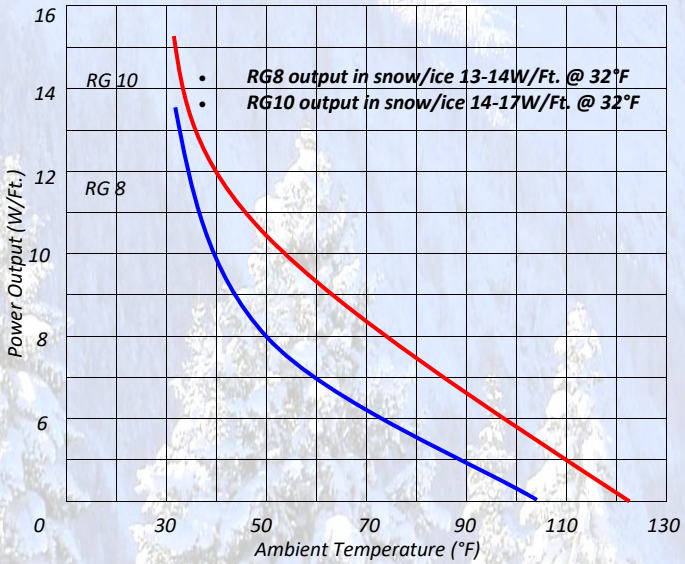
Note: For heater cable applications refer to National Electric Code Article 427 Fixed electric heating for pipelines and vessels.

ORDERING INFO

Example Configuration		RG82			
RG	Wattage	Voltage	Jacket	Weight/1000'	Dimensions
	8, 10	1=120V	R= Rubber Jacket (Std.)	94 Lbs.	.520"x.247"
T Rating	T-6 (8 W) T-5 (10 W)	2=240V	T=Fluoropolymer Jacket*	100 Lbs.	.510"x.230"
T rating per 1999 NEC Table 500-5(d). 240 for use with 208V-277V. See Output @ Alternate Voltage chart below for true output.* Optional fluoropolymer jacket available upon request. ± 10% random lengths, 250' min. 900'-1032' typ.					

ALT VOLTAGE OUTPUT

Typical Heaters	208 VAC	220 VAC	240 VAC	277 VAC
RG 82	7.28	7.66	8.00	8.80
RG 102	9.30	9.67	10.0	10.8



ACCESSORIES

RGPK	Power Connection Kit
SCK-2	Power Termination Kit
SCK-2-E	Termination Kit with End Seal
RCK-1	Roof Clips (10/Pack)
RDK-1	Downspout Hanger
RSD 4.5	Snow/Moisture Sensor 35A
AIC-4	Snow-Melting Controller 16A
TF115	Ambient Sensing Thermostat
TRF115	Line Sensing Thermostat

Note: Not all accessories are listed. See catalog for additional listings.

*To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with **National Electric Code (NEC) Article 427.22** requirements, agency certifications, and local codes, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection. Ground fault protection is the responsibility of the end user and should be installed by a certified electrician.*

It is highly recommended that all heat trace systems be connected to a control device to limit inrush potential and circuit breaker issues. Control devices also extend the life of all heat trace systems.

MAX CIRCUIT LENGTH

Typical Heaters	50°F Start-Up (Ft.)				0°F Start-Up (Ft.)				-20°F Start-Up (Ft.)			
	15A	20A	30A	40A	15A	20A	30A	40A	15A	20A	30A	40A
RG 81	150	200	210	NR	95	125	190	210	85	100	170	210
RG 82	295	390	420	NR	195	250	375	420	170	225	340	420
RG 101	115	150	180	NR	70	95	145	180	60	85	120	165
RG 102	230	305	360	NR	150	200	300	360	130	175	260	360
NR= Not Required. Maximum circuit length has been achieved using smaller size breaker.												

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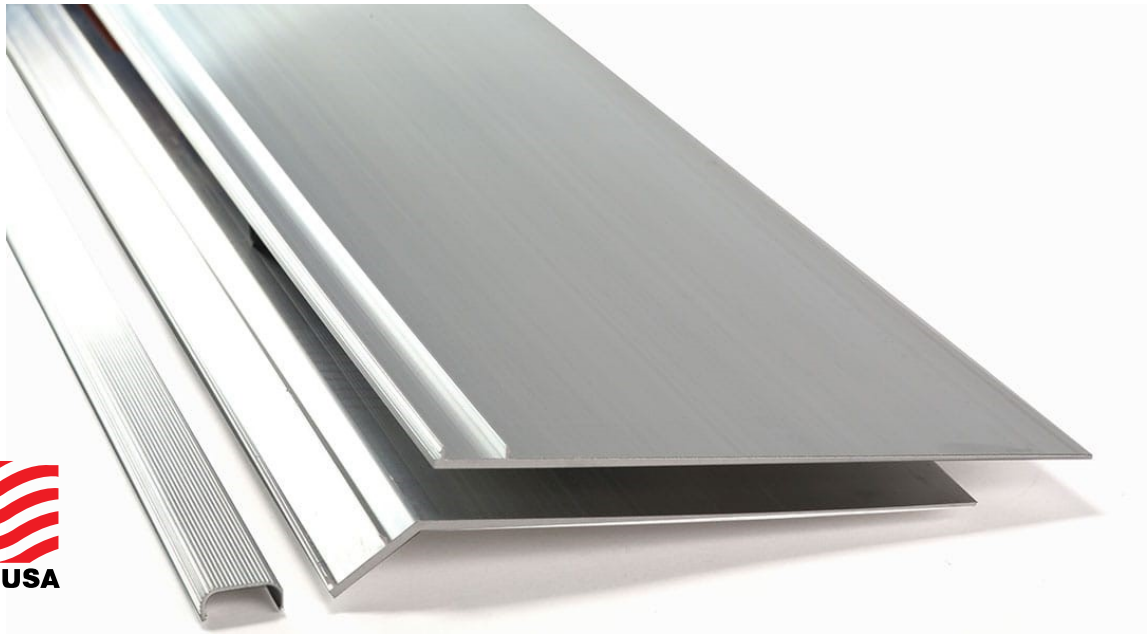
Romans 10:11 For whosoever believes on Him shall not be ashamed.

Hot Flash

HEATED FLASHING

Accessories



Made in USA

DESCRIPTION

Hot Flash is an aluminum flashing designed to be used as a heat conductive flashing for removal of snow and ice dams on roofs. It is an aesthetic, efficient, alternative to traditional forms of roof & gutter trace. Hot Flash is intended for use with industrial grade cables and NOT contractor/residential grade cables and imports with cheap dielectrics, such as PVC.

Hot Flash works by evenly conducting heat underneath the roof shingles or metal roofing to melt snow and ice and ensure proper drainage. It is completely invisible; maintains the roof's natural appearance and yet, provides huge energy savings over traditional methods. (Check with local providers for available rebates and lower insurance premiums.) Hot Flash reduces overall costs significantly because it requires less cable and is protected from wind and storm damage. When used with snow melt controls, Hot Flash will provide years of maintenance free protection for homes and businesses.

Hot Flash is an excellent choice for residential and commercial locations such as homes, apartments, condominiums, resorts, hotels, retail, manufacturing, etc. It can be installed with screws, nails or appropriate adhesives.

** Hot Flash can be ordered with a 6 mil urethane membrane applied to help prevent galvanic oxidation or corrosion when in contact with dissimilar metals.*

SPECS

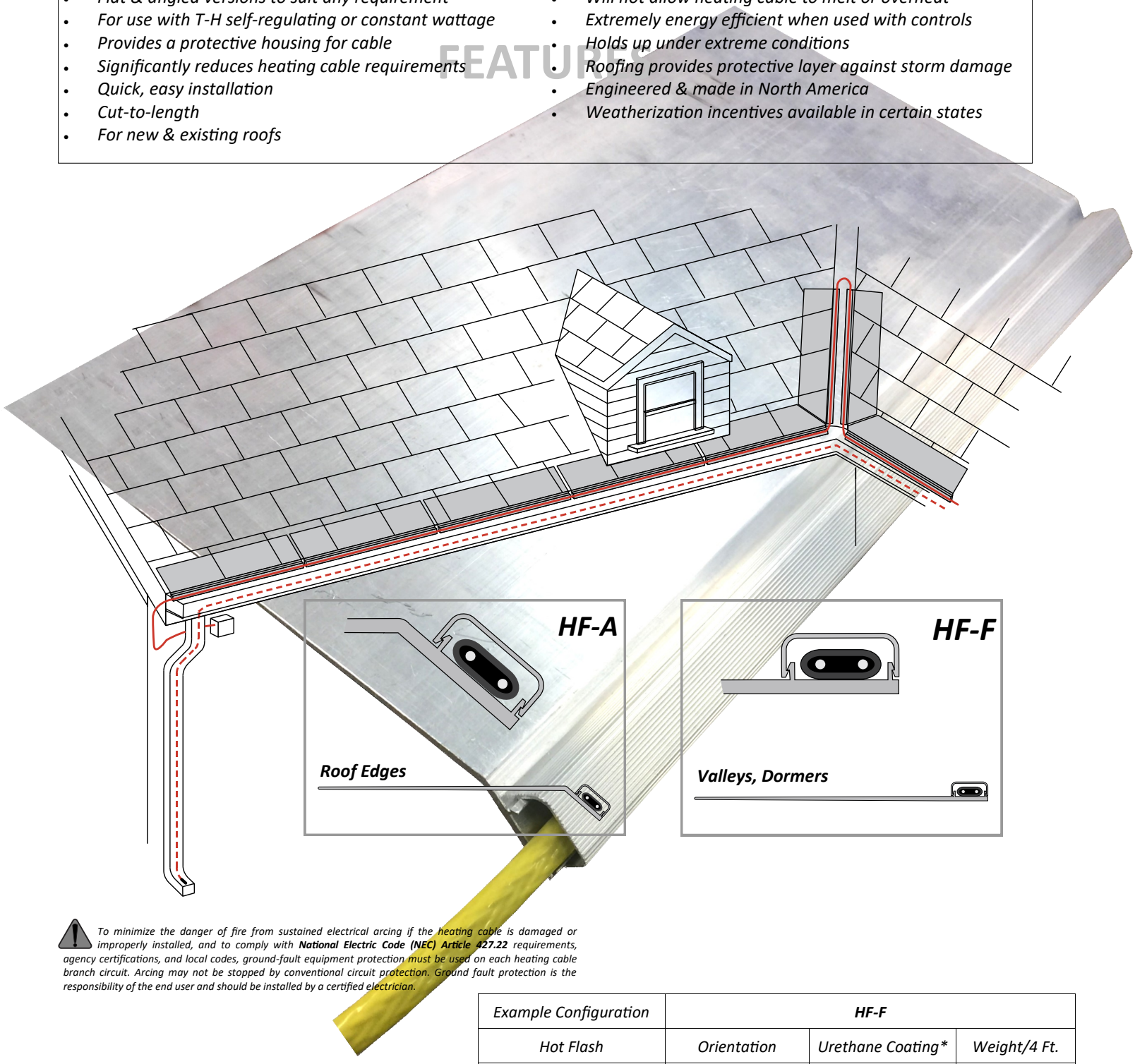
- *4 Ft. (1.2m) aluminum flashing w/ cap*
- *5-1/2" width (14cm) installed under roofing material*
- *Exposed cap width 3/4" (1.9cm) can be painted to match roof*
- *6 mil urethane membrane for use with steel roofs*
- *2.7 Lbs./4 Ft. (1.22kg)*

APPLICATIONS

- *Residential Buildings (i.e. Homes, Condos, Apartments)*
- *Resorts, Hotels, Camps, Marinas*
- *Commercial (Banks, Retail, Medical, Grocery, etc.)*
- *Agricultural Locations (Stalls, Barns, etc.)*
- *Industrial Buildings (Warehouse, Manufacturing)*
- *Government (Federal, Military, Courthouses, Police)*

FEATURES

- *4 Ft. tapered aluminum flashing w/ cap*
- *Flat & angled versions to suit any requirement*
- *For use with T-H self-regulating or constant wattage*
- *Provides a protective housing for cable*
- *Significantly reduces heating cable requirements*
- *Quick, easy installation*
- *Cut-to-length*
- *For new & existing roofs*
- *Aesthetically pleasing; discrete*
- *Will not allow heating cable to melt or overheat*
- *Extremely energy efficient when used with controls*
- *Holds up under extreme conditions*
- *Roofing provides protective layer against storm damage*
- *Engineered & made in North America*
- *Weatherization incentives available in certain states*



To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with ***National Electric Code (NEC) Article 427.22*** *requirements, agency certifications, and local codes, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection. Ground fault protection is the responsibility of the end user and should be installed by a certified electrician.*

ORDERING INFO

Example Configuration	***HF-F***		
Hot Flash	*Orientation*	*Urethane Coating**	*Weight/4 Ft.*
	F=Flat	*S=Steel Roof*	*2.7 Lbs.*
	A=Angled		*2.7 Lbs.*

** 6 mil urethane membrane is to help prevent galvanic oxidation or corrosion when in contact with dissimilar metals.*

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SM-B

SNOW MELT SELF-REGULATING

Heat Trace

1. *16 AWG Buss Wires*
2. *Conductive Core*
3. *Polyolefin Jacket*
4. *Tinned Copper Braid*
5. *24 mil Overjacket*

FM CE

DESCRIPTION

SM-B SnoMelt is a self-regulating heating cable that can be used for snow melting and ice prevention of surfaces such as concrete roads, ramps, driveways and paths. It may also be used on stairways, walkway gratings or loading docks. It can be cut-to-length in the field and exact lengths can be matched without any complicated design considerations. The power output regulates itself in response to surface temperature. SM-B cable cannot overheat and tends to reduce power when not needed. SM-B is ideally suited for most general snow and ice prevention applications and is not bound to various mat sizes, which simplifies design. Aside from MI cable, it's industrial grade design is far superior to all other forms & brands on the open market. It's super thick jacket provides superior protection against accidents that can occur on job sites during installation. It also protects the cable from aggressive drying components found in certain concrete mixes. SM-B is safer and easier to install than hydronic systems and provides years of reliable, maintenance free service at a fraction of the cost. Various snow melting controls are available to suit operational flexibility, residential/commercial electrical needs, simplicity, and energy efficiency.

APPLICATIONS

SM-B is used for snow-melting and de-icing applications. It can achieve a maximum surface temperature of 104°F.

The minimum installation temperature for SM-B cable is –22°F.

