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Heating Technology

Reservation

Technical data subject to change without notice. No claims for damages arising from alterations, errors or misprints shall be allowed. Attention is drawn to the applicable standards and regulations on safety components and systems together with the relevant operating and installation instructions.

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BARTEC

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Your applications...

Frost protection

Safe product and plant protection against frost damages

Temperature maintenance

Reliable adherence to in-process, down-time and storage temperatures for liquid and gas media

Heating

Calculated heating of material and liquid media for the accurately timed attainment of the required in-process and storage temperatures

Pipe trace heating

Heating of simple as well as complex pipe systems, from short to very long including the heating of all components such as flanges, valves, pumps and other equipment.

Container heating

Heating of all kinds of containers such as tanks, silos and others for the reliable and safe temperature maintenance of the media stored within.

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Heating of bins and silos

Heating of hoppers and conveyors, e. g. in power plants and pollution control plants.

Heating of analyzer systems

Precision heating of pulse and measurement performances from tapping to analyser system.

Heating of cabinets and instrumentations

Heating of transmitter cases, control boxes and cabinets as well as customer-tailored heating of instrumentation and process control equipment such as pressure gauges, flow-rate meters, liquid level indicators.

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Our solutions

Heating tapes/Heating cables

- **PSBL/PSB/MSB/HSB/HTSB** Self-limiting heating tapes
- **EKL** Plastic single-core heating cables
- **EMK** Mineral-insulated heating cables
- **SEH** Skin Effect heating cables

Connection systems

- **PLEXO TCS** plug-in connection system for industrial applications and for hazardous areas
- **CONPAC** connection system for industrial applications for HSB
- **TWISTO-B** connection system for industrial applications in non-explosive atmospheres for PSB
- **Heat shrink technology** the connection system for industrial applications and for hazardous areas
- **Silicone cold-applied technology** Installation without hot work permit for industrial applications and for hazardous areas

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Control systems and temperature sensors

- Electromechanical capillary tube controllers and temperature limiters as well as an extensive range of electronic closed and open loop devices and power controllers for the use in hazardous areas and industrial applications
- Ambient thermostats, two-position controllers, proportional controllers and PID controllers
- Single, bus-capable for up to 256 heating circuits
- Pt100 temperature sensor for the direct use in explosive atmospheres and for industrial applications
- Multi-channel control systems with bus capability for up to 2000 heating circuits

Heaters

- Self-limiting and constantly heating heating plates for use in hazardous areas
- Heater plates for control cabinets
- Mini-heaters
- Anti-condensation motor heaters

Installation accessoires

- Junction box
- Mounting material
- Mounting plates and brackets
- Insulation entries
- Over insulation caution labels

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Our support

Project planning software Heloc

This software product was developed to help the user project the complete layout of all electric trace heating systems for pipes and vessels in no time at all.

Our project planning software is extremely user-friendly and easy to handle. It proposes

- Heat loss calculations
- Heating circuit layouts
- Different heating cables
- Material list
- Budgeting
- Print out of each single heating circuit
- Download free of charge from: www.bartec-group.com

Technical support

As a supplier of complete systems we know from experience how important it is to have project planning engineers and product advisors standing by ready for action.

Seminars and training

At regular intervals we offer technical seminars at our parent company in Bad Mergentheim. We also offer in-house training for your technical staff.

- Product application seminars
- Project planning workshops
- Installation training

03-0330-0234/D-10/2013-BEH-201981/5

Ideal trace heating solutions for all applications

Economic solution

You can choose many different heating systems. This allows you to find your ideal solution also with regard to economic aspects. For not every system is suitable for every application. It is the choice of the correct system which guarantees the satisfaction of all your individual requirements.

Safe and reliable products

BARTEC's all-time objective is the safety for people, environment, plant and machinery. Our products and solutions provide the highest safety standards and have been tried and tested in many applications all over the world.

From heating components to engineering

Experienced engineers do the entire basic and detailed engineering for you. They analyse the task to be accomplished, taking account of local laws and regulations. They conduct feasibility studies and work out a rough strategy. Quantities/capacities and costs are planned with due consideration to criteria of economic efficiency.

BARTEC then uses the basic engineering to draw up detailed engineering containing a more precise strategy for producing the system. The required measures are discussed and agreed on with the customer directly.

