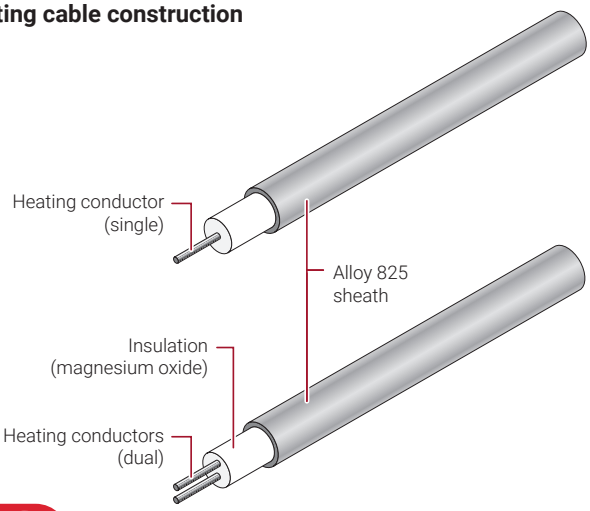
XMI-A (Alloy 825)

CONNECT AND PROTECT

High temperature constant wattage mineral insulated heating cables Electrical freeze protection and process temperature maintenance for nonhazardous and hazardous locations

PRODUCT OVERVIEW

Heating cable construction



10 YEAR Product warranty

nVent RAYCHEM XMI-A heating cables provide solutions for industrial freeze protection and process- temperature maintenance applications up to 1022°F (550°C) and maximum exposure temperatures up to 1200°F (650°C).

They are available as 300 V and 600 V rated heating cables and are approved for applications up to 61 watts per foot (200 watts per meter) of power output, and can be used for pipe and vessel tracing in both hazardous and nonhazardous area applications.

XMI-A heating cables are constructed using an Alloy 825 sheath and are ideally suited for heating applications where high power output, high exposure temperatures, or extreme resistance to environmental corrosives is needed.

For additional information, contact your nVent representative or call (800) 545-6258.

TEMPERATURE RATING

Maximum continuous exposure temperature for heating cable*	1200°F (650°C)
Maximum continuous exposure temperature for brazed components such as hot/cold joints and end cap*	1022°F (550°C)

* Higher temperature/power capabilities may also be available depending on the application; contact nVent for additional information.

TEMPERATURE ID NUMBER (T-RATING)

To be established by calculating the maximum sheath temperature. Use TraceCalc Pro design software or contact nVent for assistance.

APPROVALS

XMI-A
(Alloy 825 sheath)
Nonhazardous and Hazardous Locations

C US

Class I, Division 1 and 2, Groups A, B, C and D; Class II, Division 1 and 2, Groups E, F and G;
Class III, Division 1 and 2; T-coded*
Class I Zone 1 AEx eb IIC T* Gb or Class I Zone 2 AEx nA IIC T* Gc
Ex 60079-30-1 IIC T* Gb or Ex 60079-30-1 IIC T* Gc

SPECIFICATIONS

Product Family	Sheath Material	Product Code	Voltage Rating	Number of Conductors	Max. Power Output**	Bending Radius
XMI-A	Alloy 825	XMI-A61	600 V	1	61 W/ft; 200 W/m	6 times heating cable diameter
XMI-A	Alloy 825	XMI-A32	300 V	2	60 W/ft; 197 W/m	6 times heating cable diameter
XMI-A	Alloy 825	XMI-A62	600 V	2	61 W/ft; 200 W/m	6 times heating cable diameter

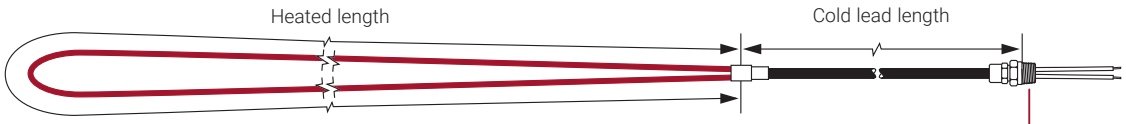
** Actual power output values are application specific and may be lower, particularly for designs in hazardous locations. Use TraceCalc Pro design software or contact nVent for design assistance.

