

eltherm[®]
innovations in heat tracing



Self-Regulating

Parallel Trace Heaters

innovations in heat tracing



ELSR Trace Heaters

Application Options

The application options for the ELSR trace heaters range from freeze protection to temperature maintenance of pipes and vessels.

The eltherm® ELSR-NA trace heater is suitable for low and medium temperature applications, a high temperature version ELSR-HA trace heater is available for temperatures up to 392 °F (200 °C). Matching accessories complete our product offering.

All eltherm® trace heaters have been approved by national and international technical standards (e.g. VDE). ELSR-NA, ELSR-HA, ELSR-WA heating cables are also approved and certified for use in hazardous areas.

Design: 4 distinct options

We offer the widest selection of self-regulating trace heater designs, capable of handling every application, including service in harsh conditions and corrosive environments.

AO: Aluminum foil with a thermoplastic outer jacket

This design allows for easy assembly. AO design is available for all low and medium temperature heating cables.

BO: Protective braid with a thermoplastic outer jacket

This classic design provides a protective tin-plated copper braid. The BO design is available for low and medium temperature heating cables.

BOT: Protective braid with fluoropolymer outer jacket

This design features a fluoropolymer outer jacket to provide maximum resistance to aggressive chemicals, oil and fuel. The BOT outer jacket design is available for various ELSR-heating cables.

BF: Protective braid with food approved outer jacket, approved for use in potable water

A trace heater of this design can be used directly inside potable water lines. This design is currently only available for the ELSR-MA version.

Most products listed in this catalog are available for use in hazardous locations, please review the individual product data sheets for details on use in hazardous locations. The temperatures allocated to the products are the maximum permissible exposure temperatures. Our project engineers will be glad to assist you to design and dimension electrical heating systems.

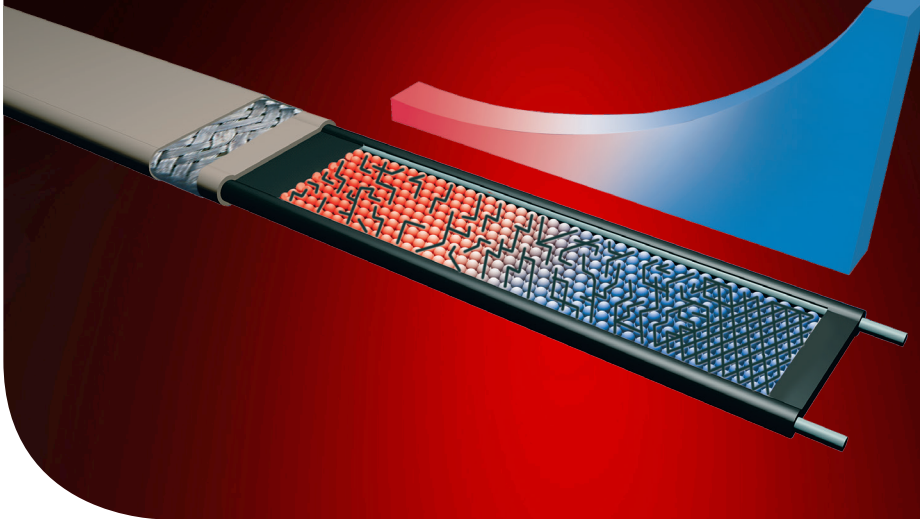
All products listed in the catalog are available ex stock (subject to prior sale).

Please note:

- All products listed in this catalog shall only be connected and commissioned by a qualified electrician.
- All applicable local electrical and safety regulations must be observed during installation and operation.
- For most economic design and accurate temperature maintain applications we recommend the use of a temperature control unit
- National and international electrical codes require the use of residual current devices (RCDs) or ground-fault circuit interrupters (GFCIs) to separate in time electrical heating from mains supply to prevent damage.

Specifications and advertising messages in this products and services catalog, irrespective of their nature, in particular descriptions, illustrations, drawings, samples, information pertaining to quality, condition, composition, performance, consumption and usability as well as dimensions and weights of the product range remain subject to change in as far as they are not expressly declared as binding. They do not denote any assurance or guarantee whatsoever. Minor deviations from the product specifications shall be deemed approved in as far as they are not unreasonable for the buyer.

We explicitly reserve the right to amend errors and alter technical data.



Self-Regulating Parallel Trace Heaters

Benefits:

- Self-regulating with adaptable output
- Various temperature range applications
- High chemical resistance
- No temperature regulation or limiting required
- Easy to install
- Can be cut to length off the roll

Application:

The ELSR trace heater (eltherm[®]-self-regulating) can be used for freeze protection and maintaining constant temperatures on vessels, pipes, valves, etc. Except for the connections, the trace heater may be immersed in fluids. If used in an aggressive environment (the chemical or petrochemical industry), we lag the trace heater with a special chemically resistant outer jacket (fluoropolymer), option "BOT".

Operation:

Self-regulating trace heaters consist of two parallel bus wires embedded in a networked plastic heating element, doped with surrounding carbon particles. If the temperature increases during operation, the plastic expands due to molecular expansion and the distance between the carbon particles increases. Resistance increases and output drops. When it cools down, this process is reversed and output increases.

This physical property provides several benefits, including the ability to overlap the heater and installation without the requirement of a temperature limiting device.

Features

Type	Self-regulating	Moisture proof	UV-resistant	Highest chemical resistance	Physical contact with foodstuffs/ use in potable water	Low temperature	Medium temperature	High temperature	Approved for hazardous areas
ELSR-NA-AO	■	■	■			■			■
ELSR-NA-BO	■	■	■			■			■
ELSR-NA-BOT	■	■	■	■		■			■
ELSR-MA-AO	■	■	■			■			
ELSR-MA-BO	■	■	■			■			
ELSR-MA-BF	■	■	■		■	■			
ELSR-WA-AO	■	■	■				■		■
ELSR-WA-BO	■	■	■				■		■
ELSR-HA-BOT	■	■	■	■				■	■

Self-Regulating **Trace Heaters** for Processes and Freeze Protection

eltherm's ELSR-NA line of self-regulating trace heaters are designed for freeze protection and process temperature maintenance up to 140 °F (60 °C) and are suitable for a wide range of commercial and industrial applications. The NA series of trace heaters are approved for use in non-hazardous and hazardous locations. The BOT version is configured for use in corrosive environments, including organic chemicals and corrosives found in the oil, gas, and petrochemical industry.