03-0330-0234/D-10/2013-BEH-201981/6

Heating tape PSBL

Heating tape PSB

Heating tape MSB

Heating tape HSB

Heating tape HTSB

Heating systems	System PSBL	System PSB	System MSB	System HSB	System HTSB
	Self-limiting parallel heating tapes PSBL	Self-limiting parallel heating tapes PSB	Self-limiting parallel heating tapes MSB	Self-limiting parallel heating tapes HSB	Self-limiting parallel heating tapes HTSB
Explosion protection	yes	yes	yes	yes	yes
Technical data					
Heating power [1]	10 to 30 W/m	10 to 33 W/m	10 to 40 W/m	10 to 60 W/m	15 to 90 W/m
Max. operating temperature [2] heating tape energized (switched on)	+65 °C	+65 °C	+110 °C	+120 °C	+200 °C
Resistant to steam cleaning	-	-	-	yes	yes
Max. length of heating circuit [3] per power feeding point	154 m	205 m	235 m	235 m	154 m
Max. operating voltage	120 V/254 V	120 V/254 V	254 V	120 V/254 V	254 V
Suitable for corrosive atmospheres [4]	yes	yes	yes	yes	yes

[1] Different nominal powers available

[2] Reference value: each case will depend on conductor/surface temperature of the heating cable and the application itself

[3] Reference value: depending on application, depend on ambient temperature

[4] To be tested for individual cases

* Multiple occupancy

03-0330-0235/F-09/2014-BEH-201982/1

Heating cable EKL

Heating cable EMK CuNi

Heating cable EMK VA

Heat tube SEH

Heating systems	System EKL	System EMK CuNi	System EMK VA	System SEH
	Single-core plastic insulated heating cables EKL	Mineral-insulated heating cables EMK, Outer jacket CuNi	Mineral-insulated heating cables EMK, Outer jacket VA or Incoloy	Heat tube SEH
Explosion protection	yes	yes	yes	yes
Technical data				
Heating power	approx. 25/30 W/m	150 W/m	250 W/m	~ 200 W/m*
Max. operating temperature [2]	+260 °C	+500 °C	+1000 °C	+260 °C
Resistant to steam cleaning	yes	yes	yes	yes
Max. length of heating circuit [3] per power feeding point	3000 m	1000 m	1000 m	> 20 km
Max. operating voltage	500 V/750 V	500 V/750 V	500 V/750 V	5000 V
Suitable for corrosive atmospheres [4]	yes	yes	yes	no

[1] Different nominal powers available

[2] Reference value: each case will depend on conductor/surface temperature of the heating cable and the application itself

[3] Reference value: depending on application, depend on ambient temperature

[4] To be tested for individual cases

* Multiple occupancy

03-0330-0235/F-09/2014-BEH-201982/2

Heating System Components - typical application		PSBL		PSB		MSB		HSB	
		Ex	M	Ex	M	Ex	M	Ex	M
Connection									
PLEXO TCS	Connection system	■	■	■	■	■	■	■	■
TWISTO-B	Connection system				■				
CONPAC HSB	Connection system								■
Heat shrink technology	Connection technology	■	■	■	■			■	■
Cold-applied technology	Connection technology	■	■	■	■	■	■	■	■
PLEXO EKL medium/EKL premium	Connection set								
EMK "Ex"	Connection set								
EMK "Standard"	Connection set								
Control units									
STW II	Safety temperature monitor	■		■		■		■	
BSTW II	Safety temperature monitor	■		■		■		■	
BTB II/BSTB II	Safety temperature limiter								
DTW/DTB	Flame-proof resistant temperature controller/limiter	■		■		■		■	
MTE	Mini thermostat	■		■		■		■	
KTE	Cable thermostat	■		■		■		■	
KRM	Capillary tube thermostat		■		■		■		■
DEPU	Complete digital solution								
DPC III	Digital temperature controller	■[1]	■	■[1]	■	■[1]	■[1]	■[1]	■
DPC_{front}	Digital temperature controller (front panel)	■[1]	■	■[1]	■	■[1]	■[1]	■[1]	■
DTL III Ex	Digital temperature limiter								
DEC	Digital power controller								
MPC II/MPC^{net}	Multiplex controller	■[1]	■	■[1]	■	■	■	■[1]	■
Pt100 Ex	Resistance thermometer	■		■		■		■	
Pt100 M	Resistance thermometer		■		■		■		■
Mounting accessories									
Junction boxes for heating circuit		■	■	■	■	■	■	■	■
Junction box Pt100		■	■	■	■	■	■	■	■
Insulation entries		■	■	■	■	■	■	■	■
Adhesive aluminium tapes		■	■	■	■	■	■	■	■
Adhesive textile tapes		■	■	■	■				
Adhesive polyester tapes		■	■	■	■				
Adhesive glass fibre tapes		■	■	■	■	■	■	■	■
Caution Labels		■	■	■	■	■	■	■	■
Mounting plates and fixing brackets (S/S)		■	■	■	■	■	■	■	■
Mounting plates and fixing brackets (galv. steel)		■	■	■	■	■	■	■	■
Fixing strap and buckle for mounting rail		■	■	■	■	■	■	■	■
Polyester fixing strap and buckle		■	■	■	■	■	■	■	■
EKL spacing strips									
EMK spacing strips									
Wire mats, welding rods, spring lock washers		■	■	■	■	■	■	■	■
Stainless steel cable ties									
Nylon cable ties		■	■	■	■	■	■	■	■

■[1] = Used outside the Ex area but acts on explosion-protected heating circuits in the Ex area.