BASIC HEATING CABLE DESIGN CONFIGURATIONS

XMI-A heating cables are designed as engineered heating units according to your specific application. An engineered heating unit consists of a length of heating cable (Heated length) joined to a length of non-heating cold lead (Cold lead length). Engineered heating units are designed using our TraceCalc Pro software. This section describes the available XMI-A engineered heating unit design configurations.

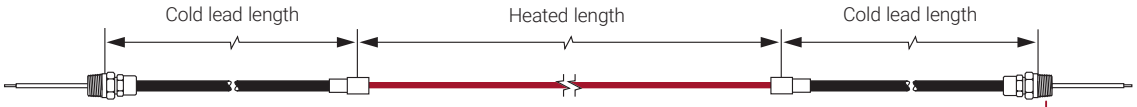
Various quick connector options are available for the XMI-A cold lead (Canada only). Refer to data sheet H59126 for further details.

Design A



Single conductor cable (XMI-A61 series only)

Design B

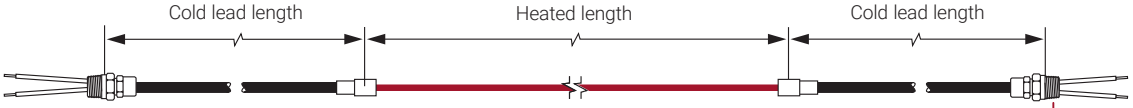


Single conductor cable (XMI-A61 series only)

Design D

Dual conductor cable (XMI-A32 or XMI-A62 series only)

Design E



Dual conductor cable (XMI-A32 or XMI-A62 series only)

HEATING CABLE CATALOG NUMBER

An XMI-A engineered heating unit is ordered by compiling the catalog number based on the design of the specific engineered heating unit required for your application. Typically, an engineered heating unit is designed using our TraceCalc Pro design software which provides the catalog number as part of the design output. An explanation of the catalog number follows:

Example: Engineered Heating Unit (Part No.: EHU)
EHU: D/32SA2200/40/538/208/7/S25A/X/N12/RG1/PE/S

Position:	**1**	**/ 2**	**/ 3**	**/ 4**	**/ 5**	**/ 6**	**/ 7**	**/ 8**	**/ 9**	**/ 10**	**/ 11**	**/ 12**
	D	**/ 32SA2200**	**/ 40**	**/ 538**	**/ 208**	**/ 7**	**/ S25A**	**/ X**	**/ N12**	**/ RG1**	**/ PE**	**/ S**

Position	Characteristic	Code Options	Description
1	Design configuration	A, B, D or E	Designates the basic heating cable design configuration of the XMI-A engineered heating unit.
2	Heating cable reference	See Tables 3, 4 and 5	Indicates the XMI-A heating cable reference used in the design.
3	Heated length	Length of the heating cable in feet or meters	Default value is in feet; if in meters add “M” after the length.
4	Power	Power output of the heating cable unit	Power output at maintain temperature, in Watts, for the total heated length of the engineered heating unit.
5	Voltage	Effective voltage applied to a heating unit	This is the designed effective voltage that will be applied to the engineered heating unit (in the case of series connected heating units, it is the voltage across a single unit).
6	MI cold lead length	(length) or (length)–(length) Length of the MI cold lead in feet or meters	Default value is in feet; if in meters add “M” after the length. Standard lengths for XMI-A engineered heating units are 4 feet (1.2 m) or 7 feet (2.1 m), however custom lengths can be designated here. For E and B configurations, which have cold leads on each end, a single value (such as “7”) indicates that both MI cold leads are to be 7 feet long. A hyphenated value (such as “5-7”) indicates that the cold lead on one end is 5 feet long and the cold lead on the other end is 7 feet long.
7	MI cold lead code	Select the cold lead code from Table 2	Table 2 is used to select the appropriate MI cold lead based on the current and voltage rating required by the design.
8	Hot-cold joint type	X	“X” type joint is used with all XMI-A engineered heating units.
9	Gland size reference	Refer to Table 2	Gland size depends on the cold lead code selected from Table 2.
10	Reverse gland	RG12, RG34, RG1	Optional reversed gland added to the cold lead to make a water tight seal for design configurations A and D, when used for internal pipe tracing applications. • Design A configuration: only 1" NPT (RG1) reversed gland available. • Design D configuration: ½" NPT (RG12), ¾" NPT (RG34) or 1" NPT (RG1) reversed gland available.
11	Pulling eye	PE	Optional pulling eye to aid in pulling a cable inside a pipe or channel. Use with Design D configuration only.
12	Special feature	S	Indicates a special non-standard feature has been added to the heating cable.

