

The background features a dark blue gradient with a collage of white icons in rounded squares. These icons represent various industrial and technological elements: a server rack, a wireless router, a computer monitor, a chemical flask, a chemical structure (H-C-H with a subscript C), a syringe, a train, a factory at night, a network diagram, a gas cylinder, a circuit board, a control panel, a pump, and a chemical structure (H-C-H with a subscript C).

27 years in industry

SOLCO.

advanced trace heating solution



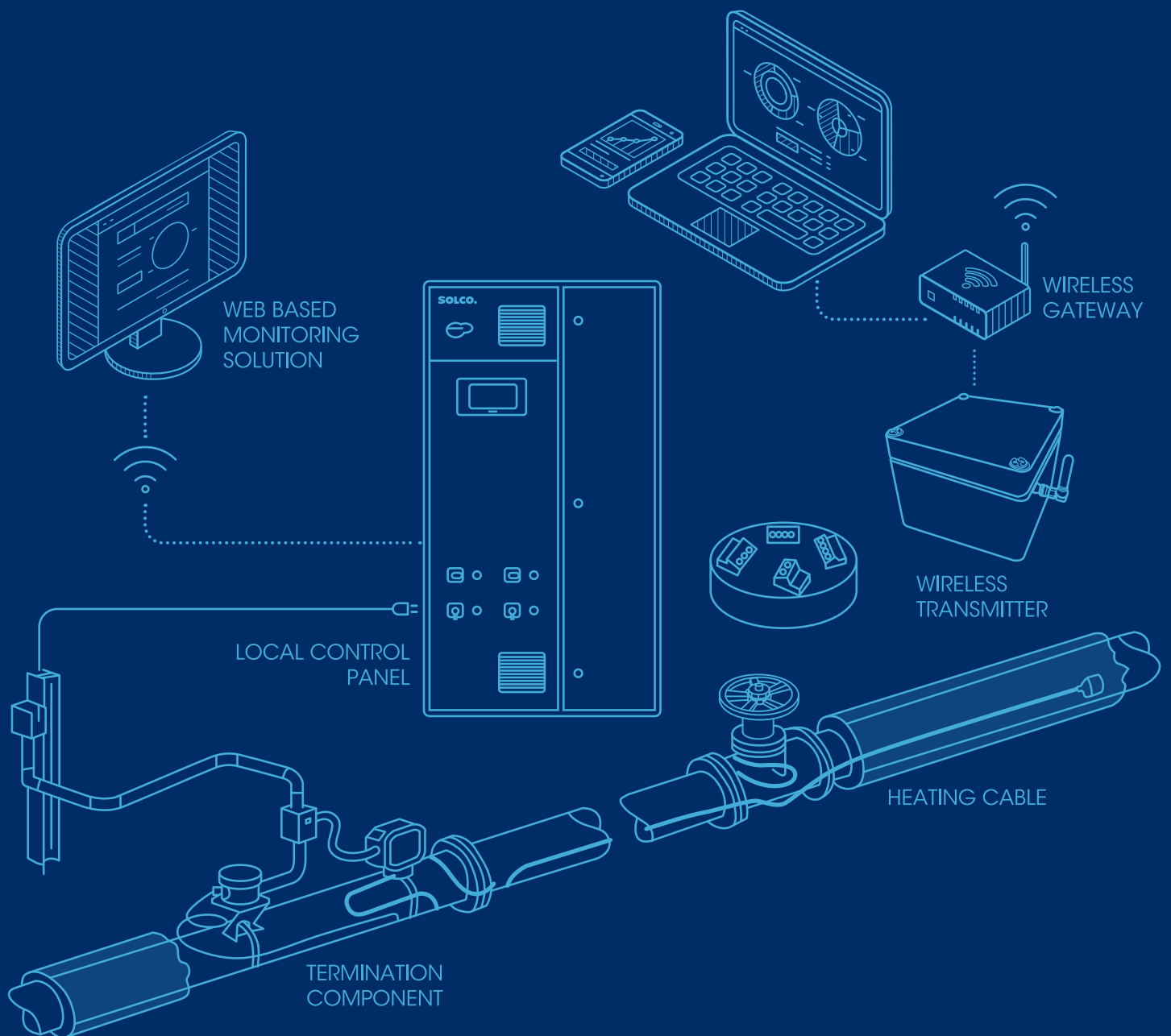
advanced trace heating solution

SOLCO PYROELEC



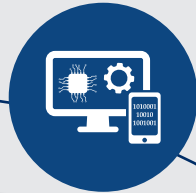
Trace Heating Automation

Reliability • Efficiency • Proactiveness



DISCC

5 Success factors of
trace heating management



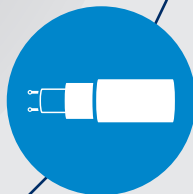
Trace Heating Design



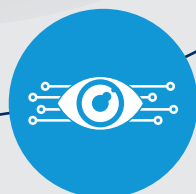
Installation and
Commissioning



Sensors



Heating Cables



Control and Monitoring

SOLCO PYROELEC

provides the most advanced industrial trace heating solution





Safety

- Ex certified trace heating cable system
- Automated circuit monitoring and performance trend analysis
- No more shut-down by proactive maintenance



Reliability

- 27 years experience in trace heating
- Proven quality of trace heating products
- Accepted by big companies in the world
- Worldwide approvals
- Encrypted LoRa wireless communication network
- Quality installation and commissioning service



Economy

- No more process shut-down
- Discover of hidden and unnecessary energy use in trace heating circuits
- Energy saving up to 70%
- No cabling cost for distant sensor installation



Ergonomics

- Web-based monitoring and control
- Easy access to monitoring system wherever internet is available
- Automated trace heating design system
- Easy installation with state-of-the-art termination components

BEST QUALITY AND PERFORMANCE

SOLCO PYROLEC

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- Components

Monitoring and Control

Sky trace
Blue trace
PYEX - WLT

01






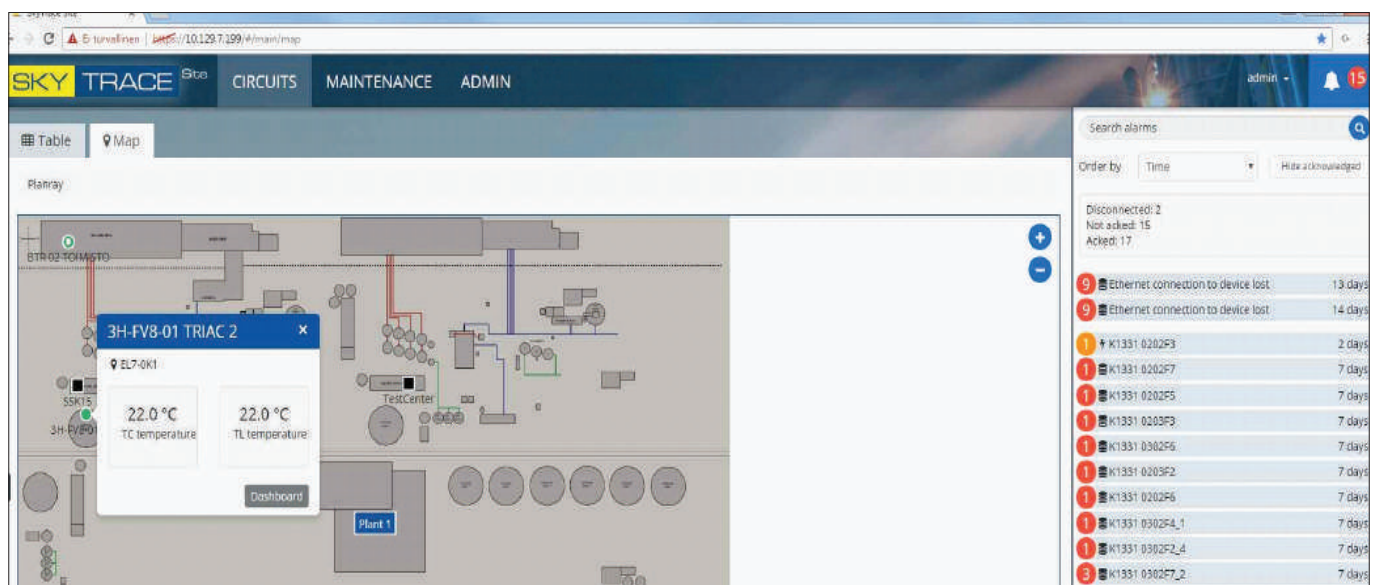
Monitoring and Control

SKY TRACE

Web-based monitoring solution
for industrial trace heating application



Use	<p>Avoid process downtime.</p> <p>Find hidden energy cost and save money.</p> <p>Identify and solve mysterious problems.</p> <p>Confirm heating cable quality and maintenance schedule.</p>
Specification	<p>Trace heating circuit analysis by table and site map.</p> <p>Control panel and circuit location can be customized after the completion of installation dashboard for controlling and monitoring of individual circuit.</p> <p>Monitoring temperature, load current, leakage current and sensor status.</p> <p>Energy consumption statistics - Top 10 circuits with higher consumption.</p> <p>Top 10 alarm count per circuit.</p>
Features	<p>Web-based monitoring and control solution for trace heating system.</p> <p>Saving energy and labor costs up to 70%.</p> <p>Proactive maintenance analysis.</p> <p>Prioritized alarm 1 to 9.</p> <p>Heating cable performance analysis.</p> <p>Excellent security.</p> <p>Remote control via VPN to LAN network.</p> <p>Integrate to client own automation system.</p> <p>Extendable to 'SKTRACE analytics' via cloud service.</p> <p>Mobile user interface.</p> <p>Monthly report.</p>
Certification	

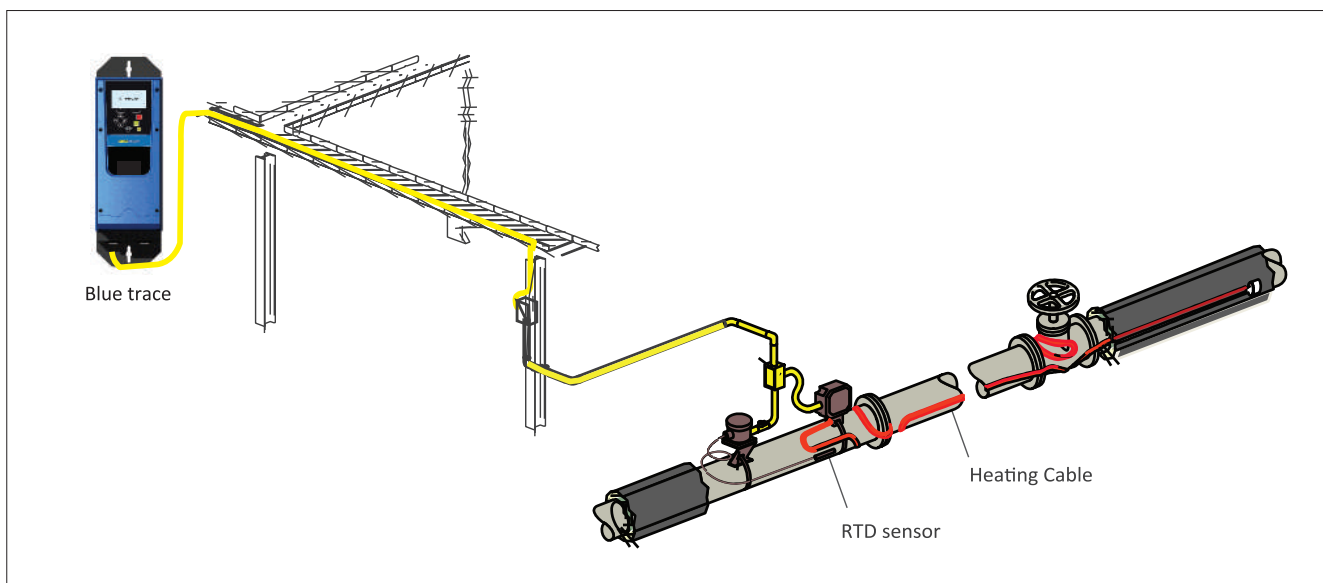


BLUE TRACE

Single circuit controller
for industrial trace heating system



Use	Tanks, Vessels, Pipelines, Conveyors, Filter stations, Gutter, Roof drains, Ventilation grids, Pumps, Ramps, Slabs etc.
Specification	50A x 1 Phase / 3 Phase. Solid state relay. Two RTD inputs. RS485 connection. Adjustable power percentage save time and money in trace heating design. Temperature limiter can be integrated. BluePID algorithm. Temperature window mode. Two programmable voltage inputs 24Vdc, 100-277Vac. Downtime test cycle and circuit status report. Setting can be saved and downloaded for copy.
Features	Self-contained single circuit control and monitoring solution for trace heating system. Plug-and-play. Accurate and intelligent control with BluePID algorithm and softstat function. Easy to use and maintain. Extended lifetime.
Certification	CE Ex

Monitoring and
ControlTechnical
SupportHeating
CableConnection
Kit

Component

Temperature
MeasurementHeating
JacketLiquid Leak
Detection

PYEX-WLT

Industrial grade wireless LoRa transmitter



Features

WIRELESS FOR INDUSTRIAL APPLICATIONS

Industry grade turn-key solution for cost efficient wireless measurements.
Fast and simple set-up also for retro-fit and temporary installation.
Reliable, long range, low power wireless data communication with excellent immunity to interference even in high demanding circumstances.

SMARTER MAINTENANCE FOR BETTER PRODUCTIVITY

Prevent, detect, locate and diagnose problems and failures faster and more efficiently.
Optimise inspection and maintenance intervals, conditions, product life-cycle and warranty costs based on real time measurement.
Get more insight with more data - temperature, humidity etc.

FUTURE-PROOF FLEXIBILITY

Use as stand alone solution or to be integrated into existing automation systems.
Scale-up for new sensors, locations and monitoring options.
Simple web-based access to real time data, trends and measuring set-up any time, anywhere, also with mobile devices.

Certification

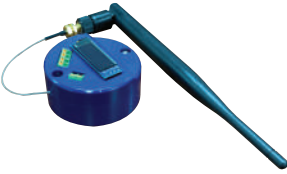


Application references

Detecting the reduced efficiency in heat exchanger with remote and automated temperature measurement.
Problem diagnostics and proactive maintenance for pumps and gears with wireless temperature, pressure and vibration measurements.
Monitoring and improving energy efficiency in surface heating systems.



Components



Wireless LoRa transmitter

Encrypted wireless LoRa communication. LoRaWAN certified.
 Energy efficient LoRa 920-923 MHz transmitter using LoRaWAN protocol.
 3.6V nominal 8.5Ah Lithium primary cell battery or external 5V DC power supply.
 Long range, low power and excellent immunity for external interferences.
 1 to 3 sensors per transmeter. (temperature, humidity)
 Configurable measuring interval and alarms.
 Outstanding signal transmission distance typical 100m indoor, up to 10km outdoor.



Wireless gateway and monitoring

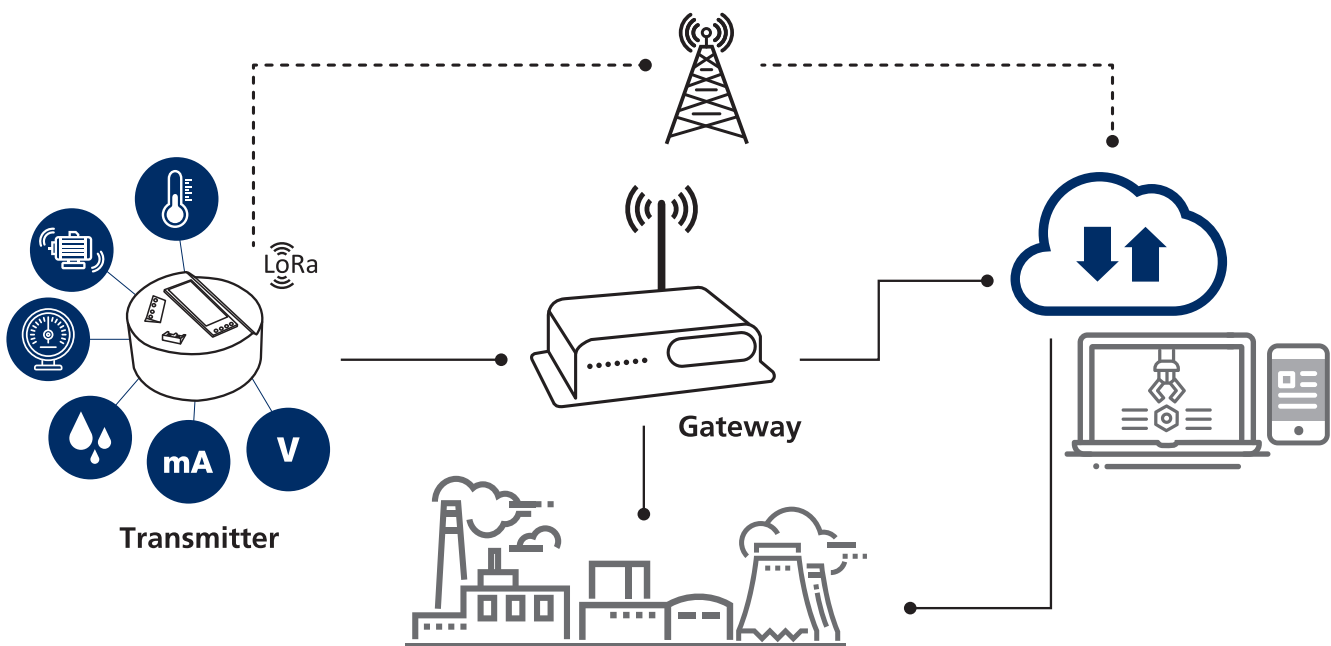
Data routing (4G / 5G / Ethernet) to LoRa transmitter cloud or any other system.
 Real time monitoring, alarms and history data anywhere with any web-enabled device.
 Configurable dashboard views and measuring parameters.



Wireless LoRa transmitter temperature sensing kit

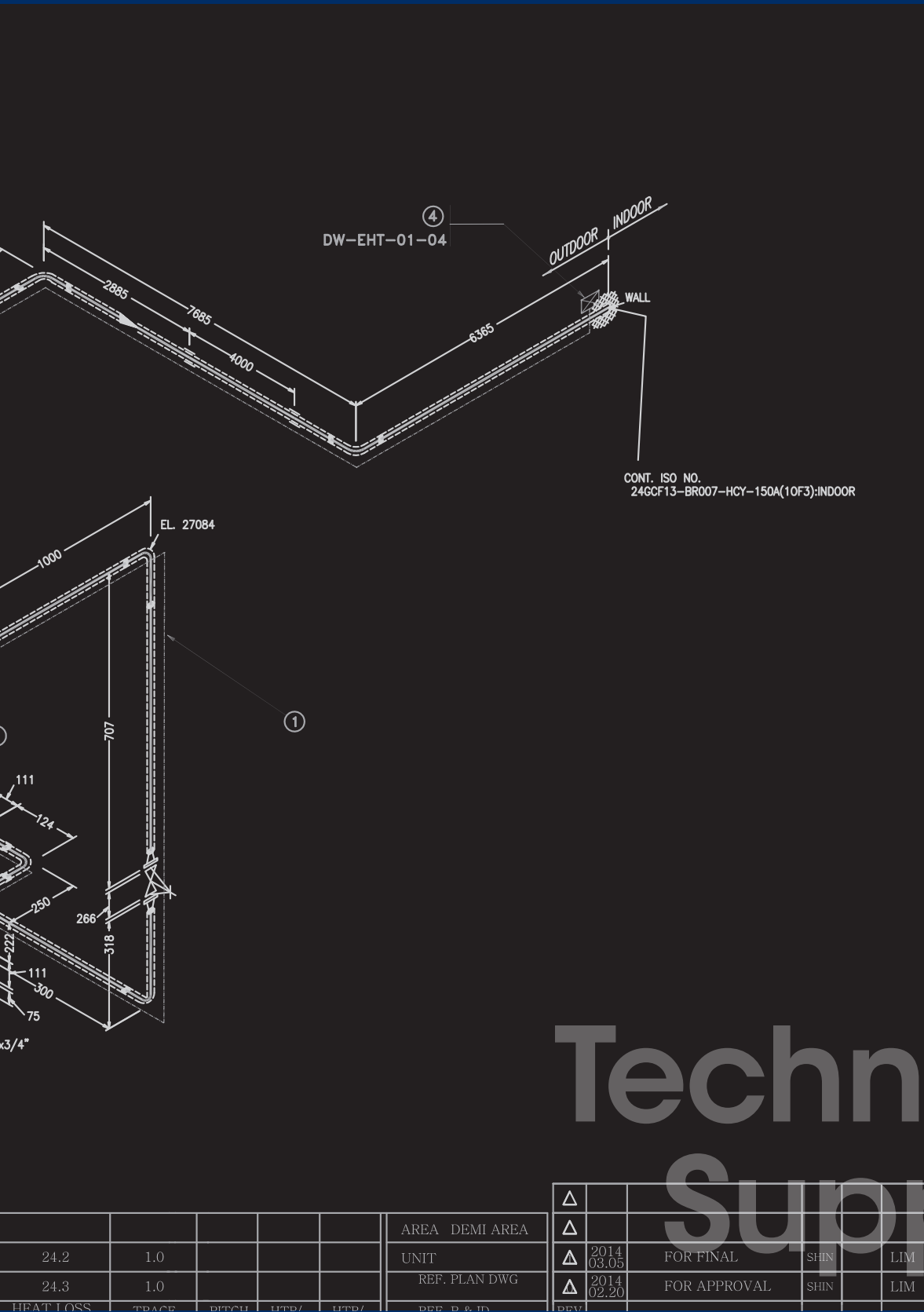
Completed measuring sets according to needs and conditions.
 Includes sensors, transmitters, batteries, antennas, housing and other required components.
 Pre-configured and ready-to-use for immediate wireless measurements and monitoring.
 Unlimited lifetime with solar power option.
 Smart power saving and self-diagnostics.

System configuration



02





DESIGN DATA				<input type="checkbox"/> INDOOR	<input checked="" type="checkbox"/> OUTDOOR
FLUID _____ DW					
MAX.PIPE TEMP.(INTERMITTENT) _____					
NORMAL OPER.TEMP. _____					
MAINTAIN TEMP. _____					
MINIMUM AMB.TEMP. _____					
TEMP.DIFFERENTIAL _____					
SERVICE VOLTAGE _____					
PIPE MATERIAL _____					
THERMAL INSULATION					
TYPE	"K"	THK.	PIPE SIZE		
Perlite	0.0687	5.	6"		
	Q'TY	CAT.NO.	DESC.		
1	59	HSR242-CF	26.3		
2		HSR302-CF	32.8		
3		VSR302-CF	34.2		
4	1	AL-PJB-P	POWER C		
5			POWER C		
6	1	AL-PJB-LE	LIGHTED		
7			END SEA		
8					
9			SPLICE C		
10		HACC-TK-P	TEE CON		
11					
12		HACC-TSK-P	THERMO		
13			TEMP. S		
14					
15					
16					
17					
Solco. pyroelec					
PROJECT NAME					
TITLE					
ELECTRIC HEAT TRACING					
END USER					
PROJECT CHP-S1		ENG'S JOB NO.		P.O. NO. KKPC CHP-S	
LINE NO.		24GCF13-BR003-150A			SHT. 1 of 1
DRAWING NO.					
EHT-DW-201					

					AREA	DEMI AREA
24.2	1.0				UNIT	
24.3	1.0				REF. PLAN DWG	
HEAT LOSS	TRACE	PITCH	HTP/	HTP/	REF. P & ID	REV

Δ						
Δ						
Δ	2014 03.05	FOR FINAL	SHIN		LIM	
Δ	2014 02.20	FOR APPROVAL	SHIN		LIM	

Pyrotechnician

Trace heating design software



Pyrotechnician, the design software for trace heating application provides the outstanding design-aid performance via user-friendly interface. The process conditions and parameters can be entered individually by keyboard or be downloaded from MS Excel program for multiple lines. User friendly graphics makes the design work more comfortable and easier. The selection of termination kits and/or control devices become easier with more intuitive user interface.

It has all the features you need such as

- site conditions and process conditions can be tailored for each pipeline
- heat loss calculation,
- automated heating cable selection
- electrical load for each circuit
- selection of control and monitoring method
- calculated/determined temperature information
- automated generation of design summary and bill of material(BOM).

All reports can be issued in Excel program. Pyrotechnician is the most advanced design software for precision and time-saving design work for both pipe tracing and tank tracing application.

Project window

The screenshot displays the Pyrotechnician 2.0 software interface. The main window shows a schematic diagram of a trace heating system with segments and terminations. A dialog box titled "Default Connection Kit Types" is open, allowing the user to select a kit type for a new kit. The "Input Data of 'Segment 1'" window is also visible, showing various parameters for the segment.