Heating System Components - typical application		HTSB		EKL		EMK		SEH	
		Ex	M	Ex	M	Ex	M	Ex	M
Connection									
PLEXO TCS	Connection system								
TWISTO-B	Connection system								
CONPAC HSB	Connection system								
Heat shrink technology	Connection technology				■				
Cold-applied technology	Connection technology	■	■						
PLEXO EKL medium/EKL premium	Connection set			■					
EMK "Ex"	Connection set					■			
EMK "Standard"	Connection set						■		
Control units									
STW II	Safety temperature monitor	■		■		■			
BSTW II	Safety temperature monitor	■		■		■			
BTB II/BSTB II	Safety temperature limiter			■		■			
DTW/DTB	Flame-proof resistant temperature controller/limiter	■		■		■			
MTE	Mini thermostat								
KTE	Cable thermostat								
KRM	Capillary tube thermostat		■		■		■		
DEPU	Complete digital solution			■		■			
DPC III	Digital temperature controller	■[1]	■	■[1]	■	■[1]	■		
DPC_{front}	Digital temperature controller (front panel)	■[1]	■	■[1]	■	■[1]	■		
DTL III Ex	Digital temperature limiter			■[1]	■	■[1]	■		
DEC	Digital power controller			■[1]	■	■[1]	■		
MPC II/MPC^{net}	Multiplex controller	■[1]	■	■[1]	■	■[1]	■		
Pt100 Ex	Resistance thermometer	■		■		■			
Pt100 M	Resistance thermometer		■		■		■		
Mounting accessories									
Junction boxes for heating circuit		■	■	■	■	■	■	■	■
Junction box Pt100		■	■	■	■	■	■	■	■
Insulation entries		■	■	■	■				
Adhesive aluminium tapes		■	■	■	■			■	■
Adhesive textile tapes									
Adhesive polyester tapes									
Adhesive glass fibre tapes		■	■	■	■				
Caution Labels		■	■	■	■	■	■	■	■
Mounting plates and fixing brackets (S/S)		■	■	■	■	■	■		
Mounting plates and fixing brackets (galv. steel)		■	■	■	■	■	■		
Fixing strap and buckle for mounting rail		■	■	■	■	■	■	■	■
Polyester fixing strap and buckle		■	■	■	■	■			
EKL spacing strips				■	■				
EMK spacing strips						■	■		
Wire mats, welding rods, spring lock washers		■	■	■	■	■	■		
Stainless steel cable ties						■	■		
Nylon cable ties		■	■	■	■				

■[1] = Used outside the Ex area but acts on explosion-protected heating circuits in the Ex area.

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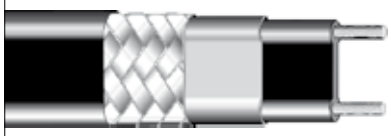
Heating tape PSBL



Terminal box

Installation kit

System overview PSBL

Features

- Self-limiting, without overheating while overlapping
- Limiter is not required
- Easy installation due to on-site assembly
- Installation in commercial, industrial and Ex-area, maximum admissible work-piece temperature of +65 °C (switched on).
- Certificate for the system according to IEC/EN 60079-30-1
- Junction boxes made of polyester, stainless steel and aluminium available
- Calculation and design-software - Free Download
- Direct entry in a junction box possible

Description

Typical applications are frost protection, temperature maintenance and heat-up in pipes, tanks, vessels or surfaces. The electric heating system PSBL is the perfect solution in Zone 1, 2, 21 and 22.

The self-limiting heating tape PSBL is available with various nominal power ratings from 10 W/m to 30 W/m at 10 °C. The standard outer insulation jacket is made of polyolefin. For special applications which require chemical resistance and mechanical strength a fluoropolymer insulation jacket is optionally available.