Factory Mutual:
Ordinary locations
Type C and D installations
Snow-Melting/De-Icing

FM

The SM-B system (BPS2,BES2, BES3 and HES3)

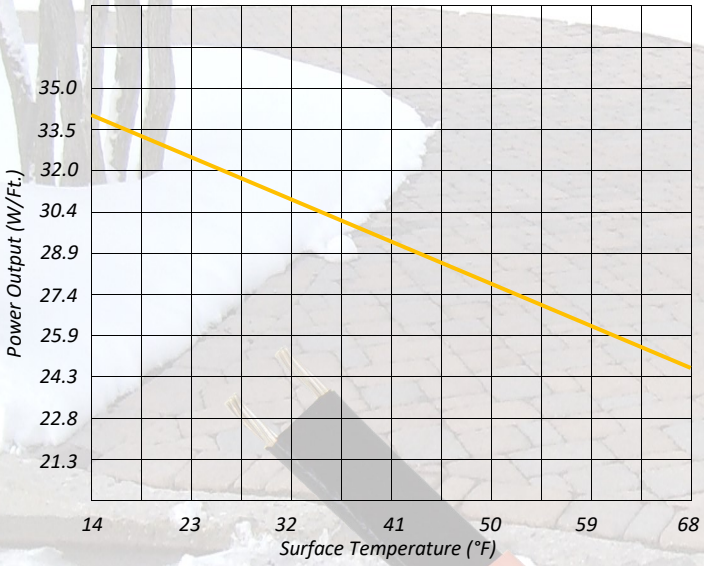
Note: For heater cable applications refer to National Electric Code Article 427 Fixed electric heating for pipelines and vessels.

CE

Example Configuration		SM2-B		
SM	Voltage	Jacket	Weight/1000'	Dimensions
	2=208V-277V	B=Rubber Jacket	127 Lbs.	.600" x .256"
	3=347V	A=Aluminum Jacket	122 Lbs.	.590" x .240"
SM-A replaces braid and overjacket with extruded aluminum, offering greater mechanical protection when required. Verify with local codes for use in concrete.				

UTK555	Termination Kit
SMB-SK	Splice Kit for SM-B
CT-1	Cable Ties (50/Pack)
RPC-SM	Power Connection Kit for SM
RTC-SM	Multi-Entry Kit for SM
AIC-4	Snow Melting Control 10A
RSD4.5	Snow Melting Control 35A
GF-PRO	Snow Melting Control
SIT-6E	Pavement Sensor

Note: Not all accessories are listed. See catalog for additional listings.



The following graph indicates the cable performance when buried in concrete. For other conditions, refer to the Factors Table shown below.

*To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with **National Electric Code (NEC) Article 427.22** requirements, agency certifications, and local codes, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection. Ground fault protection is the responsibility of the end user and should be installed by a certified electrician.*

It is highly recommended that all heat trace systems be connected to a control device to limit inrush potential and circuit breaker issues. Control devices also extend the life of all heat trace systems.

Typical Heaters	208 VAC	240 VAC	277 VAC
SM2	26.88 (88)	28.65 (94)	29.58 (97)
Note: Output changes with applied voltage. (W/m)			

Service Voltage	38°F (3°C) Start-Up (Ft.)			
	15A	20A	30A*	40A*
208VAC	90 (27)	120 (36)	180 (54)	240 (73)
240VAC	100 (30)	130 (39)	200 (61)	260 (79)
277VAC	110 (33)	145 (44)	220 (67)	290 (88)
Note: Breaker not to exceed 50A. * In order to achieve circuit length both cable ends MUST be powered. For single power point refer to 20A circuit length. (meters)				

For Burial In:	Power Output Multiplying Factor
Sand (Wet)	W/Ft. in concrete x 0.9
Metal Conduit	W/Ft. in concrete x 0.4

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MISS-K/B

MINERAL INSULATED

Made in USA

Heat Trace

1. End Termination
2. Alloy 825 Stainless Steel
3. Hot/Cold Joint
4. Compression Fitting

DESCRIPTION

MI heater cables are seamless die drawn cables that are made to specified lengths to deliver high power output along the entire length of the cable. It's nichrome heating conductors are embedded in highly compressed magnesium oxide dielectric and covered with a stainless Alloy 825 sheath. The sheath is fully annealed and is easily hand formable.

MI heater cables are factory assembled and cannot be cut to length in the field. Both hot and cold sections are made to customer specifications. MI cables can be completely submersed which makes them great for gut tracing applications. MI cables can also be equipped with reversed glands and puller-eyes to assist in cable installation and capping small diameter pipes. MI cables resist the most aggressively corrosive environments. MI heating cable is totally inorganic and will not deteriorate with age. All heating units are factory fabricated to a specified length and rigorously tested to IEEE standards. Alloy 825 cables are capable of withstanding temperatures up to 1,000°F.

APPLICATIONS

MI heater cables are suitable for use in pipe tracing applications where high temperatures are required, pad heating/snow melting where removal of snow and ice are needed for safety. MI heater cables are also useful in large vessel and hopper heating applications. In tank and hopper heating applications MI is attached to sheets of wire mesh to help diffuse the heat into the tank walls. Because MI cables are silver soldered and waterproof they are a great choice in "gut" tracing applications.

To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with ***National Electric Code (NEC) Article 427.22*** *requirements, agency certifications, and local codes, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection. Ground fault protection is the responsibility of the end user and should be installed by a certified electrician.*

CALCULATE

To determine which conductor in Table 2 will satisfy performance requirements follow the arithmetic below.

$$\text{Conductor } (\Omega/\text{Ft.}) = \frac{\text{Voltage}^2}{\text{Length}^2(\text{Cable W/Ft.})}$$

Compare the answer to the closest available conductor that will yield desired effect. Recalculate using formula above to determine exact output and whether the result is favorable and will not impose any safety or damage potential. No more than 4 W/Ft. is permissible on PVC and polyethylene pipe. Some design complications may arise under certain circumstances due to variables, however there are workarounds such as transformers.

Example Configuration		MISS-K742-AN-125-03-C1-E				
MISS	Conductor	Form	Hot Section	Cold Section	Options	Options Continued
	Table 2	AN	See Notes	.5' - 40' Exp.	C1=1/2" Reversed Gland	P=PVC Jacketed Cold Section
		BN			C2=3/4" Reversed Gland	U=NEMA 7 Termination
		CN			E=Puller-Eye End	X=Other, Specify
					G=Glass Wrapped Hot Section	
					R=Reel Delivery	
Note: Hot section length is dependent on several factors including voltage, cable output, conductor, amperage.						

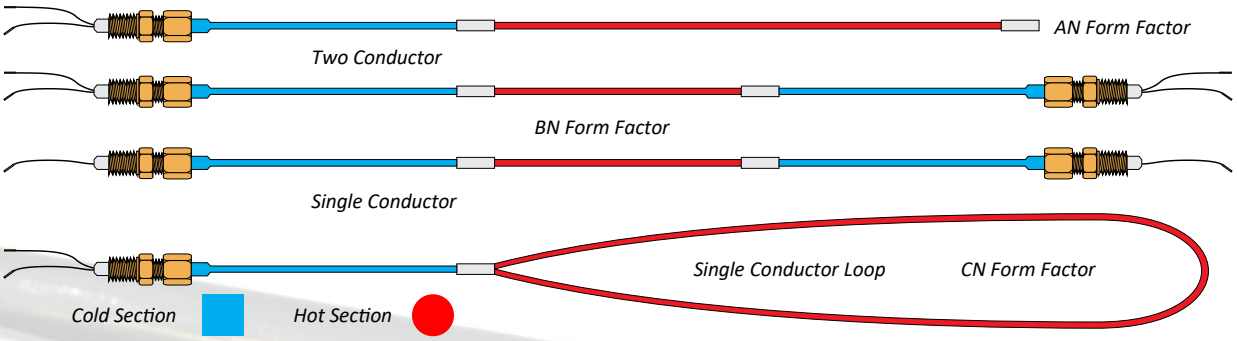

Table 2

300 Volt, 2 Conductor 3/16" OD .07 Lbs/Ft.			600 Volt, 2 Conductor 5/16" OD .22 Lbs/Ft.			600 Volt, 1 Conductor 3/16" OD .07 Lbs/Ft.		
Size	Ohms/Ft.	Max Exp Temp°F	Size	Ohms/Ft.	Max Exp Temp°F	Size	Ohms/Ft.	Max Exp Temp°F
K556	.043*	600	B588	.0071*	600	K145	.0046*	600
K658	.058*		B614	.0149*		K189	.0090*	
K674	.074*		B627	.027*		K216	.0165*	
K693	.093*		B640	.040*		K239	.039	1,000
K712	.117*		B670	.065	1,000	K250	.050	
K715	.147*		B710	.104		K279	.079	
K721	.213*		B715	.162		K310	.095	
K732	.319	1,000	B720	.205		K316	.157	
K742	.416		B732	.325		K326	.260	
K752	.520		B750	.500		K333	.330	
K766	.660		B774	.735		K346	.457	
K774	.740		B810	1.162		K372	.730	
K810	1.00		B819	1.87		K412	1.17	
K813	1.30		B830	2.97		K415	1.48	
K818	1.80		B840	4.30		K423	2.36	
K824	2.34		B859	5.98		K430	2.80	
K830	2.96					K447	4.50	
K838	3.70							
K846	4.72							
K860	5.60							
K866	6.60							
K894	9.00							
K919	18.00							

Note: All values @ 68°F
*Resistance curves apply, consult TAD for design

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MISS-KN

MINERAL INSULATED

Made in USA

Heat Trace

1. End Termination
2. Alloy 825 Stainless Steel
3. Hot/Cold Joint
4. Compression Fitting

DESCRIPTION

MI heater cables are seamless die drawn cables that are made to specified lengths to deliver high power output along the entire length of the cable. It's nichrome heating conductors are embedded in highly compressed magnesium oxide dielectric and covered with a stainless Alloy 825 sheath. The sheath is fully annealed and is easily hand formable.

MI heater cables are factory assembled and cannot be cut to length in the field. Both hot and cold sections are made to customer specifications. MI cables can be completely submersed which makes them great for gut tracing applications. MI cables can also be equipped with reversed glands and puller-eyes to assist in cable installation and capping small diameter pipes. MI cables resist the most aggressively corrosive environments. MI heating cable is totally inorganic and will not deteriorate with age. All heating units are factory fabricated to a specified length and rigorously tested to IEEE standards. MISS-KN type MI cables are capable of withstanding temperatures up to 1,200°F.

APPLICATIONS

MI heater cables are suitable for use in pipe tracing applications where high temperatures are required, pad heating/snow melting where removal of snow and ice are needed for safety. MI heater cables are also useful in large vessel and hopper heating applications. In tank and hopper heating applications MI is attached to sheets of wire mesh to help diffuse the heat into the tank walls. Because MI cables are silver soldered and waterproof they are a great choice in "gut" tracing applications.

To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with ***National Electric Code (NEC) Article 427.22*** *requirements, agency certifications, and local codes, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection. Ground fault protection is the responsibility of the end user and should be installed by a certified electrician.*

CALCULATE

To determine which conductor in Table 2 will satisfy performance requirements follow the arithmetic below.

$$\text{Conductor } (\Omega/\text{Ft.}) = \frac{\text{Voltage}^2}{\text{Length}^2(\text{Cable W/Ft.})}$$

Compare the answer to the closest available conductor that will yield desired effect. Recalculate using formula above to determine exact output and whether the result is favorable and will not impose any safety or damage potential. No more than 4 W/Ft. is permissible on PVC and polyethylene pipe. Some design complications may arise under certain circumstances due to variables, however there are workarounds such as transformers.

Example Configuration		MISS-KN142L-AN-100-03-C1-E				
MISS-KN	Conductor	Form	Hot Section	Cold Section	Options	Options Continued
1200°F	Table 2	AN	See Notes	.5' - 40' Exp.	C1=1/2" Reversed Gland	P=PVC Jacketed Cold Section
		BN			C2=3/4" Reversed Gland	U=NEMA 7 Termination
		CN			E=Puller-Eye End	X=Other, Specify
					G=Glass Wrapped Hot Section	
					R=Reel Delivery	

Note: Hot section length is dependent on several factors including voltage, cable output, conductor, amperage.

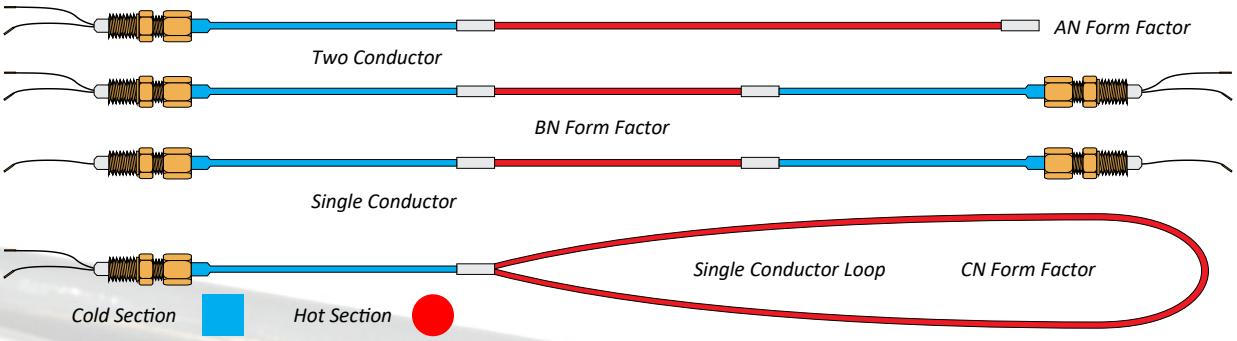

Table 2

300 Volt, 2 Conductor KNXXXL			600 Volt, 2 Conductor KNXXX			600 Volt, 1 Conductor KN		
Size	Ohms/Ft.	O.D.	Size	Ohms/Ft.	O.D.	Size	Ohms/Ft.	O.D.
32SP4458	0.0458	0.185	KN132	0.10	0.265	KN101	0.03	0.26
32SP4583	0.0583	0.184	KN142	0.15	0.245	KN111	0.04	0.24
32SP4734	0.0734	0.184	KN152	0.2	0.245	KN121	0.07	0.20
KN132L	0.10	0.180	62SQ3286	0.286	0.246	KN141	0.10	0.20
KN142L	0.15	0.160	62SQ3505	0.505	0.234	KN151	0.15	0.19
KN152L	0.2	0.146	KN182	0.7	0.265	KN161	0.20	0.19
KN162L	0.3	0.215	62ST2115	1.15	0.239	KN171	0.30	0.19
KN172L	0.5	0.196	KN222	2.0	0.245	KN191	0.50	0.18
KN182L	0.7	0.160	62SA2414	4.14	0.239	KN211	0.70	0.17
KN192L	1.0	0.196	KN252	6.0	0.215	KN221	1.0	0.17
KN222L	2.0	0.180	62SZF2900	9.0	0.215	KN241	2.0	0.16
KN242L	4.0	0.146	KN292	11.0	0.215			
KN252L	6.0	0.135						
32SF2900	9.0	0.140						
KN292L	11.0	0.130						

Note: All values @ 68°F
*Resistance curves apply, consult TAD for design

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2256
TUBE BUNDLE

Tube Bundle

Made in USA

◀ FM ▶

1. Process Tube
2. Heat Trace
3. Aluminum Mylar Wrap
4. Fiberglass Insulation
5. FRPVC Overjacket

DESCRIPTION

2256 series tube bundle is a pre-insulated, heat traced fluid transport line for use in applications requiring freeze protection, process, or condensation prevention. The energy efficient, convenient design provides maintenance temperatures up to 250°F depending on tracer type. Tube bundle was designed to expedite and simplify the process of routing thermally insulated instrumentation, process, and gas sampling lines. It reduces manpower, waste, installation & material costs, takes up less space than field fabricated lines, and is extruded in a durable, impact/abrasion, & flame resistant PVC shell which ensures a 100% waterproof, UV proof seal. 2256 series can be configured with various tube types/sizes and self-regulating heating cables to ensure optimal maintenance temperatures for process, lag times and condensate abatement for precise instrument/sample readings. 2256 series are FM approved for use in Class 1 Division 2 areas.