Advantages:

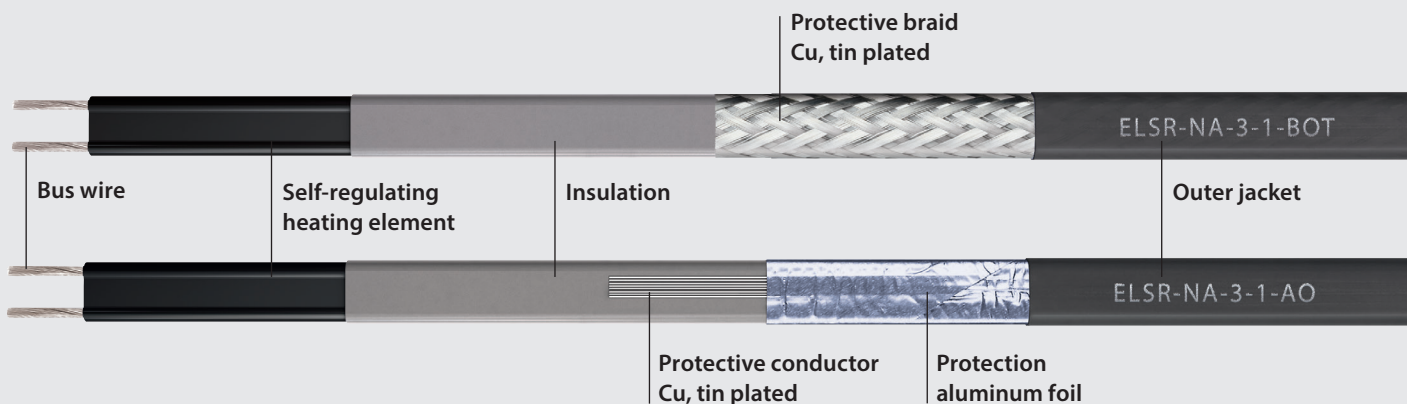
- Self-regulating
- Multiple nominal outputs
- May be cut to length in the field
- Weather Resistant
- UV-resistant
- Approved for use in hazardous areas

Applications:

- Freeze protection
- Heat tracing of instrumentation
- Pipes, vessel and tanks
- Chemical and petrochemical industries
- Oil and gas industries
- Food processing
- Automotive
- Tank bottom heating/frost heave prevention of LNG and cryogenic terminal storage tanks



Type **ELSR-NA**





Technical Information

Type ELSR-NA

Data

■ Outer jacket	Thermoplastic / Fluoropolymer
■ Bus wire	Nickel plated copper
■ Minimum start up temperature	-22 °F (-30 °C)
■ Maximum operating temperature, energized	140 °F (60 °C)
■ Maximum operating temperature, de-energized	176 °F (80 °C)
■ Nominal voltage	120 VAC (ELSR-NA-XX-1-XX) 240 VAC (ELSR-NA-XX-2-XX)
■ Bending radius, min.	25 mm (1 in)
■ Installation temperature, min.	-49 °F (-45 °C)
■ Classification	Class I Div 1* Group B,C,D Class II Div 1* Group E,F,G Class I Div 2 Group A,B,C,D Class II Div 2 Group E,F,G Class III T6 Class I Zone1 Ex e II T6 <small>*with termination kit Hazelect (part no. 09CA051); Canada only</small>
■ Certificates	CSA C US 2547790 CSA 22.2 130-16
■ Standards	IEEE 515, CSA 22.2 130-16 IEC/IEEE 60079-30-1
■ Rating	Wet rated, for outdoor use (WS)

Design

■ BO	Protective braid and a thermoplastic outer jacket
■ AO	Aluminum foil and a thermoplastic outer jacket
■ BOT	Protective braid and a fluoropolymer outer jacket

Type	Nominal output	Dimensions approx. (mm)	Weight approx. (g/m)	Part No.
ELSR-NA-3-1-AO	3 W/ft at 41°F (5 °C)	13.6 x 5.5	91	BA200131
ELSR-NA-3-1-BO	3 W/ft at 41°F (5 °C)	14.1 x 5.8	108	BA200111
ELSR-NA-3-1-BOT	3 W/ft at 41°F (5 °C)	13.8 x 5.6	108	BA200121
ELSR-NA-4-2-AO	4 W/ft at 41°F (5 °C)	13.6 x 5.5	91	BA200130
ELSR-NA-4-2-BO	4 W/ft at 41°F (5 °C)	14.1 x 5.8	108	BA200110
ELSR-NA-4-2-BOT	4 W/ft at 41°F (5 °C)	13.8 x 5.6	108	BA200120
ELSR-NA-5-1-AO	5 W/ft at 41°F (5 °C)	13.6 x 5.5	91	BA200231
ELSR-NA-5-1-BO	5 W/ft at 41°F (5 °C)	14.1 x 5.8	108	BA200211
ELSR-NA-5-1-BOT	5 W/ft at 41°F (5 °C)	13.8 x 5.6	108	BA200221
ELSR-NA-6-2-AO	6 W/ft at 41°F (5 °C)	13.6 x 5.5	91	BA200230
ELSR-NA-6-2-BO	6 W/ft at 41°F (5 °C)	14.1 x 5.8	108	BA200210
ELSR-NA-6-2-BOT	6 W/ft at 41°F (5 °C)	13.8 x 5.6	108	BA200220
ELSR-NA-7-1-AO	7 W/ft at 41°F (5 °C)	13.6 x 5.5	91	BA200331
ELSR-NA-7-1-BO	7 W/ft at 41°F (5 °C)	14.1 x 5.8	108	BA200311
ELSR-NA-7-1-BOT	7 W/ft at 41°F (5 °C)	13.8 x 5.6	108	BA200321
ELSR-NA-8-2-AO	8 W/ft at 41°F (5 °C)	13.6 x 5.5	91	BA200330
ELSR-NA-8-2-BO	8 W/ft at 41°F (5 °C)	14.1 x 5.8	108	BA200310
ELSR-NA-8-2-BOT	8 W/ft at 41°F (5 °C)	13.8 x 5.6	108	BA200320
ELSR-NA-10-2-AO	10 W/ft at 41°F (5 °C)	13.6 x 5.5	91	BA200430
ELSR-NA-10-2-BO	10 W/ft at 41°F (5 °C)	14.1 x 5.8	108	BA200410
ELSR-NA-10-2-BOT	10 W/ft at 41°F (5 °C)	13.8 x 5.6	108	BA200420

Trace Heater	Nominal output 208 V vs. 240 V	Heating circuit length 208 V vs. 240 V
ELSR-NA-XX-2	0.88	0.93