Explosion protection

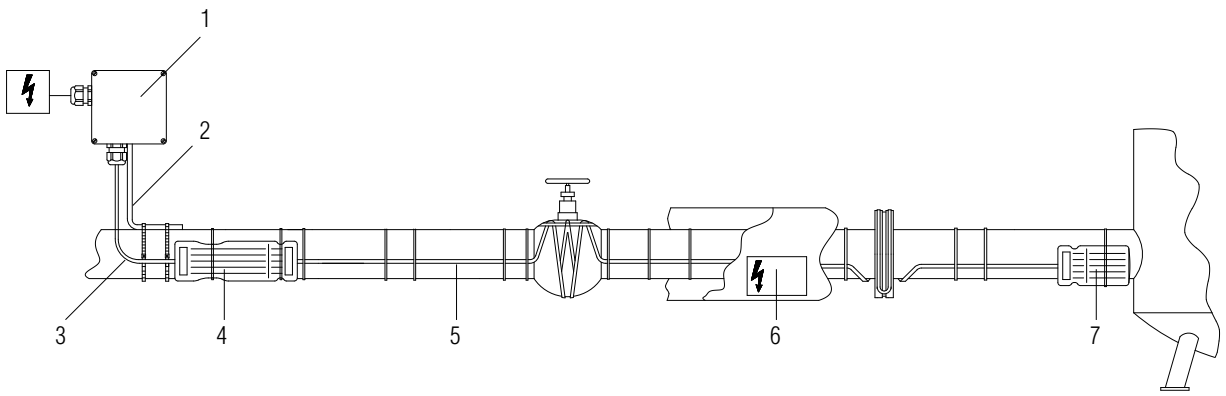
Certification

KEMA 08 ATEX 0112 X
IECEx KEM 09.0085X
TC RU C-DE.ГБ06.B.00230

System overview

- Self- limiting parallel heating tape PSBL
- Heat shrink technology or silicone cold applied technology or pluggable system PLEXO TCS connection and termination
- Junction box made of polyester, stainless steel and aluminium
- Optional: mechanical or electronic thermostats or control systems

Application example PSBL heating system



1 Junction box
2 Mounting bracket
3 Connection cable for power supply
4 Connection PLEXO TCS
5 Heating tape PSBL
6 Caution label "Electrically Heated"
7 End termination PLEXO TCS

03-0330-0470/E-09/2014-BEH-246902/2

Features

- Self-limiting
- Can be used in explosive athmospheres without temperature limiter
- Can be cut to any length due to the parallel current supply
- Resistant to corrosion and chemical influences because of the external protective jacket
- Tinned copper braiding for electrical and mechanical protection
- Easy installation due to high level of flexibility

Self-limiting parallel heating tape PSBL

1. Conductors:
stranded copper wire 1.0 mm², tinned

2. Self-limiting, irradiated
polymer heating element

3. Polyolefin electrical insulation jacket

4. Tinned copper braiding

5. Polyolefin or alternatively
fluoropolymer protective jacket

Description

Around two parallel positioned copper wires with a cross-section of 1 mm² an irradiated electrically conducting polymer is extruded.

This electrically conducting matrix responds to changes of the ambient temperature with an increase or decrease of the heating output.

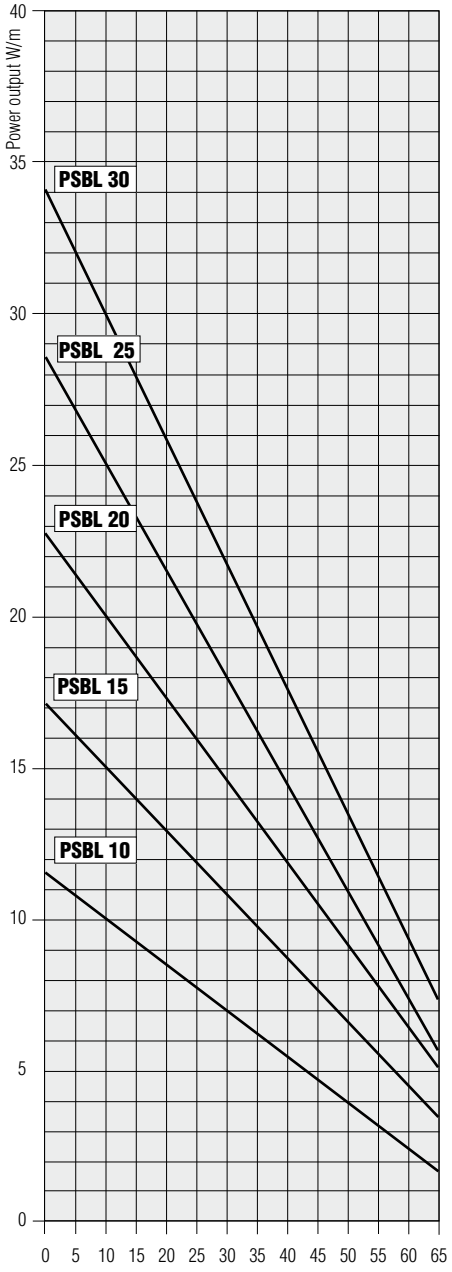
A flame-retardant, UV-resistant jacket protects the braiding against humidity and offers additional protection against mechanical stress.

The heating system must be designed to ensure that the maximum operating temperature of 65 °C will not be exceeded when it is energized.

When it is switched off, the heating tape can be exposed to a temperature of 85 °C, not more than 1,000 hours cumulated.

03-0330-0471/E-09/2014-BEH-246903/1

PSBL characteristics



Power output on insulated steel pipes at **230 V** under nominal conditions.

Areas of application

The PSBL heating tape is suitable for electric trace heating for frost protection of pipelines and vessels.

While the polyolefin protective jacket is used where there are aqueous, inorganic chemicals, the fluoropolymer outer jacket is suitable for organic chemicals.