FEATURES

- *Compact Design*
- *Single or Multiple Process Tubes*
- *Low & High Temperature Self-Regulating Cables*
- *Low Heat Loss*
- *Low-Maintenance*
- *Intrinsic Safety*
- *Easy to Install*
- *Light, Durable, Easy to Handle*
- *Consistent Thermal Characteristics*

APPLICATIONS

- *Process Analyzers*
- *Stack Gas sampling*
- *Gas transport lines*
- *Liquid transport lines*
- *Analyzer and instrument lines*
- *Small diameter process lines*
- *Impulse lines – D/P cells*

Factory Mutual:
Ordinary locations
Hazardous locations
FM10ATEX0032X
FME10.0003X

◀ FM ▶

ATEX:
Ex e IIC T6 Gb II2GD
Ex e II T6 II 2D Ex tb
IIIC IP66 T85C

2256-	1	7	A	D9	Reserved	
	Tube Size	Tube Material	Tube Qty.	Heat Trace Type	Wall Thickness	Jacket Type
	1=1/8"	**0**=Welded 316 Stainless Steel	**A**=1	**69**=3W/120V LT	Call	Call
	2=1/4"	**1**=#12 DHP Copper	**B**=2	**C9**=3W/240V LT		
	3=3/8"	**2**=Welded 304 Stainless Steel	**C**=3	**39**=5W/120V LT		
	4=1/2"	**3**=Seamless 304 Stainless Steel	**D**=4	**99**=5W/240V LT		
	5=5/8"	**4**=PFA	**E**=5	**49**=8W/120V LT		
	6=3/4"	**5**=FEP		**A9**=8W/240V LT		
	7=7/8"	**6**=Seamless Low Carbon Steel		**D9**=10W/120V LT		
	8=1"	**7**=Seamless 316 Stainless Steel		**E9**=10W/240V LT		
	9=1-1/4"	**8**=Monel 400		**R9**=5W/120V HT		
	A=1-1/2"	**9**=Welded 316 AA		**K9**=5W/240V HT		
	M=4mm	**A**=Seamless T316LSS		**59**=10W/120V HT		
	N=6mm	**B**=Welded T304LSS		**B9**=10W/240V HT		
	P=8mm	**C**=Seamless T304LSS		**79**=15W/120V HT		
	Q=10mm	**D**=TFE Fluoropolymer		**H9**=15W/120V HT		
	R=12mm	**E**=Welded Low Carbon Steel		**N9**=20W/120V HT		
		F=Seamless Inconel C22		**P9**=20W/240V HT		
		G=Incoloy 825				
		H=Hastelloy C22				
		J=Hastelloy C276				
		K=Nickel 200				
		L=Alloy 20				
		M=Polypropylene				
		N=LDPE (Low Density)				
		P=HDPE (High Density)				
		Q=Thermoplastic				
		S=Nylon				
		T=FR Polyethylene				
		U=Permbar				
		Z=Other				

ORDERING INFO

316SS Tube (Common)	1/8"	1/4"	3/8"	1/2"	3/4"
Overall OD (Inches)	≈1.4	≈1.41	≈1.5	≈1.6	≈1.8
Min. Bend Radius (Inches)	9	9	10	10	12
Working Pressure (PSI)	12,050	5,260	3,360	2,470	1,610
Max Continuous Length (Ft.)	1,000	1,000	1,000	1,000	640
Weight Lbs/Ft.	0.40	0.40	0.45	0.50	0.60
Note: Above figures are standard. Not all tubes types/sizes listed.					

SPECS

*To minimize the danger of fire from sustained electrical arcing if the heating cable is damaged or improperly installed, and to comply with **National Electric Code (NEC) Article 427.22** requirements, agency certifications, and local codes, ground-fault equipment protection must be used on each heating cable branch circuit. Arcing may not be stopped by conventional circuit protection. Ground fault protection is the responsibility of the end user and should be installed by a certified electrician.*

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115
TEMPERATURE CONTROLS

Controls

DESCRIPTION

The TRF115 line sensing & TF115 ambient sensing thermostats are NEMA 4X temperature controls. The TRF115 is intended mainly for process applications while the TF115 for freeze protection of pipes, vessels, hoppers, instrumentation, snow-melting, roof & gutter and other types of electric heat tracing applications. Both thermostats are perfectly suitable for both industrial and commercial applications and are approved for use in ordinary locations.

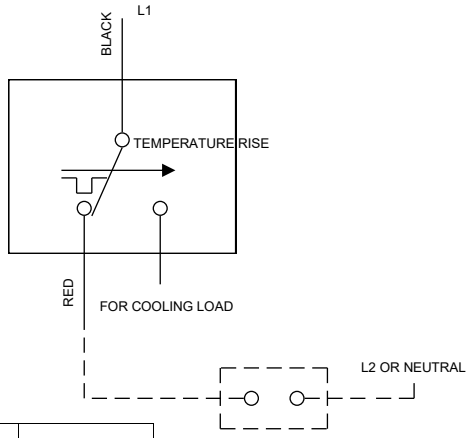
FEATURES

- *Rugged weather resistant enclosure made of corrosion resistant materials for long life.*
- *Stainless steel remote bulb (TRF115) provides rapid response to temperature change.*
- *Low mass, high surface area of stainless steel coiled sensor (TF115) provides rapid response to temperature change.*
- *Large, readily visible dial with 0°F-120°F temperature range (TRF115) and 40°F-110°F (TF115).*
- *Multi-positional mounting offers flexibility in either new or existing installations.*
- *One control for both heating and cooling applications.*

C US

- *Multi-positional mounting meets new or existing wiring needs.*
- *Insulated enclosure.*
- *All mounting holes are exterior to the enclosure.*
- *Easily removable knockouts in sides and top of enclosure.*
- *Large wiring compartment with watertight cover separated from thermostat compartment.*
- *May be cord or conduit connected.*
- *Pigtail leads for rapid, positive, electrical connection.*

INSTALLATION

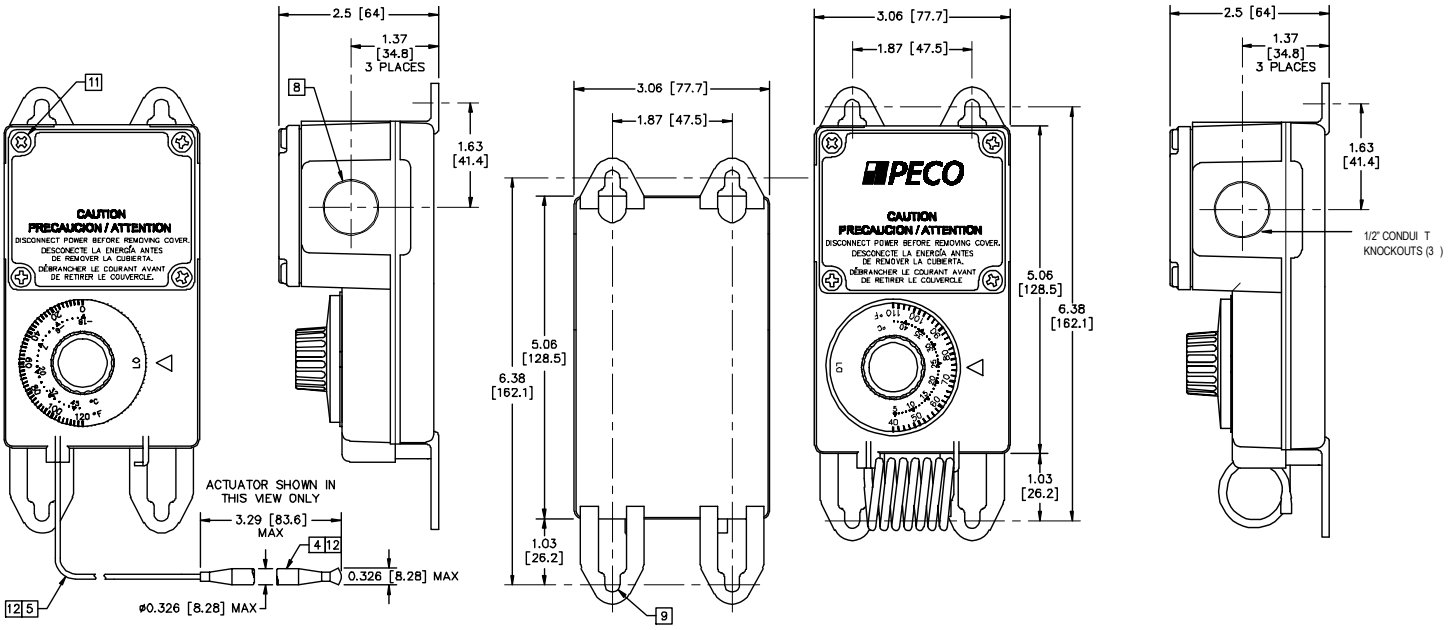


	120VAC	240VAC	277VAC	480VAC
Full Load Amps	16.0	12.0	10	—
Locked Rotor Amps	80.0	60.0	50	—
Non-Inductive Resistive Load Amps	25.0	25.0	22.0	5

RATINGS

Thermostat	Type	Range	Differential	Bulb Size	Capillary
TRF115	SPDT	0°F - 120°F	3°F	2 5/16" x 5/16"	5'
TF115	SPDT	40°F - 110°F	2.5°F	NA	NA

SPECIFICATIONS



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121

TEMPERATURE CONTROLS

Controls

Made in USA

DESCRIPTION

The 121 line of thermostats are explosion & weatherproof temperature controls housed in a NEMA 4X, 7 lightweight die cast aluminum enclosure. They're approved for use in Class I Div. 1 & 2 hazardous locations. The E121 line sensing thermostat is ideal for process temperature applications. The B121 ambient sensing thermostat has an immersion stem for sensing atmospheric temperatures and is ideal for freeze protection applications. Both thermostats are SPDT (Single Pole Double Throw) switches that offer a very dependable and accurate control for heat trace circuits in hazardous locations.

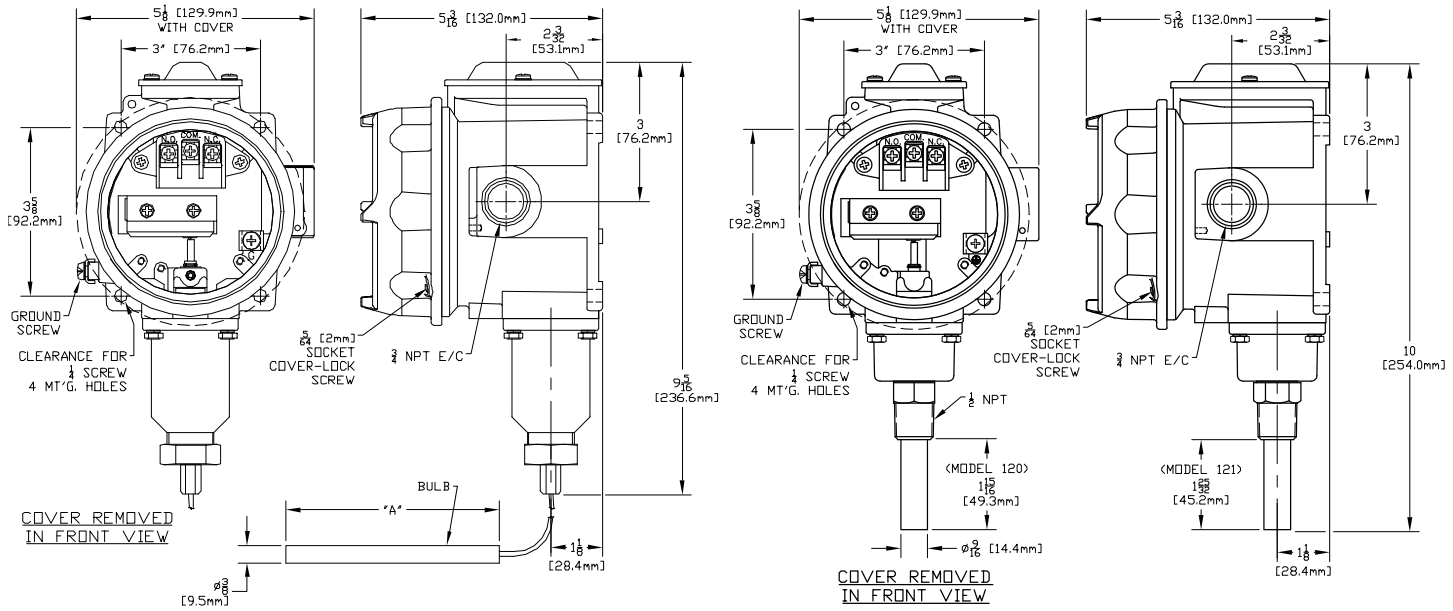
FEATURES

- *Class 1 Divisions 1 & 2, Groups B C & D*
- *Class 2 Divisions 1 & 2, Groups E F & G*
- *Class 3*
- *25°F - 325°F Range (E121)*
- *15°F - 140°F Range (B121)*
- *3/4" NPT hub for electrical*
- *304 SS Bulb/Capillary (E121), Immersion Stem (B121)*
- *NEMA 4X, 7, 9, IP66*
- *Internal Dial (Gasketed SS Tamper Resistant)*