Default Connection Kit Types Dialog:

Category	Type	Image	Description
Power	JBP-16		PYEX-EP-JBP-16-P: 160x160 GRP enclosure with
Power & Splice	JB-16		PYEX-EP-JB-16-P: 160x160 GRP enclosure with h
Power & TSplice	JB-26		PYEX-EP-JB-26: 250x160 GRP enclosure with hea
Power with Lamp	JBP-12-LP		PYEX-EP-JBP-12-LP: 120x120 GRP enclosure with

Input Data of 'Segment 1' Window:

Property	Value	Unit
Basic Information		
Name	Segment 1	
Module	[Unspecified]	
Work Package	[Unspecified]	
Area	[Unspecified]	
Customer Line No.	[Unspecified]	
Ext. Reference No.	[Unspecified]	
Customer Drawing No.	[Unspecified]	
Pipe		
Size	50(2) mm	
Length	30.00 m	
Insulation		
Layer Count	One Layer	
Inner Layer Type	MF(Mineral Fiber)	
Inner Layer Thickness	25.00 mm	
Inner Layer Thermal Cor	0.0332581965	
Outer Layer Type	N/A	
Outer Layer Thickness	N/A mm	
Outer Layer Thermal Cor	N/A	
Weather Barrier	Aluminum	
Emissivity	0.12	
Temperature		
Min Ambient	-20.00 °C	
Max Ambient	40.00 °C	
Startup Ambient	-20.00 °C	
Environmental		
Chemical Exposure	None	
Wind	0.00 m/s	
Safety Factor	20.00 %	

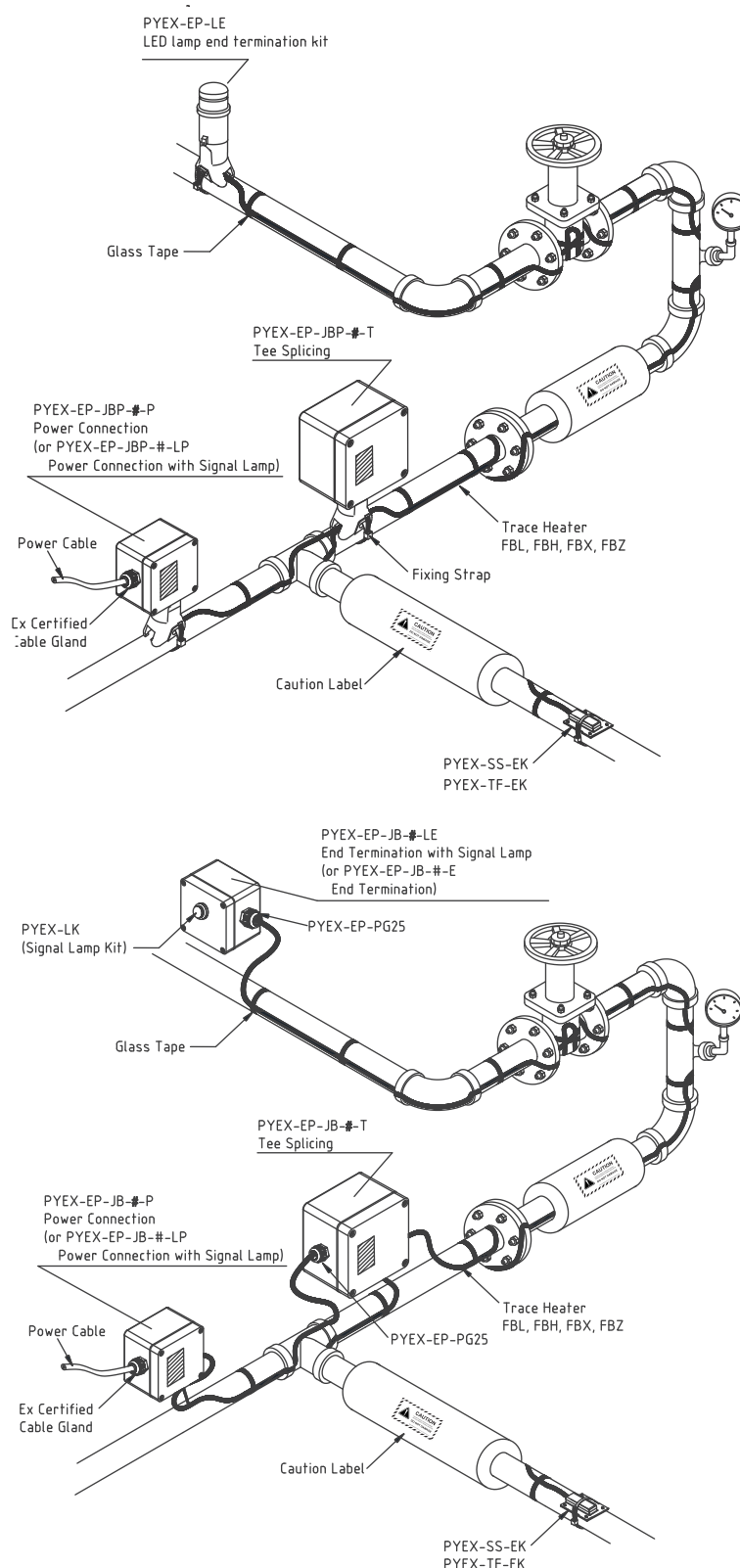
Circuit Data:

Control Method	Stabilized Pipe Sensing
Total Heater Length	93.00 m
Operating Load	1433.13 W
Operating Current	6.51 A
Maximum Current	15.82 A

For Piping:

Value	Unit
7.72	W/m
31.00	m
30.00	m
0.00	m
0.00	m
0.00	m
0.00	m
0.00	m
1.00	m

Typical installation



SOLCO PYROELEC self-regulating cables are to be installed with genuine components being supplied by SOLCO PYROELEC representative to guarantee optimum performance as well as to validate extended warranty scheme. To benefit from SOLCO PYROELEC product warranty, the customer must complete and retain the installation, inspection or commissioning record(s) provided with installation manual. Also the customer should complete warranty registration form and fax it to SOLCO PYROELEC within thirty(30) days from the installation. Otherwise only standard terms and conditions apply.

Monitoring and Control

Technical Support

Heating Cable

Connection Kit

Component

Temperature Measurement

Heating Jacket

Liquid Leak Detection

Heating Cable

FBL
FBH
FBX
FBZ
FBCW
SFC
LLC
STS
MI

03

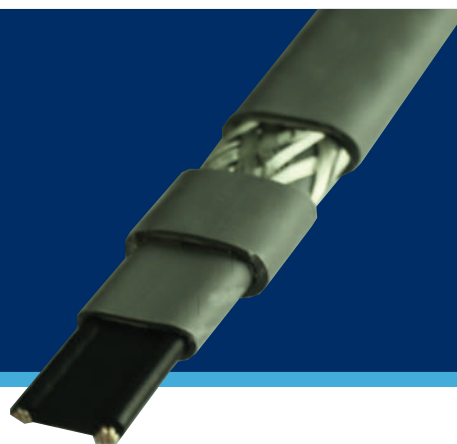











Heating Cable

FBL

Self-regulating heating cable for low to medium temperature process flow control



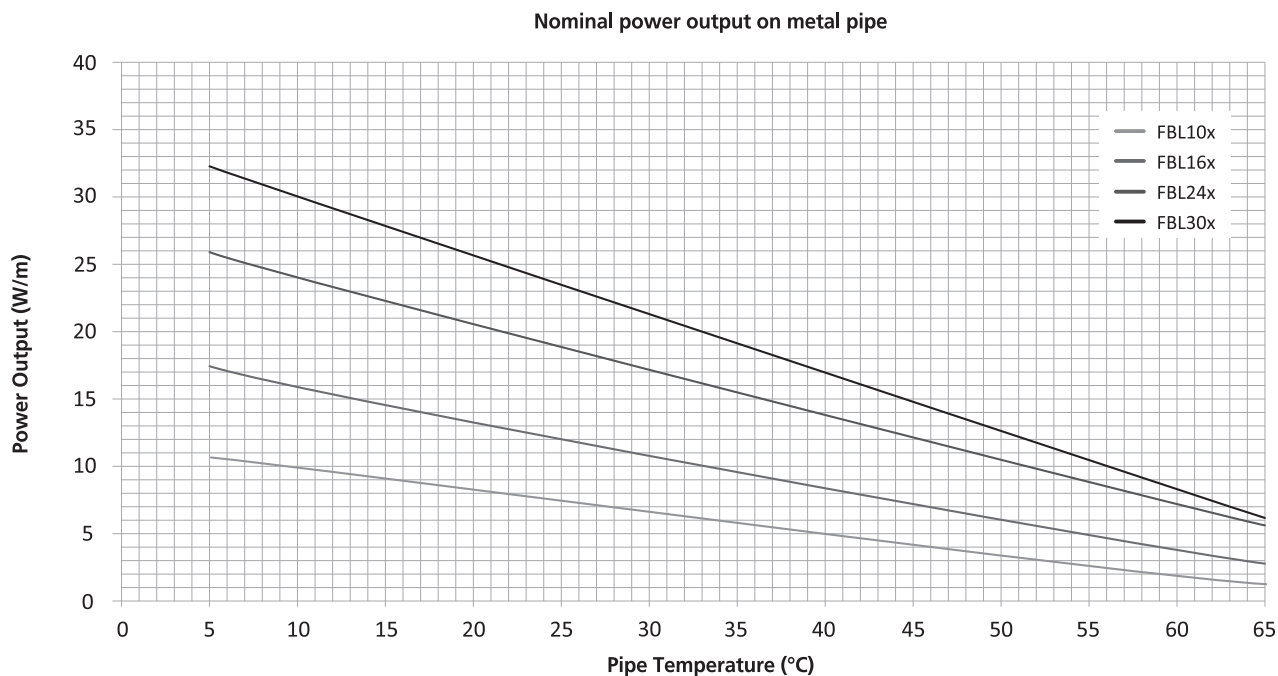
Use	Freeze protection for water pipeline. Temperature maintenance for petrochemical and gas plant use in hazardous location. Use in hazardous and non-hazardous location.								
Specification	<p>Max. maintain temperature (Power-on) 65°C (150°F) Max. withstand temperature (Power-off) 85°C (185°F) Min. installation temperature : -60°C Temperature classification (T- rating) : T6 (85°C) Rated voltage : 100 ~ 120 Vac, 200 ~ 277 Vac Rated power output : 10, 16, 24 and 30 watt/m@10°C Dimension(nom.) FBL10x, 16x, 24x 11.6mm x 5.6mm FBL30x 13.6mm x 5.6mm Bus wire - ASTM B355 Class 2 NPC AWG16 Outer jacket FR polyolefin (CP) : Exposure to aqueous inorganic chemicals Fluoropolymer (CF) : Exposure to organic chemicals or corrosives</p>								
Features	<p>It will not burn or overheat even when overlapped. It self-regulates thermal performance in response to temperature. It can be cut to any length to suit any installation condition. Independent heat output control along the length. Soft power switching for energy saving as well as longer service life. Easy termination for powering and splicing.</p>								
Selection Code	<p>FBL 16 2 - C P Ⓐ Ⓑ Ⓒ Ⓓ</p> <table border="1"> <tr> <td>Ⓐ</td><td>Model</td></tr> <tr> <td>Ⓑ</td><td>Rated output 10, 16, 24 and 30 watt/m@10°C</td></tr> <tr> <td>Ⓒ</td><td>Rated voltage 1 : 100 ~ 120 Vac, 2 : 200 ~ 277 Vac</td></tr> <tr> <td>Ⓓ</td><td>Outer jacket P : FR Polyolefin F : Fluoropolymer</td></tr> </table>	Ⓐ	Model	Ⓑ	Rated output 10, 16, 24 and 30 watt/m@10°C	Ⓒ	Rated voltage 1 : 100 ~ 120 Vac, 2 : 200 ~ 277 Vac	Ⓓ	Outer jacket P : FR Polyolefin F : Fluoropolymer
Ⓐ	Model								
Ⓑ	Rated output 10, 16, 24 and 30 watt/m@10°C								
Ⓒ	Rated voltage 1 : 100 ~ 120 Vac, 2 : 200 ~ 277 Vac								
Ⓓ	Outer jacket P : FR Polyolefin F : Fluoropolymer								
Certification	      								

Product drawing



- Bus wire: Nickel plated copper wire
- Polymeric heating element: PE + C/B
- Primary insulation: Flame-retardant polyolefin
- Earthing: Braided tin plated copper wire
- Outer jacket: FR polyolefin or fluoropolymer

Power output graph



Circuit design guide







Breaker size(A) Product code	Start-up Temp. -20°C						Start-up Temp. 0°C						Start-up Temp. 10°C					
	10A	16A	20A	25A	32A	40A	10A	16A	20A	25A	32A	40A	10A	16A	20A	25A	32A	40A
FBL102-CP(F)	84	134	155	155	155	155	101	162	169	169	169	169	131	193	193	193	193	193
FBL162-CP(F)	59	94	118	129	129	129	71	113	141	142	142	142	92	147	162	162	162	162
FBL242-CP(F)	42	67	84	104	111	111	49	79	99	122	122	122	66	105	131	137	137	137
FBL302-CP(F)	32	51	64	80	101	101	32	51	64	80	102	113	41	66	82	102	124	124

Max. circuit length(m) at 230Vac based on starting temp. (°C) and typical Type C circuit breaker size (Amps).

FBH

Self-regulating heating cable for medium to high temperature process flow control



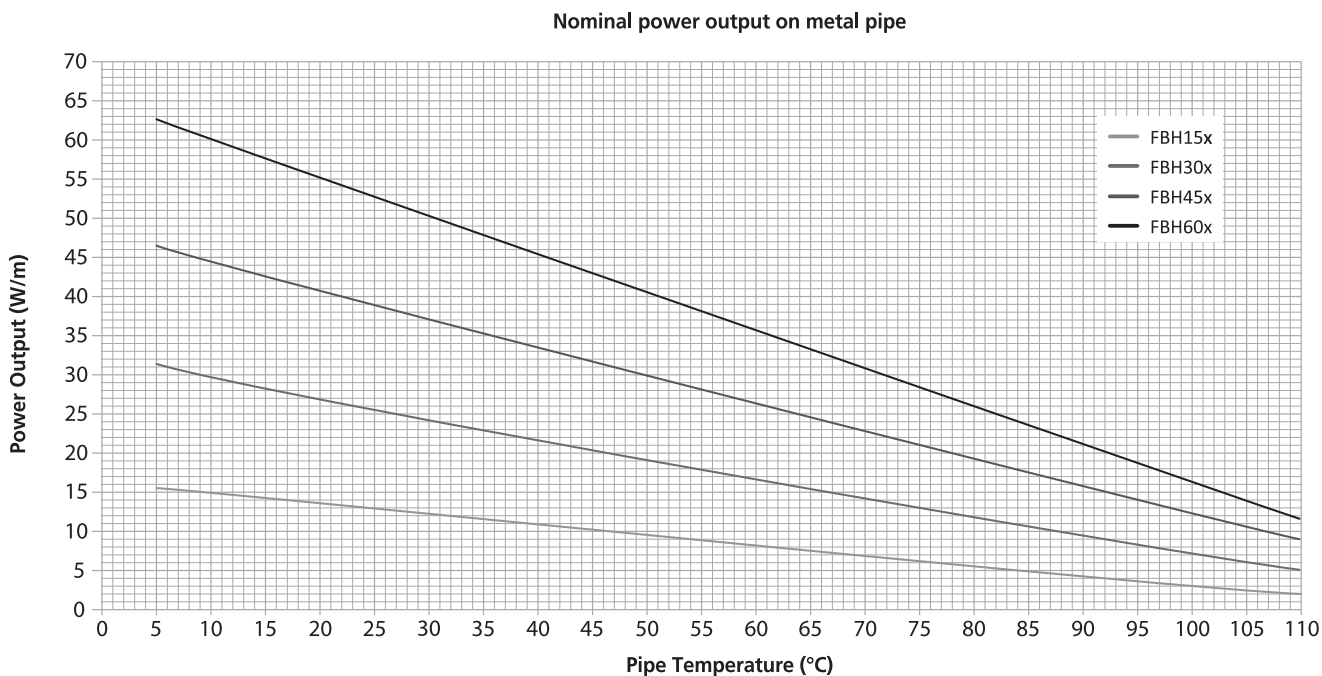
Use	Freeze protection for water, fuel, chemical pipeline. Temperature maintenance for petrochemical and gas plant. Use in hazardous and non-hazardous location.																																								
Specification	Max. maintain temperature (Power-on) 110°C (230°F) Max. withstand temperature (Power-off) 135°C (275°F) Min. installation temperature -60°C Temperature classification (T- rating) : T4 (135°C) Rated voltage : 100 ~ 120 Vac, 200 ~ 277 Vac Rated power output : 15, 30, 45 and 60 watt/m@10°C Dimension(nom.) FBH 15x, 30x, 45x 12.9mm x 5.2mm FBH 60x 14.8mm x 5.6mm Bus wire FBH15x, 30x, 45x ASTM B355 Class 2 NPC AWG16 FBH60x ASTM B355 Class 2 NPC AWG14 Outer jacket Fluoropolymer (CT) : Exposure to organic chemicals or corrosives Flame - retardant XLEVA (CX) : Exposure to aqueous inorganic chemicals																																								
Features	It will not burn or overheat even when overlapped. It self-regulates thermal performance in response to temperature. It can be cut to any length to suit any installation condition. Independent heat output control along the length. Soft power switching for energy saving as well as longer service life. Easy termination for powering and splicing.																																								
Selection Code	<table><tr><td>FBH</td><td>30</td><td>2</td><td>-</td><td>C</td><td>T</td></tr><tr><td>Ⓐ</td><td>Ⓑ</td><td>Ⓒ</td><td></td><td></td><td>Ⓓ</td></tr><tr><td>Ⓐ</td><td colspan="5">Model</td></tr><tr><td>Ⓑ</td><td colspan="5">Rated output 15, 30, 45 and 60 watt/m@10°C</td></tr><tr><td>Ⓒ</td><td colspan="5">Rated voltage 1 : 100 ~ 120 Vac, 2 : 200 ~ 277 Vac</td></tr><tr><td>Ⓓ</td><td colspan="5">Outer jacket T : Fluoropolymer, X : FR XLEVA</td></tr></table>					FBH	30	2	-	C	T	Ⓐ	Ⓑ	Ⓒ			Ⓓ	Ⓐ	Model					Ⓑ	Rated output 15, 30, 45 and 60 watt/m@10°C					Ⓒ	Rated voltage 1 : 100 ~ 120 Vac, 2 : 200 ~ 277 Vac					Ⓓ	Outer jacket T : Fluoropolymer, X : FR XLEVA				
FBH	30	2	-	C	T																																				
Ⓐ	Ⓑ	Ⓒ			Ⓓ																																				
Ⓐ	Model																																								
Ⓑ	Rated output 15, 30, 45 and 60 watt/m@10°C																																								
Ⓒ	Rated voltage 1 : 100 ~ 120 Vac, 2 : 200 ~ 277 Vac																																								
Ⓓ	Outer jacket T : Fluoropolymer, X : FR XLEVA																																								
Certification	     																																								

Product drawing



- Bus wire: Nickel plated copper wire
- Polymeric heating element: Fluoropolymer + C/B
- Primary insulation: Flame-retardant XLEVA
- Earthing: Braided tin plated copper wire
- Outer jacket: Fluoropolymer

Power output graph



Circuit design guide








Breaker size(A) Product code	Start-up Temp. -20°C						Start-up Temp. 0°C						Start-up Temp. 10°C					
	10A	16A	20A	25A	32A	40A	10A	16A	20A	25A	32A	40A	10A	16A	20A	25A	32A	40A
FBH152-CT	65	104	130	136	136	136	78	125	149	149	149	149	80	128	151	151	151	151
FBH302-CT	39	63	79	99	106	106	47	75	94	116	116	116	48	77	97	117	117	117
FBH452-CT	28	45	57	71	90	90	33	53	66	82	97	97	35	56	69	87	99	99
FBH602-CT	23	37	46	57	73	85	25	40	50	63	80	88	27	43	54	68	87	92

Max. circuit length(m) at 230Vac based on starting temp. (°C) and typical Type C circuit breaker size (Amps).

FBX

Self-regulating heating cable for high temperature process flow control



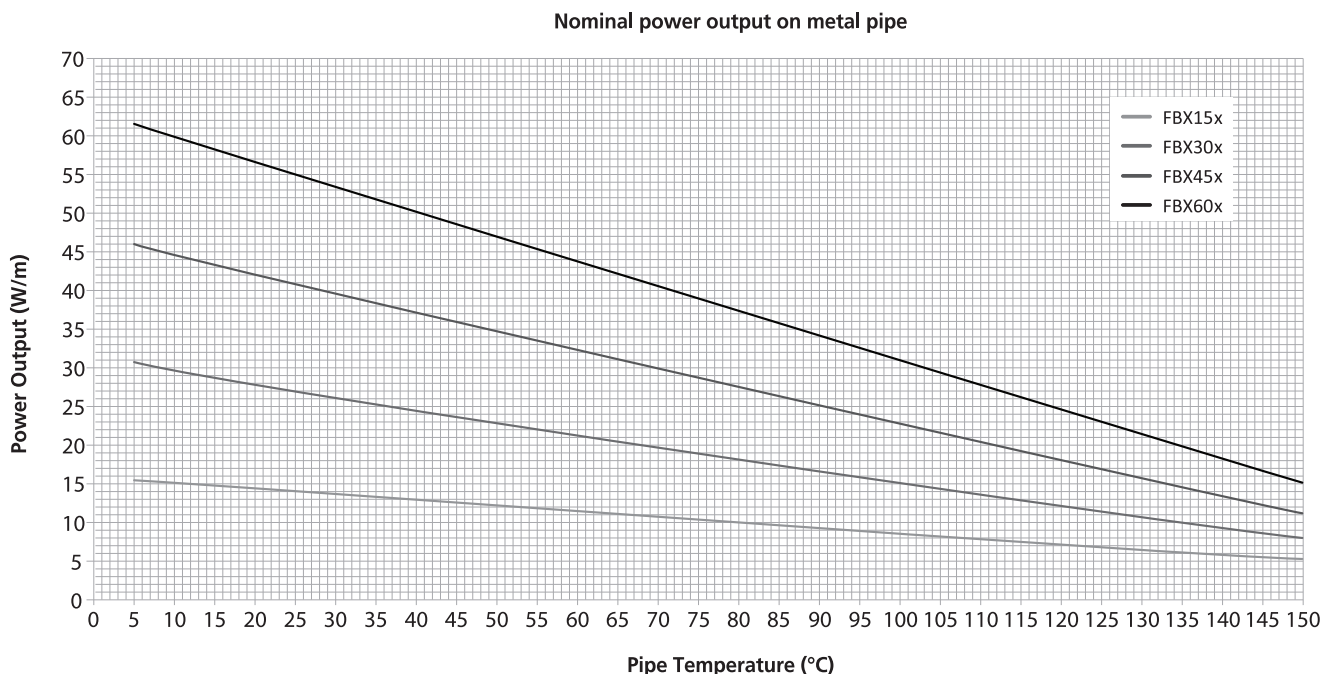
Use	<p>Freeze protection for various pipeline under steam purging process.</p> <p>Temperature maintenance for petrochemical and gas plant.</p> <p>Medium or heavy duty heat-up process ex) hopper heater.</p> <p>Use in hazardous and non-hazardous location.</p>								
Specification	<p>Max. maintain temperature (Power-on) 150°C (302°F)</p> <p>Use in hazardous and non-hazardous location</p> <p>Max. withstand temperature (Power-off) 200°C (392°F)</p> <p>Min. installation temperature -60°C</p> <p>Temperature classification (T- rating)</p> <p>FBX15x, 30x, 45x : T3 (200°C)</p> <p>FBX60x : T2 (220°C)</p> <p>Rated voltage : 100 ~ 120 Vac, 200 ~ 277 Vac</p> <p>Rated power output : 15, 30, 45 and 60 watt/m@10°C</p> <p>Dimension(nom.) : 12.2mm x 4.8mm</p> <p>Bus wire - ASTM B355 Class 2 NPC AWG16</p> <p>Outer jacket</p> <p>Fluoropolymer(CT) : Exposure to organic chemicals or corrosives</p>								
Features	<p>It will not burn or overheat even when overlapped.</p> <p>It self-regulates thermal performance in response to temperature.</p> <p>It can be cut to any length to suit any installation condition.</p> <p>Independent heat output control along the length.</p> <p>Soft power switching for energy saving as well as longer service life.</p> <p>Easy termination for power connection and splicing.</p>								
Selection Code	<p>FBX 30 2 - C T</p> <p>① ② ③ ④ ⑤</p> <table border="1"> <tr> <td>①</td><td>Model</td></tr> <tr> <td>②</td><td>Rated output 15, 30, 45 and 60 watt/m@10°C</td></tr> <tr> <td>③</td><td>Rated voltage 1 : 100 ~ 120 Vac, 2 : 200 ~ 277 Vac</td></tr> <tr> <td>④</td><td>Outer jacket T : Fluoropolymer</td></tr> </table>	①	Model	②	Rated output 15, 30, 45 and 60 watt/m@10°C	③	Rated voltage 1 : 100 ~ 120 Vac, 2 : 200 ~ 277 Vac	④	Outer jacket T : Fluoropolymer
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④	Outer jacket T : Fluoropolymer								
Certification	      								

Product drawing



- Bus wire: Nickel plated copper wire
- Polymeric heating element: Fluoropolymer + C/B
- Primary insulation: Fluoropolymer
- Earthing: Braided nickel plated or tin plated copper wire
- Outer jacket: Fluoropolymer

Power output graph



Circuit design guide







Breaker size(A) Product code	Start-up Temp. -20°C						Start-up Temp. 0°C						Start-up Temp. 10°C					
	10A	16A	20A	25A	32A	40A	10A	16A	20A	25A	32A	40A	10A	16A	20A	25A	32A	40A
FBX152-CT	67	107	134	138	138	138	78	125	149	149	149	149	80	128	151	151	151	151
FBX302-CT	44	70	88	110	112	112	46	74	92	114	114	114	48	77	97	117	117	117
FBX452-CT	31	50	63	79	94	94	33	53	66	83	97	97	35	56	69	87	99	99
FBX602-CT	25	39	49	61	79	84	26	42	52	65	83	86	27	43	54	68	87	88

Max. circuit length(m) at 230Vac based on starting temp. (°C) and typical Type C circuit breaker size (Amps).