Heating Circuit Length

Type ELSR-NA

120 VAC

Start-up temperature	CB capacity (A)	Maximum heating circuit length (ft) for		
		ELSR-NA-3-1	ELSR-NA-5-1	ELSR-NA-7-1
50 °F (10 °C)	10	159	125	82
	15	238	187	123
	20	317	249	164
	25	397	312	205
	30	476	374	246
	35	555	436	287
32 °F (0 °C)	10	143	112	75
	15	215	168	113
	20	287	224	151
	25	358	280	188
	30	430	336	226
	35	502	392	264
14 °F (-10 °C)	10	130	102	69
	15	195	153	104
	20	260	204	139
	25	325	255	173
	30	390	306	208
	35	455	357	243
-22 °F (-30 °C)	10	110	87	60
	15	165	130	90
	20	220	173	120
	25	275	217	150
	30	330	260	180
	35	385	303	210

240 VAC

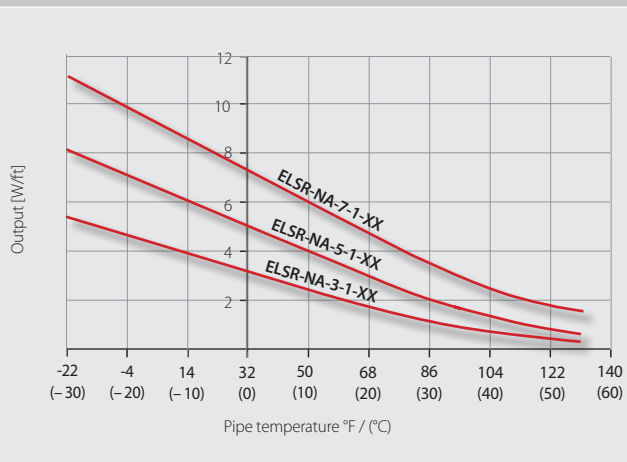
Start-up temperature	CB capacity (A)	Maximum heating circuit length (ft) for			
		ELSR-NA-4-2	ELSR-NA-6-2	ELSR-NA-8-2	ELSR-NA-10-2
50 °F (10 °C)	10	273	170	127	66
	15	410	255	191	99
	20	547	340	255	132
	25	683	425	318	165
	30	820	510	382	198
	35	957	595	446	231
	40	1087	680	510	264
32 °F (0 °C)	10	245	154	117	61
	15	367	231	175	91
	20	489	308	233	121
	25	612	385	292	152
	30	734	462	350	182
	35	856	539	408	212
	40	979	616	467	243
14 °F (-10 °C)	10	222	141	108	57
	15	333	211	162	85
	20	444	281	216	113
	25	555	352	270	142
	30	666	422	324	170
	35	777	492	378	198
	40	888	563	432	227
-22 °F (-30 °C)	10	187	120	93	50
	15	280	180	140	75
	20	373	240	187	100
	25	467	300	233	125
	30	560	360	280	150
	35	653	420	327	175
	40	747	480	373	200

Maximum heating circuit lengths ELSR-NA-XX based on the following conditions:

- Voltage 120VAC (-1-) / 240VAC (-2-) ■ MCB type QO (100% utilisation)
- Voltage drop max. 10% ■ Single heater fed from 1 end

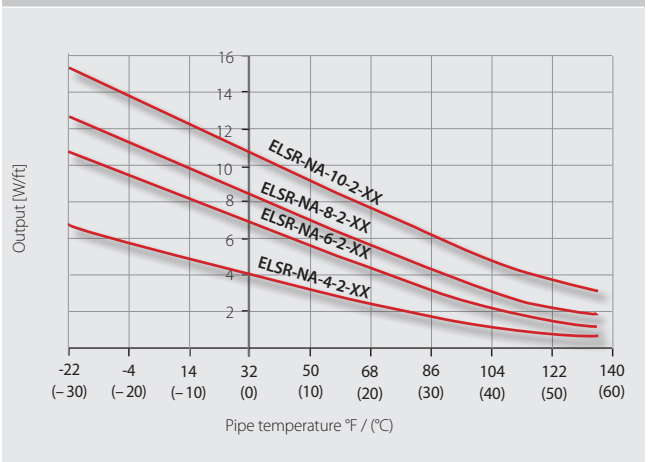
ELSR-NA-XX-1-XX output

(on insulated metallic pipes)



ELSR-NA-XX-2-XX output

(on insulated metallic pipes)





Self-Regulating Trace Heater

High Temperature

eltherm's ELSR-HA self-regulating trace heaters are designed for high process temperature maintain applications up to 392° F (200 °C) and are suitable for a wide range of industrial service. They are approved for use in non-hazardous and hazardous locations. The materials used provides maximum protection for service in the harshest environments, including organic chemicals and corrosives in the oil, gas and petrochemical industry.

Advantages:

- Maximum maintain temperature 248 °F (120 °C)
- Maximum exposure temperature 392 °F (200 °C)
- Self-regulating
- Various nominal outputs available
- May be cut to length in the field
- Moisture proof
- Highly resistant to chemicals and corrosive environments
- Approved for use in hazardous areas

Applications:

- Freeze protection
- Heat tracing of instrumentation
- Pipes, vessel and tanks
- Chemical and petrochemical industries
- Oil and gas industries
- Food processing
- Automotive
- Tank bottom heating/frost heave protection of LNG and cryogenic terminal storage tanks



Type ELSR-HA



Technical Information

Type ELSR-HA

Data

■ Outer jacket	Fluoropolymer
■ Bus wire	Nickel plated copper
■ Minimum start up temperature	-22 °F (-30 °C)
■ Maximum operating temperature, energized	248 °F (120 °C)
■ Maximum operating temperature, de-energized	302 °F (150 °C), continuous, 392 °F (200 °C) de-energized, for 1000 h cumulative
■ Nominal voltage	120 VAC (ELSR-HA-XX-1-BOT) 240 VAC (ELSR-HA-XX-2-BOT)
■ Bending radius, min.	25 mm (1 in)
■ Installation temperature, min.	-49 °F (-45 °C)
■ Classification	Class I Div 1* Group B,C,D Class I Div 2 Group A,B,C,D Class II Div 2 Group E,F,G Class III T3 Class I Zone 1 Ex e II T3 <small>*with termination kit Hazelect (item no. 09CA051); Canada only</small>
■ Certificates	CSA C US 2547790 CSA 22.2 130-16
■ Standards	IEEE 515, CSA 22.2 130.16 IEC/IEEE 60079-30-1
■ Rating	Wet rated, for outdoor use (WS)