C US

Style	Switch Type	Range	Accuracy	Differential	Bulb Size	Capillary	Immersion Stem	Finish
E121	SPDT	25°F - 325°F	±1% Range	3°F - 6°F	10 1/2" x 3/8"	10'	NA	304SS
B121	SPDT	15°F - 140°F	±1% Range	3°F - 6°F	NA	NA	9/16" x 2-11/16"	304SS

SPECIFICATIONS



Ratings	120V - 480V
Resistive Amps	22A

RATINGS

Example Configuration	E121	Weight
E121	Line Sensing Thermostat	6.4 Lbs.
B121	Ambient Sensing Thermostat	6.6 Lbs.
Notes: 1660-13A12(E121), 1660-18912(B121)		

ORDERING INFO

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E55

TEMPERATURE CONTROL

Made in USA

Controls

E55-E22BC

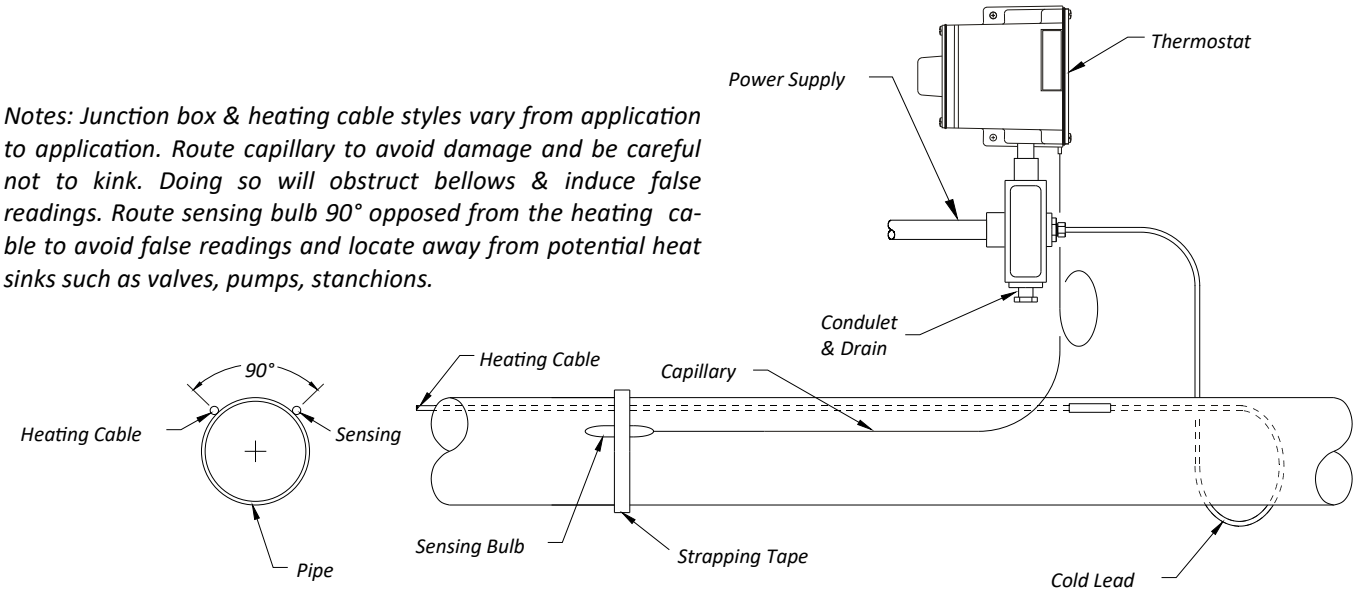
SPECS

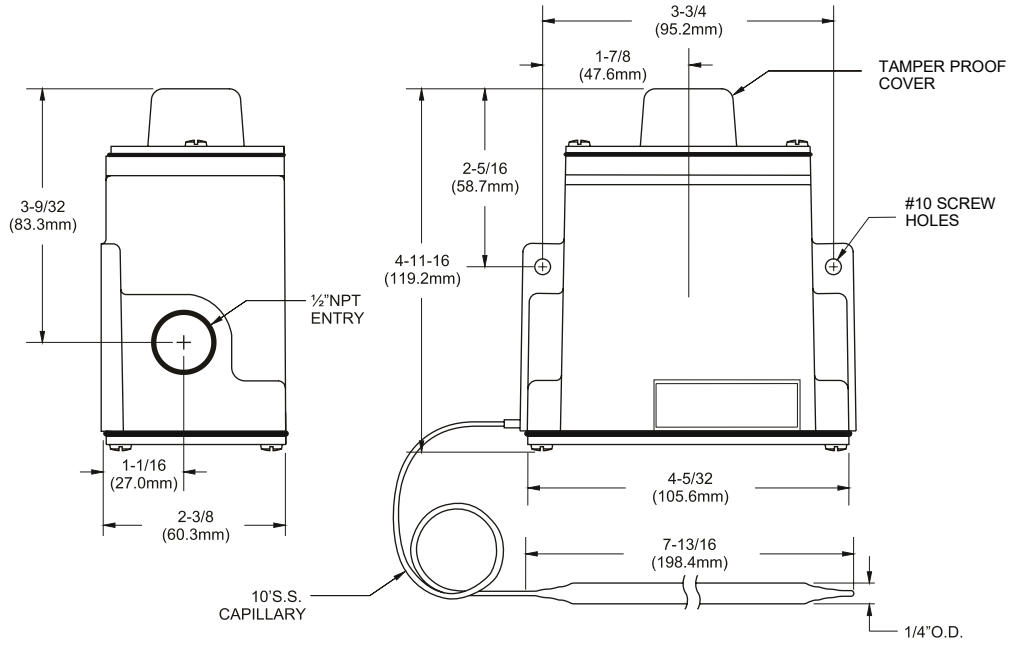
- Enclosure: NEMA 4X Die Cast Aluminum Epoxy Coated
- Set-Point Range: 50°F - 400°F (10°C - 204°C)
- Bulb Exposure: -40°F - 600°F (-40°C - 315°C)
- Capillary Length/Type: 10' 304SS
- Switch Type: SPDT
- Contact Rating: 22A@110V-480V/1,000,000 cycles
- Accuracy: ± 1% of range
- Differential: Typ. 1% of range
- Weight: 1 Lb.

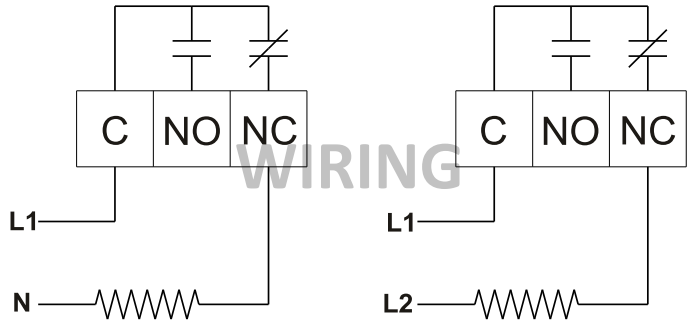
DESCRIPTION

The E55-400 is a remote line sensing thermostat used for heat trace applications typically where process temperatures are maintained. It is suitable for use in ordinary locations and where corrosive materials are present. It is a NEMA 4X rated cast aluminum enclosure with a protective cap over the adjusting dial. Even at 480VAC, it has a robust contact rating of 22 Amps which makes it more than capable of handling multiple circuits of heat trace or high watt density heating cables. It's size makes it ideal for cramped locations and provides an exceptional value for its features.

Notes: Junction box & heating cable styles vary from application to application. Route capillary to avoid damage and be careful not to kink. Doing so will obstruct bellows & induce false readings. Route sensing bulb 90° opposed from the heating cable to avoid false readings and locate away from potential heat sinks such as valves, pumps, stanchions.







WIRING

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A419

TEMPERATURE CONTROL

Controls

DESCRIPTION

The A419 electronic temperature control is a single-stage, single -pole double-throw (SPDT), electronic temperature control. The control features a lockable , three button touchpad for setup and adjustment and an LCD which displays the sensed temperature and other control functions. A front panel LED indicates the output relay status. The control has a temperature range of - 30°F to 212°F.

The A419 control has both heating and cooling modes with adjustable setpoint and differential, an adjustable anti-short cycle delay, and a temperature offset function. The control provides remote sensing capability, and electronic accuracy in a NEMA 4X watertight and corrosion resistant enclosure.

FEATURES

- *Easy-to-read LCD displays the sensed temperature and control function status clearly and custom icons on the display indicate the control and system status at a glance.*
- *The temperature differential adjustment range allows precise (1°F or °C) temperature differential settings that are much tighter than electromechanical controls.*
- *The Adjustable Anti-Short Cycle Delay (0-12 minutes in 1-minute increments) ensures that the output relay remains off for a user-set time delay and helps avoid hard starts, nuisance overload outages, and unnecessary equipment wear.*
- *The Noryl® high-impact thermoplastic type NEMA 4X enclosures allow watertight surface mount.*
- *Lockable front-panel touchpad allows easy setup and adjustment of the A419 control setpoint, differential, and other functions; a concealed jumper locks the touchpad.*

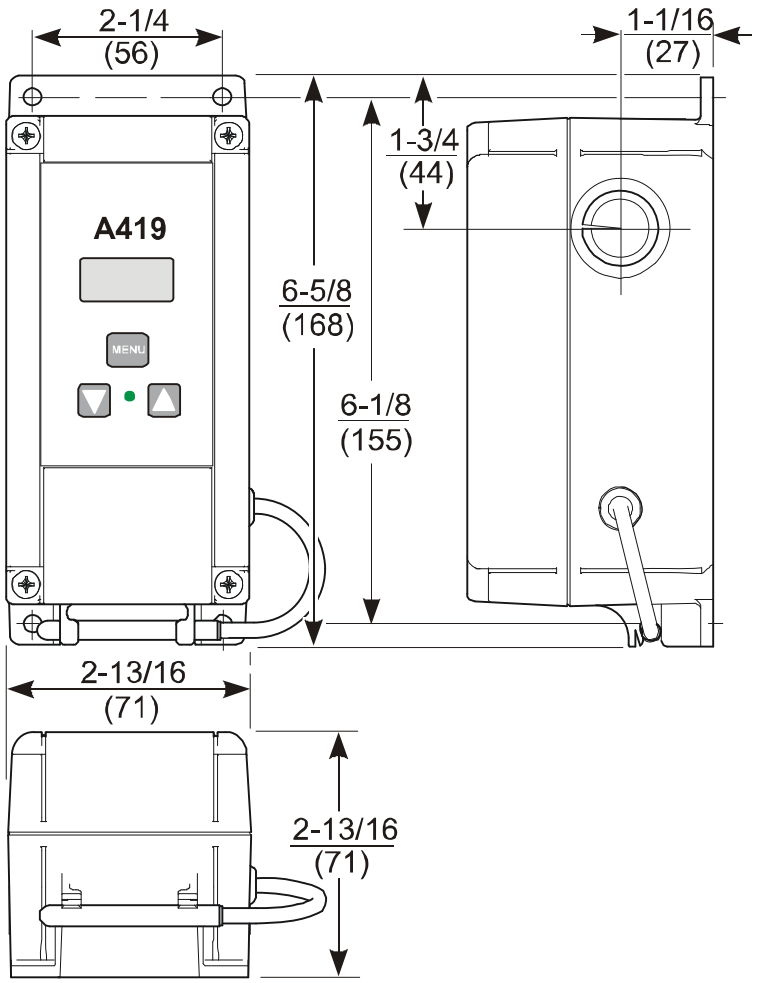
C UL US

SPECIFICATIONS

Type	Range	Differential	Sensor
SPDT	-30°F - 212°F	1°F - 30°F	6.5' PTC

RATINGS

	120VAC	208VAC	240VAC	277VAC
Full Load Amps	16.0	9.20	8.00	6.90
Locked Rotor Amps	96.0	55.2	48.0	41.6
Non-Inductive Resistive Load Amps	15.0	10.0	10.0	8.70



ORDERING INFO

Example Configuration	A419	Weight
A419	NEMA 4X Digital Thermostat	1.0 Lbs
Note: Sensor is for ambient or line sensing use.		

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AIC4

SNOW MELT CONTROL

Controls

DESCRIPTION

The AIC4 is one of the most economical & compact automatic snow melt controls on the planet. It senses both moisture and temperature that could result in frozen precipitation. In automatic mode, the controller energizes when both conditions are present. There is also a manual on/off mode for weary customers! Indicators allow visual confirmation of automatic mode and when the system is energized. An optional P/N 85248 extends the mount distance for rather large industrial, commercial and some residential applications where routing is a concern. The AIC4 can be integrated with building systems through dry contacts for ease of control and monitoring. The unit has a built-in 16A contactor which accommodates a generous amount of roof & gutter heat trace. It can be integrated with additional units and or contactors for increased loads and zoning options, plus 3-phase loads. The unit can be wall or mast mounted away from trees and awnings for an unobstructed sampling point. This ensures that the collection grid is free of leaves and other debris. Place in automatic mode, climb down the ladder or raise the mast, and get ready for winter! Heat trace controls are proven to be the ideal solution for set & forget and yield greater savings over conventional methods.

Moisture sensing grid

SPECS

- *Energize Temperature:* ***38°F***
- *Minimum On Time:* ***1 hour***
- *Control voltage:* ***120-277VAC (Specify voltage)***
- *Built-In Contactor:* ***16A resistive @ 120-277VAC***
- *Contactor Output:* ***T1 and T2***
- *Mounting Options:* ***Tab or Mast Mounted***
- *Control Toggle Features:* ***AUTO/OFF/ON***
- *Default setting:* ***AUTO***
- *Energy Saving Features:* ***Auto toggle @ 70°F/10 min.***

Note: Turn off power to during Summer months. Always de-energize unit prior to maintenance.