FBZ

Self-regulating heating cable
for extremely high temperature process flow control



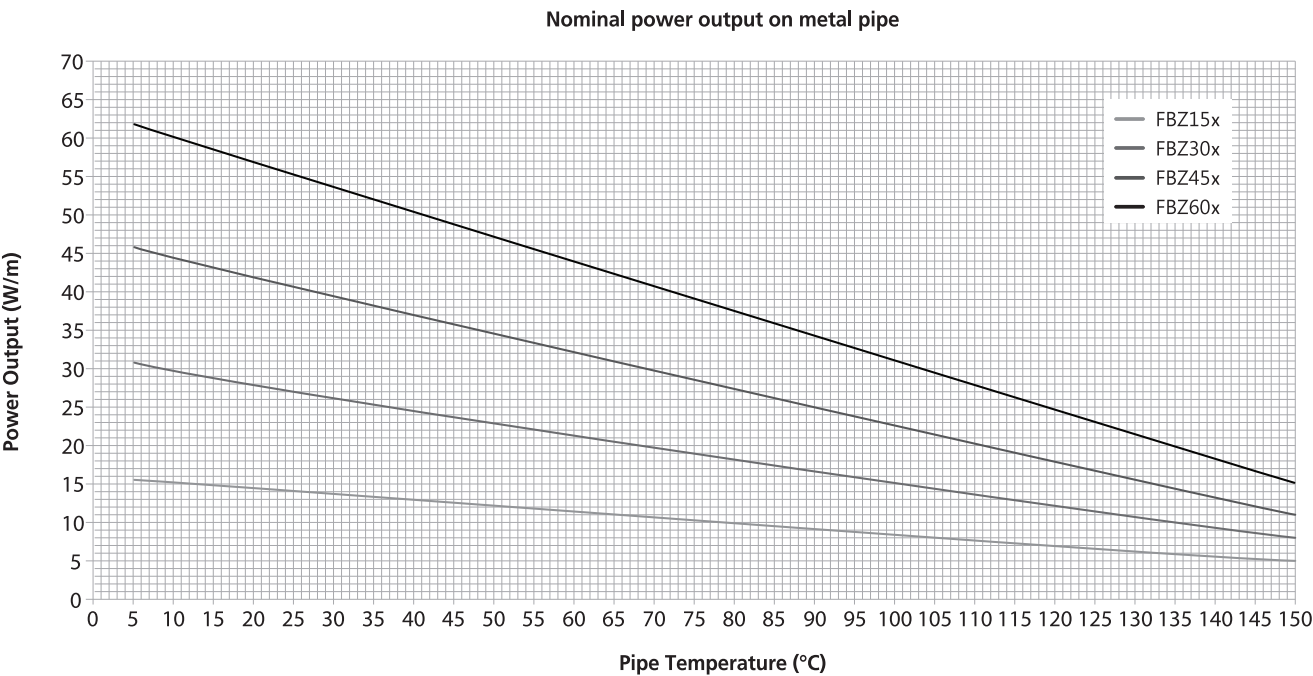
Use	<p>Freeze protection for various pipeline under steam purging process.</p> <p>Temperature maintenance for petrochemical and gas plant.</p> <p>Medium or heavy duty heat-up process ex) hopper heater.</p> <p>Use in hazardous and non-hazardous location.</p>								
Specification	<p>Max. maintain temperature(Power-on) 200°C (392°F)</p> <p>Max. withstand temperature(Power-off) 240°C (464°F)</p> <p>Min. installation temperature -60°C</p> <p>Temperature classification (T- rating)</p> <p>FBZ15x, 30x, 45x : T3 (200°C)</p> <p>FBZ60x : T2 (220°C)</p> <p>Rated voltage : 100 ~ 120 Vac, 200 ~ 277 Vac</p> <p>Rated power output : 15, 30, 45 and 60 watt/m@10°C</p> <p>Dimension(nom.) : 12.2mm x 4.8mm</p> <p>Bus wire - ASTM B355 Class 2 NPC AWG16</p> <p>Outer jacket</p> <p>Fluoropolymer (CT) : Exposure to organic chemicals or corrosives</p>								
Features	<p>It will not burn or overheat even when overlapped.</p> <p>It self-regulates thermal performance in response to temperature.</p> <p>It can be cut to any length to suit any installation condition.</p> <p>Independent heat output control along the length.</p> <p>Soft power switching for energy saving as well as longer service life.</p> <p>Easy termination for power connection and splicing.</p>								
Selection Code	<p>FBZ 60 2 - C T</p> <p>① ② ③ ④</p> <table border="1"> <tr> <td>①</td><td>Model</td></tr> <tr> <td>②</td><td>Rated output 15, 30, 45 and 60 watt/m@10°C</td></tr> <tr> <td>③</td><td>Rated voltage 1 : 100 ~ 120 Vac, 2 : 200 ~ 277 Vac</td></tr> <tr> <td>④</td><td>Outer jacket T : Fluoropolymer</td></tr> </table>	①	Model	②	Rated output 15, 30, 45 and 60 watt/m@10°C	③	Rated voltage 1 : 100 ~ 120 Vac, 2 : 200 ~ 277 Vac	④	Outer jacket T : Fluoropolymer
①	Model								
②	Rated output 15, 30, 45 and 60 watt/m@10°C								
③	Rated voltage 1 : 100 ~ 120 Vac, 2 : 200 ~ 277 Vac								
④	Outer jacket T : Fluoropolymer								
Certification	     								

Product drawing



- Bus wire: Nickel plated copper wire
- Polymeric heating element: Fluoropolymer + C/B
- Primary insulation: Fluoropolymer
- Earthing: Braided nickel plated or tin plated copper wire
- Outer jacket: Fluoropolymer

Power output graph



Circuit design guide

Breaker size(A) Product code	Start-up Temp. -20°C						Start-up Temp. 0°C						Start-up Temp. 10°C					
	10A	16A	20A	25A	32A	40A	10A	16A	20A	25A	32A	40A	10A	16A	20A	25A	32A	40A
FBZ152-CT	51	82	103	121	121	121	60	96	120	130	130	130	62	98	123	132	132	132
FBZ302-CT	37	59	74	93	103	103	39	62	78	97	105	105	41	66	82	102	108	108
FBZ452-CT	28	44	56	69	89	89	29	47	58	73	91	91	31	49	61	77	93	93
FBZ602-CT	22	36	45	56	71	80	24	38	47	59	75	82	25	39	49	61	79	83

Max. circuit length(m) at 230Vac based on starting temp. (°C) and typical Type C circuit breaker size (Amps).

FBCW

Silicone insulated parallel resistance heating cable for industrial applications



Use	Freeze protection or temperature maintenance of vessel and tank. Freeze protection for chemical feeding or process line. Use in hazardous and non-hazardous location.								
Specification	<p>Max. maintain temperature (Power-on) 100°C (212°F) Max. withstand temperature (Power-off) 150°C (302°F) Rated voltage : 100 ~ 120 Vac, 200 ~ 240 Vac Rated power output : 10, 20, 30, 40 watt/m@20°C Max. circuit length : 100m Node interval : 10, 20 w/m model : 100cm 30, 40 w/m model : 50cm Conductor size : 10 w/m model : 0.75mm² 20, 30, 40 w/m model : 1.25 mm² Cable dimension (nom.) : 10 w/m model : 9.5mm x 7.5mm 20, 30, 40 w/m model : 11.5mm x 8.0mm Outer jacket (Optional) : CS : Silicone rubber CT : Fluoropolymer</p>								
Features	<p>Easy operation and fast response. Zone type parallel circuit heating cable. Flexible and excellent mechanical strength. Excellent resistance to heat, oil and chemicals. Long service life. Save cabling cost and installation cost. No inrush current.</p>								
Selection Code	<p>FBCW 30 2 - C S</p> <p> ① ② ③ ④ ⑤</p> <table border="1"> <tr> <td>①</td><td>Model</td></tr> <tr> <td>②</td><td>Rated output 10, 20, 30, 40watt/m@20°C</td></tr> <tr> <td>③</td><td>Rated voltage 1 : 100 ~ 120 Vac, 2 : 200 ~ 240 Vac</td></tr> <tr> <td>④</td><td>Outer jacket S : Silicone rubber, T : Fluoropolymer</td></tr> </table>	①	Model	②	Rated output 10, 20, 30, 40watt/m@20°C	③	Rated voltage 1 : 100 ~ 120 Vac, 2 : 200 ~ 240 Vac	④	Outer jacket S : Silicone rubber, T : Fluoropolymer
①	Model								
②	Rated output 10, 20, 30, 40watt/m@20°C								
③	Rated voltage 1 : 100 ~ 120 Vac, 2 : 200 ~ 240 Vac								
④	Outer jacket S : Silicone rubber, T : Fluoropolymer								

Product drawing



- Conductor
- Heating element
- Primary insulation
- Elec. connection node
- Insulation
- Sheath
- Earth covering
- Out jacket

Copper
Nichrome alloy
Silicone rubber

Braided glassfiber
Silicone rubber
Braided tinned copper
- CS : Silicone rubber
- CT : Fluoropolymer

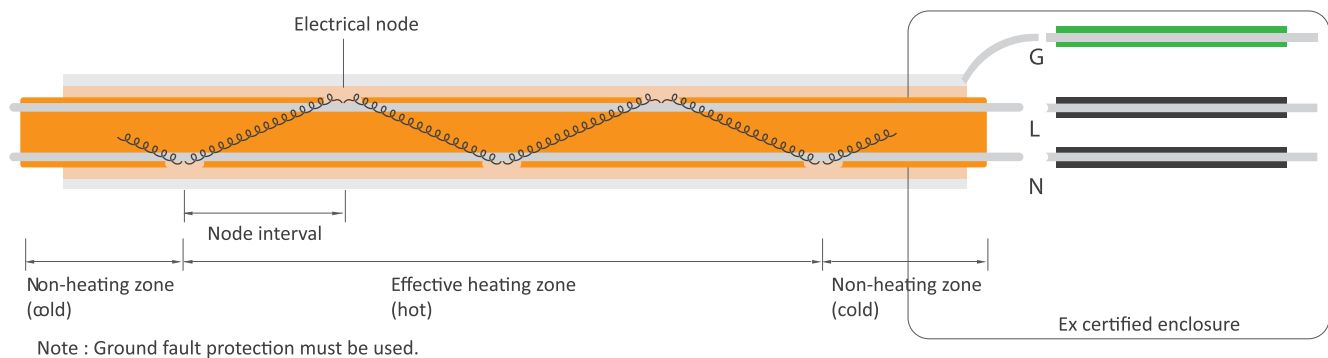
Semi-conductor industry

In semi-conductor industry, the variety of aggressive gases are required. The heat-up or temperature maintenance of the gas supply system including tank or vessel requires an outstanding performance and accuracy together with ultimate energy efficiency.

Solco Pyroelec FBCW heating cable and relevant components show outstanding thermal endurance and mechanical strength up to 150°C. Also it has no inrush current so as to save cabling cost.



Typical circuit arrangement



Temperature rating (T-Class)

Maximum permitted maintenance temperature (°C) for multiple T-Classes

stabilised design

Model	T6	T5	T4	T3
FBCW10x	50	70	105	120
FBCW20x	30	50	85	100
FBCW30x	-	30	65	80
FBCW40x	-	-	35	50

controlled design

Model	T6	T5	T4	T3 (150 °C)
FBCW10x	75	90	125	140
FBCW20x	75	90	125	140
FBCW30x	75	90	125	140
FBCW40x	75	90	125	140

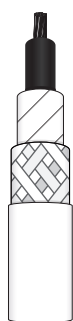
SFC

Teflon insulated series resistance heating cable for industrial heat-up application



Use	<p>Freeze protection or temperature maintenance of long distance pipeline.</p> <p>Freeze protection or temperature maintenance of vessel and tank.</p> <p>Freeze protection for chemical feeding or transportation line.</p>								
Specification	<p>Max. continuous exposure temperature (Power-on) 150°C (302°F)</p> <p>Max. intermittent exposure temperature (Power-off) 250°C (482°F)</p> <p>Rated voltage : 600 Vac</p> <p>Max. heat density 40 watt/m</p> <p>Cable size varies depending on conductor size</p> <p>Various conductor size and outjacket selection</p> <p>Non hazardous and hazardous location</p> <p>Circuit length up to 4,000m</p> <p>Outer jacket</p> <p>T : High temperature fluoropolymer</p>								
Features	<p>Easy operation and fast response.</p> <p>Heat tracing up to 4km with single power source.</p> <p>Flexible and excellent mechanical strength.</p> <p>Excellent resistance to heat, oil and chemicals.</p> <p>Long service life.</p> <p>Save cabling cost and installation cost.</p> <p>No inrush current.</p>								
Selection Code	<p>SFC L 25 - C T</p> <p>① ② ③ ④</p> <table> <tr> <td>①</td><td>Model</td></tr> <tr> <td>②</td><td>None : Heating cable / L : Cold lead cable</td></tr> <tr> <td>③</td><td>dc resistance ohm/km at 20°C</td></tr> <tr> <td>④</td><td>Outer jacket T : Fluoropolymer</td></tr> </table>	①	Model	②	None : Heating cable / L : Cold lead cable	③	dc resistance ohm/km at 20°C	④	Outer jacket T : Fluoropolymer
①	Model								
②	None : Heating cable / L : Cold lead cable								
③	dc resistance ohm/km at 20°C								
④	Outer jacket T : Fluoropolymer								
Certification	<p>CE</p>								

Product drawing



• Conductor	Tin plated copper wire
• Primary insulation	Fluoropolymer
• 2nd Insulation	Braided glassfiber
• Earthing	Braided tin plated copper wire
• Outer jacket	High temperature fluoropolymer

Installation detail

Product Code	Heating Element	Conductor Diameter (mm)	Dc resistance ohm/km@20°C	Cable Diameter (mm)
SFC1.7-CT	Copper	4.10	1.74	6.78
SFC2.9-CT	Copper	3.20	2.92	5.88
SFC4.5-CT	Copper	2.80	4.55	5.48
SFC7.1-CT	Copper	2.00	7.08	4.68
SFC11.3-CT	Copper	1.60	11.28	4.28
SFC14.8-CT	Copper	1.40	14.74	4.08
SFC18.9-CT	Copper	1.40	18.95	4.08
SFC30.5-CT	Copper-Nickel Alloy	1.65	30.53	4.33
SFC42.6-CT	Copper-Nickel Alloy	1.40	42.63	4.08
SFC74.2-CT	Copper-Nickel Alloy	1.50	74.21	4.18
SFC98.4-CT	Copper-Nickel Alloy	1.60	96.63	4.28
SFC148.9-CT	Copper-Nickel Alloy	1.30	150.23	3.98
SFC196.3-CT	Copper-Nickel Alloy	1.60	196.32	4.28
SFC297.4-CT	Copper-Nickel Alloy	1.30	297.37	3.98
SFCL-2.5	Copper	2.00	7.08	4.68
SFCL-4	Copper	2.80	4.55	5.48
SFCL-6	Copper	3.20	2.92	5.88
SFCL-10	Copper	4.10	1.74	6.78
SFCL-16	Copper	5.20	1.03	7.88
SFCL-25	Copper	6.50	0.71	9.18






Tank and vessel heating

In extreme weather condition, heat-up or temperature maintenance of tank or vessel requires an outstanding performance together with ultimate energy efficiency. Solco Pyroelec SFC heating cable and relevant components show outstanding thermal endurance and mechanical strength up to 250°C. Also it has no inrush current so as to save cabling cost.

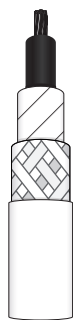
LLC

Teflon insulated series heating cable for long distance pipe tracing



Use	<p>Freeze protection of fire hydrant water supply in tunnel.</p> <p>Freeze protection for long distance chemical feeding or transportation line.</p> <p>Use in hazardous and non-hazardous location.</p>										
Specification	<p>Max. maintain temperature (Power-on)</p> <p>LLC1X, LLC3X series 90°C (194°F)</p> <p>LLC1T, LLC3T series 150°C (302°F)</p> <p>Max. withstand temperature (Power-off)</p> <p>LLC1X, LLC3X series 135°C (275°F)</p> <p>LLC1T, LLC3T series 240°C (464°F)</p> <p>Rated voltage : 1000V</p> <p>Max. heat density : 40 watt/m</p> <p>Circuit length up to 4,000m</p> <p>Cable size varies depending on conductor size</p> <p>Outer jacket</p> <p>X : XLEVA</p> <p>T : Fluoropolymer</p>										
Features	<p>Easy operation and fast response.</p> <p>Heat tracing up to 4km with single power source.</p> <p>Save cabling cost for power supply.</p> <p>Flexible and excellent mechanical strength.</p> <p>Excellent resistance to heat, oil and chemicals.</p> <p>Flat cable for optimized thermal performance.</p> <p>Long service life.</p>										
Selection Code	<p>LLC 1 T 015 - C T</p> <p>① ② ③ ④ ⑤</p> <table border="1"> <tr> <td>①</td><td>Model LLC : Heating cable, SPCL : Cold lead cable</td></tr> <tr> <td>②</td><td>No. of conductors 1, 2 or 3</td></tr> <tr> <td>③</td><td>Inner sheath X : XLEVA, T : Fluoropolymer</td></tr> <tr> <td>④</td><td>Conductor size 015 / 025 / 040 / 060 / 080 / 100 / 160 / 250 Other sizes are available on request</td></tr> <tr> <td>⑤</td><td>Outer jacket X : XLEVA, T : Fluoropolymer</td></tr> </table>	①	Model LLC : Heating cable, SPCL : Cold lead cable	②	No. of conductors 1, 2 or 3	③	Inner sheath X : XLEVA, T : Fluoropolymer	④	Conductor size 015 / 025 / 040 / 060 / 080 / 100 / 160 / 250 Other sizes are available on request	⑤	Outer jacket X : XLEVA, T : Fluoropolymer
①	Model LLC : Heating cable, SPCL : Cold lead cable										
②	No. of conductors 1, 2 or 3										
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④	Conductor size 015 / 025 / 040 / 060 / 080 / 100 / 160 / 250 Other sizes are available on request										
⑤	Outer jacket X : XLEVA, T : Fluoropolymer										
Certification	    										

Product drawing

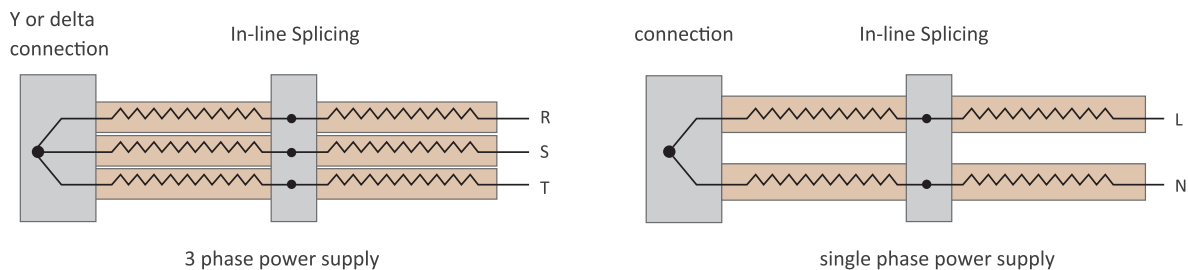


- | | | |
|-------------|--------------------|--------------------------------|
| -----●----- | Heating element | Ni-Cu alloy |
| -----●----- | Primary insulation | Fluoropolymer |
| -----●----- | 2nd insulation | XLEVA or Fluoropolymer |
| -----●----- | Earthing | Braided tin plated copper wire |
| -----●----- | Outer jacket | XLEVA or Fluoropolymer |

Freeze protection system for long distance pipeline

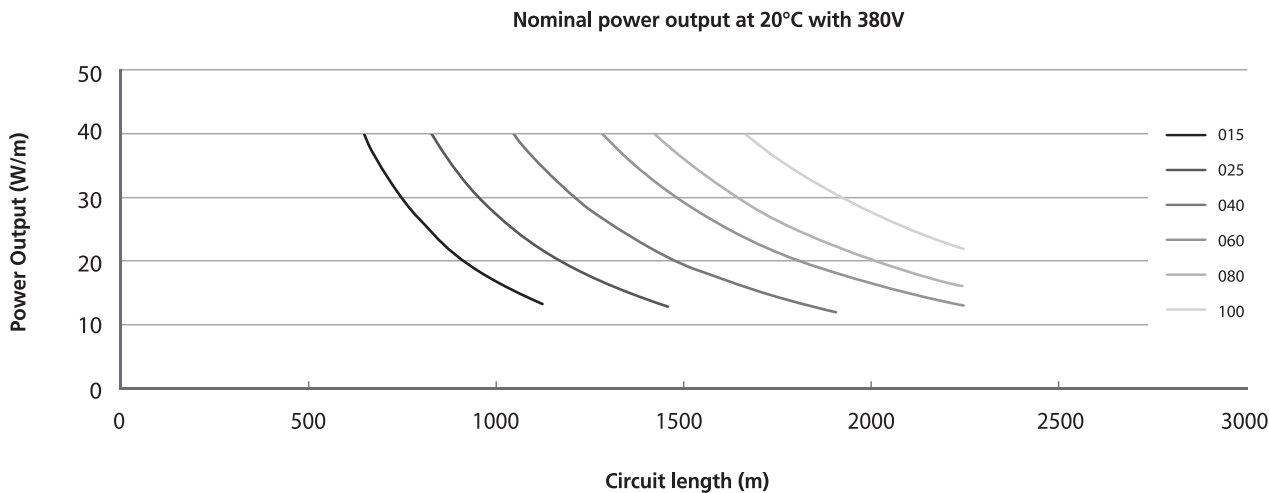
In cold weather, an electrical heat tracing system is highly required for freeze protection of pipelines ex. chemical transport or water supply. But the heat tracing for tunnel or long distance pipeline should bear numbers of power supplies with conventional heating cables. The cabling cost often exceeds that of heat tracing itself. Solco Pyroelec LLC longline heating cable system requires only one power supply in order to trace up to 4 km and saves money and time for extra cablings and connections.

Typical circuit arrangement



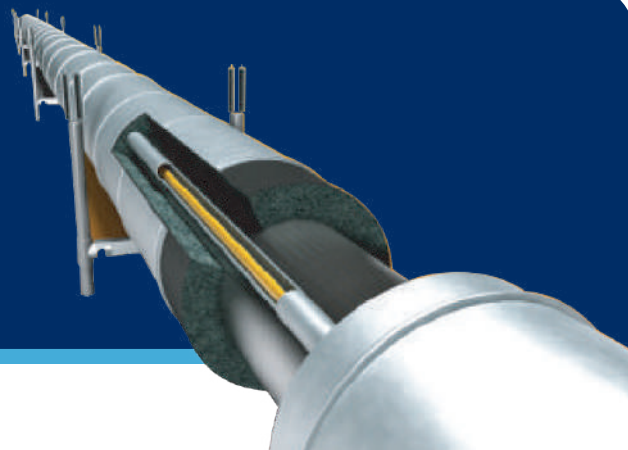
Power output graph

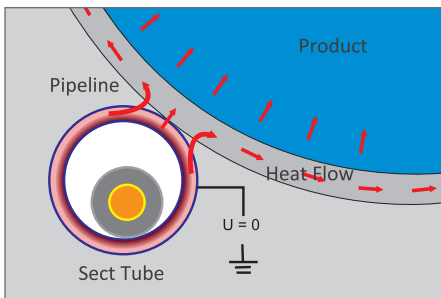


The below power output graphs for typical conductor sizes and supplying voltages are to be used only for reference. For practical use, more variations should be considered beforehand. Please refer to Solco Pyroelec technical team for further information. Other conductor sizes are available on request.



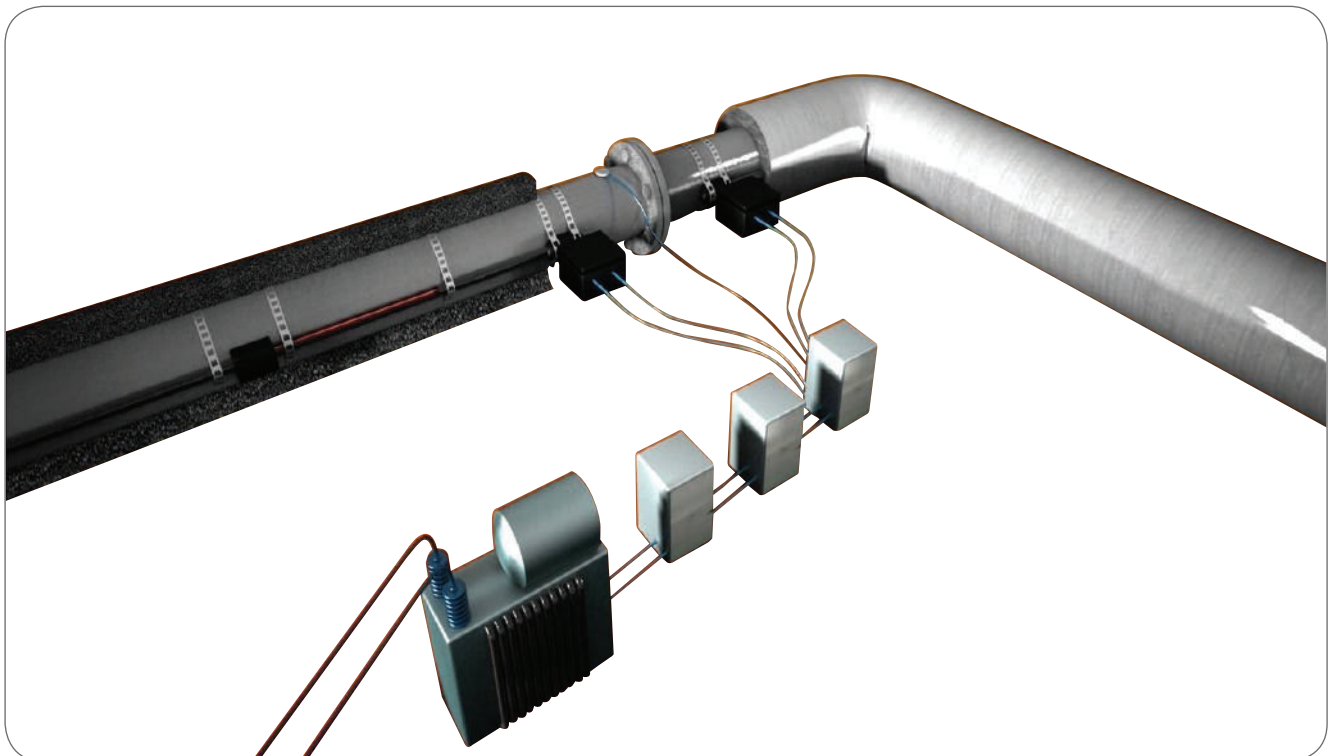
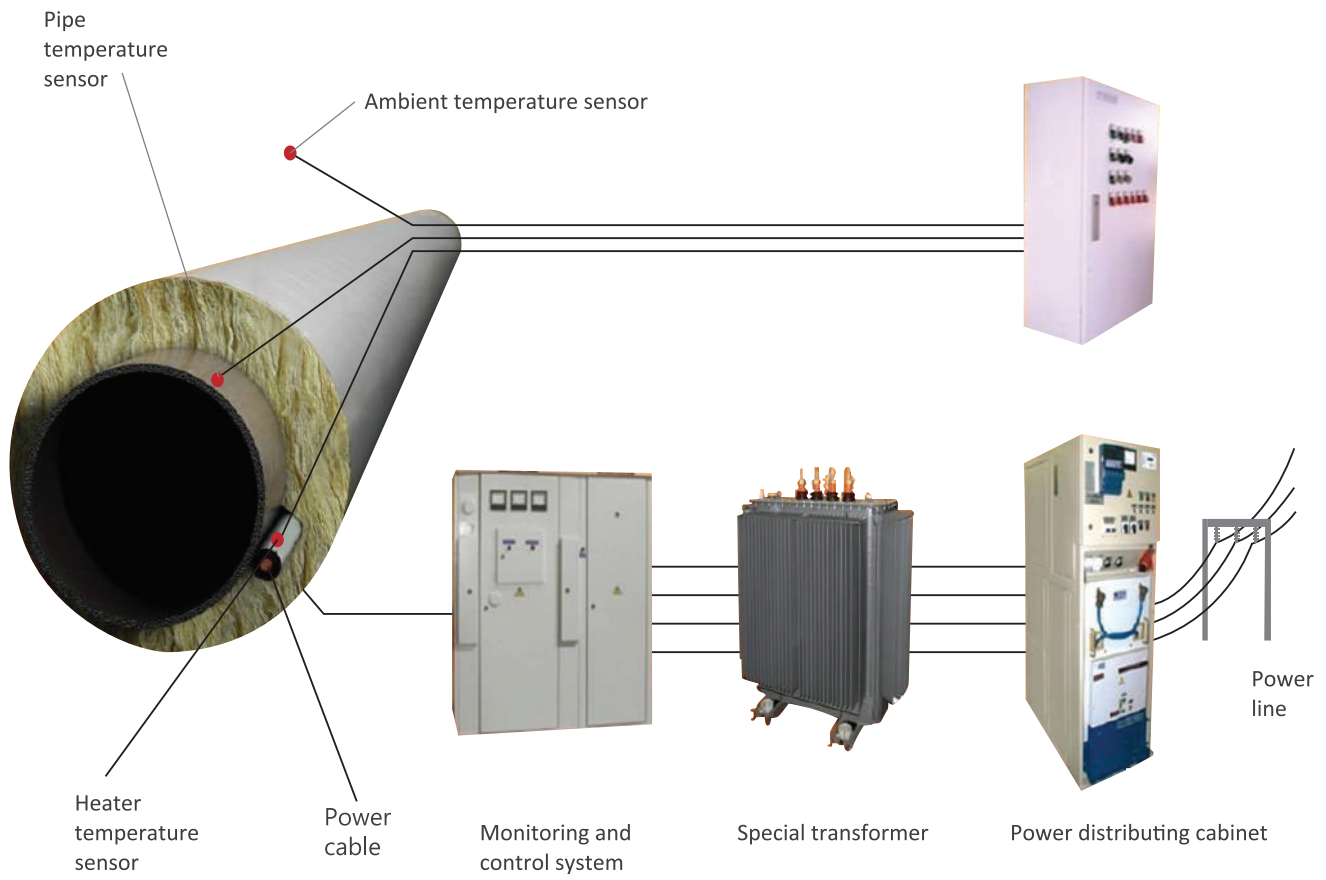
STS