Design

- BOT Protective braid and a fluoropolymer outer jacket

Type	Nominal output	Dimensions approx. (mm)	Weight approx. (g/m)	Part No.
ELSR-HA-3-1-BOT	3 W/ft at 50 °F (10 °C)	12.4 x 5.9	120	BA221101
ELSR-HA-3-2-BOT	3 W/ft at 50 °F (10 °C)	12.4 x 5.9	120	BA221103
ELSR-HA-7-1-BOT	7 W/ft at 50 °F (10 °C)	12.4 x 5.9	120	BA221201
ELSR-HA-7-2-BOT	7 W/ft at 50 °F (10 °C)	12.4 x 5.9	120	BA221203
ELSR-HA-10-1-BOT	10 W/ft at 50 °F (10 °C)	12.4 x 5.9	120	BA221301
ELSR-HA-10-2-BOT	10 W/ft at 50 °F (10 °C)	12.4 x 5.9	120	BA221303
ELSR-HA-15-1-BOT	15 W/ft at 50 °F (10 °C)	12.4 x 5.9	120	BA221451
ELSR-HA-15-2-BOT	15 W/ft at 50 °F (10 °C)	12.4 x 5.9	120	BA221453
ELSR-HA-20-1-BOT	20 W/ft at 50 °F (10 °C)	12.4 x 5.9	120	BA221601
ELSR-HA-20-2-BOT	20 W/ft at 50 °F (10 °C)	12.4 x 5.9	120	BA221603

Trace Heaters	Nominal output 208 V vs. 240 V	Heating circuit length 208 V vs. 240 V
ELSR-HA-XX-2	0.74	1.00



Heating Circuit Length

Type ELSR-HA

120 VAC

Start-up temperature	CB capacity (A)	Maximum heating circuit length (ft) for				
		ELSR-HA-3-1	ELSR-HA-7-1	ELSR-HA-10-1	ELSR-HA-15-1	ELSR-HA-20-1
50 °F (10 °C)	10	261	137	113	72	53
	15	391	205	169	108	79
	20	521	273	225	145	105
	25	559	342	282	181	132
	30	559	411	338	217	158
	35	559	411	374	253	184
32 °F (0 °C)	10	249	132	108	70	50
	15	374	198	162	104	75
	20	499	264	216	139	100
	25	559	330	270	174	125
	30	559	396	234	209	150
	35	559	411	374	244	175
14 °F (-10 °C)	10	239	128	104	67	48
	15	358	192	156	101	72
	20	477	256	208	134	95
	25	559	320	260	168	119
	30	559	384	312	201	143
	35	559	411	364	235	167
-22 °F (-30 °C)	10	220	120	97	63	43
	15	330	180	145	94	65
	20	440	240	193	125	87
	25	550	300	242	157	109
	30	559	360	290	188	130
	35	559	411	338	220	152

240 VAC

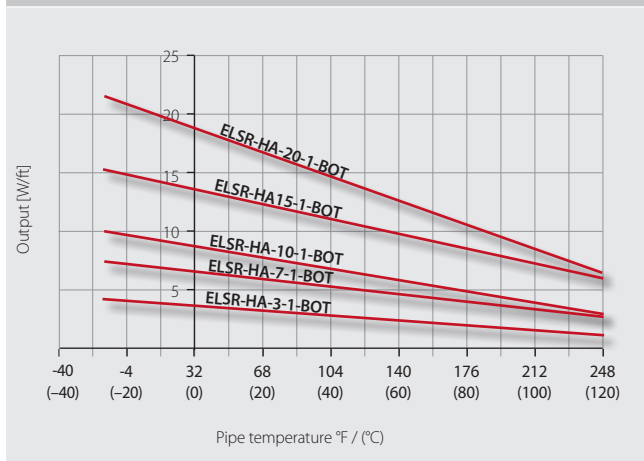
Start-up temperature	CB capacity (A)	Maximum heating circuit length (ft) for				
		ELSR-HA-3-2	ELSR-HA-7-2	ELSR-HA-10-2	ELSR-HA-15-2	ELSR-HA-20-2
50 °F (10 °C)	10	649	304	181	115	97
	15	973	456	271	173	146
	20	1267	608	361	231	194
	25	1267	759	452	288	243
	30	1267	864	542	346	291
	35	1267	864	632	404	340
32 °F (0 °C)	10	610	286	171	110	92
	15	915	429	256	165	138
	20	1220	571	341	220	184
	25	1267	714	427	275	230
	30	1267	857	512	330	276
	35	1267	864	597	385	322
14 °F (-10 °C)	10	576	270	162	105	87
	15	864	404	243	158	131
	20	1152	539	324	211	175
	25	1267	674	405	263	219
	30	1267	809	486	316	262
	35	1267	864	567	369	306
-22 °F (-30 °C)	10	518	242	147	97	80
	15	777	364	220	145	119
	20	1036	485	293	193	159
	25	1267	606	367	242	199
	30	1267	727	440	290	239
	35	1267	848	513	338	278

Maximum heating circuit lengths ELSR-HA-XX based on the following conditions:

- Voltage 120VAC (-1-) / 240VAC (-2-) ■ MCB type QO (100% utilisation)
- Voltage drop max. 10% ■ Single cable fed from 1 end

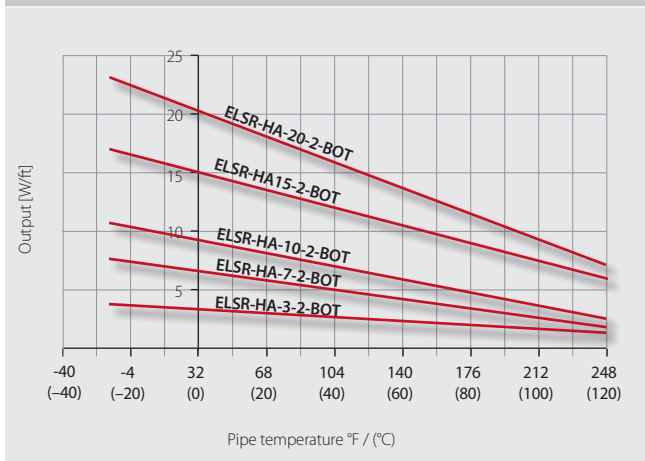
ELSR-HA-XX-1-BOT output

(on insulated metallic pipes)



ELSR-HA-XX-2-BOT output

(on insulated metallic pipes)



Self-Regulating Trace Heaters

Medium Temperature

eltherm's ELSR-WA self-regulating trace heater is designed for heat tracing of vessels, pipes, valves and other uses in medium temperature ranges between approx. 85 to 175 °F (30 to 80 °C). ELSR-WA heaters are frequently used to heat trace process and drain lines in the food processing industry, or to maintain temperatures in hot water supply lines of large commercial buildings. ELSR-WA is approved for use in hazardous locations, making it ideally suited for medium temperature service for various industrial applications.