For questions regarding the chemical resistance please contact your BARTEC sales representative.

Explosion protection

Ex protection type

Ex II 2G Ex e IIC T5 Gb
Ex II 2D Ex tb IIIC T95 °C Db

Certification

System

KEMA 08 ATEX 0112 X
IECEx KEM 09.0085X
TC RU C-DE.ГБ06.B.00230

Heating tape

KEMA 02 ATEX 2326 U
IECEx KEM 07.0047 U

03-0330-0471/E-09/2014-BEH-246903/2

Technical data

Nominal voltage AC 208 V to 254 V
AC 110 V to 120 V

Power setting at +10 °C					
Power output	**PSBL 10**	**PSBL 15**	**PSBL 20**	**PSBL 25**	**PSBL 30**
at AC 230 V	10 W/m	15 W/m	20 W/m	25 W/m	30 W/m
at AC 120 V	10.6 W/m	15.7 W/m	20.8 W/m	25.8 W/m	30.6 W/m

Max. exposure temperature
switched on +65 °C
switched off +85 °C

Min. installation temperature -55 °C

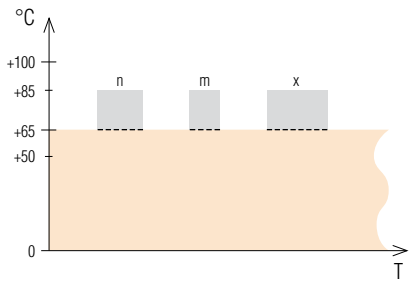
Min. start-up temperature -30 °C

Max. braid resistance <18,2 Ω/km

Dimensions
with braiding and jacket 10,5 x 6,0 mm

Min. bending radius 25 mm

Maximum exposure temperature



Continuous operation, switched on heating tape
Period of time in switched-off state , n + m + x ... ≤ 1000 h
(n, m, x... ≤ 48 hours, breaks in between at least 4 weeks)

Max. length of heating circuit at AC 230 V for automatic circuit-breakers with C characteristic					
Circuit breaker size	**PSBL 10**	**PSBL 15**	**PSBL 20**	**PSBL 25**	**PSBL 30**
10 A, start-up temperature +10 °C	118 m	104 m	79 m	60 m	45 m
10 A, start-up temperature -15 °C	90 m	69 m	49 m	39 m	24 m
10 A, start-up temperature -30 °C	77 m	56 m	40 m	30 m	16 m
16 A, start-up temperature +10 °C	154 m	139 m	110 m	83 m	-
16 A, start-up temperature -15 °C	136 m	89 m	71 m	56 m	-
16 A, start-up temperature -30 °C	118 m	78 m	58 m	47 m	-

Max. length of heating circuit at AC 120 V for automatic circuit-breakers with C characteristic					
Circuit breaker size	**PSBL 10**	**PSBL 15**	**PSBL 20**	**PSBL 25**	**PSBL 30**
10 A, start-up temperature +10 °C	49 m	43 m	33 m	25 m	-
10 A, start-up temperature -15 °C	45 m	35 m	25 m	20 m	-
10 A, start-up temperature -30 °C	39 m	28 m	20 m	15 m	-
16 A, start-up temperature +10 °C	77 m	58 m	46 m	35 m	-
16 A, start-up temperature -15 °C	68 m	45 m	36 m	28 m	-
16 A, start-up temperature -30 °C	59 m	39 m	29 m	24 m	-

Selection chart PSBL

Description	Protective jacket	Type	Order no.
PSBL parallel heating tape AC 254 V - self-limiting - Ⓜ media protected - tinned copper braiding	fluoropolymer	PSBL 10	**07-5807-2105**
		PSBL 15	**07-5807-2155**
		PSBL 20	**07-5807-2205**
		PSBL 25	**07-5807-2255**
		PSBL 30	**07-5807-2305**
	polyolefin	PSBL 10	**07-5807-2106**
		PSBL 15	**07-5807-2156**
		PSBL 20	**07-5807-2206**
		PSBL 25	**07-5807-2256**
		PSBL 30	**07-5807-2306**
PSBL parallel heating tape AC 120 V - self-limiting - Ⓜ media protected - tinned copper braiding	fluoropolymer	PSBL 10	**07-5807-1105**
		PSBL 15	**07-5807-1155**
		PSBL 20	**07-5807-1205**
		PSBL 25	**07-5807-1255**
	polyolefin	PSBL 10	**07-5807-1106**
		PSBL 15	**07-5807-1156**
		PSBL 20	**07-5807-1206**
		PSBL 25	**07-5807-1256**
PSBL parallel heating tape AC 254 V - self-limiting - Ⓔx explosion protected - tinned copper braiding - Ex marked	fluoropolymer	PSBL 10	**07-5807-2108**
		PSBL 15	**07-5807-2158**
		PSBL 20	**07-5807-2208**
		PSBL 25	**07-5807-2258**
		PSBL 30	**07-5807-2308**
	polyolefin	PSBL 10	**07-5807-2109**
		PSBL 15	**07-5807-2159**
		PSBL 20	**07-5807-2209**
		PSBL 25	**07-5807-2259**
		PSBL 30	**07-5807-2309**
PSBL parallel heating cable AC 120 V - self-limiting - Ⓔx explosion protected - tinned copper braiding - Ex marked	fluoropolymer	PSBL 10	**07-5807-1108**
		PSBL 15	**07-5807-1158**
		PSBL 20	**07-5807-1208**
		PSBL 25	**07-5807-1258**
	polyolefin	PSBL 10	**07-5807-1109**
		PSBL 15	**07-5807-1159**
		PSBL 20	**07-5807-1209**
		PSBL 25	**07-5807-1259**