Skin trace heating system



Use	<p>Maintenance of the product temperature.</p> <p>Protection of long trunk pipelines against freezing and ensuring their start heating.</p> <p>Use in hazardous and non-hazardous location.</p>
Specification	<p>Operating temperature : up to 200°C</p> <p>Power output of the heating : up to 120W/m</p> <p>Power supply : up to 5000Vac</p> <p>Circuit length : up to 30km</p>
Features	<p>The only way to heat pipelines with the length up to 30 km without parallel supply network.</p> <p>The most efficient way to heat any trunk pipelines of an unlimited length.</p> <p>Inherent strength and reliability of system design.</p> <p>Zero electrical potential on outer surfaces of heating elements after earthing.</p>
Selection Code	<p>The STS skin trace heating system consists of a ferromagnetic steel tube with outer diameter of 20-60mm and the wall thickness of at least 3.0mm. There is an insulated copper or aluminium conductor with cross-section of 10-50mm² placed inside the tube. The conductor is electrically connected to the tube at the end of a heating run while AC voltage is supplied between the conductor and the pipe at the run head: the voltage value is calculated based on the required heat output and the heating run length. Currents of the conductor and the tube have opposite directions and thus skin and proximity effects originate in the system. The conductor is non-magnetic, thus, it does not feature any noticeable skin effect and AC flows throughout the whole section of the conductor. The main heat producing element of STS is the tube, which produces heat up to 80% of the system output.</p> 
Certification	 

Typical installation



Monitoring and
Control

Technical
Support

Heating
Cable

Connection
Kit

Component

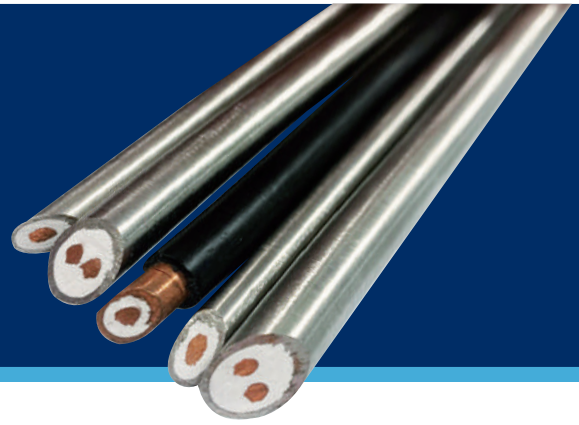
Temperature
Measurement




Heating
Jacket

Liquid Leak
Detection

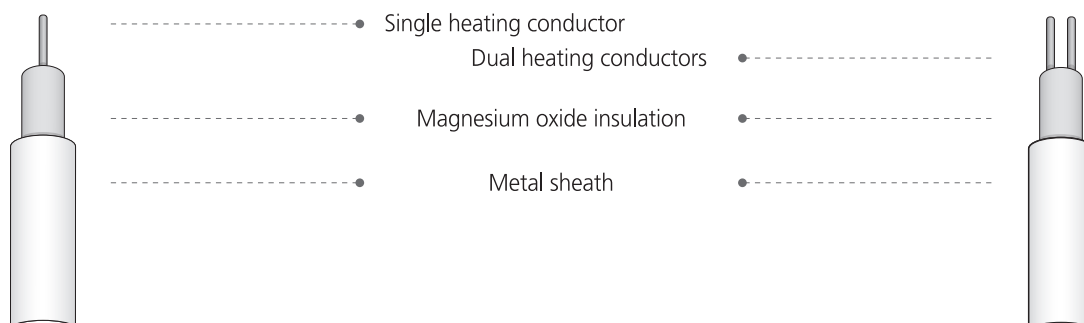
MI

Mineral insulated heating cable



Use	<p>Oil and gas, chemical and petrochemical, power generation, gas storage and many other industrial application.</p> <p>Use in hazardous and non-hazardous location.</p>				
Specification	<p>Sheath material : one of the following</p> <table border="0"> <tr> <td>Copper</td><td>Stainless steels of AISI 300x range</td></tr> <tr> <td>Cupronickel 70/30</td><td>Alloys 825, Inconel 600</td></tr> </table> <p>No. of conductors : 1 or 2</p> <p>Conductor material : one of the following</p> <p>Nichrome</p> <p>Copper</p> <p>Constantan</p> <p>Copper-Nickel alloys</p> <p>Insulation Material : Magnesium Oxide (MgO)</p> <p>Maximum operating temperature</p> <p>Copper sheath : 200°C</p> <p>Cupronickel sheath : 400°C</p> <p>Stainless steel and nickel alloy sheath : 600°C</p> <p>Electrical Parameters</p> <p>Supply voltage up to 500Vac (assembled unit)</p> <p>Supply voltage up to 750Vac (cable)</p>	Copper	Stainless steels of AISI 300x range	Cupronickel 70/30	Alloys 825, Inconel 600
Copper	Stainless steels of AISI 300x range				
Cupronickel 70/30	Alloys 825, Inconel 600				
Features	<p>MI cables and elements are ideal for industrial freeze protection, high temperature maintenance of process and areas where good corrosion resistance are required. The cables are enabled to operate at high temperatures for long periods of time in extremely harsh environments. For example, petro-chemical, reactor vessels and other applications where the integrity of the cable is the most important.</p> <p>MI cable offers excellent corrosive properties against a wide range of organic acids and alkalis in combination with a high temperature withstand capability.</p>				
Certification	  				

Product drawing



Typical installation

Heating units references

B / H321-A10K / T1 25 / 1.15 / 150

a	b	c	d	e	f
a	Unit Design	"B" - Single core heating unit design B "D" - Twin core heating unit design D "E" - Twin core heating unit design E			
b	Cable reference	For cable references see tables below			
c	Type of termination	"T1" - Type 1 / "T2" - Type 2 / "T4" - Type 4			
d	Heated length	Length of heating cable in meters			
e	Cold lead in length	Length of cold lead-in cable and tails, in meters			
f	Tail length	Tail length in mm			

Heating cable references

H 122 - 1 D 100 - HDPE

a	b	c	d	e	f
a	Category	"H" - Heating cable			
b	Sheath material	122 - Copper 321 - AISI321 Stainless steel 316L - AISI316L Stainless steel 310 - AISI310 Stainless steel 400 - Cupronickel 70/30 600 - Inconel 600 825 - Alloy 825			
c	Number of conductors	1 - One conductor (omitted by default) 2 - Two conductors			
d	Conductor material reference	"A" - Nichrome "B" - Constant "C" - Copper "D" - Copper-Nickel alloys			
e	Conductor(s) resistance	Resistance in ohm/1000m (km) for single conductor or for loop of two conductors			
f	Suffix	Additional information, such as "-300V" - Voltage rating if not 500V "-HDPE" - for HDPE served cables			

Cold lead / Wiring cable reference

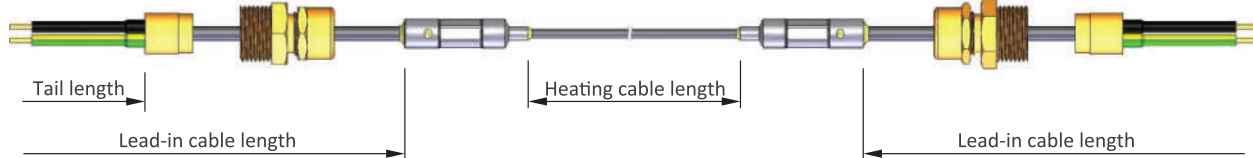
W 122 - 1 C 10 - 750V - HDPE

a	b	c	d	e	f	g
a	Category	"W" - Wiring/Cold lead-in cable				
b	Sheath material	122 - Copper 321 - AISI321 316L - AISI316L 310 - AISI310 400 - Cupronickel 70/30 600 - Inconel 600 825 - Alloy 825				
c	Number of conductors	1 - One conductor (omitted by default) 2 - Two conductors				
d	Conductor material reference	"C" - Copper				
e	Conductor cross section area	Cross section area of a single conductor				
f	Voltage Rating	Voltage rating 750V				
g	Suffix	"-HDPE" - for HDPE served cables with copper sheath				

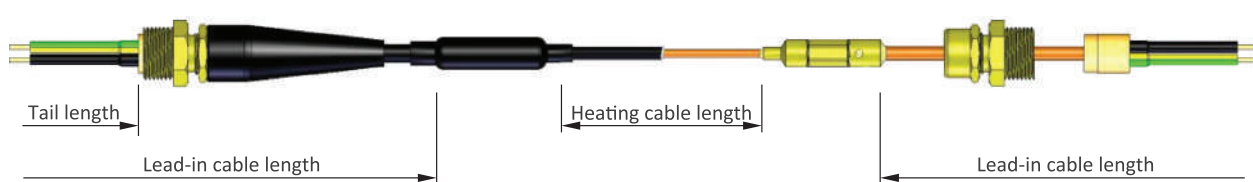
Heating units design types

Design B

Single core heating cable with Stainless Steel, Cupronickel or Nickel alloy sheath

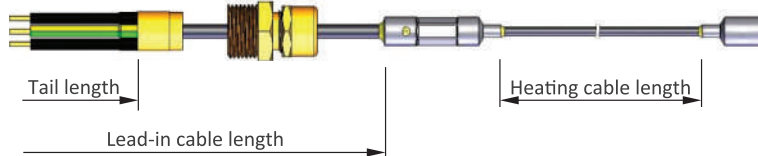


Single core heating cable with Copper sheath bare (right) or HDPE served (left)



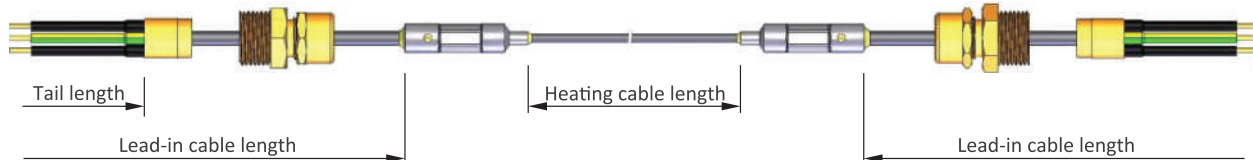
Design D

Twin core heating cable with Stainless Steel, Cupronickel or Nickel alloy sheath

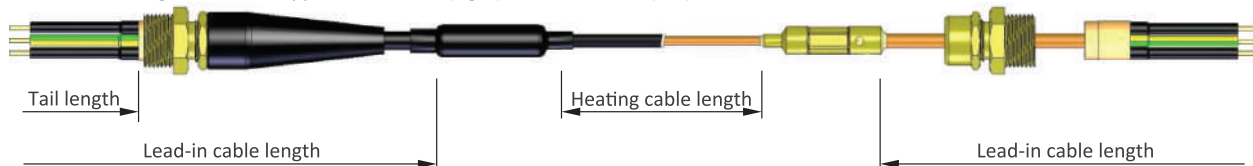


Design E

Twin core heating cable with Stainless Steel, Cupronickel or Nickel alloy sheath

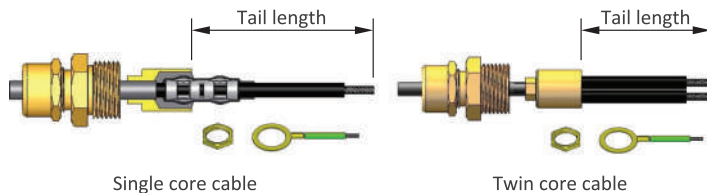


Twin core heating cable with Copper sheath bare (right) or HDPE served (left)



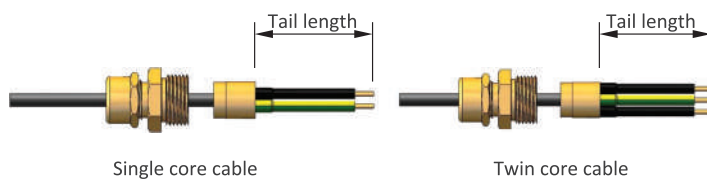
Termination types

Type 1



Seal reference	T1
Description	ATEX approved seal for use in hazardous area terminations
Conductor Type	Flexible
Earth tail type	Flexible earth tag with locknut
Pot type	Crimp on pot
Gland thread	M20x1.5 Other sizes on request
Standard tail lengths	150 mm, 300 mm, 450 mm

Type 2



Seal reference	T2
Description	ATEX approved seal for use in hazardous area terminations
Conductor Type	Solid
Earth tail type	Solid
Pot type	Braze on pot
Gland thread	M20x1.5 Other sizes on request
Standard tail lengths	150 mm, 300 mm, 450 mm

Type 4



Seal reference	T4
Description	Long reach seal with on-pot gland CSA and ATEX approved for use in hazardous area terminations
Conductor Type	Flex
Earth tail type	Flexible earth tag with locknut (optional depending on application)
Pot type	Braze on long reach pot
Gland thread	M20x1.5 Other sizes on request
Gland material	Brass, Nickel plated brass, Stainless steel
Standard tail lengths	150 mm, 300 mm, 450 mm

Connection Kit

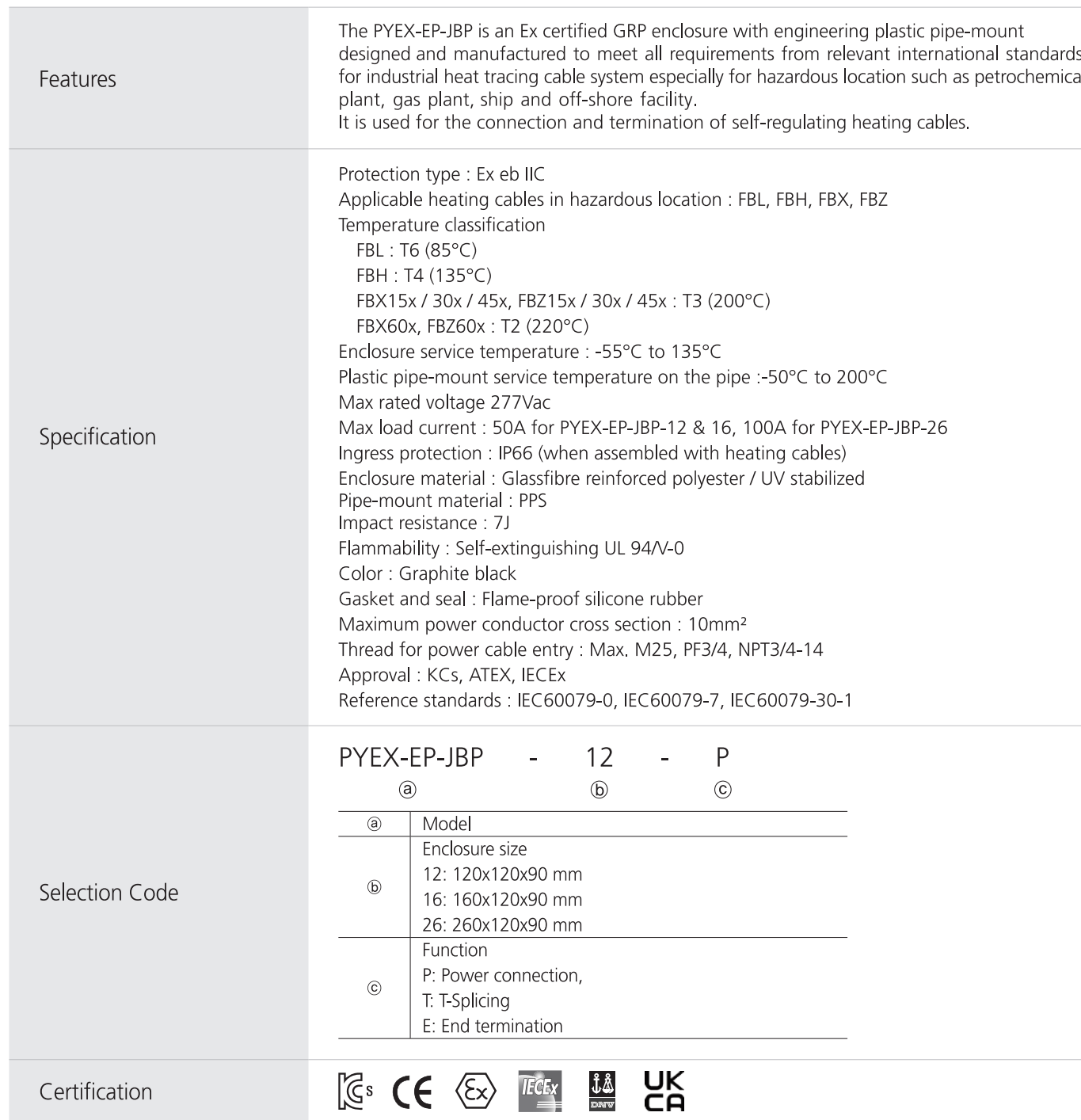
PYEX-EP-JBP
PYEX-EP-JBP-LP/LE
PYEX-EP-LE
PYEX-EP-JB
PYEX-EP-JB-LP/LE
PYEX-EP-JBS
PYEX-SS-JB
PYEX-SS-EK
PYEX-TF-JCK
PYEX-TF-EK
PYEX-EP-SPK

04

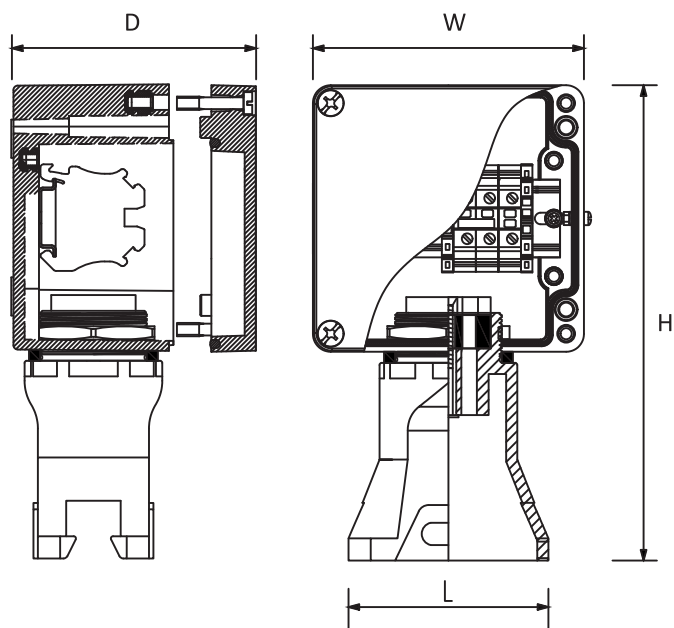




Connection Kit



Product drawing



Note

The dimension of assembled enclosure system varies depending on the choice of enclosure size.

Model	W	H	L	D
PYEX-EP-JBP-12	122	244	90	90
PYEX-EP-JBP-16	160	284	90	90
PYEX-EP-JBP-26	260	254	90	90

Components

Part Name	Description
PYEX-EP-JB	12 : 122x120x90 16 : 160x160x90 26 : 260x160x90
PYEX-EP-LID	Enclosure lid
PYEX-EP-BODY	Enclosure body
PYEX-TBP	Ex Terminal block for power
PYEX-TBE	Ex Terminal block for earth (Yellow/Green)
PYEX-MEMT	Mount
PYEX-JBP-HS	Heater seal
PYEX-EAS	Earth stud (Optional)

Seal selection and applicable heaters







Part No	Width(A)	Height(B)	Applicable Heaters	Outer Jacket
JBP-HS116	11.6	5.6	FBL 10,16,24	Fluoropolymer -CF / Polyolefin -CP
JBP-HS122	12.2	4.6	FBX FBZ 15,30,45,60	Fluoropolymer -CT
JBP-HS127	12.7	5.2	FBH 15,30,45	Fluoropolymer -CT
JBP-HS136	13.6	5.6	FBL 30	Fluoropolymer -CF / Polyolefin -CP
JBP-HS143	14.3	5.4	FBH 60	Fluoropolymer -CT

All dimensions are in mm.

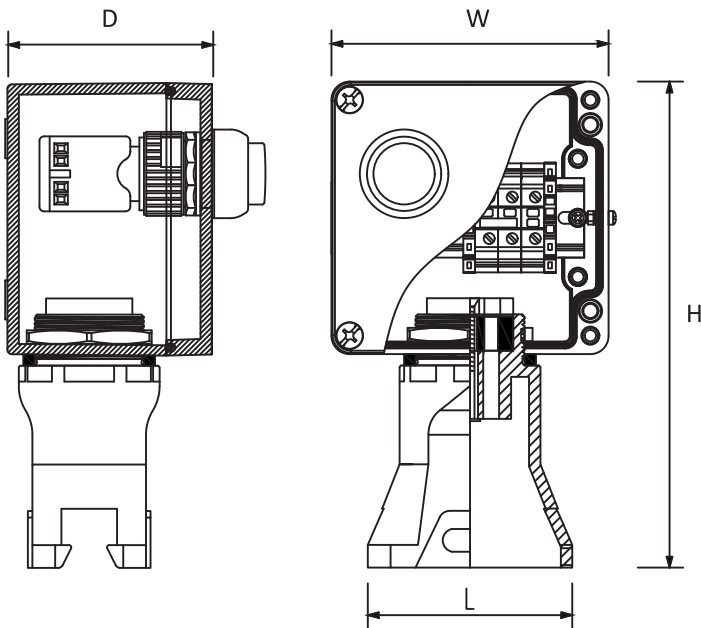
PYEX-EP-JBP-LP/LE

GRP enclosure with plastic pipe-mount & signal lamp



Features	The PYEX-EP-JBP-LP/LE is designed and manufactured to meet all requirements of relevant standards for industrial heat tracing cable system in hazardous location such as petrochemical plant, gas plant, ship and off-shore facility and utilizes an Ex certified GRP enclosure with plastic pipe-mount for self-regulating heating cable's connection. For the monitoring purpose, an Ex certified LED signal lamp is installed on the lid of GRP enclosure.						
Specification	<p>Protection type : Ex db eb IIC</p> <p>Applicable heating cables in hazardous location : FBL, FBH, FBX, FBZ</p> <p>Temperature classification</p> <ul style="list-style-type: none"> FBL : T6 (85°C) FBH : T4 (135°C) FBX15x / 30x / 45x, FBZ15x / 30x / 45x : T3 (200°C) FBX60x, FBZ60x : T2 (220°C) <p>Enclosure service temperature : -55°C to 135°C</p> <p>Plastic pipe-mount service temperature on the pipe : -50°C to 200°C</p> <p>Max rated voltage 277Vac</p> <p>LED signal lamp</p> <ul style="list-style-type: none"> Rated voltage: 20~ 250Vac Power consumption: ≤1W Color: Green, Red, Yellow, Blue, White <p>Max load current : 50A for PYEX-EP-JBP-12 & 16, 100A for PYEX-EP-JBP-26</p> <p>Ingress protection : IP66 (when assembled with heating cables)</p> <p>Enclosure material : Glassfibre reinforced polyester / UV stabilized</p> <p>Pipe-mount material : PPS</p> <p>Impact resistance : 7J</p> <p>Flammability : Self-extinguishing UL 94V-0</p> <p>Color : Graphite black</p> <p>Gasket and seal : Flame-proof silicone rubber</p> <p>Maximum power conductor cross section : 10mm²</p> <p>Thread for power cable entry : Max. M25, PF3/4, NPT3/4-14</p> <p>Approval : KCs, ATEX, IECEx</p> <p>Reference standards : IEC60079-0, IECE60079-1, IEC60079-7, IEC60079-30-1</p>						
Selection Code	<div style="text-align: center;"> PYEX-EP-JBP - 12 - LP (a) (b) (c) </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%; text-align: center;">(a)</th><th style="text-align: left;">Model</th></tr> </thead> <tbody> <tr> <td style="text-align: center;">(b)</td><td> Enclosure size 12: 120x120x90 mm 16: 160x120x90 mm 26: 260x120x90 mm </td></tr> <tr> <td style="text-align: center;">(c)</td><td> Function LP: Power connection with signal lamp LE: End termination with signal lamp </td></tr> </tbody> </table>	(a)	Model	(b)	Enclosure size 12: 120x120x90 mm 16: 160x120x90 mm 26: 260x120x90 mm	(c)	Function LP: Power connection with signal lamp LE: End termination with signal lamp
(a)	Model						
(b)	Enclosure size 12: 120x120x90 mm 16: 160x120x90 mm 26: 260x120x90 mm						
(c)	Function LP: Power connection with signal lamp LE: End termination with signal lamp						
Certification	     						

Product drawing



Note
The dimension of assembled enclosure system varies depending on the choice of enclosure size.