Advantages:

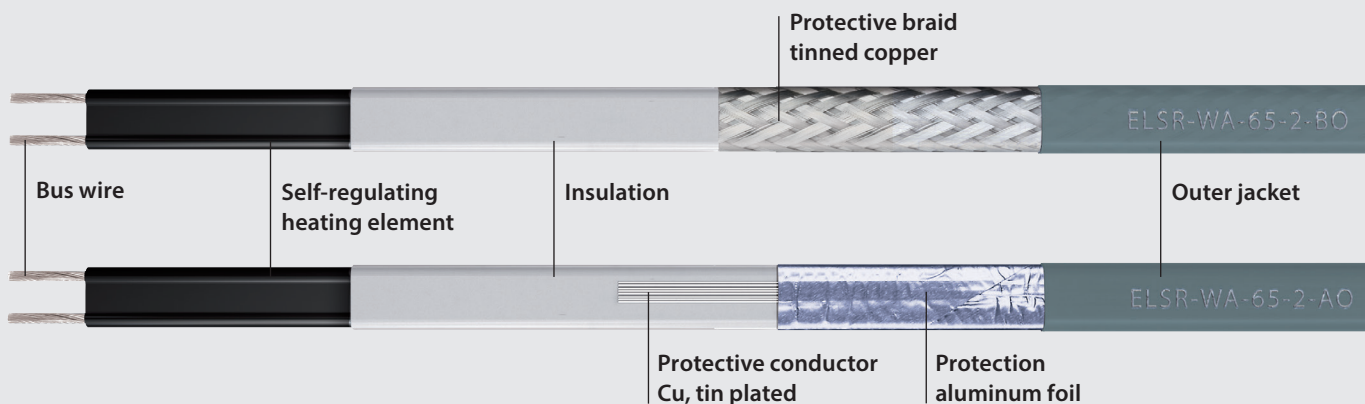
- Self-regulating
- Available in two nominal outputs
- Can be cut to length off the spool
- Water proof

Applications:

- Food processing industry
- Drain lines in canteens and large-scale kitchens
- Freeze protection of heated lines or pipes
- Installation of hot water supplies



Type ELSR-WA





Technical Information

Type ELSR-WA

Data

■ Outer jacket	TPE-O
■ Bus wire	Nickel plated copper
■ Minimum start up temperature	-22 °F (-30 °C)
■ Maximum exposure temperature (power off)	194 °F (90 °C)
■ Maximum exposure temperature (power on)	176 °F (80 °C)
■ Nominal voltage	120 VAC (ELSR-WA-XX-1-XX) 240 VAC (ELSR-WA-XX-2-XX)
■ Bending radius, minimum	20 mm (0.79 in)
■ Installation temperature, min.	-49 °F (-45 °C)
■ Classification	Class I Zone 1 AEx / Ex e II T5 Class I Div 2 Group A, B, C, D Class II Div 1 Group E, F, G Class III Div 1
■ Certificates	FM CUS 3050047
■ Standards	IEEE 515, CSA 22.2 130.03
■ Rating	Wet rated, for outdoor use (WS)

Design

- BO Protective braid and a thermoplastic outer jacket
- AO Aluminum foil and a thermoplastic outer jacket

Type	Nominal output used for water supply lines	Dimensions approx. (mm)	Weight approx. (g/m)	Part No.
ELSR-WA-55-1 AO	3 W/ft at 131 °F (55 °C)	13.4 x 5.8	100	BA200360
ELSR-WA-55-1 BO	3 W/ft at 131 °F (55 °C)	13.6 x 5.6	130	BA200370
ELSR-WA-55-2 AO	3 W/ft at 131 °F (55 °C)	13.4 x 5.8	100	BA200380
ELSR-WA-55-2 BO	3 W/ft at 131 °F (55 °C)	13.6 x 5.6	130	BA200390
ELSR-WA-65-1 AO	4 W/ft at 149 °F (65 °C)	13.4 x 5.8	100	BA200460
ELSR-WA-65-1 BO	4 W/ft at 149 °F (65 °C)	13.6 x 5.6	130	BA200470
ELSR-WA-65-2 AO	4 W/ft at 149 °F (65 °C)	13.4 x 5.8	100	BA200480
ELSR-WA-65-2 BO	4 W/ft at 149 °F (65 °C)	13.6 x 5.6	130	BA200490

Trace Heater	Nominal output 208 V vs. 240 V	Heating circuit length 208 V vs. 240 V
ELSR-WA-XX-2	0.80	1.00

Type	Nominal output used with fat/ oil lines	Dimensions approx. (mm)	Weight approx. (g/m)	Part No.
ELSR-WA-65-2 AO	7 W/ft at 104 °F (40 °C)	13.4 x 5.8	100	BA200480
ELSR-WA-65-2 BO	7 W/ft at 104 °F (40 °C)	13.6 x 5.6	130	BA200490
ELSR-WA-65-1 AO	7 W/ft at 104 °F (40 °C)	13.4 x 5.8	100	BA200460
ELSR-WA-65-1 BO	7 W/ft at 104 °F (40 °C)	13.6 x 5.6	130	BA200470

Heating Circuit Length

Type ELSR-WA

120 VAC

Start-up temperature	CB capacity (A)	Heating circuit length (ft) for	
		ELSR-WA-55-1	ELSR-WA-65-1
50 °F (10 °C)	10	144	97
	15	219	145
	20	246	194
	25	246	198
	30	246	198
32 °F (0 °C)	10	131	87
	15	197	133
	20	233	176
	25	233	189
	30	233	189
14 °F (-10 °C)	10	118	81
	15	180	121
	20	221	160
	25	221	180
	30	221	180
-22 °F (-30 °C)	10	102	68
	15	153	103
	20	202	139
	25	203	167
	30	203	167