Made in USA

SPECS

1. *Sensor initiates control operation during conditions conducive to ice formation. That is, precipitation when the ambient temperature is below 40°F.*
2. *The controller will assure a minimum on time of one hour.*
3. *Controller operates on 120VAC or 208-277VAC.*
4. *The relay provided is rated at 16A @ 120V. Local codes and accepted wiring practices may limit actual usage further. For 3-Phase or for larger loads, use this unit to power an available external contactor.*
5. *Weather resistant enclosure for outdoor mounting.*
6. *The controller provides an AUTO/OFF/ON switch. Normal boot-up mode is AUTO. In AUTO, the control will activate its relay when icing conditions are indicated by the sensor and will energize for an hour. In the OFF position, the heater remains off regardless of icing conditions until mode is changed. In the ON position, the contactors are engaged until mode is changed.*

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RSD45

SNOW MELT CONTROL

DESCRIPTION

The RSD45 snow melt controller uses remote moisture and temperature sensors to effectively & efficiently shed snow/ice. It senses both moisture and temperature that could result in frozen precipitation. In automatic mode, the controller energizes when both conditions are present. There is also a manual on/off mode for weary customers! Indicators allow visual confirmation of automatic mode and when the system is energized. The RSD45 comes with a built-in 50A contactor for use with 120V-277V. This accommodates a generous amount of heat trace for snow melting or roof & gutter configurations. Additional contactors can be substituted for greater loads. Please provide system voltage when ordering. The optional P/N 85248 extends the mounting distance for tall buildings. This is ideal for industrial, commercial and some residential applications. The RSD45 can be integrated with other building systems through dry contacts for ease of control and monitoring. The RSD45 is one of the most economical automatic snow melt controls on the market. Heat trace controls are proven to be the ideal solution for set & forget and yield greater savings over conventional methods.

SPECS

- *Energize Temperature:* ***38°F***
- *Minimum On Time:* ***1 hour***
- *Control voltage:* ***120-277VAC (Specify voltage)***
- *Built-In Contactor:* ***50A resistive @ 120-277VAC***
- *Contactor Output:* ***T1 and T2***
- *Mounting Options:* ***Indoor/Outdoor Tab***
- *Control Toggle Features:* ***AUTO/OFF/ON***
- *Default setting:* ***AUTO***
- *Energy Saving Features:* ***Auto toggle @ 70°F for 10 min.***

Note: Turn off power to during Summer months. Always de-energize unit prior to maintenance.

FEATURES

- *Features a hold-on timer which will remain energized for a time after the icing condition stops. This allows the heater to completely melt any remaining snow and ice.*
- *Controller is equipped with a push-button which allows the operator to manually energize or disable the heater as desired.*
- *Controller will monitor ambient temperature and place itself in the AUTO mode from the ON/OFF mode in the event it monitors 70°F for 10 minutes.*
- *Mount system allows tab-screw mounting.*
- *The optional P/N 85248 allows increased sensor length for tall buildings.*
- *Optional interface with fire alarm type systems.*

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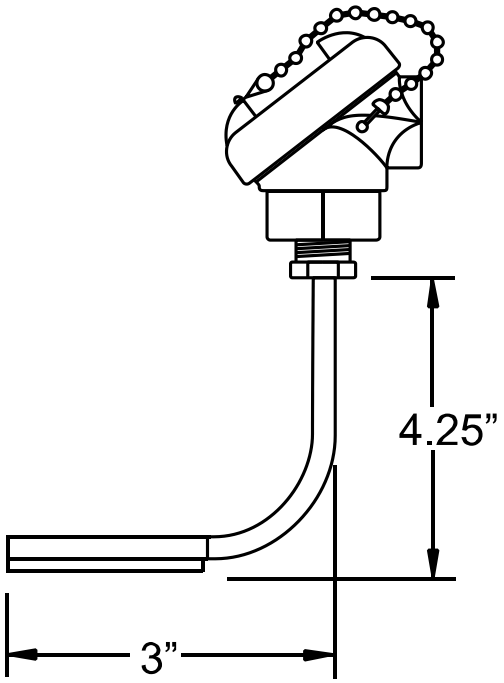
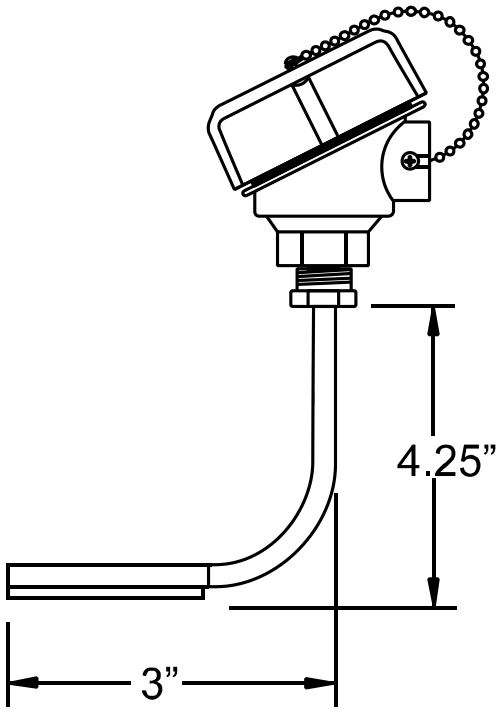
T1441

RTD SENSORS



T1441



T1441X

The T1441 series is a temperature controller for controlling heat trace systems in ordinary and corrosive environments. It is ideal for process temperature control and freeze protection. The T1441X is the explosion proof variant.

DESCRIPTION

- *Cast aluminum. T1441 is NEMA 4 and T1441X is explosion proof for Class 1 Division 1 & 2, Groups C & D.*
- *Sheath is 1/4” OD Stainless Steel*
- *Operating range is 0˚F to 700˚F*
- *Element Type is 100Ω, 3-Wire RTD, DIN 0.00385*
- *1/2” entry*
- *Tolerance: Class B, ± 0.12%*

FEATURES

Example Configuration	***T1441X***	
P/N	*Options*	*Weight*
T1441	*X=Explosion Proof*	*2 Lbs.*

DESCRIPTION

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TraceMate

TEMPERATURE CONTROLS

Controls

DESCRIPTION

The TraceMate is an electronic temperature control designed for indoor/outdoor use in non-hazardous or Class 1 Division 2 hazardous locations. It not only controls and monitors temperature, but also monitors your heating process for current and ground leakage with built-in GFEP. The TM is an ideal electronic control for heat trace and tubing bundle. Temperature sensing is achieved through a 100Ω, 3-wire platinum RTD mounted on the pipe. The TM can be installed locally or remotely under certain provisions. The TM eliminates the need for a separate ground fault breaker and the associated installation costs.

TraceMate's outstanding reliability ensures your time is spent producing, not troubleshooting. A comprehensive alarm package provides quick fault detection and a ground fault trip for optimal performance and safety. Spotting fault conditions is easy with the TraceMate's green light on the front door. You can also use the NO/NC alarm contacts to send a signal to a remote location.

The TM controls your heat tracing to a differential of only 3°C using solid-state controls and microprocessor-driven commands. The digital temperature setpoint offers fast, precise settings over a wide range. No mechanical thermostat can come close to matching the TraceMate's performance. The unit is self-contained, easy to configure and install. By combining the control, system monitoring and testing requirements of a heat trace control system into a single package, the TM facilitates significant, low-cost system upgrades. It is also readily customizable to meet your specific system requirements.

Range	*-50 to +500°C (-58 to 932°F)*
Accuracy/Repeatability	*±4.5°F, ±1.8°F*
RTD Input	*Single 100Ω platinum, 3-wire 20Ω maximum lead resistance*
Configuration	*Single-pole, Double Pole control circuits 250A 1/2 cycle inrush*
Ratings	*120V-240VAC@30A*
Ground Fault Measurement	*0mA to 511mA; 1mA steps*
Voltage Measurement	*0 to 300VAC 3%±2V (Circuit 1 ONLY)*
Control Power	*From heater voltage 120V-240VAC, 2VA Fused*
Protection	*2A fuse MOV transient protection*
Remote Monitoring	*DC or AC alarm output for PLC or remote alarm indication*
User Interface	*12 position dip switch, Reset Heater Test (Dip Switch)*
Panel Indicators	*Power On, Heater On, Low/High Temp, Current Fail, Ground Fault, RTD Fail*
User Definable Options	*Heater Setpoint: Low/High Temp: 0°C to 511°C Steps; Units: °C or °F Current Fail Setpoint: 0.0A to 30.0A, 0.1A Steps; Ground Fault Trip: 0mA to 511mA, 1mA Steps*
Alarms	*High/Low Temp, Current Fail, Ground Fault, RTD Fail, No Voltage, TraceCheck,*
TraceCheck	*Self-diagnostic exercises dormant systems every 24 hours for early warning for shutdown prevention. Status indicators show cause of alarms. Separate fail-safe local and remote alarms*
Enclosure	*NEMA-4X painted steel, Single Pole: 8"H x 6"W x 4"D; Double Pole: 10"H x 8"W x 4"D; (1)3/4" knockout; (2) 1/2" knockouts for RTD & Signal Wire*
Approvals	*CSA C/US Class I, Div. 2, Groups A, B, C, D*

FEATURES

- *Temperature Control*
- *System Fault Alarm*
- *Early Warning*
- *Remote Monitoring*
- *Hazardous / Non-hazardous Area Usage*
- *Low Installed Cost*

ORDERING INFO

Example Configuration	***TM-1SIH1-E5-RTD-A1***	
TM-	*System Voltage*	*Ship Weight*
TM-1SIH1-E5-RTD-A1	*120VAC*	*8 Lbs.*
TM-1DIH2-E5-RTD-A1	*208VAC-240VAC*	*9 Lbs.*
TM-1SIH1-E5-RTD-A1-277	*277VAC*	*8 Lbs.*

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MS2000

TEMPERATURE CONTROLS

Controls

DESCRIPTION

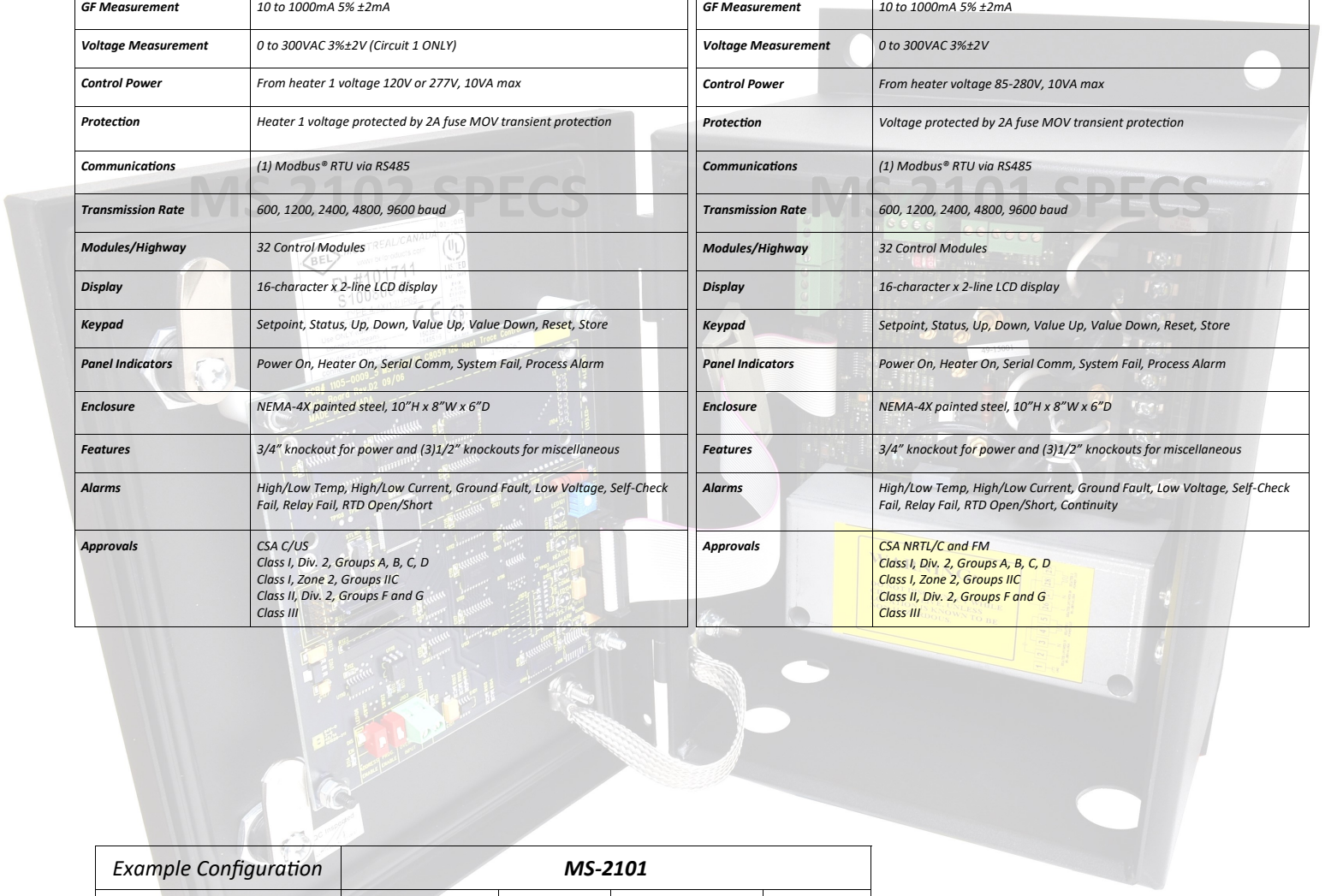
The MS-2100 series controllers are a microprocessor based heat trace control system designed for use in ordinary and hazardous locations. They control and monitor most types of heat trace. The MS-2100 series can switch up to 30A and accept up to two RTD inputs for redundancy or high-limit. These RTD inputs are user-settable with fail-safe features and can be configured to operate using only one, with the second as a backup. Alternatively, they can be configured to act as a high temperature cutout, or both can be used to control heat tracing based on values of the highest, lowest, or average of the two readings. The MS-2100 have both ON/OFF Control, with adjustable deadband, and Proportional Control that will maximize the performance and reliability of self-regulating and other types of heat trace. The master override input provides external control for load shedding or ambient temperature override. The PowerLimit feature reduces high inrush current associated with self-regulating cables, eliminating the requirement for over-sized breakers, and allows the operator to set the maximum average heater current level of each circuit. The MS-2100 has the capability of networking with other MasterTrace controllers providing the most flexible and cost effective solutions for existing and future heat trace needs. The MS-2100 continuously monitors all important heat trace variables such as temperature, current, voltage and ground fault detection and alerts operators of possible problems before they occur. All user-selectable alarm levels are independent of the trip levels and additionally, the MS-2100 performs a self-check and monitors the RTD and switches. To ensure that your heat tracing system operates 24-7, 365 days/year, TraceCheck periodically energizes and checks for alarm conditions on all dormant signals. The MS-2100 also logs minimum and maximum values and energy usage.