Model	W	H	L	D
PYEX-EP-JBP-12	122	244	90	90
PYEX-EP-JBP-16	160	284	90	90
PYEX-EP-JBP-26	260	254	90	90

Components

Part Name	Description
PYEX-EP-JB	12 : 122x120x90 16 : 160x160x90 26 : 260x160x90
PYEX-EP-LID	Enclosure lid
PYEX-EP-BODY	Enclosure body
PYEX-TBP	Ex Terminal block for power
PYEX-TBE	Ex Terminal block for earth (Yellow/Green)
JBP-MEMT	Mount
JBP-HS	Heater seal
PYEX-LK	Signal lamp kit
PYEX-EAS	Earth stud (Optional)

Seal selection and applicable heaters



Part No	Width(A)	Height(B)	Applicable Heaters	Outer Jacket
JBP-HS116	11.6	5.6	FBL 10,16,24	Fluoropolymer -CF / Polyolefin -CP
JBP-HS122	12.2	4.6	FBX FBZ 15,30,45,60	Fluoropolymer -CT
JBP-HS127	12.7	5.2	FBH 15,30,45	Fluoropolymer -CT
JBP-HS136	13.6	5.6	FBL 30	Fluoropolymer -CF / Polyolefin -CP
JBP-HS143	14.3	5.4	FBH 60	Fluoropolymer -CT

All dimensions are in mm.

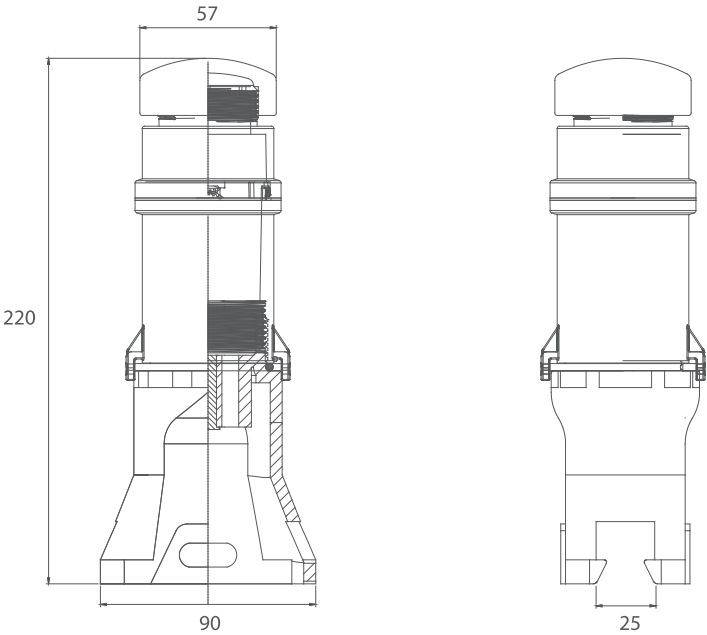
PYEX-EP-LE

End termination kit with LED signal lamp
for industrial trace heating applications



Features	<p>The PYEX-EP-LE is an end termination kit with LED signal lamp. It is designed and manufactured to meet all relevant standards for industrial trace heating cable system in hazardous locations such as petrochemical plant, gas plant, ship and off-shore facilities. It consists of an Ex certified plastic termination enclosure and all necessary parts together with intrinsically safe signal lamp assembly. It has a specially 'single-twist-lock' technology for easy and time-saving connection with Solco Pyroelec self-regulating heating cables on various sites.</p>
Use	<p>Monitoring the performance of industrial trace heating circuits such as freeze protection or temperature maintenance of vessel, tank, chemical feeding or transportation pipelines. Non hazardous and hazardous location.</p>
Specification	<p>Protection type : Ex eb ib IIC T2...T6 Gb Electrical rating : 100 ~ 240 Vac / 49mW / 0.125A Color : Green (250nm) / other colors on request Optical efficiency (typ.) : 6 x 2.5 lm/W (green) Ambient temperature : -50°C to +60°C Temperature class T6 (85°C) when used with FBL T4 (135°C) with FBH T3 (200°C) with FBX15x, 30x, 45x / FBZ15x, 30x, 45x T2 (220°C) with FBX60x / FBZ60x Enclosure service temp. : -50°C to +130°C Product dimension : Ø 57mm x 220mm Construing materials Lamp cover : PC (transparent) Main housing : glassfibre-reinforced nylon Pipe-mount : PPS O-rings and grommets : silicone rubber Ingress protection : IP66 (when assembled with heating cables) Impact resistance : 7 Joules Weather-proof : Yes Approval : KCs, CE Reference standards : IEC60079-0, IEC60079-7, IEC60079-11, IEC60079-30-1</p>
Certification	<p> </p>

Product drawing



Partlist

Part Name	Description
ELK-PC-COVER	Transparent lamp cover
ELK-PA-PCB	PCB Housing nylon 66
ELK-PA-MAIN	Termination enclosure nylon 66
PYEX-MEMT	Pipe-mount PPS
ELK-PCB-LED	LED PCB
ELK-PCB-MAIN	Main PCB
ELK-MOLD	Encapsulation
ELK-LOCK	'no-twist-back' teeth
ELK-SR-B	Gasket for mount
JBP-HSG	Heater seal for PYEX-MEMT

Monitoring and
Control

Technical
Support

Heating
Cable

Connection
Kit

Component

Temperature
Measurement

Heating
Jacket

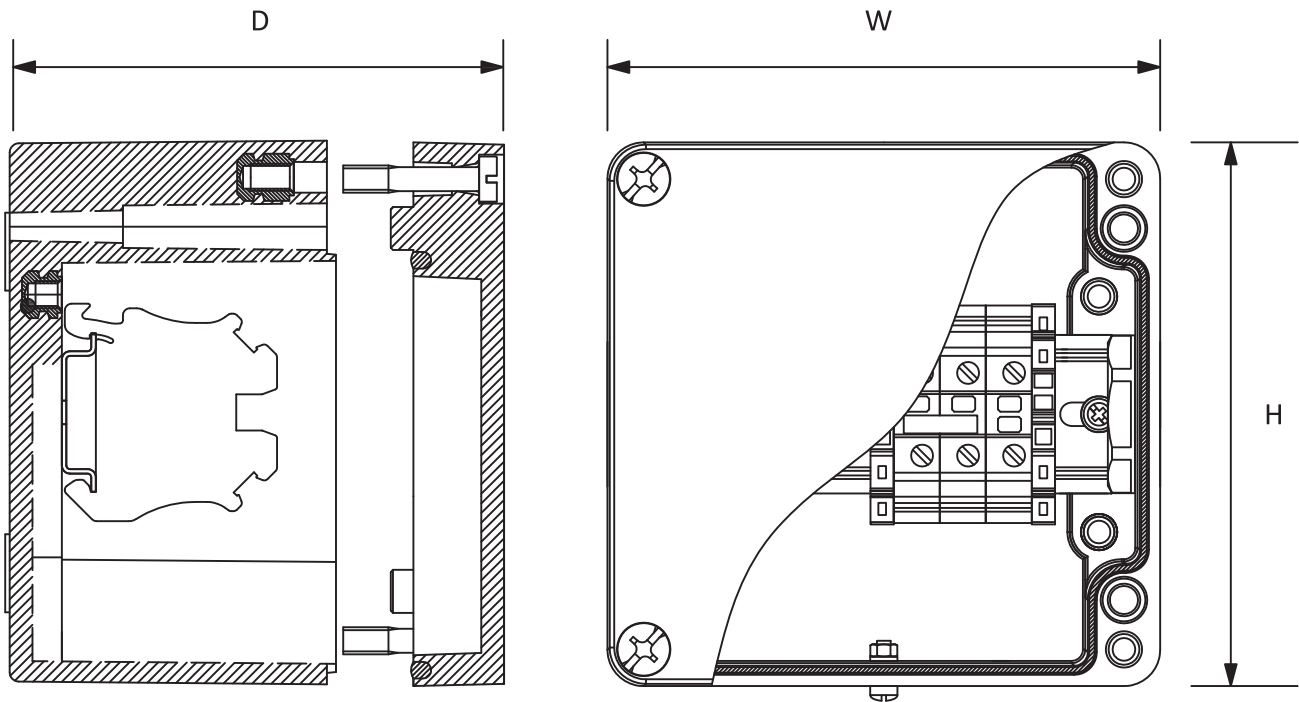
Liquid Leak
Detection

Power Connection, T-Splicing, End Termination



Features	The PYEX-EP-JB is an Ex certified GRP enclosure system designed and manufactured to meet all requirements from relevant international standards for industrial heat tracing cable system especially for hazardous location such as petrochemical plant,gas plant, ship and off-shore facility and utilizes an Ex certified GRP enclosure with Ex certified M20 or M25 cabs gland for the connection and termination of self-regulating heating cables.												
Specification	Protection type : Ex eb IIC Applicable heating cables in hazardous location : FBL, FBH, FBX, FBZ Temperature classification FBL : T6 (85°C) FBH : T4 (135°C) FBX152 / 302 / 452, FBZ152 / 302 / 452 : T3 (200°C) FBX602, FBZ602 : T2 (220°C) Enclosure service temperature : -55°C to 135°C M25 heating cable gland service temperature : -60°C to 121°C Max rated voltage 277Vac Max load current : 50A for PYEX-EP-JB-12 & 16, 100A for PYEX-EP-JB-26 Ingress protection : IP65 (when assembled with heating cables) Enclosure material : Glassfibre reinforced polyester / UV stabilized Impact resistance : 7J Flammability : Self-extinguishing UL 94/V-0 Color : Graphite black Gasket and seal : Flame-proof silicone rubber Maximum power conductor cross section : 10mm² Thread for power cable entry : Max. M25, PF3/4, NPT3/4-14 Approval : ATEX, IECEx Reference standards : IEC60079-0, IEC60079-7, IEC60079-30-1												
Selection Code	<div>PYEX-EP-JB - 12 - P</div> <div>(a) (b) (c)</div> <table border="1"> <tr> <th>(a)</th><th>Model</th></tr> <tr> <td rowspan="4">(b)</td><td>Enclosure size</td></tr> <tr> <td>12: 120x120x90 mm</td></tr> <tr> <td>16: 160x120x90 mm</td></tr> <tr> <td>26: 260x120x90 mm</td></tr> <tr> <td rowspan="4">(c)</td><td>Function</td></tr> <tr> <td>P: Power connection,</td></tr> <tr> <td>T: T-Splicing</td></tr> <tr> <td>E: End termination</td></tr> </table>	(a)	Model	(b)	Enclosure size	12: 120x120x90 mm	16: 160x120x90 mm	26: 260x120x90 mm	(c)	Function	P: Power connection,	T: T-Splicing	E: End termination
(a)	Model												
(b)	Enclosure size												
	12: 120x120x90 mm												
	16: 160x120x90 mm												
	26: 260x120x90 mm												
(c)	Function												
	P: Power connection,												
	T: T-Splicing												
	E: End termination												
Certification													

Product drawing

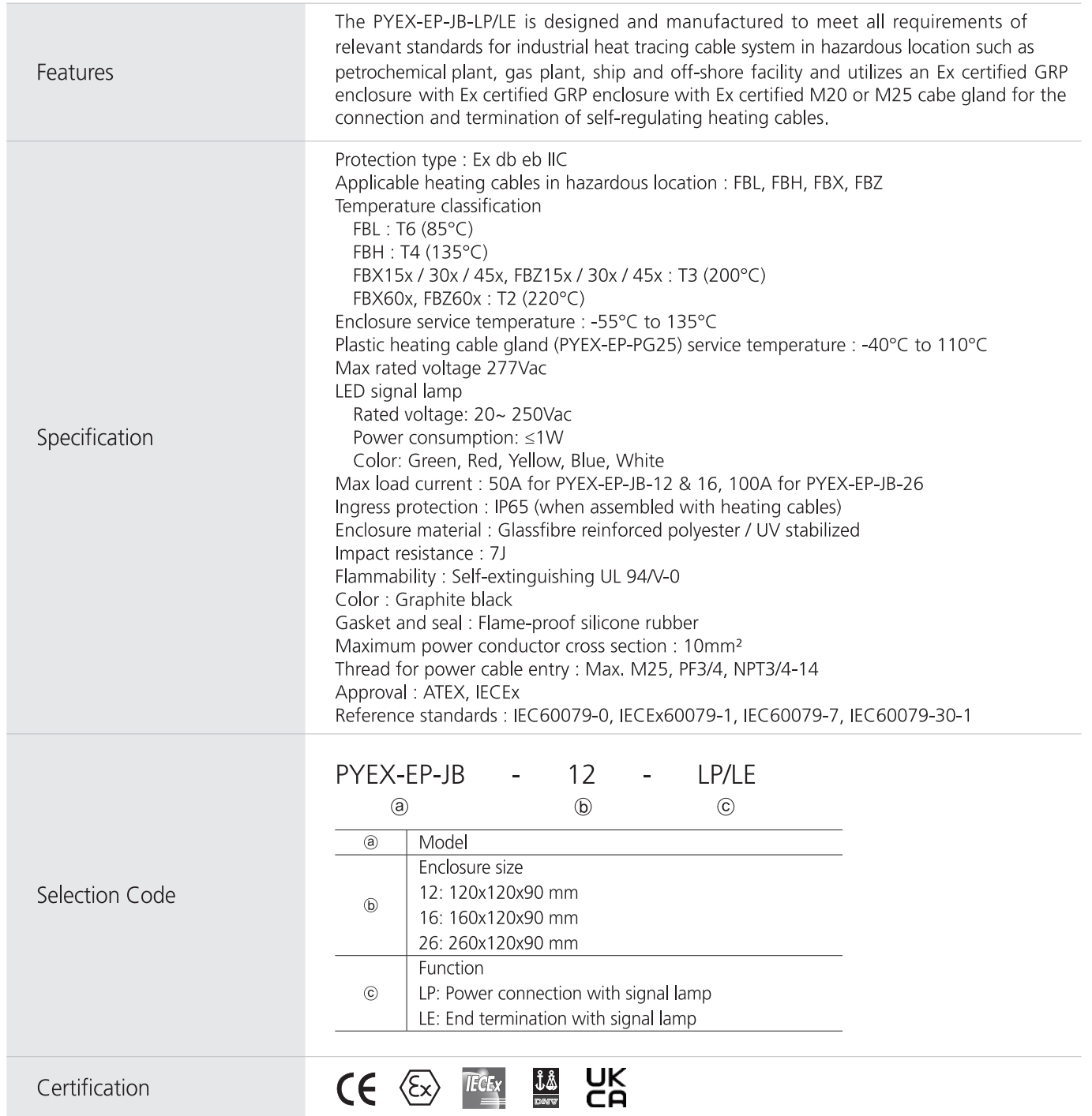


Note
The dimension of assembled enclosure system varies depending on the choice of enclosure size.

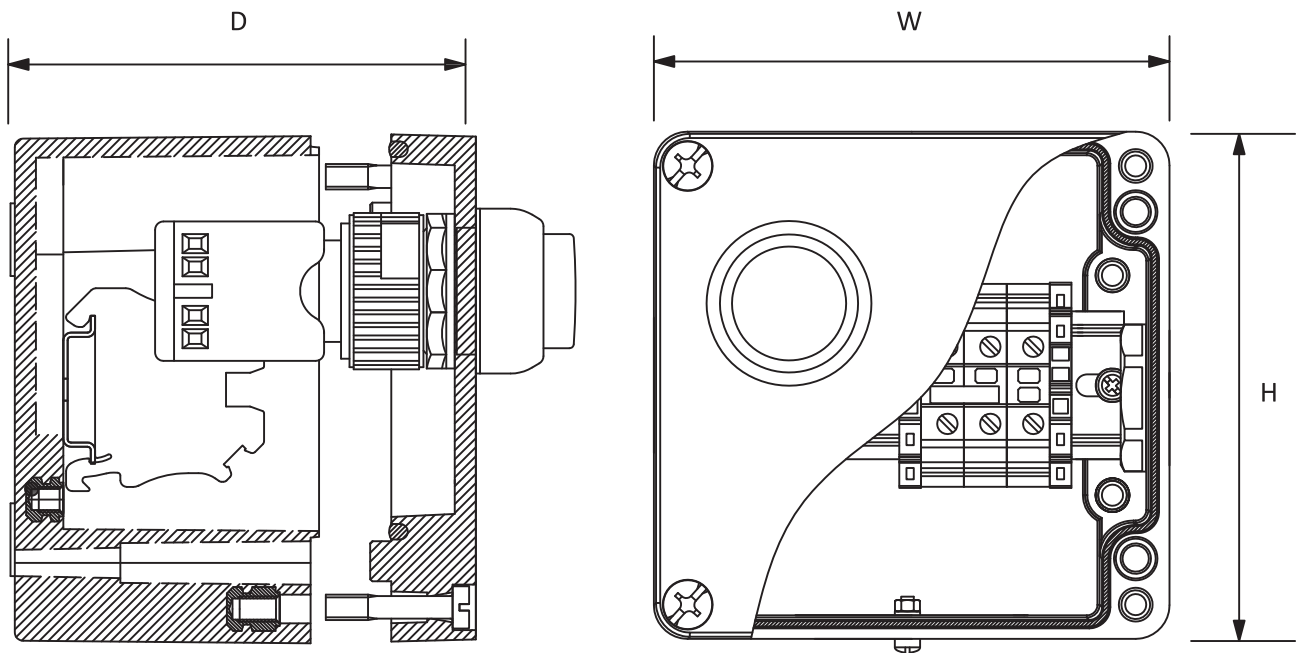
Model	W	H	D
PYEX-EP-JB-12	122	120	90
PYEX-EP-JB-16	160	160	90
PYEX-EP-JB-26	260	160	90

Components

Part Name	Description
PYEX-EP-JB	12 : 122x120x90 16 : 160x160x90 26 : 260x160x90
PYEX-EP-LID	Enclosure lid
PYEX-EP-BODY	Enclosure body
PYEX-TBP	Ex Terminal block for power
PYEX-TBE	Ex Terminal block for earth (Yellow/Green)
PYEX-EP-PG25	M25 Ex Plastic cable gland
PYEX-EAS	Earth stud (Optional)



Product drawing

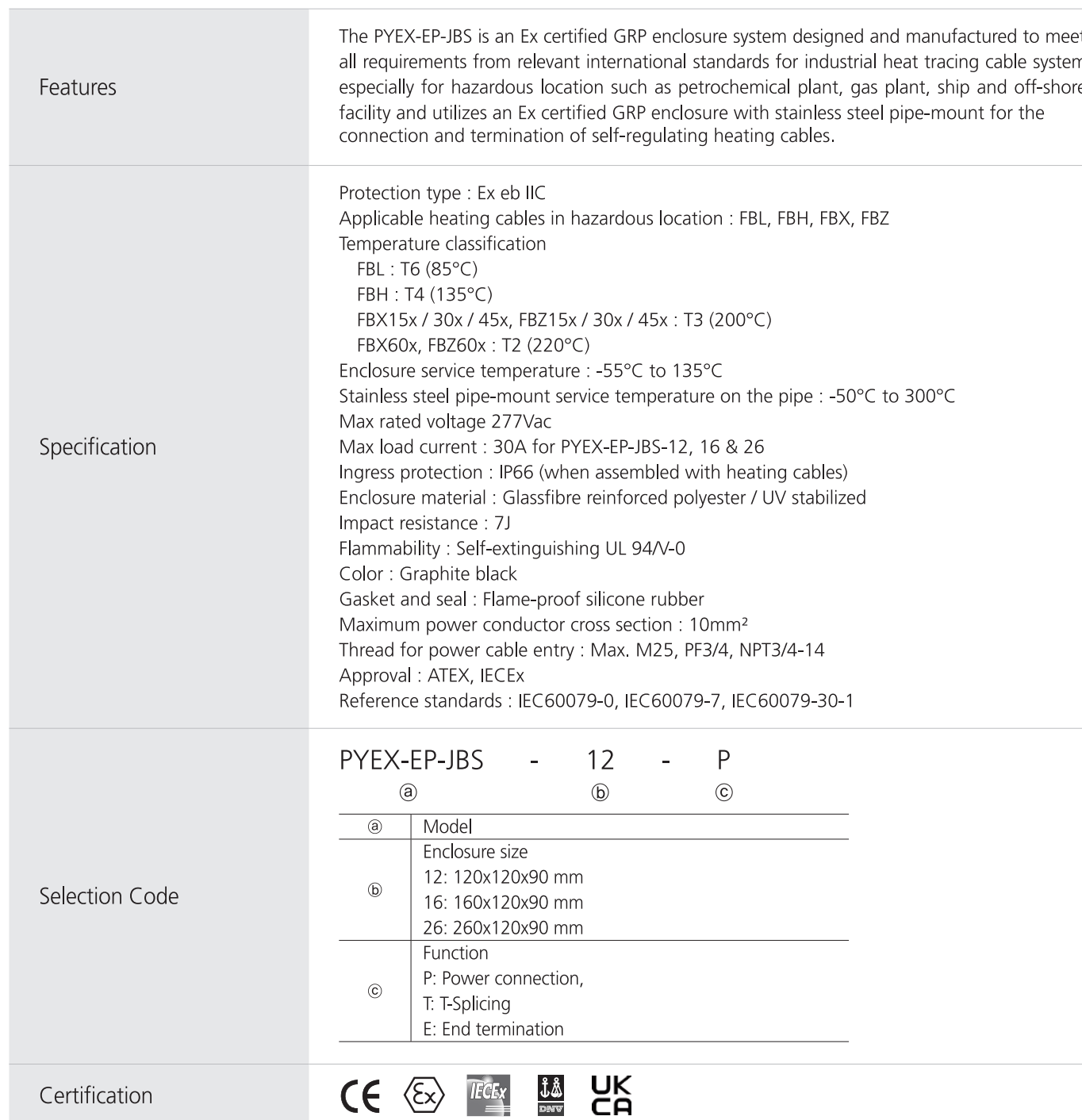


Note
The dimension of assembled enclosure system varies depending on the choice of enclosure size.

Model	W	H	D
PYEX-EP-JB-12	122	120	90
PYEX-EP-JB-16	160	160	90
PYEX-EP-JB-26	260	160	90

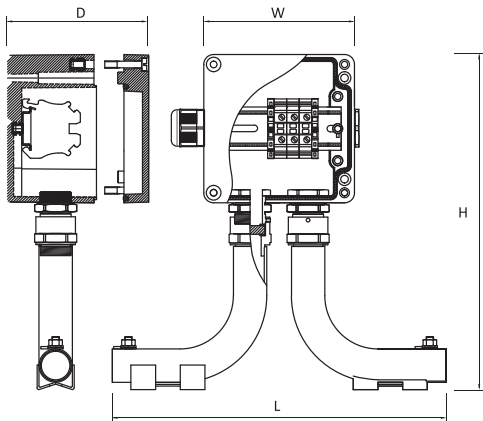
Components

Part Name	Description
PYEX-EP-JB	12 : 122x120x90 16 : 160x160x90 26 : 260x160x90
PYEX-EP-LID	Enclosure lid
PYEX-EP-BODY	Enclosure body
PYEX-TBP	Ex Terminal block for power
PYEX-TBE	Ex Terminal block for earth (Yellow/Green)
PYEX-EP-PG25	M25 Ex Plastic cable gland
PYEX-LK	Signal lamp kit
PYEX-EAS	Earth stud (Optional)

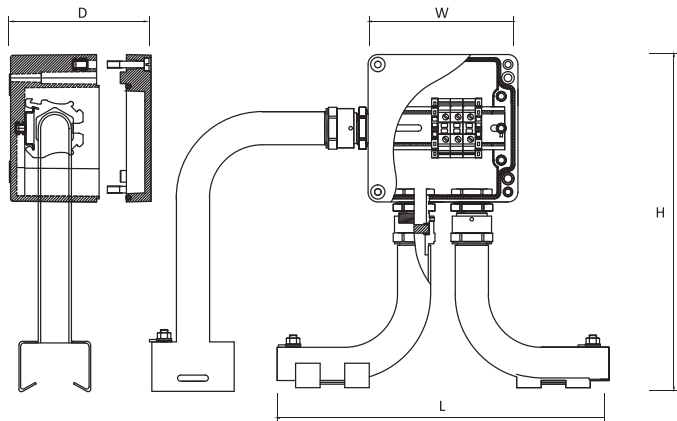


Product drawing

① PYEX-EP-JBS-P/E



② PYEX-EP-JBS-T



Note
The dimension of assembled enclosure system varies depending on the choice of enclosure size.

Model	W	H	L	D
PYEX-EP-JBS-12	122	272	268	90
PYEX-EP-JBS-16	160	312	271	90
PYEX-EP-JBS-26A	260	312	297	90
PYEX-EP-JBS-26B	255	402	292	90

Components

Part Name	Description
PYEX-EP-JB	12 : 122x120x90 26A : 260x160x90 16 : 160x160x90 26B : 255x250x90
PYEX-EP-L	Enclosure lid
PYEX-EP-B	Enclosure body
PYEX-DR	Din rail
PYEX-TBP	Ex Terminal block for power
PYEX-TBE	Ex Terminal block for earth (Yellow/Green)
PYEX-SS-MT	Pipe-mount assembly
PYEX-HS	Heater seal
PYEX-EP-PG25	Ex Plastic cable gland (optional)
PYEX-SP-M25	Ex stopping plug (optional)
PYEX-BR-PMG25	Metallic cable gland for pipe mount (optional)
PYEX-SS-SE	SUS side elbow pipe-mount (optional)

Seal selection and applicable heaters

Part No	Width(A)	Height(B)	Applicable Heaters	Outer Jacket
JBS-HS116	11.6	5.6	FBL 10,16,24	Fluoropolymer -CF / Polyolefin -CP
JBS-HS122	12.2	4.6	FBX FBZ 15,30,45,60	Fluoropolymer -CT
JBS-HS127	12.7	5.2	FBH 15,30,45	Fluoropolymer -CT
JBS-HS136	13.6	5.6	FBL 30	Fluoropolymer -CF / Polyolefin -CP
JBS-HS143	14.3	5.4	FBH 60	Fluoropolymer -CT

All dimensions are in mm.