240 VAC

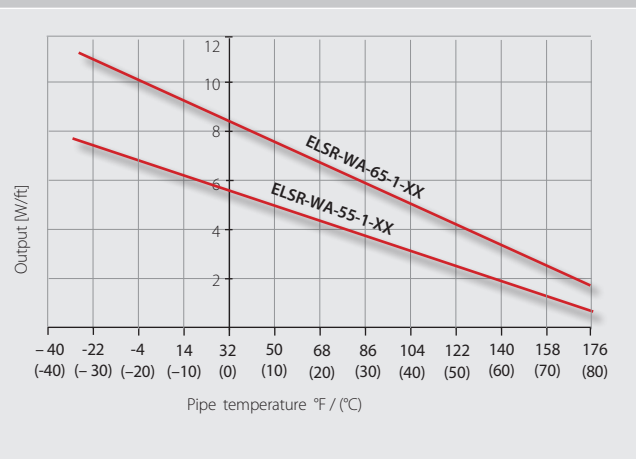
Start-up temperature	CB capacity (A)	Heating circuit length (ft) for	
		ELSR-WA-55-2	ELSR-WA-65-2
50 °F (10 °C)	10	231	149
	15	348	226
	20	430	302
	25	430	348
	30	430	348
	30	430	348
32 °F (0 °C)	10	207	136
	15	312	203
	20	405	272
	25	405	326
	30	405	326
	30	405	326
14 °F (-10 °C)	10	187	123
	15	279	184
	20	372	247
	25	384	310
	30	384	312
-22 °F (-30 °C)	10	158	105
	15	237	160
	20	315	212
	25	353	263
	30	353	263
	30	353	286

Heating circuit lengths ELSR-WA-XX based on the following conditions:

- Voltage 120VAC (-1) / 240VAC (-2)
- MCB type QO (100% utilisation)
- Voltage drop max. 10%
- Single heater fed from 1 end

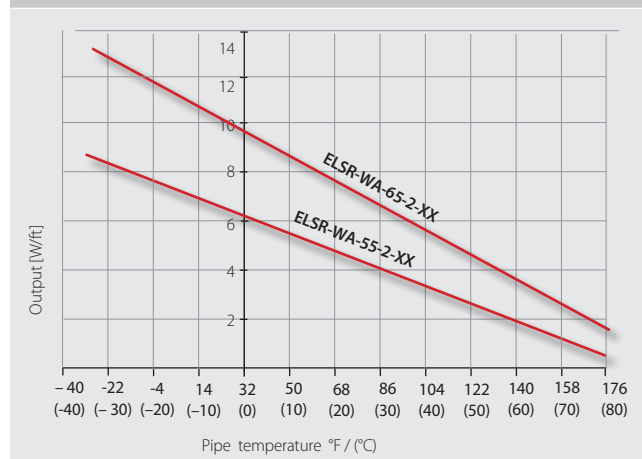
ELSR-WA-XX-1-XX output

(on insulated metallic pipes, in accordance with IEEE 515/CSA 22.2 130-03)



ELSR-WA-XX-2-XX output

(on insulated metallic pipes, in accordance with IEEE 515/CSA 22.2 130-03)





Self-Regulating Trace Heater

Micro-Size

eltherm's ELSR-MA self-regulating trace heater is extremely flexible and designed for installations which require smaller overall cable dimensions and shorter heating circuits. ELSR-MA is designed for freeze protection and all temperature maintain applications to 140 °F (60 °C).

Advantages:

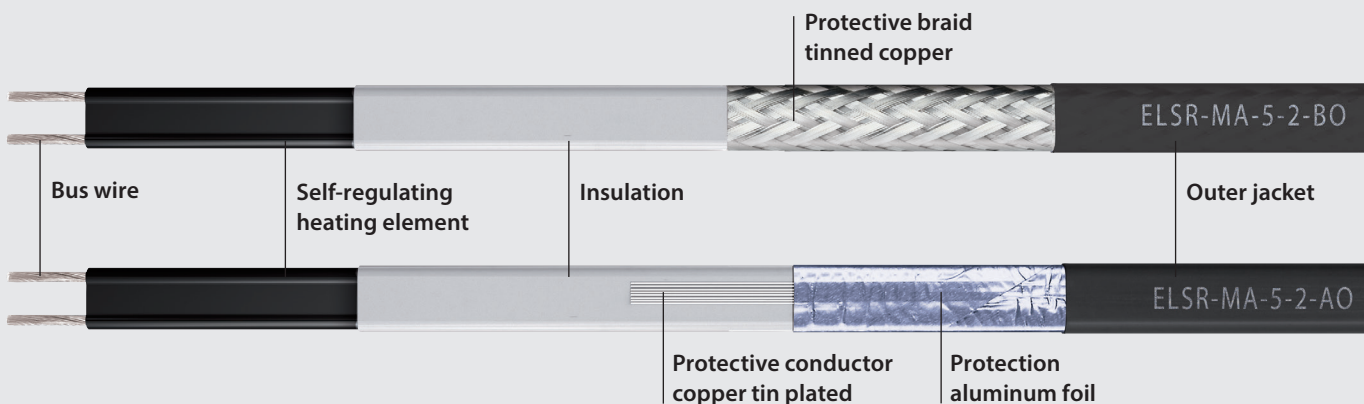
- Self-regulating
- Two nominal outputs
- Cut to length off the spool
- Moisture proof
- UV-resistant
- Small dimensions

Applications:

- Heat tracing of metallic and non-metallic pipes, pumps, vessels and valves
- Food processing industry
- Automotive
- Refrigeration
- Sprinkler systems
- Sewage pipes, intake drain pipes



Type ELSR-MA



Technical Information

Type ELSR-MA

Data

■ Outer jacket	TPE-O
■ Bus wire	Nickel plated copper
■ Minimum start up temperature	-22 °F (-30 °C)
■ Maximum operating temperature de-energized	140 °F (60 °C)
■ Maximum operating temperature energized	140 °F (60 °C)
■ Nominal voltage	120 VAC (ELSR-MA-XX-1-XX) 240 VAC (ELSR-MA-XX-2-XX)
■ Bending radius, minimum	25 mm (1 in)
■ Installation temperature, min.	-49 °F (-45 °C)
■ Standards	IEEE 515, CSA 22.2 130.16
■ Certificates	FM CUS 3050047
■ Rating	Wet rated, for outdoor use (WS)

Design

■ BO	Protective braid and a thermoplastic outer jacket
■ AO	Aluminum foil and a thermoplastic outer jacket

Type	Nominal output	Dimensions approx. (mm)	Weight approx. (g/m)	Part No.
ELSR-MA-3-1 AO	3 W/ft at 50 °F (10 °C)	7.7 x 6.4	62	BA225110
ELSR-MA-3-1 BO	3 W/ft at 50 °F (10 °C)	8.1 x 5.8	75	BA225120
ELSR-MA-3-2 AO	3 W/ft at 50 °F (10 °C)	7.7 x 6.4	62	BA225130
ELSR-MA-3-2 BO	3 W/ft at 50 °F (10 °C)	8.1 x 5.8	75	BA225140
ELSR-MA-5-1 AO	5 W/ft at 50 °F (10 °C)	7.7 x 6.4	62	BA225210
ELSR-MA-5-1 BO	5 W/ft at 50 °F (10 °C)	8.1 x 5.8	75	BA225220
ELSR-MA-5-2 AO	5 W/ft at 50 °F (10 °C)	7.7 x 6.4	62	BA225230
ELSR-MA-5-2 BO	5 W/ft at 50 °F (10 °C)	8.1 x 5.8	75	BA225240