Examples

D/62SQ3100/200/9920/480/4/S25A/X/N12

- Configuration is Design D
- XMI-A62 heating cable (600 V rated, dual conductor cable), resistance at 20°C is 0.100 Ω/ft (0.328 Ω/m)
- Heating cable length is 200 ft (61 m)
- Heating cable wattage is 9920 W at 480 V
- MI cold lead length is 4 ft (1.2 m)
- MI cold lead code is S25A (25 Amps)
- Hot-cold joint type is “X” for use with XMI-A Alloy 825 sheath cables
- Gland connector is ½ in NPT

E/32SQ3200/25M/870/120/2.1M/LS23A/X/N12

- Configuration is Design E
- XMI-A32 heating cable (300 V rated, dual conductor cable), resistance at 20°C is 0.200 Ω/ft (0.656 Ω/m)
- Heating cable length is 25 m (82 ft)
- Heating cable wattage is 870 W at 120 V
- MI cold lead length is 2.1 m (7 ft) on both ends
- MI cold lead code is LS23A (23 Amps)
- Hot-cold joint type is “X” for use with XMI-A Alloy 825 sheath cables
- Gland connector is ½ in NPT

B/61SQ3118/250/6820/480/5-7/S29A/X/N12

- Configuration is Design B
- XMI-A61 heating cable (600 V rated, single conductor cable), resistance at 20°C is 0.118 Ω/ft (0.387 Ω/m)
- Heating cable length is 250 ft (76 m)
- Heating cable wattage is 6820 W at 480 V
- MI cold lead length is 5 ft (1.5 m) on one end and 7 ft (2.1 m) on the other end
- MI cold lead code is S29A (29 Amps)
- Hot-cold joint type is “X” for use with XMI-A Alloy 825 sheath cables
- Gland connector is ½ in NPT

D/32SA2200/40/538/208/7/S25A/X/N12/RG1/PE

- Configuration is Design D
- XMI-A32 heating cable (300 V rated, dual conductor cable), resistance at 20°C is 2.0 Ω/ft (6.56 Ω/m)
- Heating cable length is 40 ft (12.2 m)
- Heating cable wattage is 538 W at 208 V
- MI cold lead length is 7 ft (2.1 m)
- MI cold lead code is S25A (25 Amps)
- Hot-cold joint type is “X” for use with XMI-A Alloy 825 sheath cables
- Gland connector is ½ in NPT
- Supplied with 1" NPT reversed gland
- Supplied with pulling eye

TABLE 1 HEATING CABLE REFERENCE DECODING

Position	1	2	3	4	5	6	7	8
	6	2	S	A	2	2	0	0

Position	Description	
1	Maximum voltage rating	3 = 300 V, 6 = 600 V
2	Number of conductors	1 or 2
3	Sheath material	S = Alloy 825
4	Conductor material	A, B, C, F, P, Q, or T
5	Move decimal point to left indicated number of places	1, 2, 3, 4, 5, or 6 places
6 to 8	Cable resistance to 3 whole numbers (use with digit 5)	2200 = 2.00 Ω/cable foot at 20°C

TABLE 2 ALLOY 825 SHEATHED COLD LEADS

The cold lead is supplied from the factory with a standard stainless steel National Pipe Thread (NPT) gland connector ready for assembly into the junction box or panel using the flexible wire tails extending from the MI cold lead. The cold lead is selected based on the voltage and current requirements of the XMI-A engineered heating unit. The standard tail length is 12 in (30 cm) unless otherwise specified, and the gauge size (AWG) for the tails is shown in the table below.