03-0330-0471/C -09/2014-BEH-246903/4

Connection system PLEXO TCS

Features

- Cross-section of connection cable up to 4 mm²
- Operating temperature range from -60 °C to +180 °C
- Integrated strain relief; high electrical and mechanical safety
- Quick and easy installation, with standard tools
- System approval with BARTEC self-limiting heating tapes

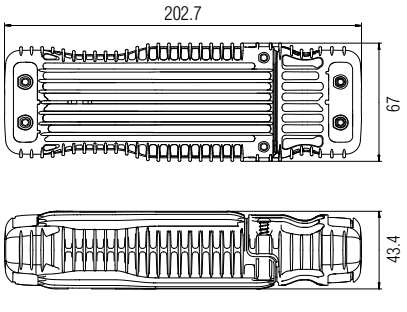
Description

The PLEXO TCS connection system can be used for BARTEC self-limiting heating tapes. This modular connection technology allows an easy and reliable assembly of supply connections, splicing and remote-end terminations. PLEXO TCS is plugged and built up with a patented sealing and clamping technology.

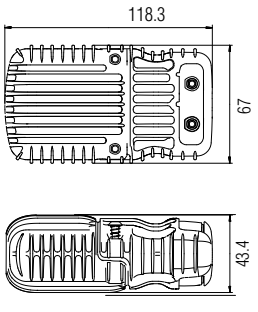
Maintenance work and later modifications on the heating circuit can be done quick and flexible.

The strands from the heating tape or the supply cable are fixed in place securely by spring-loaded terminals in the internal clamping technology.

Dimensions (in mm)
Type 27-59P1-*0100000 and 27-59P2-01100000



Dimensions (in mm)
Type 27-59P3-00100000



Explosion protection

Ex protection type

PLEXO TCS with heating tape

II 2G Ex e IIC T5 Gb

II 2D Ex tb IIIC T95 °C Db

Certification

PLEXO TCS with heating tape

BVS 13 ATEX E 040 X

IECEx BVS 13.0048X

TC RU C-DE.ГБ06.B.00230

PSBL-System

KEMA 08 ATEX 0112 X

IECEx KEM 09.0085X

TC RU C-DE.ГБ06.B.00230

Technical data

Rated voltage

max. 254 V

Rated current

max. 16 A

Protection class

EN 60079-0 IP 65

EN 60529 IP 66/IP 68

Operating temperature range

Ex application: -60 °C to +180 °C

Non Ex application: -60 °C to +200 °C

Rated cross-section of supply cable

max. 4 mm²

Minimum installation temperature

-55 °C

Sealing range supply cable

see type selection

Selection chart PLEXO TCS

Description		Order no.
PLEXO heating tape connection to supply cable		
with sealing range	$8 < D_A \leq 10$ mm	**27-59P1-1010**
	$10 < D_A \leq 12$ mm	**27-59P1-2010**
	$12 < D_A \leq 14$ mm	**27-59P1-3010**
	$14 < D_A \leq 16$ mm	**27-59P1-4010**
PLEXO heating tape splice with sealing range for PSBL		**27-59P2-0110**
PLEXO heating tape remote-end termination with sealing range for PSBL		**27-59P3-0010**

Selection chart Accessories

Description		Order no.
Connection cable Heat-resistant connection cable with silicone outer sheath (H05SS-F quality, EWKF outer sheath, -50 °C to +180 °C)		
Cross-section 3 x 1.5 mm²	D_A = 8.5 mm	**02-4034-0008**
Cross-section 3 x 2.5 mm²	D_A = 9.8 mm	**02-4034-0027**
Mounting bracket The PLEXO TCS can be mounted with the optional mounting bracket outside the thermal insulation.		**05-0105-0385**

Technical data subject to change without notice.

03-0330-0720-09/2014-BEH-348954/2

Junction box

for PLEXO TCS, heat shrink and cold-applied technology

Features

- Wide temperature range
- Can be combined with connection technology PLEXO, heat shrink and cold-applied technology
- Flame-retardant
- Impact-resistant
- System approval

Description

Inside the junction box up to three heating circuits can be connected to the supply voltage.