Range	*-50 to +500°C (-58 to 932°F)*
Accuracy/Repeatability	*±2°C, ±1°C*
RTD Input	*(2)Single 100Ω platinum, 3-wire 20Ω maximum lead resistance*
Configuration	*(2) Single-pole control circuits 800A 1 cycle inrush*
Ratings	*120V or 277V, 30A continuous, 50-60Hz*
Current Measurement	*0.1 to 30A 3%±0.2A*
GF Measurement	*10 to 1000mA 5% ±2mA*
Voltage Measurement	*0 to 300VAC 3%±2V (Circuit 1 ONLY)*
Control Power	*From heater 1 voltage 120V or 277V, 10VA max*
Protection	*Heater 1 voltage protected by 2A fuse MOV transient protection*
Communications	*(1) Modbus® RTU via RS485*
Transmission Rate	*600, 1200, 2400, 4800, 9600 baud*
Modules/Highway	*32 Control Modules*
Display	*16-character x 2-line LCD display*
Keypad	*Setpoint, Status, Up, Down, Value Up, Value Down, Reset, Store*
Panel Indicators	*Power On, Heater On, Serial Comm, System Fail, Process Alarm*
Enclosure	*NEMA-4X painted steel, 10"H x 8"W x 6"D*
Features	*3/4" knockout for power and (3)1/2" knockouts for miscellaneous*
Alarms	*High/Low Temp, High/Low Current, Ground Fault, Low Voltage, Self-Check Fail, Relay Fail, RTD Open/Short*
Approvals	*CSA C/US Class I, Div. 2, Groups A, B, C, D Class I, Zone 2, Groups IIC Class II, Div. 2, Groups F and G Class III*

MS-2102 SPECS

Range	*-50 to +500°C (-58 to 932°F)*
Accuracy/Repeatability	*±2°C, ±1°C*
RTD Input	*Dual 100Ω platinum, 3-wire 20Ω maximum lead resistance*
Configuration	*One dual-pole control circuit 800A 1 cycle inrush*
Ratings	*120V-277V, 30A continuous, 50-60Hz*
Current Measurement	*0.1 to 30A 3%±0.2A*
GF Measurement	*10 to 1000mA 5% ±2mA*
Voltage Measurement	*0 to 300VAC 3%±2V*
Control Power	*From heater voltage 85-280V, 10VA max*
Protection	*Voltage protected by 2A fuse MOV transient protection*
Communications	*(1) Modbus® RTU via RS485*
Transmission Rate	*600, 1200, 2400, 4800, 9600 baud*
Modules/Highway	*32 Control Modules*
Display	*16-character x 2-line LCD display*
Keypad	*Setpoint, Status, Up, Down, Value Up, Value Down, Reset, Store*
Panel Indicators	*Power On, Heater On, Serial Comm, System Fail, Process Alarm*
Enclosure	*NEMA-4X painted steel, 10"H x 8"W x 6"D*
Features	*3/4" knockout for power and (3)1/2" knockouts for miscellaneous*
Alarms	*High/Low Temp, High/Low Current, Ground Fault, Low Voltage, Self-Check Fail, Relay Fail, RTD Open/Short, Continuity*
Approvals	*CSA NRTL/C and FM Class I, Div. 2, Groups A, B, C, D Class I, Zone 2, Groups IIC Class II, Div. 2, Groups F and G Class III*

MS-2101 SPECS



ORDERING INFO

Example Configuration	***MS-2101***			
P/N	*System Voltage*	*No. Poles*	*No. HT Circuits*	*Weight*
9004-0101	*120V-277V*	*2*	*1*	*15 Lbs.*
9004-0107	*120V/277V*	*1*	*2*	*15 Lbs.*
**9005-XXXX*	*208V/240V*	*2*	*2*	*15 Lbs.*

** 9005-XXXX is a built-to-order controller. Please specify either 208V or 240V when ordering.*

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HTDP

HEAT TRACE PANEL

Made in USA

Controls

DESCRIPTION

HTDP heat trace distribution panels are built to job requirements. All HTDP panels feature solid state programmable controls and solid state relays or circuit breakers for efficient & reliable control of heating cables. A durable NEMA 4X rain-tight enclosure protects against the elements ensuring that all electrical is safely protected. Whether it be process temperature or freeze protection, distribution panels offer a singular, versatile and convenient source for energizing heat trace. Distribution panels offer finer and easier adjustment of setpoint temperatures and better precision in monitoring over mechanical thermostats. Distribution panels can be customized to allow for future integration of controllers/relays for expanded heat trace systems. Distribution panels also come with serial com ports for remote operability and can be configured with direction antennas for wireless communications, so you have access to your heat trace system from anywhere in the world.

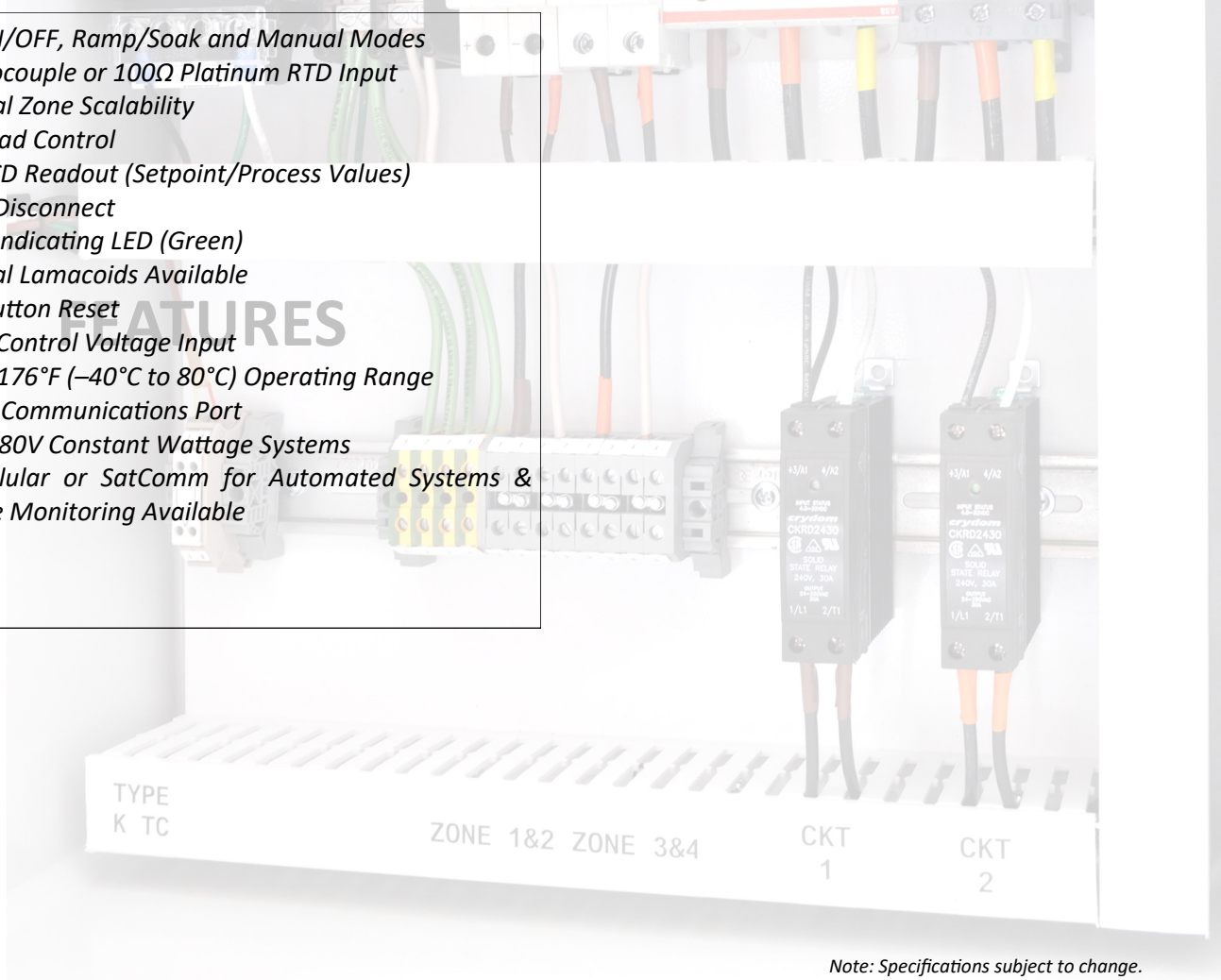
ORDERING INFO

Example Configuration	***HTDP-4X-2C-120V-2R/20A-10P-H-G***					
Cabinet Type	*Controllers*	*Operating Voltage*	*No. Relays*	*Relay Amps*	*Points*	*Options*
4=NEMA 4	*1C=1 Controller*	*120V*	*1R=1 Relay*	*10A*	**5P=5*	*H=Heated*
4X=NEMA 4X	*2C=2 Controllers*	*208V-240V*	*2R=2 Relays*	*20A*	*10P=10*	*G=GFI Protection*
	3C=3 Controllers	*277V*	*3R=3 Relays*	*30A*	*15P=15*	*RF=Radio*
	4C=4 Controllers	*480V*	*4R=4 Relays*	*35A*	*20P=20*	*CEL=Cellular*
			5R=5 Relays	*45A*	*25P=25*	*SAT=Satellite*
			6R=6 Relays	*55A*	*30P=30*	

Notes: Controller operates on 100VAC to 240VAC or 24VDC and is preconfigured to accept a type K thermocouple. Each panel comes prewired with a small piece of SW-K to illustrate proper wiring. Please observe correct polarity when wiring thermocouple. For large scale heat trace jobs it is prudent to divide out circuits over multiple relays and gang relays into individual controllers (zoning). Avoid clustering circuits into large capacity singular relays. Never exceed 80% of a relay's capacity (National Electric Code). All parallel heat trace has two conductors and ground braid. When determining number of terminals each conductor is considered a point or terminal. 5 points minimum.*

FEATURES

- *PID, ON/OFF, Ramp/Soak and Manual Modes*
- *Thermocouple or 100Ω Platinum RTD Input*
- *Optional Zone Scalability*
- *Touchpad Control*
- *Dual LCD Readout (Setpoint/Process Values)*
- *Safety Disconnect*
- *Status Indicating LED (Green)*
- *Optional Lamacoids Available*
- *Push Button Reset*
- *AC/DC Control Voltage Input*
- *-40°F - 176°F (–40°C to 80°C) Operating Range*
- *RS-485 Communications Port*
- *Up to 480V Constant Wattage Systems*
- *RF, Cellular or SatComm for Automated Systems & Remote Monitoring Available*



Note: Specifications subject to change.

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R SERIES

CONNECTION KITS

Accessories

Made in USA

The R series connection kits offer the most versatile and durable platform for terminating constant wattage, self-regulating and MI heating cables in both ordinary & division 2 locations. The RPC & RTC both have an 3/4" conduit opening for service while the RSL functions as an monitor light. Each enclosure comes with DIN mounted 600V rated terminals for quick & reliable electrical connection. The RPC comes standard with an end seal for a complete circuit. The RSL accommodates a range of service voltages from 120V-277V and is used for indicating voltage at the end-of-circuit. The RTC can function as either a 3-way power connection or above-insulation splice & tee kit. R series kits are NEMA 4X rated and approved for use in Class 1 Division 2 areas (3rd Party Certification).

DESCRIPTION

- *Junction Box*
- *Cover*
- *Mounting Bracket*
- *2 - Sealing Grommets*
- *Lock Ring*
- *Compression Fitting*
- *Power Termination Boot*
- *End Termination Cap*
- *Silicone Packet*
- *Pipe Strap*

RPC

Example Configuration	***RPC-1-SR***		
Connection Type	*Pipe Size*	*Cable Type* (RPC)*	*Weight*
RPC	*1=1”-3”*	*SR=Self-Regulating*	*1.9 Lbs.*
RSL	*2=2”-14”*	*CW=Constant Watt*	*2.0 Lbs.*
RSL-4- (480V)	*3=3/4”-1”*		*2.0 Lbs.*
RTC			*5.0 Lbs.*

*Note: *Cable type is for end termination purposes (RPC ONLY). Not for use with RSL. RSL-4 is for 480V constant wattage ONLY! See banding sizes below for mounting considerations.*

ORDERING INFO

- *Junction Box*
- *Cover w/ 33mm LED*
- *Mounting Bracket*
- *Compression Fitting*
- *2 - Sealing Grommets*
- *Pipe Strap*
- *Lock Ring*
- *Power Termination Boot*
- *Silicone Tube*

RSL

Enclosure[1]	*Fiberglass Reinforced Duroplastic Polyester*
Stand-Off/Compression[2]	*Ryton PPS*
Temperature Range[1]	*-60°F to 420°F*
Melting Point	*480°F[1] , 540°F[2]*
Entry Hole (RPC, RTC)	*1-1/16” (Hole Diameter), 3/4” Hub*
Lamp Type (RSL)	*30mm LED 24VDC-277V*
Termination Cap (RPC)	*500°F Silicone*
Dimensions (RPC, RSL)	*4.8”Lx4.42”Wx3.58”D (w/ cover)*
Dimensions (RTC)	*6-13/16”Lx4”Wx3-9/32” (w/ cover)*

CONSTRUCTION

- *Junction Box*
- *Cover*
- *Mounting Bracket*
- *Compression Fitting*
- *2 - Sealing Grommets*
- *1” NPT Plug*
- *Pipe Strap*
- *2 - Lock Rings*
- *3 - Power Termination Boot*
- *Silicone Tube*

RTC

- *Corrosion resistant*
- *Thermal stability*
- *Non-flammable*
- *Captive stainless hardware*
- *Water resistant*
- *3/4” conduit hub opening*
- *DIN rail mounted terminal blocks*
- *UV resistant*

FEATURES

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PL

CONNECTION KITS

Made in USA

Accessories

PL

- *Junction Box*
- *Cover*
- *Mounting Bracket*
- *1" NPT Plug*
- *2 - Pipe Straps*
- *End Termination Cap*
- *Terminal Block*
- *Silicone Packet*