Heating Circuit Length

Type ELSR-MA

120 VAC

Start-up temperature	CB capacity (A)	Heating circuit length (ft) for	
		ELSR-MA-3-1	ELSR-MA-5-1
50 °F (10 °C)	10	208	132
	15	233	190
	20	233	190
	25	233	190
32 °F (0 °C)	10	170	110
	15	213	174
	20	213	174
	25	213	174
14 °F (-10 °C)	10	146	94
	15	197	150
	20	197	161
	25	197	161
-22 °F (-30 °C)	10	113	73
	15	172	117
	20	172	141
	25	172	141

240 VAC

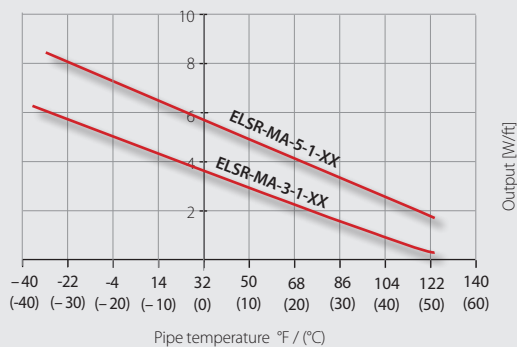
Start-up temperature	CB capacity (A)	Heating circuit length (ft) for	
		ELSR-MA-3-2	ELSR-MA-5-2
50 °F (10 °C)	10	415	320
	15	415	346
	20	415	346
	25	415	346
	25	415	346
32 °F (0 °C)	10	379	273
	15	379	320
	20	379	320
	25	379	320
	25	379	320
14 °F (-10 °C)	10	325	239
	15	349	299
	20	349	299
	25	349	299
	25	349	299
-22 °F (-30 °C)	10	255	190
	15	307	266
	20	307	266
	25	307	266
	25	307	266

Heating circuit lengths ELSR-MA-XX based on the following conditions:

- Voltage 120VAC (-1-) / 240VAC (-2-) ■ MCB type QO (100% utilisation)
- Voltage drop max. 10% ■ Single heater fed from 1 end

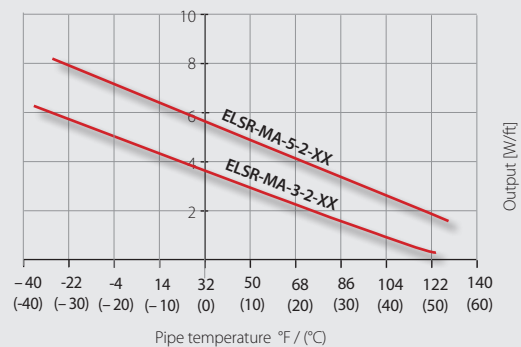
ELSR-MA-XX-1-XX output

(on insulated metallic pipes, in accordance with IEEE 515/CSA 22.2 130-03)



ELSR-MA-XX-2-XX output

(on insulated metallic pipes, in accordance with IEEE 515/CSA 22.2 130-03)



Self-Regulating Trace Heaters

Potable Water Applications

eltherm's ELSR-MA-BF is a light self-regulating trace heater specifically designed and approved for heat tracing of potable water lines. ELSR-MA-BF provides maximum performance in a most compact design and is optimized for short heating circuits for the most economical operation. This versatile trace heater comes with an NSF compliant outer jacket for installation inside of potable water pipelines.

Advantages:

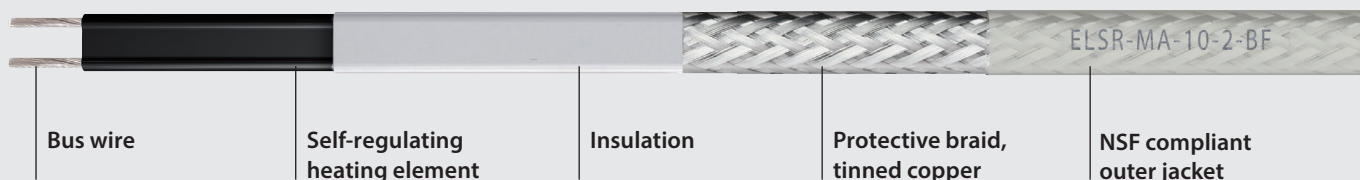
- NSF compliant
- Can be cut to length off the spool
- Moisture proof
- UV-resistant
- Small dimensions

Application:

- Internal trace heating for pipes and hoses



Type ELSR-MA-BF





Technical Information

Type ELSR-MA-BF

Data

■ Outer jacket	Fluoropolymer
■ Bus wire	Nickel plated copper
■ Minimum start up temperature	-22 °F (-30 °C)
■ Maximum exposure temperature (power off)	140 °F (60 °C)
■ Maximum exposure temperature (power on)	140 °F (60 °C)
■ Nominal voltage	120 VAC (ELSR-MA-3-1-BF) 240 VAC (ELSR-MA-3-2-BF)
■ Bending radius, minimum	25 mm (1 in)
■ Installation temperature, min.	-49 °F (-45 °C)
■ Standards	IEEE 515, CSA 22.2 130.16
■ Certificates	FM CUS 3050047
■ Rating	PS (2,000 kPa / 290 psi)

Design

- BF Protective braid and outer jacket, suitable for use in potable water (certified according to NSF/ANSI 61)

Type	Nominal output	Dimensions approx. (mm)	Weight approx. (g/m)	Part No.
ELSR-MA-3-1 BF	3 W/ft at 50 °F (10 °C)	8.1 x 5.8	68	BA225150
ELSR-MA-3-2 BF	3W/ft at 50 °F (10 °C)	8.1 x 5.8	68	BA225160

Heating Circuit Length (immersed)

120 VAC

Start-up temperature	CB capacity (A)	Heating circuit length (ft) for
		ELSR-MA-3-1-BF
50 °F (10 °C)	10	139
	15	167
	20	167
	25	167
32 °F (0 °C)	10	112
	15	153
	25	153