PYEX-SS-JB

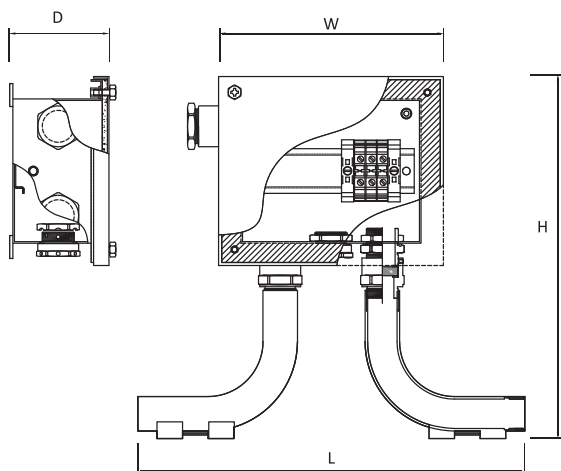
Pipe mounted junction enclosure
for trace heating installations



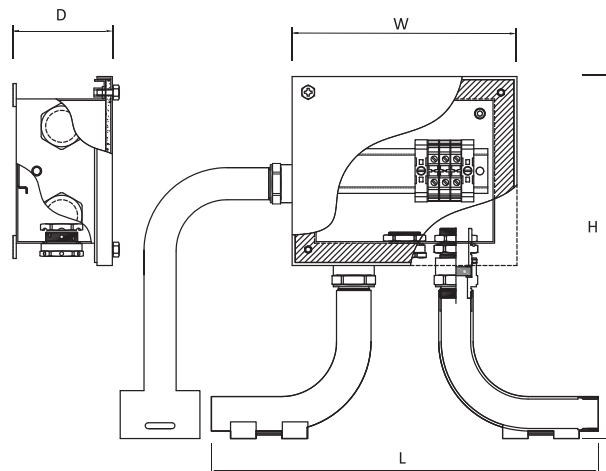
Use	Electrical installation in hazardous and safe location. Trace heating for ship-building and off-shore plant. Oil well and petro chemical plant. Control station. Instrument installation.				
Features	Designed for trace-heating in harsh environment. High ingress protection IP66 or higher. Manufactured of acid resistant stainless steel. Tailored size and performance. High strength and corrosion resistance / Long lifetime. Several earthing alternatives. Drain plug in box without water ingress.				
Specification	Protection type : Ex eb IIC Ingress protection : IP66/IP67 Material : Stainless steel AISI 304 or 316L Finish acid treatment Ambient temperature : -50°C < Ta < +50°C Applicable heating cable : FBL, FBH, FBX, FBZ Terminal block : Pheonix Contact UT2.5/4/6/10/16 Max. conductor size : 16mm ² Rated voltage : up to 750V				
Selection Code	<div><div>PYEX-SS-JB</div><div>-</div><div>P</div><div>Ⓐ</div><div>Ⓑ</div></div> <table><tr><td>Ⓐ</td><td>Model</td></tr><tr><td>Ⓑ</td><td>Function P: Power connection, T: T-Splicing E: End termination</td></tr></table>	Ⓐ	Model	Ⓑ	Function P: Power connection, T: T-Splicing E: End termination
Ⓐ	Model				
Ⓑ	Function P: Power connection, T: T-Splicing E: End termination				

Product drawing

① PYEX-SS-JB-P/E



② PYEX-SS-JB-T



Note

The dimension of assembled enclosure system varies depending on the choice of enclosure size.

Model	W	H	L	D
PYEX-SS-JB18	176	265	303	90
PYEX-SS-JB25	253	306	380	90

Components

Part Name	Description
PYEX-SS-JB	18 : 176x148x78 25 : 253x175x108
PYEX-SS-L	Enclosure lid
PYEX-SS-B	Enclosure body
PYEX-DR	Din rail
PYEX-TBP	Ex Terminal block for power
PYEX-TBE	Ex Terminal block for earth (Yellow/Green)
PYEX-SS-MT	SUS Pipe-mount assembly
PYEX-HS	Heater seal
PYEX-BR-DP	Drain plug
PYEX-BR-MG25	Ex Certified metallic cable gland (optional)
PYEX-BR-PMG25	Metallic cable gland for pipe mount (optional)
PYEX-SS-SE	SUS side elbow pipe-mount (optional)

Seal selection and applicable heaters






Part No	Width(A)	Height(B)	Applicable Heaters	Outer Jacket
SJB-HS116	11.6	5.6	FBL 10,16,24	Fluoropolymer -CF / Polyolefin -CP
SJB-HS122	12.2	4.6	FBX FBZ 15,30,45,60	Fluoropolymer -CT
SJB-HS127	12.7	5.2	FBH 15,30,45	Fluoropolymer -CT
SJB-HS136	13.6	5.6	FBL HSR 30	Fluoropolymer -CF / Polyolefin -CP
SJB-HS143	14.3	5.4	FBH 60	Fluoropolymer -CT

All dimensions are in mm.

PYEX-SS-EK

Cold applied end termination kit
for heat tracing cable system



Use	Freeze protection for water pipeline. Temperature maintenance for fuel feedline.
Features	<p>The PYEX-SS-EK is a low-profile end termination kit for FBL, FBH, FBX and FBZ parallel heat tracing cables.</p> <p>The service temperature is -50°C to 180°C.</p> <p>It is certified for ATEX and IECEx for use in hazardous areas. It provides both excellent electrical insulation and ultimate mechanical protection as it is the ideal combination between molded silicone rubber end seal and stainless steel cover. This kit does not require a heat gun or torch for the installation. Therefore hot work is not required.</p>
Specification	<p>Protection type : Ex eb IIC</p> <p>Ingress protection : IP66</p> <p>Min. Ambient temperature : -50°C</p> <p>Max. Exposure temperature : 180°C</p> <p>Construction material : Stainless steel & Silicone rubber</p> <p>Approval : ATEX, IECEx</p> <p>Reference standards : IEC60079-0, IEC60079-7, IEC60529, IEC60079-30-1</p>
Certification	    

Seal selection and applicable heaters

Part No	Width(A)	Height(B)	Applicable Heaters	Outer Jacket
EX-ES11	11.6	5.6	FBL 10,16,24	Fluoropolymer -CF / Polyolefin -CP
EK-ES12	12.7	5.2	FBX FBZ 15,30,45,60	Fluoropolymer -CT
			FBH 15,30,45	
EK-ES13	13.6	5.6	FBL HSR 30	Fluoropolymer -CF / Polyolefin -CP
EK-ES14	14.3	5.4	FBH 60	Fluoropolymer -CT

All dimensions are in mm.

PYEX-TF-JCK

Termination kit for industrial trace heating applications



Use	<p>Integral termination kits under the thermal insulation. Power connection, splicing, and end termination of high temperature trace heating system. Temperature maintenance of vessel, tank, chemical feeding or transportation pipelines. Non hazardous and hazardous location.</p>
Features	<p>The PYEX-TF-JCK is an integral termination kits for power connection, splicing connection and/or end termination of series resistance trace heating cables such as LLC and SFC by Solco Pyroelec. Once assembled, it is small, 140mm long and 40mm in diameter, and water-proof so to be installed under the thermal insulation. It is exceptionally heat-resistant as it is made of PTFE rod. It provides 2-way or 4-way non-metallic spacer for safe crimping connections between conductors inside cylindrical enclosure depending on heater type. Once RTV potting compound applied, both ends of termination kit are secured by mineral wool and non-metallic stopper for curing at room temperature.</p>
Specification	<p>Protection type : Ex 60079-30-1 IIC T2...T6 Gb Electrical rating : 1000 Vac / 106 A Color : White Temperature class : Refer to the installation manual Enclosure service temp. : -50°C to +260°C Product dimension : Ø 40mm x 140mm Construing materials : Enclosure and spacer : PTFE Stopper : Glassfibre wool Potting compound : RTV</p>
Certification	
Product Drawing	

Monitoring and Control

Technical Support

Heating Cable

Connection Kit

Component

Temperature Measurement

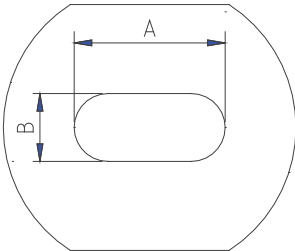





Heating Jacket

Liquid Leak Detection

PYEX-TF-EK

Cold applied end termination kit
for trace heating cable system



Use	Integral termination kits under the thermal insulation. End termination of high temperature trace heating system. Temperature maintenance of vessel, tank, chemical feeding or transportation pipelines. Non hazardous and hazardous location.														
Features	The PYEX-TF-EK is a low-profiled integral end termination kits for FBL, FBH, FBX, and FBZ self-regulating trace heating cables by Solco Pyroelec. Once assembled, it is small, 45mm x 25mm, and water-proof so to be installed under the thermal insulation. The service temperature is -50°C to +260°C. It has an excellent electrical insulation and mechanical strength as it is made of PTFE rod. The termination process does not require heat application by heat-gun or torch.														
Specification	Protection type : Ex 60079-30-1 IIC T2...T6 Gb Electrical rating : 1000 Vac / 30 A Color : White Temperature class : Refer to the installation manual Enclosure service temp. : -50°C to +260°C Product dimension : 45mm x 25mm x 21mm Construing materials : Housing : PTFE Potting compound : RTV														
Kit Selection Guide		<table><tr><th>Part No.</th><th>Width (A)</th><th>Height (B)</th></tr><tr><td>TF-EK13</td><td>12.9^{+0.2}_{-0.0}</td><td>5.8^{+0.2}_{-0.0}</td></tr><tr><td>TF-EK15</td><td>14.8^{+0.2}_{-0.0}</td><td>5.8^{+0.2}_{-0.0}</td></tr><tr><td>TF-EK20</td><td>20.0^{+0.2}_{-0.0}</td><td>12.0^{+0.2}_{-0.0}</td></tr></table>		Part No.	Width (A)	Height (B)	TF-EK13	12.9 ^{+0.2} _{-0.0}	5.8 ^{+0.2} _{-0.0}	TF-EK15	14.8 ^{+0.2} _{-0.0}	5.8 ^{+0.2} _{-0.0}	TF-EK20	20.0 ^{+0.2} _{-0.0}	12.0 ^{+0.2} _{-0.0}
Part No.	Width (A)	Height (B)													
TF-EK13	12.9 ^{+0.2} _{-0.0}	5.8 ^{+0.2} _{-0.0}													
TF-EK15	14.8 ^{+0.2} _{-0.0}	5.8 ^{+0.2} _{-0.0}													
TF-EK20	20.0 ^{+0.2} _{-0.0}	12.0 ^{+0.2} _{-0.0}													
Applicable Heaters	<table><tr><th>Part No.</th><th>Applicable Heaters</th><th>Outer</th></tr><tr><td>TF-EK13</td><td>FBL/HSR 10/16/24W models all FBX/FBZ models FBH 15/30/45W models</td><td>Polyolefin -CP Fluoropolymer -CF / -CT</td></tr><tr><td>TF-EK15</td><td>FBL/HSR 30W models FBH 60W model</td><td>Polyolefin -CP Fluoropolymer -CF / -CT</td></tr><tr><td>TF-EK20</td><td>SmSR model</td><td>Polyolefin -CX</td></tr></table>			Part No.	Applicable Heaters	Outer	TF-EK13	FBL/HSR 10/16/24W models all FBX/FBZ models FBH 15/30/45W models	Polyolefin -CP Fluoropolymer -CF / -CT	TF-EK15	FBL/HSR 30W models FBH 60W model	Polyolefin -CP Fluoropolymer -CF / -CT	TF-EK20	SmSR model	Polyolefin -CX
Part No.	Applicable Heaters	Outer													
TF-EK13	FBL/HSR 10/16/24W models all FBX/FBZ models FBH 15/30/45W models	Polyolefin -CP Fluoropolymer -CF / -CT													
TF-EK15	FBL/HSR 30W models FBH 60W model	Polyolefin -CP Fluoropolymer -CF / -CT													
TF-EK20	SmSR model	Polyolefin -CX													
Certification	<div></div>														

Power Connection, Splicing

Engineering plastic enclosure installed under insulation

The PYEX-EP-SPK is the water-proof engineering plastic enclosure for power connection and/or splice connection of heating cable. It is small and water tight (IP65) so to be installed under insulation. It has an excellent mechanical strength in both extreme weather as it is made of engineering plastic.

It can accommodate power cable and heating cable up to 15mm in diameter.

It is small enough to suit narrow installation work.

The clamping nut can be used as cable gland having 1"PF thread.

After assembled diameter 40mm, length 120mm.
Ingress protection : IP65
Operating temperature : -55°C to 130°C
Compatible with conventional pipe thread-both end 1"PF

	PYEX-EP-SPK	-	P
	(a)		(b)
(a)	Model		
(b)	Function		
	P : Powering		
	S : Splice		
	E : End Termination		

Heater Seal Selection

All dimensions are in mm.

Component

PYEX-PTK-M
PYEX-ETK-M
PYEX-PTK-S
PYEX-EP-PG25
PYEX-CG-M25
PYEX-SS-BRP/BRW
PYEX-CL-S
PYEX-GT
PYEX-AT
PYEX-FS
HACC-PK-P
HACC-TK-P
HACC-ELK-P

05





Component

Component



PYEX-PTK-M

Cold applied power connection kit for heat tracing cable system

This kit is certified for ATEX and IECEx for use in hazardous areas.
The silicone molded power tube does not require a heat gun or torch for insulating heating core.



PYEX-ETK-M

Cold applied end termination kit for heat tracing cable system

This connection kit is designed for end terminating all Solco Pyroelec self-regulating heating cables while maintaining electrical insulation of the heating cable conductors and core.



PYEX-PTK-S

Heat shrink power connection kit for self-regulating heating cables

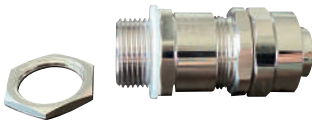
PTK-S is for power connecting FBL, FBH, FBX and FBZ parallel heating cables to Ex certified enclosure.



PYEX-EP-PG25

M25 Cable gland

The M25 plastic cable gland is made of fiberglass reinforced nylon for thermal endurance and mechanical strength. The silicone rubber seal should be selected with care to maintain optimum sealing with the heating cable to use with. An additional locknut is provided for unthreaded enclosure wall.

PYEX-CG-M25**M25 metal cable gland**

PYEX-CG-M25 is made of stainless steel for heat tracing application, specially for non-circular heating cables. It can accommodate flexible conduit for further mechanical protection.

PYEX-SS-BRP-H**Pipe mounting bracket (Horizontal)**

Support brackets are used to fix equipment such as the Ex enclosure on pipes. Applicable Ex enclosure.

-16H : PYEX-EP-JB-12, PYEX-EP-JB-16

-26H : PYEX-EP-JB-26

PYEX-SS-BRP-V**Pipe mounting bracket (Vertical)**

Support brackets are used to fix equipment such as the Ex enclosure on pipes. Applicable Ex enclosure.

-16V : PYEX-EP-JB-12, PYEX-EP-JB-16

-26V : PYEX-EP-JB-26

PYEX-SS-BRW-16V**Wall mounting bracket**

Support brackets are used to fix equipment such as the Ex enclosure on pipe trays or wall. Applicable Ex enclosure.

-16V : PYEX-EP-JB-12, PYEX-EP-JB-16

-26V : PYEX-EP-JB-26

Component



PYEX-CL-S

Warning labels

S : PET sheet type warning label.



PYEX-GT

Glass tape

The attachment tape is used to fix the heating cable or temperature sensor.
The glass tape is made of fiberglass for thermal endurance and mechanical strength.
- Max. Exposure Temp. 130°C, Size 12mm x 30M



PYEX-AT

Aluminium tape

The attachment tape is used to fix the heating cable or temperature sensor.
The high performance tape is made of aluminum for thermal conductivity and mechanical strength.
- Max. Exposure Temp. 125°C, Size 50mm x 50M



PYEX-FS

Pipe straps

Metal straps for pipe mounting of enclosure connection kit.

PYEX-FS-045	0.5" - 1.5"	10 - 45mm
PYEX-FS-100	2" - 4"	45 - 100mm
PYEX-FS-225	4" - 9"	92 - 225mm
PYEX-FS-380	9" - 15"	220 - 380mm
PYEX-FS-540	15" - 20"	375 - 540mm




HACC-PK-P

HACC-TK-P

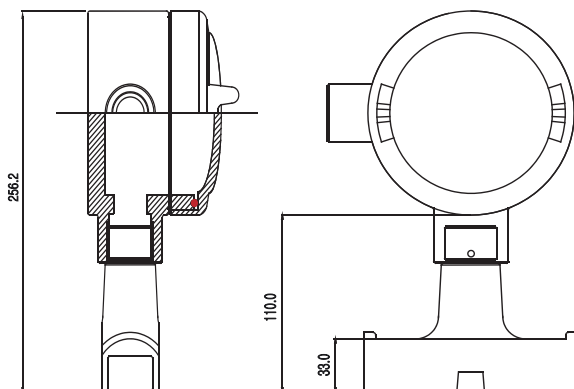
Explosion proof 'Ex-db'
Power connection / T-splicing enclosure



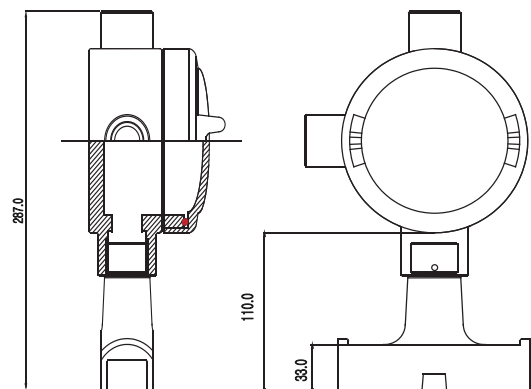
Features	<p>HACC is an aluminium enclosure specially for heating cable installation. It is designed and manufactured to meet all the technical requirements for hazardous locations.</p> <p>The additional suffix describes the specific use of HACC enclosure set for the installation with heating cables.</p> <p>HACC-PK-P : Power connection HACC-TK-P : T-splicing</p> <p>It is made of special grade aluminium to meet the required pressure tests against explosion or ignition of explosive gas or dust. The flame proof gasket stops the ingress of water and dust. In order to use with non-circular cables, suitable sealing fitting is required to accommodate non-circular cables size up to 15mm².</p>
Specification	<p>Ex db IIC T6</p> <p>Ambient temperature range : -20°C to 50°C</p> <p>Max rated voltage 600Vac</p> <p>Max load current : 20A</p> <p>Ingress protection : IP65</p> <p>Enclosure material : Aluminium</p> <p>Cable entry 3/4" PF compatible to conventional pipe thread</p> <p>Gasket and Seal : Flame proof silicone rubber</p> <p>Maximum power conductor cross section : 15mm²</p> <p>Approval : KCs</p> <p>Reference standards: IEC60079-0, IEC60079-1, IEC60079-14</p>
Certification	

Product drawing

① HACC-PK-P



② HACC-TK-P



HACC-ELK-P

Explosion-proof 'Ex-db'
End termination enclosure with signal lamp



Monitoring and
Control

Technical
Support

Heating
Cable

Connection
Kit

Component

Temperature
Measurement

Heating
Jacket

Liquid Leak
Detection

Features

HACC-ELK-P is an aluminium enclosure fitted with specially designed pilot lamp, which shows the status of power supply of each circuit of electrical heat tracing. It is made of special grade of aluminum to meet the required pressure tests against explosion or ignition of explosive gas or dust. The flame proof gaskets stops the ingress of water and dust.

Specification

Assembled enclosure : height 257mm, width 132mm, depth 64mm
Ex db IIC T6 IP66
Gasket and cable seal : Flameproof silicone rubber
220Vac / 110Vac, 15mA

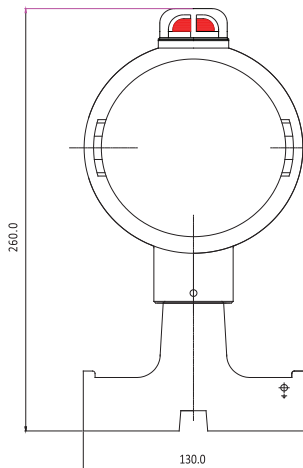
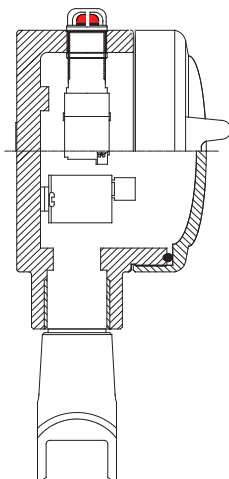
Part List

Part Name	Description
Pipe mount	ALPJB-MB/TS
Heater seal	SH-HS
Heat seal stopper	GS-CS
Enclosure body	AL-PJB-B/TS
Pilot lamp	PL
Gasket	SR-GSK
Enclosure cover	AL-PJB-C/TS
Mount grub screw	GS-GRS

Certification



Product drawing



Temperature Measurement

PYEX-EP-MTS12

PYEX-EP-RTD

Temperature sensor

HACC-TSK-P

PYEX-BT

PYEX-Z2BT

06





PYEX-EP-MTS12

Explosion proof capillary thermostat



Features

The explosion proof capillary thermostat PYEX-EP-MTS12 is built to sense and control surface temperature of various objects in potentially explosive areas.

The capillary thermostat is enclosed within Ex db (flameproof) aluminium enclosure and then the whole aluminium enclosure assembly is fitted inside 120 x 120 x 90mm engineering plastic enclosure for easy installation and maintenance on site.

The electrical switching element of capillary thermostat works based on the expansion / shrinkage of liquid and gas, being enclosed within the sensing bulb and capillary tube.

PYEX-EP-MTS12 is only single thermostat. Two more numerics shown after -MTS12 are for selection guide.

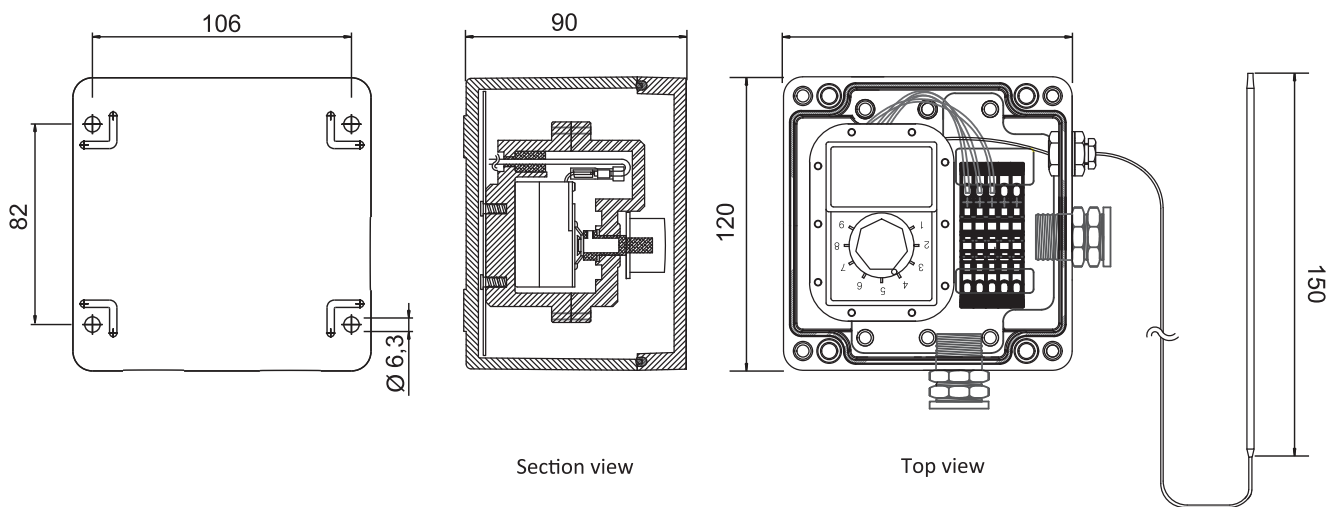
Specification

Protection Type	Ex db eb IIC T6
Ingress Protection	IP56
Ambient temperature range	- 20 °C to + 40 °C
Switching capacity	max. 250V / 16A
Relay output	Refer to Table 1.
Set point range (optional)	Refer to Table 1.
Housing	Glassfibre reinforced polyester 120 x 120 x 90mm
Cable entry method	Plastic cable gland M16, M20, M25, M32 available
Number of cable entry (optional)	max. 2
Capillary sensor	made of stainless steel Capillary Ø 1.0mm diameter, 830~1730mm in depending on model length Capillary bending radius 5.0mm max
Sensor probe	Refer to Table 1.
Operating temp range	Refer to Table 1.
Terminal	Refer to Table 2.

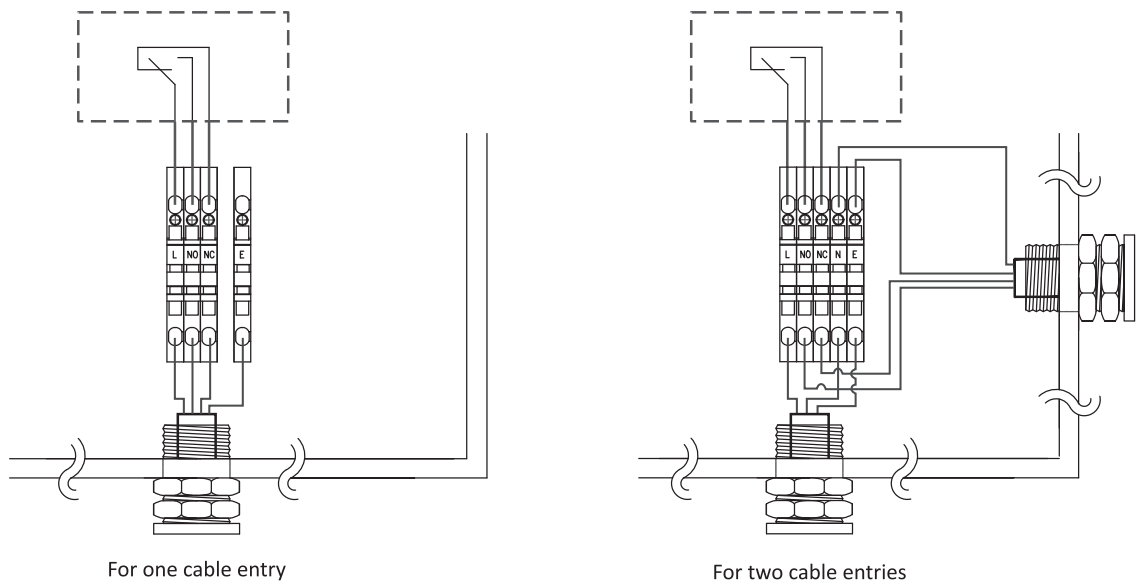
Certification



Product drawing



Wiring diagrams



Selection guide

Table 1.
Thermostat Selection Guide for PYEX-EP-MTS12 series

Thermostat No.	Temp. setting range	Service temperature for sensor probe	Capillary length (mm)	Probe diameter	Probe length	Output Terminal
1	-20 °C ~ +20 °C	-30 °C ~ +80 °C	1730	6.0	98	3
2	0 °C ~ +50 °C	-50 °C ~ +100 °C	1730	6.0	98	2
3	+30 °C ~ +90 °C	-20 °C ~ +120 °C	870	6.0	98	3
4	+30 °C ~ +110 °C	-10 °C ~ +120 °C	870	6.0	113	2
5	+30 °C ~ +110 °C	-10 °C ~ +140 °C	870	6.0	113	3
6	+54 °C ~ +324 °C	-10 °C ~ +330 °C	870	3.0	160	3
7	+200 °C ~ +600 °C	0 °C ~ +650 °C	830	3.9	163	3

Table 2.
Terminal Block Selection

Terminal Selection	conductor size (mm²)
1	2.5
2	4.0
3	6.0

Note
Tension crimping and screw tightening type are available.