One cable gland with size M25 for the power cable is already assembled at the junction box. The enclosure is prepared with threads for heating tape glands with size M20.

Explosion protection

Ex protection type System

Ex II 2G Ex e IIC T5 Gb
Ex II 2D Ex tb IIIC T 95 °C Db

Certification System

KEMA 08 ATEX 0112 X
IECEx KEM 09.0085X
TC RU C-DE.ГБ06.B.00230

Technical data

Protection class according to EN 60529

seal of cover	IP 65
cable gland	IP 65

Ambient temperature
-55 °C up to + 55 °C

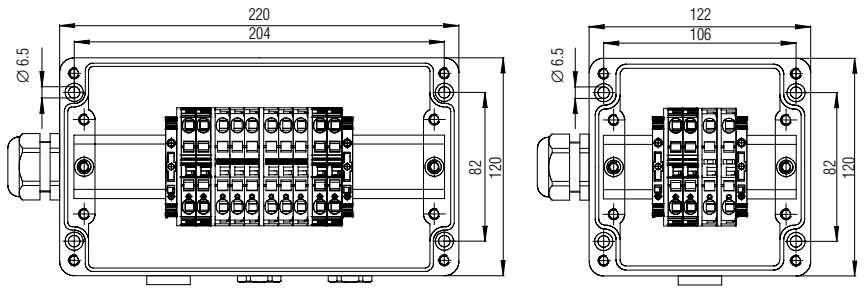
Dimensions
see selection chart

Material
Polyester, glass fibre reinforce

Voltage
AC 254 V

Circuit protection
Max. 16 A
(dependant on the heating circuit length)

Dimensions (polyester, aluminium)



Selection chart

Designation	Description		Dimensions (mm)	Terminals (mm²)	Order no.
Polyester	System 27-1580-..10/....	for 1 heating circuit	122 x 120 x 90	4 x 6; 4 x PE	**27-5452-42111210**
		for 2/3 heating circuits	220 x 120 x 90	12 x 6; 8 x PE	**27-5452-44311210**
Aluminium	System 27-1580-..10/....	for 1 heating circuit	122 x 120 x 90	4 x 6; 4 x PE	**27-5452-52111230**
		for 2/3 heating circuits	220 x 120 x 90	12 x 6; 8 x PE	**27-5452-54311230**
Stainless steel	System 27-1580-..10/....	for 1 heating circuit	150 x 150 x 100	4 x 6; 4 x PE	**27-5452-67111230**
		for 2/3 heating circuits	200 x 200 x 120	12 x 6; 8 x PE	**27-5452-68311230**

03-0330-0572/D-09/2014-BEH-301445

Cold-applied technology

explosion protected

media protected

Features

- Direct entry of a heating tape into the junction box
- Connection and termination in one set
- Space-saving solution
- Easy design and assembling with silicone cold-applied technology

Description

For direct connection of self-limiting heating tape PSBL (Order no. 07-5807-....) into the junction box the 2 supply leads are insulated with silicone glue and a silicone hose. A green yellow protection tube is pulled over the tinned copper braiding inside the insulation sheath.

The copper braiding and the metal cable gland with an extra lead are prepared to be connected to the protective earth. The end of the self-limiting heating tape is insulated with silicone glue and a silicone end cap.

Explosion protection

Ex protection type System

Ⓔx II 2G Ex e IIC T5 Gb
Ⓔx II 2D Ex tb IIIC T95 °C Db

Certification System

KEMA 08 ATEX 0112 X
IECEx KEM 09.0085X
TC RU C-DE.ГБ06.B.00230

Technical data

Ambient temperature range

-55 °C up to +55 °C

Max. operating temperature end cap

+85 °C

Electrical data

see PSBL data

10, 15, 20, 25, 30 W/m

Order no.

Installation kit explosion protected
set **05-0091-0131**
10 fold set **05-0091-0137**

Description

For direct connection of self-limiting heating tape PSBL (Order no. 07-5807-....) into the junction box the 2 supply leads are insulated by silicone glue and a silicone hose. A green-yellow protection tube is pulled over the tinned copper braiding inside the insulation sheath.

The copper braiding is prepared to be connected to the protective earth. The end of the self-limiting heating tape is insulated with silicone glue and a silicone end cap.

Technical data

Ambient temperature range

-40 °C up to +85 °C

Max. operating temperature end cap

+85 °C

Electrical data

see PSBL data

10, 15, 20, 25, 30 W/m

Order no.

Installation kit media protected
10 fold set **05-0091-0139**

Technical data subject to change without notice.

03-0330-0571/B-09/2014-BEH-301424

Heat shrink technology

explosion protected

media protected

Features

- Direct entry of a heating tape into an Ex e junction box
- Space-saving solution
- Easy installation

Description

Heat shrink technology is a reliable technology to connect heating tapes.