Cold lead code for catalog number	Maximum voltage (V)	Maximum current (A)	Cold lead diameter		Gland size (NPT)	Gland size reference for catalog no.	Tail size (AWG)
			in	mm			
Design A, D, E							
S25A	600	25	0.355	9.0	½ in	N12	14
LS23A	300	23	0.319	8.1	½ in	N12	14
S34A	600	34	0.402	10.2	¾ in	N34	10
S49A	600	49	0.496	12.6	¾ in	N34	8
S65A	600	65	0.543	13.8	¾ in	N34	6
Design B							
S29A	600	29	0.215	5.5	½ in	N12	12
S40A	600	40	0.273	6.9	½ in	N12	10
S48A	600	48	0.253	6.4	½ in	N12	8
S66A	600	66	0.319	8.1	½ in	N12	6
S86A	600	86	0.355	9.0	½ in	N12	4

Note: MI cold lead minimum bending radius is 6 times the cable diameter.

TABLE 3 XMI-A61 SERIES MI HEATING CABLE SPECIFICATIONS (600 V, SINGLE CONDUCTOR)

Heating cable reference	Nominal cable resistance at 20°C		Approximate		Maximum unjointed cable length		Nominal weight	
	Ω/ft	Ω/m	in	mm	ft	m	lb/1000 ft	kg/1000 m
61SA2200	2.00	6.56	0.170	4.3	1333	406	50	75
61SA2160	1.60	5.25	0.163	4.1	1452	443	44	66
61SA2130	1.30	4.27	0.160	4.1	1508	460	42	63
61SA2100	1.00	3.28	0.160	4.1	1510	460	43	64
61SA3850	0.850	2.79	0.170	4.3	1338	408	48	72
61SA3700	0.700	2.30	0.160	4.1	1514	462	43	64
61SA3500	0.500	1.64	0.170	4.3	1344	410	49	73
61ST3280	0.280	0.919	0.170	4.3	1337	408	48	72
61SB3200	0.200	0.656	0.180	4.6	1198	365	55	82
61SB3150	0.150	0.492	0.170	4.3	1350	412	51	76
61SQ3118	0.118	0.387	0.175	4.4	1260	384	50	75
61SQ4732	0.0732	0.240	0.170	4.3	1338	410	48	72
61SQ4581	0.0581	0.191	0.172	4.4	1308	399	50	75
61SP4467	0.0467	0.153	0.170	4.3	1337	408	48	72
61SP4366	0.0366	0.120	0.173	4.4	1292	394	50	75
61SP4290	0.0290	0.0951	0.177	4.5	1236	377	53	79

Heating cable reference	Nominal cable resistance at 20°C		Approximate		Maximum unjointed cable length		Nominal weight	
	Ω/ft	Ω/m	in	mm	ft	m	lb/1000 ft	kg/1000 m
61SP4231	0.0231	0.0758	0.174	4.4	1282	391	52	78
61SP4183	0.0183	0.0600	0.170	4.3	1347	411	50	75
61SP4145	0.0145	0.0476	0.170	4.3	1351	412	51	76
61SP4113	0.0113	0.0371	0.186	4.7	1130	345	61	91
61SC5651	0.00651	0.0214	0.187	4.7	1110	338	60	89
61SC5409	0.00409	0.0134	0.191	4.9	1069	326	64	95
61SC5258	0.00258	0.00846	0.215	5.5	848	259	83	124
61SC5162	0.00162	0.00531	0.268	6.8	546	166	129	192
61SC5102	0.00102	0.00335	0.253	6.4	622	190	124	185
61SC6640	0.00064	0.00210	0.319	8.1	391	119	197	294

TABLE 4 XMI-A32 SERIES MI HEATING CABLE SPECIFICATIONS (300 V, DUAL CONDUCTOR)