240 VAC

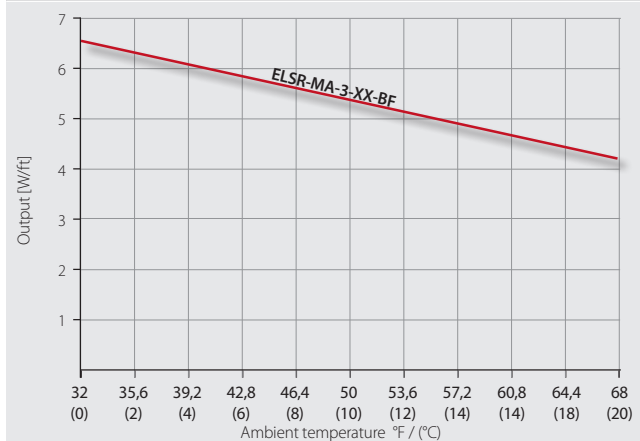
Start-up temperature	CB capacity (A)	Heating circuit length (ft) for
		ELSR-MA-3-2-BF
50 °F (10 °C)	10	241
	15	302
	20	302
	25	302
32 °F (0 °C)	10	202
	15	282
	25	282

Heating circuit lengths ELSR-MA-XX-BF based on the following conditions:

- Voltage 120VAC (-1-) / 240VAC (-2-)
- Voltage drop max. 10%
- MCB type QO (100% utilisation)
- Single heater fed from 1 end



ELSR-MA-3-X-BF output

(in a filled water pipeline)



Self-Regulating Trace Heaters

Accessories


Designation	Description	Part No.	Combining of ELSR trace heaters and kit							
			-HA (-WS)	-NA (-WS)	-HA, Class I, Zone 1 Class I,II, Div. 2, Class III	-NA, Class I, Zone 1 Class I,II, Div. 2, Class III	-MA	-MA-BF	-WA (-WS)	-WA Class I, Zone 1
 <p>Power Connection Kits</p>										
ELVB-SREx-3/4" BR HT	Power Connection Kit ELSR-HA, -NA with nickel plated cable gland, 3/4" NPT (hazardous location) ^{① ②}	09CA007	■	■	■	■				
ELVB-SREx-3/4" BR HT	Power Connection Kit ELSR-WA with nickel plated cable gland, 3/4" NPT (hazardous location) ^{① ②}	09CA027							■	■
ELVB-SREx-20 BR HT	Power Connection Kit ELSR-HA, -NA with nickel plated cable gland, M20 (hazardous location) ^{① ②}	09CA008	■	■	■	■				
ELVB-SREx-20 BR HT	Power Connection Kit ELSR-WA , with nickel plated cable gland, M20 (hazardous location) ^{① ②}	09CA028							■	■
ELVB-SRAH-3/4" ST	Power Connection Kit ELSR-HA with steel/zinc cable gland/fitting, 3/4" NPT (non-hazardous location) ^②	09CA011							■	■
ELVB-SRAN-3/4" ST	Power Connection Kit ELSR-NA with steel/zinc cable gland/fitting, 3/4" NPT (non-hazardous location) ^②	09CA012	■							
ELVB-SRAN-3/4" P*	Power Connection Kit ELSR-NA with polymer cable gland/fitting, 3/4" NPT (non-hazardous location) ^②	09CA036		■						
ELVB-SRAN-1/2" P*	Power Connection Kit ELSR-NA with polymer cable gland/fitting, 3/4" NPT (non-hazardous location) ^②	09CA037		■						
ELVB-SRAM-3/4" ST	Power Connection Kit ELSR-MA, -MA-BF with steel/zinc cable gland/fitting, 3/4" NPT (non-hazardous location) ^②	09CA013		■						
ELVB-SRAW-3/4" ST	Power Connection Kit ELSR-WA with steel/zinc cable gland/fitting, 3/4" NPT (non-hazardous location) ^②	09CA019					■	■		
ELVB-SRAH	Power Connection kit ELSR-HA without gland	09CA014							■	
ELVB-SRAN	Power Connection kit ELSR-NA without gland	09CA015	■							
ELVB-SRAM	Power Connection kit ELSR-MA without gland	09CA052		■						
ELVB-SRAW	Power Connection kit ELSR-WA without gland	09CA053					■			
 <p>End Termination Kits</p>										
EL-ECH-ex	End Termination Kit for ELSR-HA ^{① ②}	09CA021	■		■					
EL-ECN-ex	End Termination Kit for ELSR-NA, -WA ^{① ②}	09CA022		■		■			■	■
EL-ECW	End Termination Kit for ELSR-WA ^{① ②}	09CA043							■	
EL-ECM	End Termination Kit for ELSR-MA ^{① ②}	09CA041					■			
EL-ECMF	End Termination Kit for ELSR-MA-BF ^{① ③}	09CA042						■		

*Canada only ^①min. installation temperature -49 °F (-45 °C) ^②coverage: braiding 80 %, aluminum foil 100 % ^③min. installation temperature -25 °F (-13 °C)



Self-Regulating Trace Heaters

Accessories

Further Accessories			Possible combinations of trace heater and kit							
Designation	Description	Part No.	ELSR-HA (-WS)	ELSR-NA (-WS)	ELSR-HA, Ex Zone 1, Div 2, Class I, II, III, Div 2	ELSR-NA, Ex Zone 1, Div 2, Class I, II, III, Div 2	ELSR-MA	ELSR-MA-BF	ELSR-WA (-WS)	ELSR-WA, Ex Zone 1, Div 2, Class I, II, III, Div 2
	Heater Entry Kit to be applied to each heater end									
EL-HAZELECT*	Heater entry kit for Div1 rated junction box, 3/4" NPT, for ELSR-NA and -HA, Division 1 rated hazardous location	09CA051			■	■				
	Mechanical Fasteners									
ELB-16.10	Mechanical fastener, plastic strap, L= 102 x 2.5 mm	2796000001								
ELB-16.20	Mechanical fastener, plastic strap, L = 200 x 3.6 mm	2796000002								
ELB-16.36	Mechanical fastener, plastic strap, L= 360 x 4.8 mm	2796000003								
ELB-18	Mounting/fixing plate for gutter installation	0930040								
	Self-Adhesive Tape and Foil									
ELB-03	Self-adhesive glass fibre tape, max T = 194 °F (90 °C), 50 m	2481800120								
ELB-06D	Self-adhesive aluminum foil, max T = 284 °F (140 °C), 100 m	2701900076								
ELB-06E	Self-adhesive aluminum foil, max T = 302 °F (150 °C), 50 m	2701900500								
ELB-02A	Self-adhesive glass fibre tape, max T 356 °F (180 °C), 33 m	2486800126								
	Warning labels / signs									
EL-WS01 E	Warning label/sign, English "Electric Heat Tracing" (other languages upon request)	2986900012								



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