PYEX-EP-RTD

Ex temperature sensing kit
Explosion proof RTD enclosure kit
for heating cable system



Features

PYEX-EP-RTD is an Ex certified plastic enclosure kit assembled with RTD sensor probe for both ambient sensing and pipeline sensing. It is designed and manufactured to meet all the technical requirements from relevant standards for the use in hazardous location such as petrochemical plant, gas plants, ship-building and off-shore plant etc, as well as for the best performance of electrical trace heating cable system.

The plastic enclosure is made of fiberglass-reinforced polyester for ultimate thermal endurance and mechanical strength. The enclosure surface is UV resistant and electrically conductive having 10^9 ohm to reduce the static hazard risk.

Each kit includes an IP66 rated junction box and 2.5mm² terminal block. Ex certified RTD sensor probe enters into the enclosure through M16 metallic cable gland with compression seal. The length of mineral insulated RTD sensing probe can be extended up to 2m for convenient installation on site. The pipe-and wall-mount bracket are sold separately for easy installation.

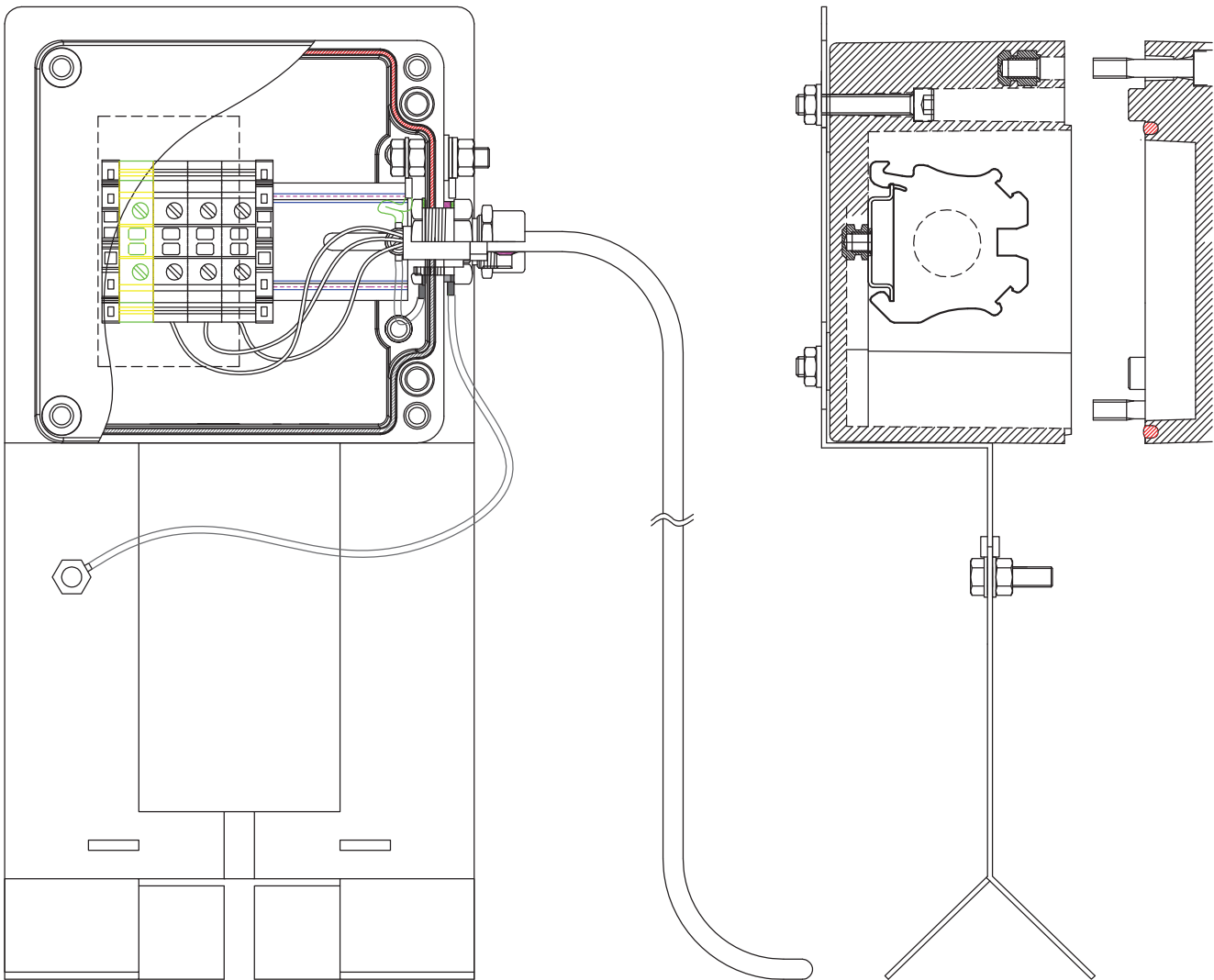
Specification

Protection type : Ex eb IIC T6
Ingress protection : IP64 (when assembled with trace heating cable)
Impact strength : 7J
Temperature rating : T6 to T2
(T-Rating varies depending on the type of heating cable and sensor probe.
Refer to installation manual.)
Surface resistance : $< 10^9 \Omega$
Flammability : Self-extinguishing UL94/V-0
Maximum conductor size for terminal : 2.5mm²
M16 metallic cable gland for compression fitting
The length of RTD sensing probe : Max. 2.0m
Enclosure dimension 122 x 120 x 90mm

Certification



Product drawing



Monitoring and Control	Technical Support	Heating Cable	Connection Kit	Component	Temperature Measurement	Heating Jacket	Liquid Leak Detection
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Temperature Sensor



Mineral insulated RTD / thermocouple

Features

Temperature sensor for high temperature range
MI materials and AISI 316L
RTD(pt100) or thermocouple
Ex certified temperature sensor

Specification

Marking	Ambient Temperature	T Class
Ex eb IIC T6...T4	-40°C to +80°C	T6
	-40°C to +95°C	T5
	-40°C to +130°C	T4

Temperature sensor:
W-M-303-@/b-/c-/FDF-4-A-Ex : Pt100
T-M-303-@/b-/c-/FDS-Z-1-Ex : Thermocouple K or N type
Max. measuring current : 10mA
Temperature range : -60°C ...+450°C Temporary +550 °C
Diameter of sensor probe : 3mm, 6mm, 8mm
Tinned copper connection Wires : 0.22mm²
Max. service temperature (connection to MI cable) : +130°C
Max. service temperature (end sleeve) : +105°C

Selection Code

W - M - 3 0 3 - @ / b - c / F D F - 4 - A - E x

a	Sensor probe diameter
	3.0mm
	6.0mm
	8.0mm
b	Probe length in millimeter, min. 30
c	Lead cable length in millimeter, min. 50





T - M - 3 0 3 - @ / b - c / F D S - Z - 1 - E x

a	Sensor probe diameter
	3.0mm
	6.0mm
	8.0mm
b	Probe length in millimeter, min. 10
c	Lead cable length in millimeter, min. 50





Certification



Stainless steel RTD

Features	Temperature sensor for multiple temperature measurement purposes MI materials and AISI 316L Pt100, accuracy class A Ex certified temperature sensor														
Specification	<table><tr><th>Marking</th><th>Ambient Temperature</th><th>T Class</th></tr><tr><td rowspan="4">Ex eb IIC T6...T3</td><td>-40°C to +80°C</td><td>T6</td></tr><tr><td>-40°C to +95°C</td><td>T5</td></tr><tr><td>-40°C to +130°C</td><td>T4</td></tr><tr><td>-40°C to +185°C</td><td>T3</td></tr></table> <p>Temperature sensor: Pt100 Max. measuring current: 10mA Operating temperature: -40°C ...+200°C Diameter of sensor probe: 6mm Tinned copper connection wires: 0.22mm²</p>			Marking	Ambient Temperature	T Class	Ex eb IIC T6...T3	-40°C to +80°C	T6	-40°C to +95°C	T5	-40°C to +130°C	T4	-40°C to +185°C	T3
Marking	Ambient Temperature	T Class													
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	-40°C to +95°C	T5													
	-40°C to +130°C	T4													
	-40°C to +185°C	T3													
Selection Code	<p>Ⓐ WT - K A A P E L I - 6 / Ⓑ - Ⓒ / T D T - 4 J - K L A - E x</p> <table><tr><td>Ⓐ</td><td>No. of sensor None : 1, 2X :2</td></tr><tr><td>Ⓑ</td><td>Probe length in millimeter, min. 30</td></tr><tr><td>Ⓒ</td><td>Lead cable length to end sleeve in millimeter, min. 50</td></tr></table>			Ⓐ	No. of sensor None : 1, 2X :2	Ⓑ	Probe length in millimeter, min. 30	Ⓒ	Lead cable length to end sleeve in millimeter, min. 50						
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Ⓑ	Probe length in millimeter, min. 30														
Ⓒ	Lead cable length to end sleeve in millimeter, min. 50														
Certification	<div></div>														


Bayonet RTD

Features	Spring-loaded bayonet sensor for measuring temperature MI materials and AISI 316L Pt100 Ex certified temperature sensor														
Specification	<table><tr><th>Marking</th><th>Ambient Temperature</th><th>T Class</th></tr><tr><td rowspan="4">Ex eb IIC T6...T3</td><td>-40°C to +80°C</td><td>T6</td></tr><tr><td>-40°C to +95°C</td><td>T5</td></tr><tr><td>-40°C to +130°C</td><td>T4</td></tr><tr><td>-40°C to +185°C</td><td>T3</td></tr></table> <p>Temperature sensor: Pt100 x 1, or Pt100 x 2 Max. measuring current: 10mA Operating temperature: -40°C ...+200°C Diameter of sensor probe: 6mm, 8mm Tinned copper connection wires: 0.22mm²</p>			Marking	Ambient Temperature	T Class	Ex eb IIC T6...T3	-40°C to +80°C	T6	-40°C to +95°C	T5	-40°C to +130°C	T4	-40°C to +185°C	T3
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Ex eb IIC T6...T3	-40°C to +80°C	T6													
	-40°C to +95°C	T5													
	-40°C to +130°C	T4													
	-40°C to +185°C	T3													
Selection Code	<p>Ⓐ W T - B A J O N E T T I - Ⓑ / Ⓒ - Ⓓ / T D T - 4 J - K L A - E x</p> <table><tr><td>Ⓐ</td><td>No. of sensor None : 1, 2X :2</td></tr><tr><td rowspan="2">Ⓑ</td><td>Sensor probe diameter</td></tr><tr><td>6.0mm 8.0mm</td></tr><tr><td>Ⓒ</td><td>Probe length in millimeter, min. 25</td></tr><tr><td>Ⓓ</td><td>Lead cable length to end sleeve in millimeter, min. 300</td></tr></table>			Ⓐ	No. of sensor None : 1, 2X :2	Ⓑ	Sensor probe diameter	6.0mm 8.0mm	Ⓒ	Probe length in millimeter, min. 25	Ⓓ	Lead cable length to end sleeve in millimeter, min. 300			
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Certification	<div><div>   </div></div>														

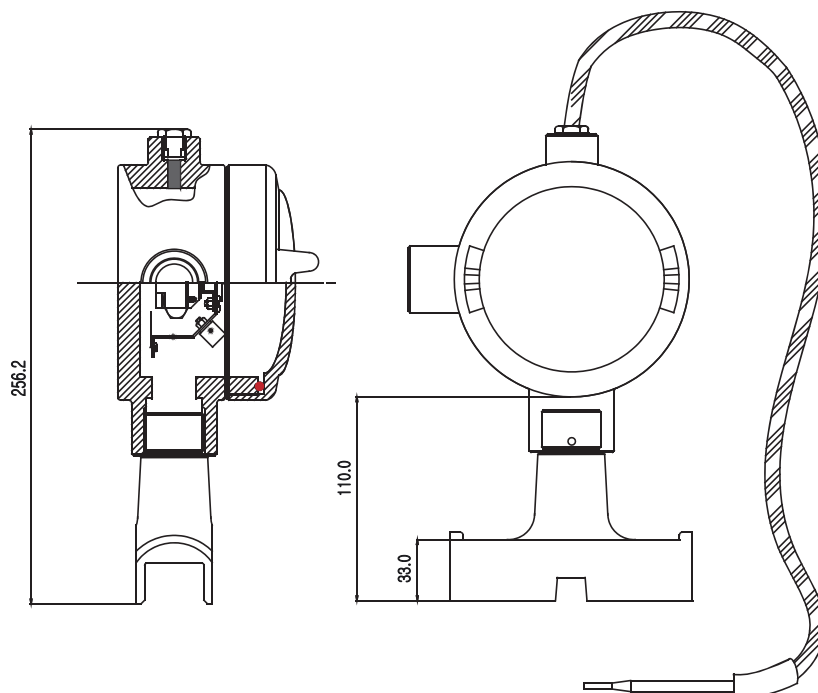
HACC-TSK-P

Line sensing thermostat enclosure
Ex 'db' explosion-proof enclosure thermostat control



Features	<p>HACC-TSK-P is the explosion-proof aluminium enclosure fitted with thermostat control unit, which detects and control the temperature of each circuit of pipeline or vessel for ultimate efficiency and safety.</p> <p>It is made of special-grade aluminium to meet the required pressure tests against explosion or ignition of explosive gas or dust. The elastomer cover gasket stops the ingress of water and dust</p>
Specification	<p>Assembled height : 257mm, width : 132mm, depth : 64mm</p> <p>Protection type Ex db IIC T6 ingress protection IP65</p> <p>Operating temp $-20^{\circ}\text{C} < T_a < 50^{\circ}\text{C}$</p> <p>Cable entry 3/4" PF compatible to conventional pipe thread</p> <p>Gasket and cable seal : silicone rubber</p> <p>Armoured flexible conduit for capillary sensor up to cable 75cm, sensor diameter 6.0mm</p>
Certification	






Product drawing



PYEX-BT

Explosion-proof bimetal thermostat
safety device for thermal cutout








Use	Temperature limiting for surface heating system. Semiconductor, display and petro chemical industry. Hazardous and non-hazardous locations.								
Specification	Ex 'mb' encapsulated explosion proof bimetallic thermostat. Connected to power relay to limit temperature rise. The smallest temperature monitoring equipment. Can be installed independently inside various surface heating equipments. ATEX, IECEx and KCs certified for zone 1 and 2 hazardous location.								
Features	Protection type : Ex mb IIC T4...T6 Gb Operating temperature : 0 °C to 100 °C with interval of 5 °C Operating tolerance : ± 5 °C Switching voltage and current : 250Vac/30mA, 24Vdc/50mA On-off differential : 30 ± 15 K Ambient temperature : -40°C to +100°C Stainless housing Dimension Φ 17.0 x 30.0mm (Type 3/8) Φ 20.5 x 32.5mm (Type 1/2) 14.0 x 18.0 x 31.5mm (Type B1418) Ingress protection : IP67 Leadwire : AWG 22								
Selection Code	PYEX-BT - 1/2 - 70 - NC (a) (b) (c) (d) <table border="1"> <tr> <td>(a)</td><td>Model</td></tr> <tr> <td>(b)</td><td>Type / Construction 1/2 - 1/2 inch cylindrical bar 3/8 - 3/8 inch cylindrical bar B1418 - rectangular bar</td></tr> <tr> <td>(c)</td><td>Switching temperature 0 ~ 100°C</td></tr> <tr> <td>(d)</td><td>Normal close (NC) / Normal open (NO)</td></tr> </table>	(a)	Model	(b)	Type / Construction 1/2 - 1/2 inch cylindrical bar 3/8 - 3/8 inch cylindrical bar B1418 - rectangular bar	(c)	Switching temperature 0 ~ 100°C	(d)	Normal close (NC) / Normal open (NO)
(a)	Model								
(b)	Type / Construction 1/2 - 1/2 inch cylindrical bar 3/8 - 3/8 inch cylindrical bar B1418 - rectangular bar								
(c)	Switching temperature 0 ~ 100°C								
(d)	Normal close (NC) / Normal open (NO)								
Certification	    								

PYEX-Z2BT

Explosion-proof bimetal thermostat
safety device for thermal cutout



Use	<p>Temperature limiting for surface heating system</p> <p>Semiconductor, display and petro chemical industry</p> <p>Hazardous and non-hazardous locations</p>								
Features	<p>Ex 'nC' encapsulated bimetallic thermostat</p> <p>Connected to power relay to limit temperature rise</p> <p>The smallest temperature monitoring equipment</p> <p>Can be installed independently inside various surface heating equipments</p> <p>ATEX, IECEx and KCs certified for zone 2 hazardous location.</p>								
Specification	<p>Protection type : Ex nC IIC T4...T6 Gc / Ex tc IIIC T85°C ... T135°C Dc</p> <p>Operating temperature : 0 °C to 100 °C with interval of 5 °C</p> <p>Operating tolerance : ± 5 °C</p> <p>Switching voltage and current : 250Vac/5A, 125Vac/8A, 24Vdc/50mA</p> <p>On-off differential : 30 ± 15 K</p> <p>Ambient temperature : -40°C to +100°C</p> <p>Stainless housing</p> <p>Dimension 6.5 x 9.0 x 28.0mm</p> <p>Ingress protection IP67</p> <p>Leadwire AWG 22</p>								
Selection Code	<p>PYEX-Z2BT - 70 - NC - 2.0</p> <p> Ⓐ Ⓑ Ⓒ Ⓓ</p> <table border="1"> <tr> <td>Ⓐ</td><td>Model</td></tr> <tr> <td>Ⓑ</td><td>Switching temperature 0 ~ 100°C</td></tr> <tr> <td>Ⓒ</td><td>Nomal close (NC) / Nomal open (NO)</td></tr> <tr> <td>Ⓓ</td><td>Lead cable lenght 1.0-20.0m</td></tr> </table>	Ⓐ	Model	Ⓑ	Switching temperature 0 ~ 100°C	Ⓒ	Nomal close (NC) / Nomal open (NO)	Ⓓ	Lead cable lenght 1.0-20.0m
Ⓐ	Model								
Ⓑ	Switching temperature 0 ~ 100°C								
Ⓒ	Nomal close (NC) / Nomal open (NO)								
Ⓓ	Lead cable lenght 1.0-20.0m								
Certification	    								



BEST QUALITY AND PERFORMANCE

Heating Jacket

FBJH-SR
FBJH-GR
FBJH-GP
FBJH-GB

07

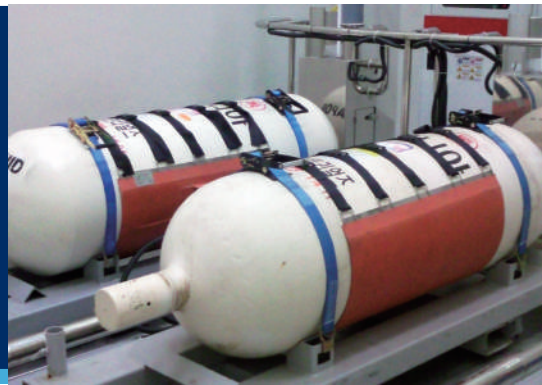









Heating Jacket

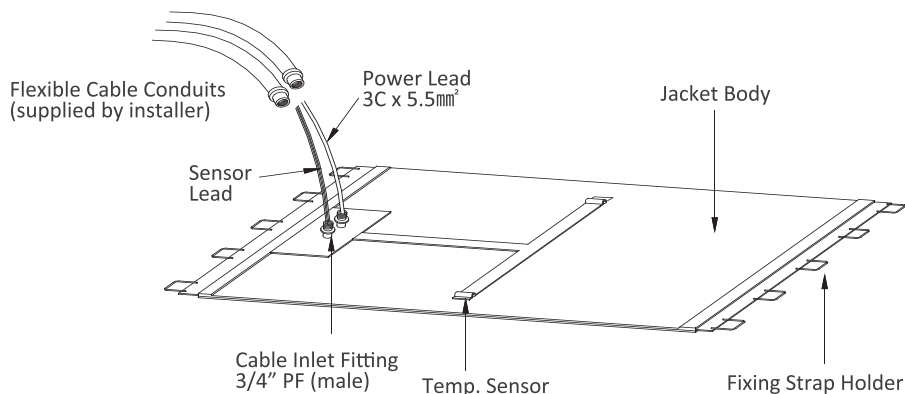
FBJH-SR

Silicone rubber substrated heating jacket
for cylindrical tanks and vessels in
chemistry and gas industry



Use	Gentle heat-up or temperature maintenance of gas cylinder. Freeze protection or temperature maintenance of chemical tanks. Hazardous and non-hazardous locations.			
Features	Explosion proof heating jacket for various containers. Wire type or etched foil type heating element. Flat heating element for highly efficient thermal performance. Glassfiber reinforced silicone rubber substrate for high thermal endurance. Flexible and excellent mechanical strength. Easy installation and fast response. Resistance to heat, oil and chemicals.			
Specification	Max. maintain temperature (Power-on) 40°C (104°F) Max. continuous temperature (Power-off) 150°C (302°F) Rated voltage : 110 / 220 Vac Power consumption : 1,000 ~ 8,000 watt per set Temperature class (T-class) : T4 (135°C) Min. installation Temperature : -20°C		Minimum bending radius 310 mm Temperature sensors Pt100 RTD or type K thermocouple Cable outlet fitting 3/4 inch PF threaded elbow Certification to use in hazardous locations Protection type Ex e IIC T4 Gb	
Selection Code	FBJH-SR / Y 6000 - F			
	(a)	(b)	(c)	(d)
	(a)	Model / Type Silicone rubber substrate heating jacket		
	(b)	Dimension Y 880mm* X 1270mm (* product with -H suffix, 805mm X 1270mm) T 1400mm X 1940mm B47x ** 480mm* X 510mm (** -x denote rated voltage 1 : 110V 2 : 220V)		
	(c)	Power consumption in watt per set 4000, 6000, 8000		
	(d)	Option H : Size variation 850mm x 1270mm G : Graphite earthing layer F : Etched foil heating element		
Certification	<div>    </div>			






Product drawing



FBJH-GR

Ex 'eb' Explosion-proof glassfiber substrate heating jacket for tanks and vessels in chemistry and gas industry



Use	Gentle heat-up or temperature maintenance of various gas cylinder. Freeze protection or temperature maintenance of chemical tanks. Hazardous and non-hazardous locations.								
Features	Explosion proof heating jacket designed for various containers. Easy installation and fast response. Aluminum backed glass fiber fabric for ultimate thermal endurance. Flexible and excellent mechanical strength. Resistance to heat, oil and chemicals. Long service life.								
Specification	Max. maintain temperature (Power-on) 40°C (104°F) Max. continuous temperature (Power-off) 150°C (302°F) Rated voltage : 220 Vac Power consumption : 70 ~ 400 watt per set Temperature class (T-Class) T4 (135°C) except - PTC version T6 (85°C) Min. installation Temperature : -20°C Minimum bending radius 110 mm Temperature sensors Pt100 RTD or type K themodouple Cable outlet fitting 1/2 inch PT threaded elbow made of stainless steel Certification to use in hazardous locations Ex eb IIC T4 or T6								
Selection Code	<div>FBJH-GR / 47 - 200 PTC</div> <div>(a) (b) (c) (d)</div> <table><tr><td>(a)</td><td>Model / Type Aluminum backed glassfibre fabric based heating jacket</td></tr><tr><td>(b)</td><td>Dimension 10 550mm x 300mm 47 880mm x 500mm* (* product with -400 suffix, 880mm X 1000mm) 54 952mm x 450mm</td></tr><tr><td>(c)</td><td>Power consumption watt per set</td></tr><tr><td>(d)</td><td>Heating cable None series heating cable PTC self-regulating (PTC) heating cable</td></tr></table>	(a)	Model / Type Aluminum backed glassfibre fabric based heating jacket	(b)	Dimension 10 550mm x 300mm 47 880mm x 500mm* (* product with -400 suffix, 880mm X 1000mm) 54 952mm x 450mm	(c)	Power consumption watt per set	(d)	Heating cable None series heating cable PTC self-regulating (PTC) heating cable
(a)	Model / Type Aluminum backed glassfibre fabric based heating jacket								
(b)	Dimension 10 550mm x 300mm 47 880mm x 500mm* (* product with -400 suffix, 880mm X 1000mm) 54 952mm x 450mm								
(c)	Power consumption watt per set								
(d)	Heating cable None series heating cable PTC self-regulating (PTC) heating cable								
Certification	<div>    </div>								

Monitoring and Control

Technical Support

Heating Cable

Connection Kit

Component

Temperature Measurement

Heating Jacket

Liquid Leak Detection

Glassfibre insulated heating jacket for gas purifier application



Use	Semi-conductor, LCD, battery industries. Hazardous and non-hazardous locations.						
Features	Explosion proof heated jacket for purifier tank. Easy and fast installation with heat resistance velcro. Aluminum backed glass fiber fabric for ultimate thermal endurance. Flexible and excellent mechanical strength. Resistance to heat, oil and chemicals. Long service life.						
Specification	Max. maintenance temperature 350°C Max. intermittent exposure 500°C Rated voltage and current 240Vac, 15A Power consumption 3,000 W max. per set Min. installation temperature -40°C Temperature sensors 2 x thermocouple Height 690mm Heating cable glassfibre insulated series heating cable 400°C 50mm E-Glass insulation						
Selection Code	<div> <div>FBJH-GP</div> <div>-</div> <div>8</div> <div>-</div> <div>3000</div> <div> <div>(a)</div> <div>(b)</div> <div>(c)</div> </div> </div> <table border="1"> <tr> <td>(a)</td><td>Model / Type Glassfibre insulation purifier heating jacket</td></tr> <tr> <td>(b)</td><td>Dimension 8 - D317mm x H690mm 12 - D417mm x H690mm</td></tr> <tr> <td>(c)</td><td>Power consumption watt per set</td></tr> </table>	(a)	Model / Type Glassfibre insulation purifier heating jacket	(b)	Dimension 8 - D317mm x H690mm 12 - D417mm x H690mm	(c)	Power consumption watt per set
(a)	Model / Type Glassfibre insulation purifier heating jacket						
(b)	Dimension 8 - D317mm x H690mm 12 - D417mm x H690mm						
(c)	Power consumption watt per set						
Certification	CE						

FBJH-GB

Glassfibre insulated heating jacket
for IBC chemical container



Use	Heat-up and temperature maintenance for IBC chemical containers. Chemical industries. Hazardous and non-hazardous locations.								
Features	Explosion proof heated jacket for IBC chemical container. Easy and fast installation with heat resistance velcro. Glassfibre fabric for thermal endurance. Flexible and excellent mechanical strength. Resistance to heat, oil and chemicals. Long service life.								
Specification	Max. maintenance temperature 135°C Heat-up control range 0 to +90°C Rated voltage and current 110 - 277Vac, 30A Power consumption 2 x 1,100W max. per set Min. installation temperature -40°C Temperature sensors 2 x Pt100 RTD Dimension when assembled L1,000mm x W1,200mm x H1,000mm Dimension when opened H1000mm x L4400mm Customized dimension available on request Silicone coated glassgfibre fabric 400°C Ingress protection IP65 min Explosion-proof termination enclosure IP66 Built-in capillary thermostat								
Selection Code	<div> <div>FBJH-GB</div> <div>/</div> <div>1</div> <div>-</div> <div>2200</div> <div>PTC</div> </div> <div> <div>Ⓐ</div> <div>Ⓑ</div> <div>Ⓒ</div> <div>Ⓓ</div> </div> <table> <tr> <td>Ⓐ</td><td>Model / Type Glassfibre fabric based heating jacket for IBC container</td></tr> <tr> <td>Ⓑ</td><td>Rated voltage 1 - 100 - 120Vac 2 - 200 - 277Vac</td></tr> <tr> <td>Ⓒ</td><td>Power consumption watt per set</td></tr> <tr> <td>Ⓓ</td><td>Heating cable None series heating cable PTC self-regulating (PTC) heating cable</td></tr> </table>	Ⓐ	Model / Type Glassfibre fabric based heating jacket for IBC container	Ⓑ	Rated voltage 1 - 100 - 120Vac 2 - 200 - 277Vac	Ⓒ	Power consumption watt per set	Ⓓ	Heating cable None series heating cable PTC self-regulating (PTC) heating cable
Ⓐ	Model / Type Glassfibre fabric based heating jacket for IBC container								
Ⓑ	Rated voltage 1 - 100 - 120Vac 2 - 200 - 277Vac								
Ⓒ	Power consumption watt per set								
Ⓓ	Heating cable None series heating cable PTC self-regulating (PTC) heating cable								
Certification	CE								

Monitoring and
ControlTechnical
SupportHeating
CableConnection
Kit

Component

Temperature
MeasurementHeating
JacketLiquid Leak
Detection

Liquid Leak Detection

LEAKBAN LDS

LBMM-100

LBSM-200/300

LBSC-1000

LBSC-3000

LBSC-7000

Components

08










LEAKBAN LDS

Leak detection system

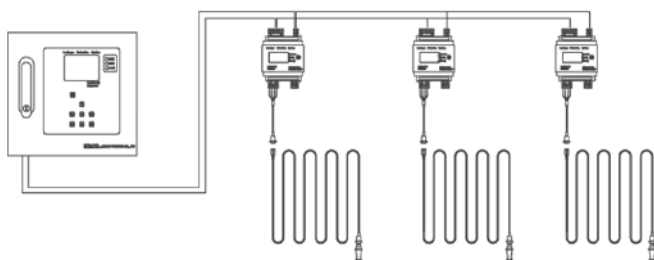
The fluid leakage in the building such as data centre or command room can stop all electrical and electronic equipment and the relevant safety systems from correct appropriate operation. Furthermore it can cause serious losses such as environmental pollution, fire, explosion and/or casualties. LEAKBAN leak detection cable system can detect various types of leakage from pipes and other equipment. Furthermore, it pinpoints the position where the leakage occurred with high accuracy. LEAKBAN LDS is an essential part for safety and a preventive operation system in industrial and commercial areas.