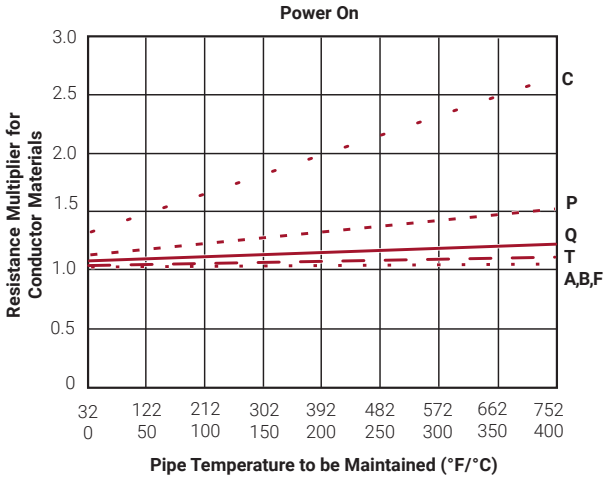
Heating cable reference	Nominal cable resistance at 20°C		Approximate cable diameter		Maximum unjointed cable length		Nominal weight	
	Ω/ft	Ω/m	in	mm	ft	m	lb/1000 ft	kg/1000 m
32SF1180	18.0	59.0	0.174	4.4	1271	387	49	73
32SF1110	11.0	36.1	0.156	4.0	1584	483	40	60
32SF2900	9.00	29.5	0.160	4.1	1507	459	42	63
32SF2750	7.50	24.6	0.157	4	1565	477	41	61
32SA2600	6.00	19.7	0.160	4.1	1507	459	42	63
32SA2400	4.00	13.1	0.146	3.7	1816	554	36	54
32SA2318	3.18	10.4	0.174	4.4	1277	389	50	74
32SA2275	2.75	9.02	0.153	3.9	1657	505	40	60
32SA2200	2.00	6.56	0.169	4.3	1359	414	49	73
32SA2170	1.70	5.58	0.167	4.2	1395	425	48	72
32SB2114	1.14	3.74	0.174	4.4	1279	390	51	76
32SB3914	0.914	3.00	0.162	4.1	1480	451	45	67
32SB3700	0.700	2.30	0.170	4.3	1347	411	50	74
32SQ3472	0.472	1.55	0.177	4.5	1232	376	52	78
32SQ3374	0.374	1.23	0.183	4.6	1153	352	55	82
32SQ3293	0.293	0.961	0.179	4.5	1206	368	53	79
32SQ3200	0.200	0.656	0.161	4.1	1498	457	44	66
32SQ3150	0.150	0.492	0.168	4.3	1378	420	49	73
32SQ3100	0.100	0.328	0.185	4.7	1140	348	60	89
32SP4734	0.0734	0.241	0.174	4.4	1284	391	52	78
32SP4583	0.0583	0.191	0.178	4.5	1230	375	55	82
32SP4458	0.0458	0.150	0.188	4.8	1105	337	62	92
32SC4324	0.0324	0.106	0.184	4.7	1145	349	57	85

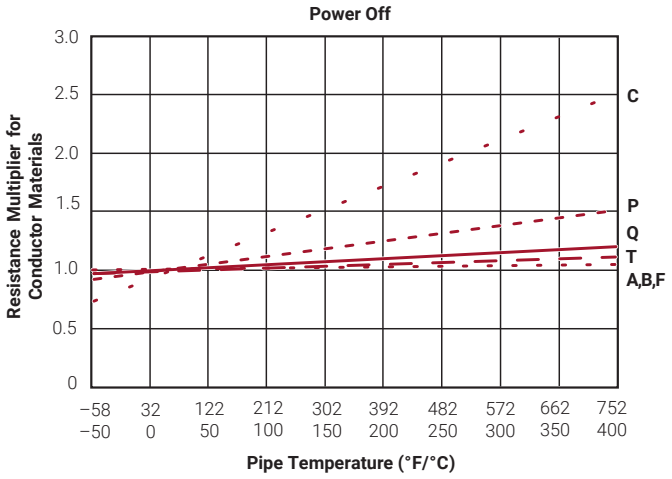
TABLE 5 XMI-A62 SERIES MI HEATING CABLE SPECIFICATIONS (600 V, DUAL CONDUCTOR)