TML

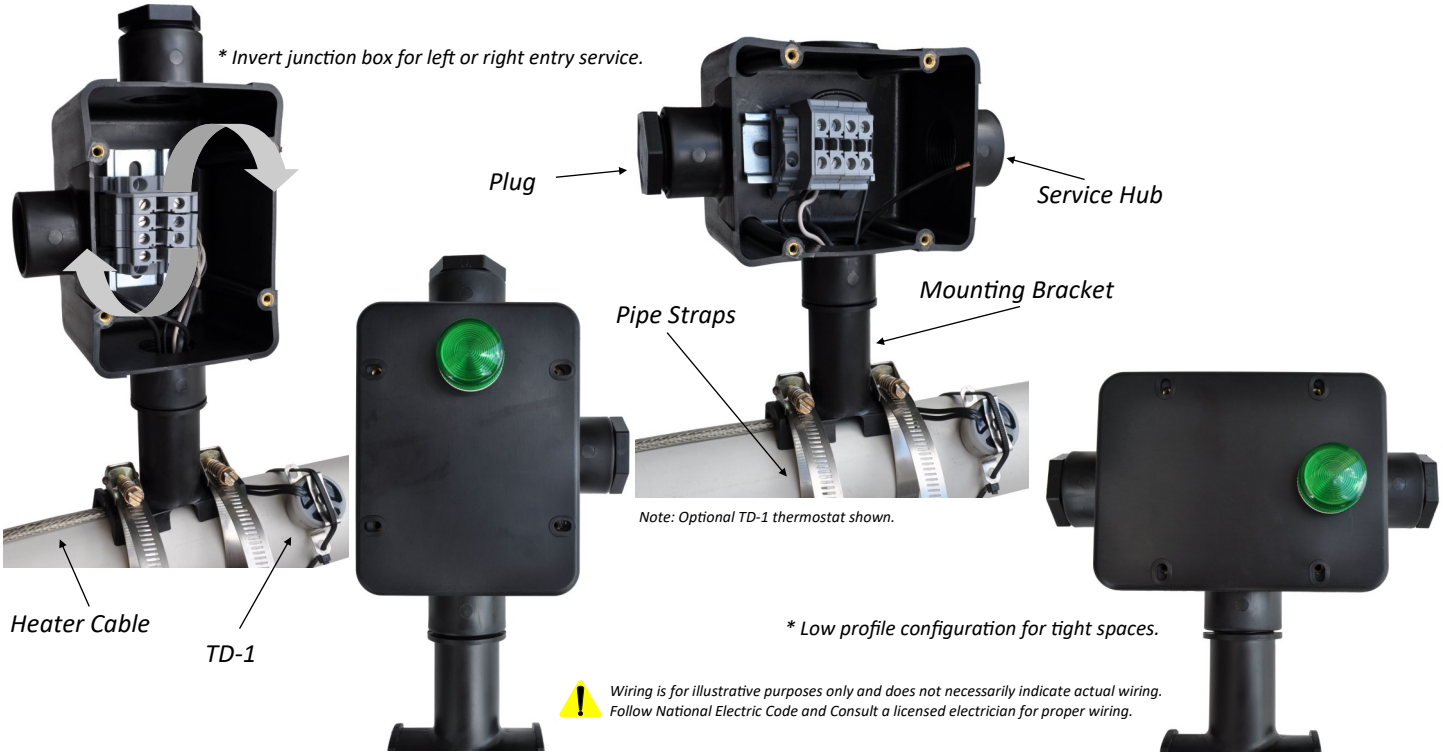
- *3 Hub Junction Box*
- *Indicating Light Cover*
- *1" NPT Mounting Bracket*
- *2 - 1" NPT Plugs*
- *Terminal Block*
- *2 - Pipe Straps*

DESCRIPTION

The PL power connection kit is a simple and inexpensive solution for terminating constant wattage and self-regulating cables in non-hazardous locations. The TML monitor light kit is used for assessing the operating status of electric heating cables in the field. The TML is used in lieu of traditional end seals when a visual cue of system functionality is desirable. It comes with an LED to provide years of uninterrupted service. Both connection kits come with terminal blocks that can be configured as floating or fixed and the two supplied pipe straps are used for securing the mounting bracket to the pipe. The enclosure and mounting bracket are made from high temperature nylon that is rated up to 380°F and is NEMA 4X rated. The supplied end termination cap in the PL is used to terminate the heat trace at the end of the circuit. The PL power connection kit offers a complete termination package for one heat trace circuit.

Material	*Nylon Polifil 627*
Melting Point	*400°F*
Temperature Range	*-60°F to 380°F*
Hub Size	*1" NPT*
Light (TML)	*22mm LED*
End Seal Type (PL)	*Silicone 500°F*
Dimensions	*6-13/16"Lx4"Wx3-9/32"D(w/ cover)*

Example Configuration	***TML-2-1***			
PL[1]	*Voltage[2]*	*Pipe Size[1,2]*	*Cable Type[1]*	*Weight*
Power Connection Kit	*1=120V*	*1=1"-3"*	*SR=Self-Regulating*	*1.3 Lbs.*
	2=208V-277V	*2=2"-14"*	*CW=Constant Watt*	*1.5 Lbs.*
	*4=480V**	*3=3/4"-1"*		*1.0 Lb.*
TML[2]				
Monitor Light Kit				
*Note: Cable type is for end termination purposes. Voltage applies to TML only. *480V is exclusive to constant watt cables.*				



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RG

ROOF & GUTTER CONNECTION KITS

Made in USA

Accessories

RG-PK

- *Junction Box*
- *Terminal Block*
- *1 - CGB Fitting*
- *1 - 1" - 3/4" NPT Reducer*
- *1" NPT Plug*
- *1 - Black Heat Shrink*
- *2 - Black Heat Shrink*
- *1 - Green Heat Shrink*

RG-PK

- *Junction Box*
- *Terminal Block*
- *2 - CGB Fitting*
- *2 - 1" - 3/4" NPT Reducer*
- *1" NPT Plug*
- *2 - Black Heat Shrink*
- *4 - Black Heat Shrink*
- *2 - Green Heat Shrink*

RG-TK

- *Junction Box*
- *Terminal Block*
- *3 - CGB Fitting*
- *3 - 1" - 3/4" NPT Reducer*
- *3 - Black Heat Shrink*
- *6 - Black Heat Shrink*
- *3 - Green Heat Shrink*

DESCRIPTION

RG termination kits are for making power, splice or tee connections inside a NEMA 4X enclosure through water tight CGB fittings primarily for roof and gutter applications.

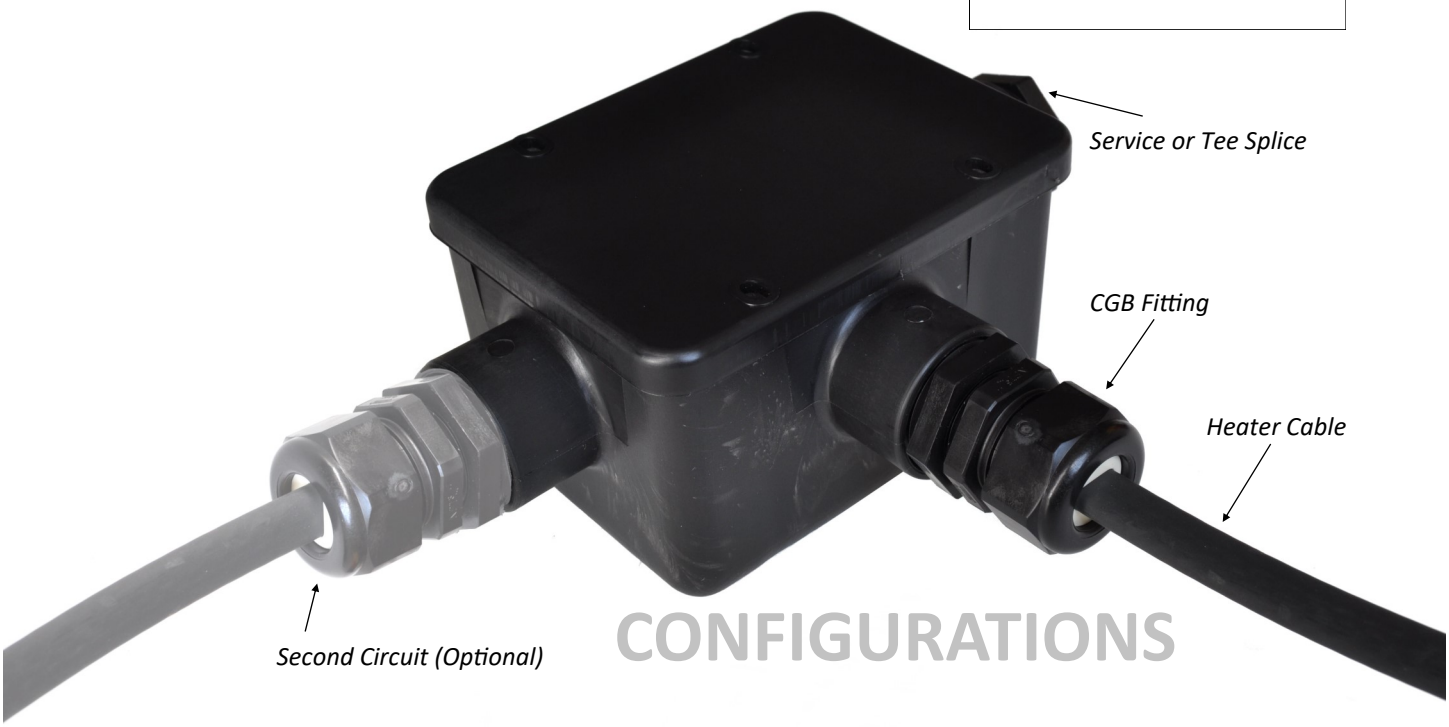
The SCK-2 power termination kit is for terminating self-regulating or constant wattage heater cables into a NEMA 4X enclosure (customer supplied) through a CGB fitting. The kit comes with heat shrink tubing to isolate each conductor including the ground braid. The SCK-2 is ideal for use in roof and gutter applications and comes with wire nuts for connecting to service leads.

Material	*Nylon Polifil 627*
Melting Point	*400°F*
Tensile Strength	*6,800 PSI*
Izod Impact Strength	*Ft./Lb./Inch Notch 16*
Rockwell Hardness	*R Scale 105*
Operating Temperature Range	*-60°F to 380°F*
Hub Size	*1" NPT*
Dimensions	*6-13/16"Lx4"Wx3-9/32"D*
CGB Fitting	Nylon 6/6 (212°F)
Bushing	Buna-N (212°F)

CONSTRUCTION

- *3/4" Nylon CGB Fitting*
- *2 - Heat Shrink (Conductors)*
- *Heat Shrink (Ground)*
- *Small Heat Shrink*
- *Large Heat Shrink*
- *2 - Wire Nuts (Conductor)*
- *Wire Nut (Ground)*

SCK-2



CONFIGURATIONS

Example Configuration	***RG-PK-SR***	
Type	*Cable Type*	*Weight*
SCK-2 (Power Kit)	*SR=Self-Regulating*	*5 oz.*
RG-PK (Power Kit)	*CW=Constant Watt*	*1.0 Lb.*
RG-SK (Splice Kit)		*1.0 Lb.*
RG-TK (Tee Kit)		*1.0 Lb.*
Note: Different bushing used for constant wattage cables.		

ORDERING INFO

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ROOF & GUTTER ACCESSORIES

Made in USA

Accessories

- 5 - Double Clips

RCK

- 5" Heat Shrink Tube
- 3" Heat Shrink Tube
- (2)1" Small Heat Shrink Tube
- 10-12 AWG Butt Splice
- (2)12 or 16 AWG Butt Splices

RGSK

- Hanger
- Rubber Hose
- Hose Clamp

RDK

ORDERING INFO

Example Configuration	**RCK**	Weight
RCK	Roof Clips	1.2 Lbs.
RDK	Downspout Hanger	0.6 oz.
RGSK	Roof & Gutter Splice Kit	2.0 oz.

DESCRIPTION

RCK roof clips are used to secure heat trace to rooftops. Roof clips can be used on most types of roofing surfaces with self-regulating and constant wattage heating cables. The kits contains enough double clips to complete 7 linear feet of roof edge.

RDK downspout hangers are used to suspend heat trace in downspouts to melt ice and ensure proper drainage. Downspout hangers can be used with constant wattage or self-regulating heating cables. Downspout hangers are secured to gutters with a sheet metal screw (not supplied).

The RGSK splice kit is used for splicing two self-regulating or constant watt cables together in the field using industrial grade heat shrink with integral adhesive. The heat shrink has an temperature range of –67°F to 230°F and is constructed of polyolefin with a 3:1 shrink ratio and an internal sealant to ensure a watertight, super strong seal.

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SMC-TK

TERMINATION KIT

Made in USA

Accessories

DESCRIPTION

The SMC-TK termination kit is a power and end termination solution to SM-C constant wattage snow-melting cables. Each kit contains enough material to terminate one SM-C circuit.

CONTENTS

- *Large 6" Heat Shrink*
- *Ground Heat Shrink*
- *(3) Strips Self-Fusing Tape*
- *(3) 10-12AWG Butt Splice*
- *RTV Packet*
- *End Seal*

ORDERING INFO

Example Configuration	***SMC-TK***	*Weight*
SMC-TK	*Termination Kit*	*4.0 oz.*

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Made in USA

STRAPPING TAPES

Accessories

FG-1

FG-3

AL-1

DESCRIPTION

FG-1 fiberglass tape is commonly used to secure heat tracing to pipes, appendages, instrumentation, etc. FG-1 is a general purpose tape reinforced with glass-yarn filaments that gives the tape high tensile strength, low stretch and superior tack. It's excellent for freeze protection and low temperature process applications. FG-3 glass cloth tape is a glass cloth tape with a high-temperature thermosetting silicone adhesive. It provides an increased bond once applied in areas of high ambient/process temperatures. FG-3 should be used in medium-high process temperature applications. AL-1 aluminum tape is used to improve heat transfer between tracers and pipes/vessels while lowering cable sheath temperature. Aluminum tape is mandatory for use on all plastic pipe and FRP vessels and is ideal for use in securing cable in gutters for roof & gutter applications.