Use	<p>Power plant and sub-station : water and various chemical detection around power generation plants, data centres, central command units</p> <p>Digital media centre : water detection including floor surfaces, subfloors and equipment locations</p> <p>Semi-conductor, battery, display panel (LCD/LED) factory : water, acid and base leakage detection around pipes, storage tanks, and trenches such as sulphuric acid, sulphurous acid, nitric acid, PAC and sodium hydroxide etc.</p> <p>Army bases : Oil and chemical leak detection including pipes and storage tanks</p> <p>SOLCO intrinsically safe leak detection system is approved for installation in ordinary and hazardous areas when used with LBSC-1000 or LBSC-7000 sensing cable with safety barrier being stated in the Ex certificates. Protection Ex ia IIC T4 Ga Certificate No. BASEEFA 15Y0074, IECEx BAS15.0064X</p>
Features	<p>Conforms with relevant EMI/EMC and Electrical Safety requirements</p> <p>Sensing cable can be connected up to 1km</p> <p>Fast response (default 8 seconds)</p> <p>Leak point positioning within $\pm 1\text{m}$ / 1,000m</p> <p>Sensing wires sit in deep grooves making it fault-free</p> <p>Durable and flexible / Reusable</p> <p>Chemical and abrasion resistance</p>
Certification	    

Product drawing

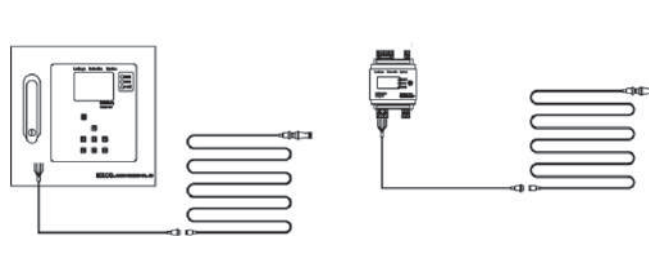
Network System

LEAKBAN LBMM-100, the main display module, is connected with LBSM, the Submodule, via RS485 and monitors the status of all the linked submodules and sensing cables. When a leakage is detected, it automatically triggers an auditory and visual alarm for recognition and alert from a distance. Max. 32 submodules can be linked with LBMM-100 via RS485, and each submodule can accommodate up to 500m of sensing cable at maximum.



Stand-Alone System

LBMM-100, main display module can be directly connected with a leak sensing cable without a LBSM. It can accommodate up to 1,000m of sensing cable at max. On the other hand, LBSM-200 or LBSM-300, submodules can be used without the LBMM. If necessary, it can be connected with a Windows PC via the RC-MBT unit for monitoring the status of leak sensing cables and for positioning the point where the leakage occurred.



LBMM-100

Master module monitoring and alarm



LBMM-100 is the main monitoring unit for the leak detection system and it works with sub-modules and sensing cables. When the LBMM is working in master mode, it is connected with the LBSM, the sub-module via RS485, for monitoring all the events and status of sub-modules on the provided LCD display. When detecting any event with a LBSM in slave mode, it produces a visual and auditory alarm to be noticed from distance with ease. Furthermore, all the data, which is safely stored in the provided external SD-Card, can be read by a personal computer even in the case the product is no longer functional. When the LBMM is working in slave mode, it performs the same functions as the LBSM, sub-module does.

Product specification

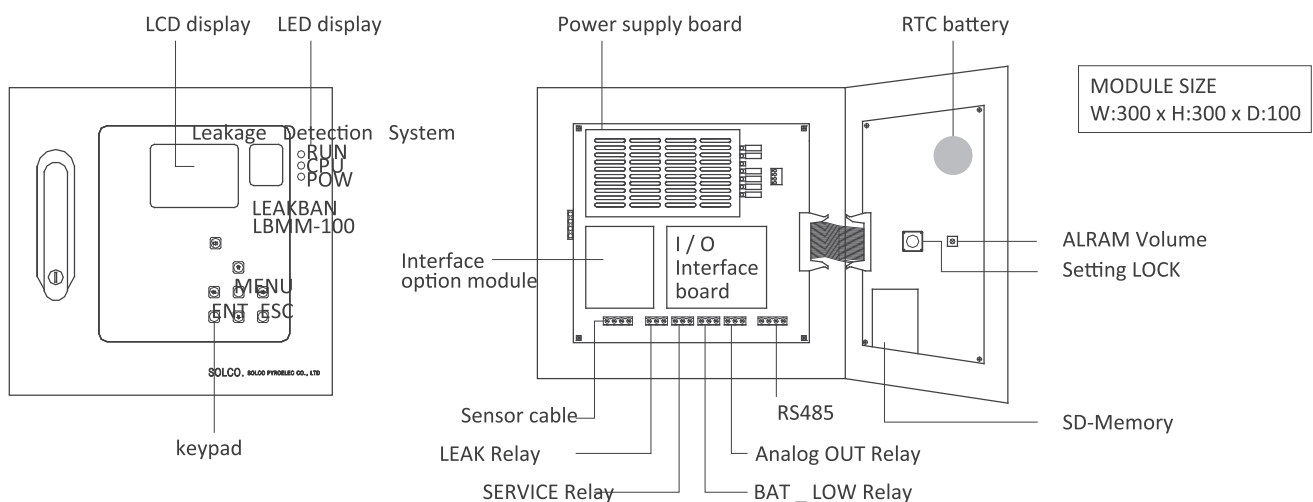
Power Supply Functions

Display/Alarm
Sensing Time
Sensing Length
Operating Temp. / Humidity
Output

RTC Battery / Memory
Parameter Setting
Communication Method
Protocol
Communication Distance / Number of Multi-Drop
Data Transferring Speed
Data bit / Stop bit / Parity bit
Housing

110 ~ 250Vac / 50, 60Hz (DC SMPS Built in)
Leak detection and positioning /
Contamination check of sensing cable
/ Continuity check of sensing cable
3.5 Inch TFT-LCD / Built in
Max. 8 seconds (default)
max 1.000M / 1M accuracy
-10 ~ 85°C / 30 ~ 80% RH
Replay – 3 Channels 250Vac - 10A , 30Vdc - 10A
Analog Output; 1 Channel (0 - 20mA) 1 Channel (0 - 10Vdc)
Built in / SD-CARD
KEY & Modbus RTU
RS485 – 2wire
Modbus-RTU
1.2km / 32
9600BPS
8bit / 1bit / none (Fixed)

Product drawing



Monitoring and Control

Technical Support

Heating Cable

Connection Kit

Component

Temperature Measurement

Heating Jacket

Liquid Leak Detection

LBSM-200/300

Master module monitoring and alarm



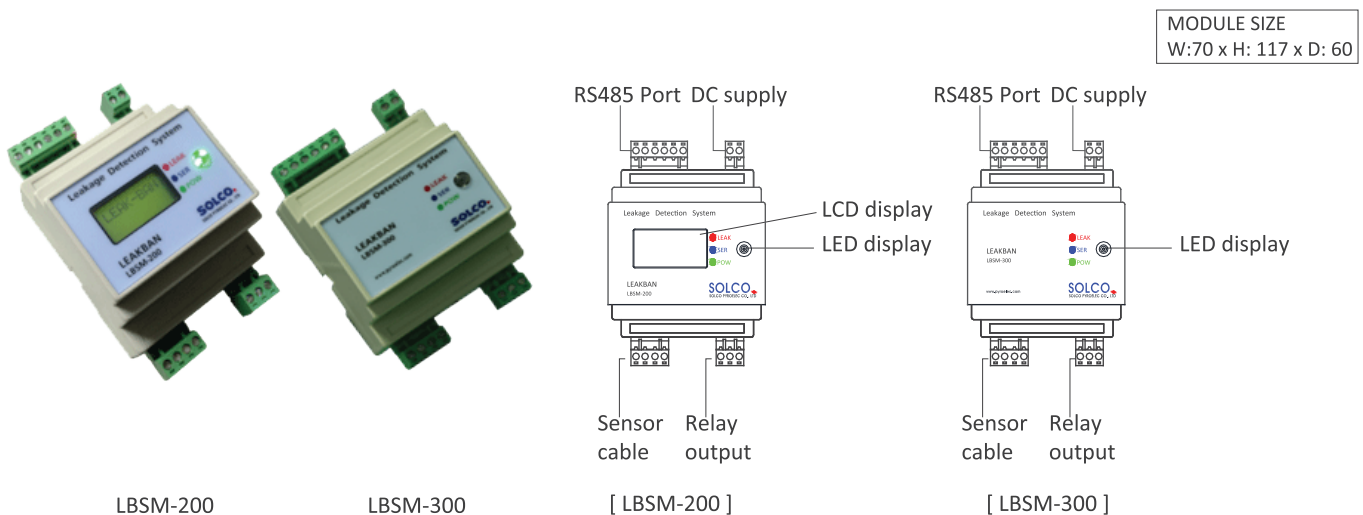
LBSM-200 and LBSM-300 are sub-modules for LeakBan leak detection system and they generally work with the LBMM, master-module unit and a leak sensing cable. When leak sensing cables detect any event, the LBSM sends pre-determined signals to the LBMM and at the same time they produce a visual and auditory alarm. Being determined as master module, the LBMM device should be linked with LBSM200 or LBSM300 via RS485 communication protocol for monitoring and alarming all the events and for showing the status of leak sensing cables on the LCD screen. All technical parameters and event-related data are automatically saved and stored in the provided external SD-card of the LBMM device and then can be read by PC or other electronic devices. LBSM can pinpoint the place where the leakage occurs with high accuracy. The housing of LBSM-200 and 300 is constructed with flame retardant PC and provides IP54 ingress protection. It can be mounted inside an enclosure by DIN rail or wall-mounted by the provided fixing screws. The LBSM-200 features a 1.4in LCD display and one LED light while LBSM-300 has no LCD display.

Product specification

Power Supply	10~30Vdc / 1.5W
Functions	Leak detection and positioning / Contamination check of sensing cable / Continuity check of sensing cable
Display/Alarm	LCD & LED / ALARM (LBSM-200) LED / ALARM (LBSM-300)
Event Relay	1 Channel A,C Point of Contact - (24Vdc-1A, 250Vac-0.5A)
Sensing Time	Max. 8 seconds (default)
Sensing Length	Max. 500m / 1m accuracy
Operating Temp. / Humidity	-10 ~ 85°C / 30 ~ 80% RH
Mounting Method	DIN rail or panel hole attachment

Conform with EMI/EMC requirements

Product drawing



LBSC-1000

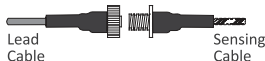
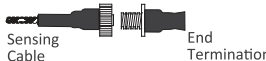
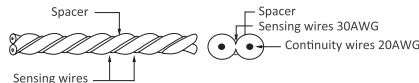





Water sensing cable



The LeakBan LBSC-1000 sensing cable detects the presence of water at any point along the length. Being installed with LBMM, master module and LBSM, slave module (sub-module), LBSC-1000 senses leakage or intrusion instantly and sends event signal to LBMM via LBSM by RS485 communication protocol. Upon reception, LBMM and LBSM trigger an alarm and find the position where the leakage occurs. LBSC-1000 sensing cable can be supplied in standard supply lengths, which are factory-terminated with a pair of circular plastic connectors to plug together. These are keyed to avoid incorrect polarity/connection for easy and quick installation. Multiples of pre-terminated sensing cables can be easily connected up to 1 km to suit on-site layouts and conditions. LBSC-1000 sensing cable consists of two continuity wires and two sensing wires being coated with a conductive material for corrosion resistance.

The sensing wires are spirally wound and positioned in the groove of the twisted spacer. As the groove is deep enough, it eliminates any single chance of false alarms even when the sensing cable lies on a metal surface.

The spacer of LBSC-1000 cable is constructed with crosslinked rigid plastic so it exhibits excellent abrasion resistance as well as chemical resistance. LBSC-1000 is thin, lightweight, flexible and less elastic so keeps its position after installation.

Use	LBSC-1000 sensing cable is designed for various applications : data centre sub-floor telecommunication centre HVAC equipment insulated pipelines electrical vaults storage areas roof or bathroom								
Features	Cable diameter Continuity wire Sensing wire Spacer Maximum continuous operating temperature Humidity Flame retardant Min. bending radius Min. installation Temperature Pre-terminated standard length CPC connector polyester/glass-filled nylon	approx. 6 mm AWG 20 x 2 AWG 30 x 2 alloy with conductive coating XLEVA, orange color 80°C up to 80% RH VW-1 35mm -40°C 3.5m, 7m or 15m Max. Ø25mm							
Specification	<p>Conforms with EMI/EMC and electrical safety requirements Sensing cable can be extended up to 1km Fast response (default 8 seconds) Leak Point Accuracy (± 1m /1,000m) Resistance to abrasion, chemicals Standard supply 3.5m, 7m, 15m Operating temp. -40°C ~ 80°C</p> <div><div><p>Cable Connection</p><p>Lead Cable Sensing Cable</p></div><div><p>End Termination</p><p>Sensing Cable End Termination</p></div><div><p>LBSC-1000</p><p>Spacer Sensing wires Continuity wires</p></div></div>								
Selection Code	<div><div>LBSC-1000</div><div>(a)</div></div> <div>-</div> <div><div>15</div><div>(b)</div></div> <div>-</div> <div><div>EX</div><div>(c)</div></div> <table><tr><th>(a)</th><th>(b)</th><th>(c)</th></tr><tr><td>Model</td><td>Pre-terminated cable length(m) : 3.5, 7, 15</td><td>Supply form None : for Safe area EX : for Hazardous area</td></tr></table>			(a)	(b)	(c)	Model	Pre-terminated cable length(m) : 3.5, 7, 15	Supply form None : for Safe area EX : for Hazardous area
(a)	(b)	(c)							
Model	Pre-terminated cable length(m) : 3.5, 7, 15	Supply form None : for Safe area EX : for Hazardous area							
Certification	<div><div></div><div></div><div></div><div></div><div></div></div>								

LBSC-3000

Acid sensing Cable



The LeakBan LBSC-3000 sensing cable detects the presence of acids such as sulphuric/sulphurous acid, hydrochloric acid and PAC etc. at any point along the length. Being installed with LBMM, master module and LBSM, slave module (sub-module), LBSC-3000 senses leakage or intrusion instantly and sends an event signal to LBMM via LBSM by RS485 communication protocol. Upon reception, LBMM and LBSM trigger an alarm and find the position where leakage occurs. LBSC-3000 sensing cable can be supplied in standard supply lengths, which are factory-terminated with a pair of circular metallic connectors to plug together. These are keyed to avoid incorrect polarity/connection for easy and quick installation. Multiples of pre-terminated sensing cables can be easily connected up to 1 km to suit on-site layouts and conditions. LBSC-3000 sensing cable consists of two continuity wires and two sensing wires. The sensing wires are spirally wound and positioned in the groove of the twisted spacer. As the sensing wires are coated with a special material, it eliminates any chance of false alarm even when the sensing cable is installed outdoor and exposed to water, rain or flying conductive dusts. The flame-retardant woven-fibre covering is therefore optional for outdoor use and not provided for protection against water, rain or dusts. The spacer of LBSC-3000 is constructed with crosslinked rigid plastic so it exhibits excellent abrasion and chemical resistance. LBSC-3000 is thin, lightweight, flexible and less elastic so keeps its position after installation.


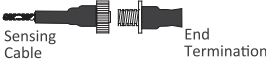
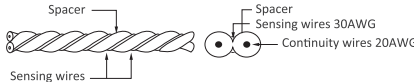





Use	LBSC-3000 sensing cable is designed for various applications : semi-conductor factory battery factory display panel (LCD/LED) factory all other chemical plants Applicable chemical : sulphuric acid, hydrochloric acid, nitric acid, and PAC etc.							
Features	Cable diameter Continuity wire Sensing wire Spacer Maximum continuous operating temperature Humidity Flame retardant Min. bending radius Min. installation Temperature Pre-terminated standard length	approx. 7 mm AWG 20 x 2 AWG 30 x 2 alloy with conductive coating chemical resistant XLEVA, red color 80°C up to 80% RH VW-1 40mm -40°C 3.5m, 7m or 15m						
Specification	Confirms with EMI/EMC and electrical safety requirements Sensing cables can be extended up to 1km Fast response less than 15 minutes depending on the acid type Leak positioning accuracy ($\pm 1\text{m} / 1,000\text{m}$) Resistance to abrasion, chemicals Standard supply 3.5m, 7m, 15m Operating temp. -40°C ~ 80°C							
	Cable Connection 	End Termination 						
	LBSC-3000 							
Selection Code	LBSC-3000 - 15 - C (a) (b) (c)							
	<table border="1"> <thead> <tr> <th>(a)</th><th>(b)</th><th>(c)</th></tr> </thead> <tbody> <tr> <td>Model</td><td>Pre-terminated cable length(m) : 3.5, 7, 15</td><td>Outdoor covering (Optional)</td></tr> </tbody> </table>		(a)	(b)	(c)	Model	Pre-terminated cable length(m) : 3.5, 7, 15	Outdoor covering (Optional)
(a)	(b)	(c)						
Model	Pre-terminated cable length(m) : 3.5, 7, 15	Outdoor covering (Optional)						

LBSC-7000

Multi-purpose sensing Cable



The LeakBan LBSC-7000 sensing cable detects the presence of any conductive liquids such as acids, bases and water at any point along the length hence is multi-purpose. Being installed with LBMM, master module and LBSM, slave module (submodule), LBSC-7000 senses leakage or intrusion instantly and sends event signal to LBMM via LBSM by RS485 communication protocol. Upon reception, LBMM and LBSM trigger an alarm and find the position where leakage occurs. LBSC-7000 sensing cables can be supplied in standard supply lengths, which are factory-terminated with a pair of circular plastic connectors to plug together. These are keyed to avoid incorrect polarity/con-nection for easy and quick installation. Multiples of pre-terminated sensing cables can be easily connected up to 1 km to suit on-site layouts and conditions. LBSC-7000 sensing cable consists of two continuity wires and two sensing wires. The sensing wires are spirally wound and positioned in the groove of the twisted spacer. As the sensing wires are coated with a conductive polymer, they have excellent corrosion resistance so perform for an extended period of time even when installed in corrosive and wet environments. The spacer of the LBSC-7000 is constructed with crosslinked rigid plastic so that it has good abrasion and chemical resistance. LBSC-7000 is thin, lightweight, flexible and less elastic so keeps its position after installation.

Use	LBSC-7000 sensing cable is designed for various applications : semi-conductor factory battery factory display panel (LCD/LED) factory all other chemical plants Applicable chemical : sulphuric acid, hydrochloric acid, nitric acid, and PAC etc.								
Features	Cable diameter Continuity wire Sensing wire Spacer Maximum continuous operating temperature Humidity Flame retardant Min. bending radius Min. installation temperature Pre-terminated standard length CPC connector polyester/glass-filled nylon	approx. 7 mm AWG 20 x 2 AWG 30 x 2 alloy with conductive coating chemical resistant XLEVA, grey color 80°C up to 80% RH VW-1 40mm -40°C 3.5m, 7m or 15m Max. Ø25mm							
Specification	<div>Confirms with EMI/EMC and electrical safety requirements Sensing cables can be extended up to 1km Fast response 8 seconds max. depending on liquid type Leak positioning accuracy (± 1m /1,000m) Resistance to abrasion, chemicals Standard supply 3.5m, 7m, 15m Operating temp. -40°C ~ 80°C</div> <div><div><div>Cable Connection</div><div><div>Lead CableSensing Cable</div></div><div><div>End Termination</div><div><div>Sensing CableEnd Termination</div></div><div><div>LBSC-7000</div><div><div>Spacer Sensing wires Continuity wires</div></div></div></div></div></div>								
Selection Code	<div><div>LBSC-7000</div><div>-</div><div>15</div><div>-</div><div>EX</div><div>(a)(b)(c)</div></div> <table><tr><th>(a)</th><th>(b)</th><th>(c)</th></tr><tr><td>Model</td><td>Pre-terminated cable length(m) : 3.5, 7, 15</td><td>Supply form None : for Safe area EX : for Hazardous area</td></tr></table>			(a)	(b)	(c)	Model	Pre-terminated cable length(m) : 3.5, 7, 15	Supply form None : for Safe area EX : for Hazardous area
(a)	(b)	(c)							
Model	Pre-terminated cable length(m) : 3.5, 7, 15	Supply form None : for Safe area EX : for Hazardous area							
Certification	<div><div></div></div>								

Components

Water sensing cable



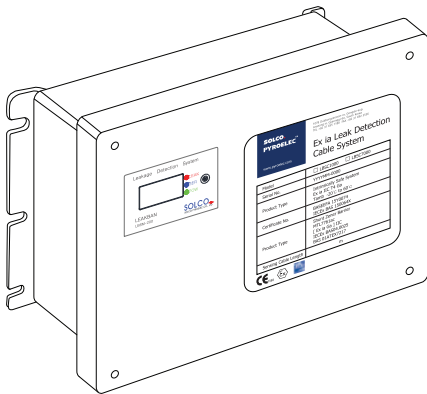
Model	: LBSC-1000 Ex
Protection Type	: Ex i IIC T4 Ga
Ambient Temp	: $-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$
Cable diameter	: approx. 6 mm
Continuity wire	: AWG 20 x 2
Sensing wire	: AWG 30 x 2
Spacer	: XLEVA
Outer governing	: Flame retardant nylon fibre
Color	: Black with red stripe

Multi-purpose sensing cable



Model	: LBSC-7000 Ex
Protection Type	: Ex i IIC T4 Ga
Ambient Temp	: $-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$
Cable diameter	: approx. 6 mm
Continuity wire	: AWG 20 x 2
Sensing wire	: AWG 30 x 2
Spacer	: XLEVA
Outer governing	: Flame retardant nylon fibre
Color	: Black with blue stripe

Safety barrier kit

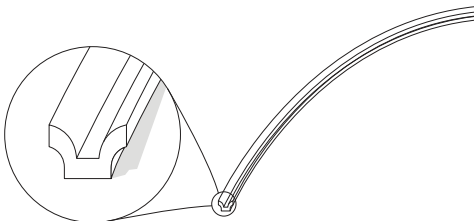


Model
Component

- : LBZK
: ① LBSM-200 Submodule
② SMPS 12V
③ Safety barrier* X 2
④ Weather-proof enclosure IP66

* Please refer to sales representative for more information on Ex certified safety barrier.

Insulative fixing clip



Model
Material
Dimension

- : LBIG
: Flame retardant PVC
: 15mm X 20mm

Thanks

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615 Pyeongchon-dong IS Biz Tower, 57-2, Heungan-daero 427beon-gil,
Dongan-gu, Anyang-si, Gyeonggi-do, South Korea
Solco Thermal Co., Ltd. T 82-31-8091-3050 E 3053@solcothermal.com