Heating cable reference	Nominal cable resistance at 20°C		Approximate cable diameter		Maximum unjointed cable length		Nominal weight	
	Ω/ft	Ω/m	in	mm	ft	m	lb/1000 ft	kg/1000 m
62SF1110	11.0	36.1	0.194	4.9	1023	312	61	91
62SF2900	9.00	29.5	0.194	4.9	1024	312	61	91
62SF2750	7.50	24.6	0.205	5.2	916	279	69	103
62SF2600	6.00	19.7	0.230	5.8	728	222	86	128
62SA2414	4.14	13.6	0.240	6.1	669	204	94	140
62SA2275	2.75	9.02	0.225	5.7	762	232	84	125
62SF2200	2.00	6.56	0.245	6.2	644	196	100	149
62SA2170	1.70	5.58	0.240	6.1	671	205	96	143
62ST2115	1.15	3.77	0.215	5.5	834	254	76	113
62SB3914	0.914	3.00	0.232	5.9	718	219	89	132
62SB3700	0.700	2.30	0.265	6.7	550	168	117	174
62ST3505	0.505	1.66	0.215	5.5	837	255	77	115
62SQ3374	0.374	1.23	0.215	5.5	834	254	76	113
62SQ3286	0.286	0.938	0.222	5.6	783	239	81	121
62SQ3200	0.200	0.656	0.227	5.8	750	229	86	128
62SQ3150	0.150	0.492	0.227	5.8	751	229	86	128
62SQ3100	0.100	0.328	0.257	6.5	586	179	111	165
62SP4775	0.0775	0.254	0.250	6.4	618	188	104	155
62SP4561	0.0561	0.184	0.263	6.7	560	171	116	173
62SP4402	0.0402	0.132	0.277	7	505	154	130	194
62SP4281	0.0281	0.0922	0.292	7.4	456	139	147	219
62SC4200	0.0200	0.0656	0.285	7.2	476	145	135	201
62SC4130	0.0130	0.0427	0.304	7.7	419	128	156	233
62SC5818	0.00818	0.0268	0.331	8.4	330	100	187	279
62SC5516	0.00516	0.0169	0.364	9.2	294	90	230	343
62SC5324	0.00324	0.0106	0.402	10.2	242	74	290	432
62SC5204	0.00204	0.00669	0.496	12.6	159	48	438	653
62SC5128	0.00128	0.00420	0.543	13.8	469	143	516	769

RESISTANCE CORRECTION FACTOR

Various conductor materials behave differently. Use the graphs below for approximate adjustment of power and resistance as a function of temperature. For detailed design, use TraceCalc Pro design software or contact nVent.





ALLOY 825 QUICK REFERENCE GUIDE

Alloy	Description	Nominal chemical composition, % (major elements)				Thermal conductivity Btu-in/ ft²-hr-°F (W/m-C)		High temperature resistance +1000°F (+540°C)		Corrosion resistance										
										G-E = Good to excellent NR = Not recommended					A = Acceptable X = Check for specific data				
		Nickel (+Cobalt)	Iron	Chromium	Other	70°F (20°C)	1500°F (815°C)	Oxidation	Carburization	Sulfuric acid	Hydrochloric acid	Hydrofluoric acid	Phosphoric acid	Nitric acid	Organic acid	Alkalis	Salts	Seawater	Chloride cracking
INCOLOY Alloy 825 nickel-iron-chromium	Excellent resistance to a wide variety of corrosives. Resists pitting and intergranular type corrosion, reducing acids and oxidizing chemicals	42.0	30.0	21.5	Mo 3.0 Cu 2.2	77 (11.1)	164 (23.6)	G-E	G-E	G-E	G-E	G-E	G-E	G-E	G-E	G-E	G-E	G-E	G-E

*From Huntington Alloys Publication 78-348-2

GROUND-FAULT PROTECTION

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

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