SPECS

Tensile Strength (lbs/inch)	*300(FG-1), 180(FG-3), 21(AL-1)*
Overall Thickness (Mils)	*6.0(FG-1), 7.0(FG-3), 3.4(AL-1)*
Elongation	*4.5%(FG-1), 5%(FG-3), 4%(AL-1)*
Temperature Rating	*185°F(FG-1), 400°F(FG-3), -40°F-250°F(AL-1)*
Electrical Strength (Volts)	*3,000 (FG-3)*
Backing	*Glass Filament, Glass Cloth, 2 Mil Dead Soft Aluminum*
Adhesive	*Rubber Resin, High-Temp Silicone, Acrylic*
Adhesion (oz./inch)	*55, 40, 45*
Dimensions (Weight)	*3/4" x 180' (.8 Lbs.), 1/2" x 108' (.3 Lbs.), 2" x 150' (1.5 Lbs.)*

Note: For FG tapes, the amount of tape required to secure heat trace is determined by taking the pipe diameter and finding the circumference (C = D x π) and adding 3" or >(avg.) of overlap. Divide your answer by 12 (12"/ft.) and multiply your answer times the length of pipe to be traced then divide by the number of feet of tape per roll. AL-1 tape should be applied lengthwise directly over the cable and pressed down around the edges to improve conduction.

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EC

END TERMINATION KIT

Made in USA

Accessories

Actual Size

DESCRIPTION

The EC end termination kit is used for terminating self-regulating and constant wattage cables. The RTV and end cap combine to form a strong, durable, moisture resistant seal and are ideal for use in both ordinary and class 1 division 2 locations where open flames are discouraged. The EC is also a great choice for low profile, under-the-insulation end seals. The end seal has a continuous exposure temperature of 500°F and can withstand intermittent exposures up to 650°F making it ideal for virtually all heat tracing applications. The EC-HS can be used with constant wattage (except FEP-M) and self-regulating cables in ordinary locations and is suitable for use in freeze protection, low process temperature & roof & gutter applications. It comes standard with a ground lug for grounding continuity. The heat shrink has an operating temperature range of –67°F to 230°F and is constructed of polyolefin with a 3:1 shrink ratio and an internal sealant to ensure a strong watertight seal.

ORDERING INFO

Example Configuration	***EC-1SR***		
Termination Type	*Qty.*	*Cable Type*	*Weight*
EC-	*1*	*SR=TSL, -M, -H, FLV, RG, SM-B*	*< 1 Lb.*
	5	*CW=FEP, -LT, -LV, SM-C*	*< 1 Lb.*
	10	*M=FEP-M*	*< 1 Lb.*
	15	*HS=Adhesive Lined Heat Shrink*	*< 1 Lb.*

Note: One RTV packet is sufficient for three end seals. HS= All cable types except FEP-M. Not for use in classified areas.

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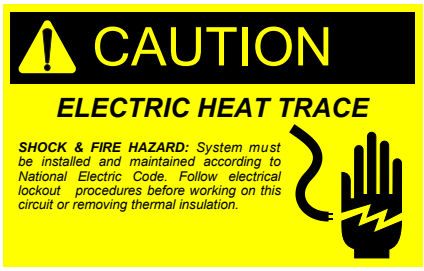
ACCESSORIES



DESCRIPTION

CL-1 caution labels are used for identifying areas where heat trace is installed and are helpful for alerting operations personnel of potential shock hazards. CL-1 caution labels are to be affixed on insulating materials placed over heat trace. Recommended placement is between 10' and no more than 25' apart.

PS series pipe straps are used to secure connection kits via mounting brackets to pipes and other convenient appendages. PS series pipe straps are constructed of 201/301 stainless steel and have a 5/16" hex head for ease of installation.

The PTB power termination boot is for use with self-regulating cables only. It's an alternative to heat shrink and slides right over the conductors. The kit comes with a packet of silicone to provide a strong seal.

ORDERING INFO

Example Configuration	PS-1	Weight
PTB	Power Termination Boot	0.8 oz.
PS[1]	1=1"-3" Pipe Size[1]	1.2 oz.
	2=2"-14" Pipe Size[1]	2.8 oz.
	3=3/4"-1" Pipe Size[1]	0.8 oz.
CL-1	Caution Labels (5/Pack)	1.0 oz.

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HTM-75

HEAT TRANSFER CEMENT

Made in USA

DESCRIPTION

HTM-75 heat transfer cement is designed to significantly improve the heat transfer between heating medias and process lines. Heat transfer cement thermally bonds steam and electric tracers to process pipes, valves, pumps and other appendages. HTM-75 fills the air cavities that normally exist between the heat tracer and process equipment with heat conductive, thermal mastic that efficiently transfers heat through conduction to the process equipment. By replacing the normal air gaps with the heat conductive cement, the heat transfer rates are improved by up to 10 times that of convective heat transfer.

SPECS

Maximum Exposure Temperature	*750°F*
Minimum Application Temperature	*32°F*
Heat Transfer Coefficient	*20-40 BTU/Hr-Ft²°F*
Water Soluble	*Yes*
Shelf Life	*1 Year Unopened*

ORDERING INFO

Example Configuration	**HTM-75-1**	
HTM-75	Container Size	Weight
Heat Transfer Cement	1=One Gallon	15 Lbs.
	5=Five Gallon	75 Lbs.
	Q=Quart	4 Lbs.
	C=0.10 Gallon Cartridge	1.5 Lbs.

- *Thermally bonds steam, fluid, and electric heat tracers to process pipes, vessels and equipment.*
- *With its high conductivity, significantly improves heat transfer between steam and fluid tracer tubes and process pipes.*
- *Provides an easy to install, cost effective alternative to jacketed piping and internal tracer systems.*
- *One tracer installed with HTM-75 will deliver the equivalent heat of up to four bare (no cement) tracers. With the elimination of multiple tracers, the costs to install and maintain the tracing system is greatly reduced.*

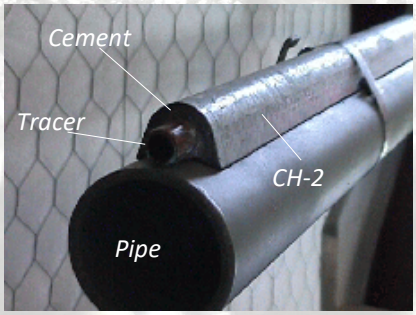
ACCESSORIES

CH-25	Channel for 1/4" Tracer (4' section)
CH-50	Channel for 1/2" Tracer (4' section)
CH-75	Channel for 3/4" Tracer (4' section)
SSB-1	Stainless Steel 1/2" x 0.02" Banding (823'/Roll)
SSCR-1	Stainless Crimp Seals for Banding (1,000/Box)
BT-1	Banding Tool for Stainless Steel Banding

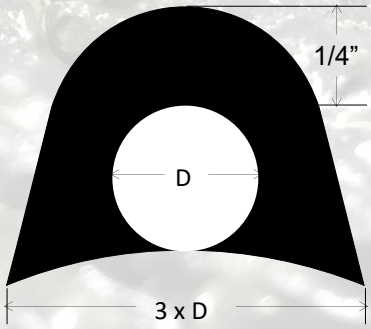
COVERAGE RATES

Application Method	**Tracer Sizes**				
	5/16" OD	**3/8" OD**	**1/2" OD**	**3/4" OD**	**1" OD**
CH-2	26'	28'	32'	NA	
CH-3	NA			19'	NA
Hand Trowel	52'	32'	28'	14'	9'
Flat Surface	1 Gallon = 6 ft.² (1/4" Thick), 12 ft.² (1/8" Thick)				

Typical hand trowel application



Optional channel reduces waste, weather protects and eliminates curing requirements



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HTM-125

HEAT TRANSFER CEMENT

Made in USA

HTM-125 heat transfer cement is designed to significantly improve the heat transfer between heating medias and process lines. Heat transfer cement thermally bonds steam and electric tracers to process pipes, valves, pumps and other appendages. HTM-125 fills the air cavities that normally exist between the heat tracer and process equipment with heat conductive, thermal mastic that efficiently transfers heat through conduction to the process equipment. By replacing the normal air gaps with the heat conductive cement, the heat transfer rates are improved by up to 10 times that of convective heat transfer.

DESCRIPTION

SPECS

Maximum Exposure Temperature	*1250°F*
Minimum Application Temperature	*32°F*
Heat Transfer Coefficient	*20-40 BTU/Hr-Ft²°F*
Water Soluble	*Yes*
Shelf Life	*1 Year Unopened*

ORDERING INFO

Example Configuration	***HTM-125-1***	
HTM-125	*Container Size*	*Weight*
Heat Transfer Cement	*1=One Gallon*	*13 Lbs.*
	5=Five Gallon	*65 Lbs.*
	Q=Quart	*3.5 Lbs.*
	C=0.10 Gallon Cartridge	*1.3 Lbs.*

- *Thermally bonds steam, fluid, and electric heat tracers to process pipes, vessels and equipment.*
- *With its high conductivity, significantly improves heat transfer between steam and fluid tracer tubes and process pipes.*
- *Provides an easy to install, cost effective alternative to jacketed piping and internal tracer systems.*
- *One tracer installed with HTM-125 will deliver the equivalent heat of up to four bare (no cement) tracers. With the elimination of multiple tracers, the costs to install and maintain the tracing system is greatly reduced.*

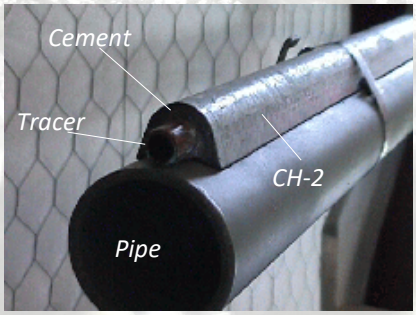
ACCESSORIES

CH-25	*Channel for 1/4" Tracer (4' section)*
CH-50	*Channel for 1/2" Tracer (4' section)*
CH-75	*Channel for 3/4" Tracer (4' section)*
SSB-1	*Stainless Steel 1/2" x 0.02" Banding (823'/Roll)*
SSCR-1	*Stainless Crimp Seals for Banding (1,000/Box)*
BT-1	*Banding Tool for Stainless Steel Banding*

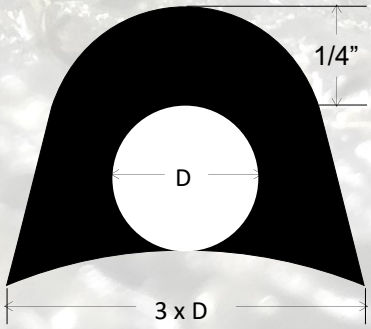
COVERAGE RATES

Application Method	***Tracer Sizes***				
	5/16" OD	***3/8" OD***	***1/2" OD***	***3/4" OD***	***1" OD***
CH-2	*26'*	*28'*	*32'*	*NA*	
CH-3	*NA*			*19'*	*NA*
Hand Trowel	*52'*	*32'*	*28'*	*14'*	*9'*
Flat Surface	*1 Gallon = 6 ft.² (1/4" Thick), 12 ft.² (1/8" Thick)*				

Typical hand trowel application



Optional channel reduces waste, weather protects and eliminates curing requirements



TRANS-HEAT, LLC.

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Romans 10:11 For whosoever believes on Him shall not be ashamed.

HTM-45

HEAT TRANSFER CEMENT

Made in USA

DESCRIPTION

HTM-45 heat transfer cement is designed to significantly improve the heat transfer between heating medias and process lines. Heat transfer cement thermally bonds steam and electric tracers to process pipes, valves, pumps and other appendages. HTM-45 fills the air cavities that normally exist between the heat tracer and process equipment with heat conductive, thermal mastic that efficiently transfers heat through conduction to the process equipment. By replacing the normal air gaps with the heat conductive cement, the heat transfer rates are improved by up to 10 times that of convective heat transfer.

SPECS

Maximum Exposure Temperature	*450°F*
Minimum Application Temperature	*32°F*
Heat Transfer Coefficient	*20-40 BTU/Hr-Ft²°F*
Water Soluble	*No*
Shelf Life	*Indefinite*

ORDERING INFO

Example Configuration	**HTM-45-1**	
HTM-45	Container Size	Weight
Heat Transfer Cement	1=One Gallon	13 Lbs.
	5=Five Gallon	65 Lbs.
	Q=Quart	3.5 Lbs.
	C=0.10 Gallon Cartridge	1.3 Lbs.

ACCESSORIES

CH-25	Channel for 1/4" Tracer (4' section)
CH-50	Channel for 1/2" Tracer (4' section)
CH-75	Channel for 3/4" Tracer (4' section)
SSB-1	Stainless Steel 1/2" x 0.02" Banding (823'/Roll)
SSCR-1	Stainless Crimp Seals for Banding (1,000/Box)
BT-1	Banding Tool for Stainless Steel Banding

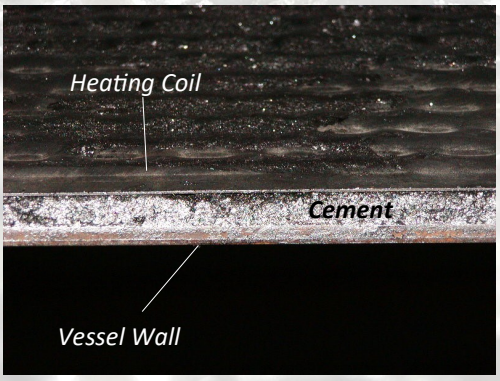
FEATURES

- Thermally bonds steam, fluid, and electric heat tracers to process pipes, vessels and equipment.
- With its high conductivity, significantly improves heat transfer between steam and fluid tracer tubes and process pipes; also plate-type steam, fluid and electric heating coils installed on storage and processing tanks.
- Provides an easy to install, cost effective alternative to jacketed piping and internal tracer systems.
- One tracer installed with HTM-45 will deliver the equivalent heat of up to four bare (no HTM) tracers. With the elimination of multiple tracers, the costs to install and maintain the tracing system is greatly reduced.
- Non-setting mastic remains pliable indefinitely and allows for easy disassembly of tracing systems.
- Requires no special curing.

COVERAGE RATES

Application Method	**Tracer Sizes**				
	5/16" OD	**3/8" OD**	**1/2" OD**	**3/4" OD**	**1" OD**
CH-2	26'	28'	32'	NA	
CH-3	NA			19'	NA
Hand Trowel	52'	32'	28'	14'	9'
Flat Surface	1 Gallon = 6 ft.² (1/4" Thick), 12 ft.² (1/8" Thick)				

Apply evenly over coil surface area filling irregular voids



Thickness 1/4" - 1/8"