The principle is easy. After the preparation of the heating tape, insulation tubes are shrunk over the conductors and the twisted protective braiding and wire end sleeves are placed.

Basically, the heating tape is connected to terminals in an enclosure that has the protection type “increased safety“. The heating circuit end is also closed with shrinkable tubes.

Explosion protection

Ex protection type
Ⓔx II 2G Ex e IIC T5 Gb
Ⓔx II 2D Ex tb IIIC T95 °C Db

Certification System
KEMA 08 ATEX 0112 X
IECEx KEM 09.0085X
TC RU C-DE.ГБ06.B.00230

Technical data

Ambient temperature range
-30 °C up to +55 °C

Max. operating temperature end cap
+85 °C

Electrical data

see PSBL data
10, 15, 20, 25, 30 W/m

Order no.

Installation kit, explosion protected
05-0091-0198

Grounding strap with lock nut, required if metal glands are used in polyester junction boxes
05-0012-0082

Description

If the heating tape is directly connected to the enclosure terminals, the heating tape is first prepared and then insulation tubes are shrunk over the conductors as well as the twisted protective braiding. Afterwards ferrules are placed. The heating tape is connected directly to terminals in a junction box, IP 65 protection class.

As an alternative, the heating tape can be connected directly to a connection cable by means of a butt connector. The heating circuit end is closed in each case with a heat shrinkable end cap.

Technical data

Ambient temperature range
-30 °C up to +85 °C

Max. operating temperature end cap
+85 °C

Electrical data

see PSBL data
10, 15, 20, 25, 30 W/m

Order no.

Installation kit, media protected

Connection and termination (direct enclosure entry)
07-5807-0000/9910

Connection and termination (flexible with crimp connector)
07-5807-0000/9920

Connection heating tape - heating tape (with crimp connector)
07-5807-0000/9930

Heat resistant connection cable (GY H05GG-F, 3G, 2.5, 3 x 1.5 mm²)
02-4034-0009

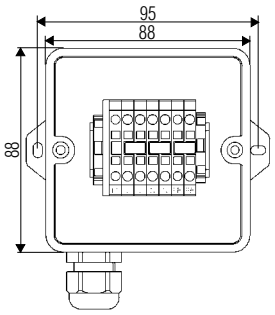
Technical data subject to change without notice.

Terminal box

Description

The terminal box is suitable for indoor as well as for protected outdoor installations.

Terminal box



Technical data

Dimensions
88 mm x 88 mm x 53 mm
(without external mounting parts)

Protection class
IP 65/EN 60529

Ambient temperature range
-25 °C up to +40 °C

Enclosure material
thermoplastic

Cable gland
1 x M20

Terminal blocks
7 x AKZ 2.5 mm²

Rated insulation voltage
AC 250 V

Order no.
05-0041-0195

Mini-thermostat

Description

This mini-thermostat is used both for monitoring the temperature outside the heating systems and also for regulating the temperature inside transmitter protection boxes or switch and control cabinets.

It can also be used for monitoring (indicating) temperatures that are too high or too low and it can serve as an alarm contact.

Technical data

Protection class
IP 66/EN 60529

Connection strands
2 x H07G-K 1.5 mm
0.5 m long

Enclosure material
Polyamide

Max. temperature at the site of utilisation
+70 °C

Minimum storage temperature
-20 °C

Electrical data

Switching capacity
AC 230 V/6 A

Contact element
N/C contact
(opens when temperature increases)

Tolerance for switching points
14 °C ± 5 K
4 °C ± 3 K
25 °C ± 3.5 K
15 °C ± 3.5 K

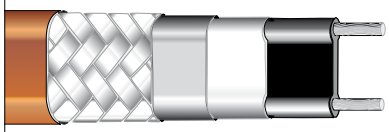
Selection chart

Temperature switching points	Code no.
+4 °C to +14 °C	7
+15 °C to +25 °C	8

Complete order no. 05-0060-008 ☐
Please enter correct code. Technical data subject to change without notice.

03-0330-0472/D-09/2014-BEH-246904

Heating tape PSB



Junction box

Installation kit

System overview PSB

Features

- Simple project planning of heating circuits
- Self-limiting, without overheating while overlapping
- Limiter is not required
- Easy installation due to on-site assembly
- Installation in commercial, industrial and Ex-area
- Certificate for the system according to IEC/EN 60079-30-1
- Junction boxes made of polyester, stainless steel and aluminium available
- Calculation and design-software - Free Download
- Direct entry in a junction box possible

Description

Typical applications are frost protection, temperature maintenance and heat-up in pipes, tanks, vessels or surfaces in non-ex areas and in explosive atmospheres for process industry. The electric trace heating system PSB is the perfect solution in Zone 1, 2, 21 and 22 as well as Class I, II and III Div 2.

The self-limiting heating tape PSB is available with various nominal power ratings from 10 W/m to 33 W/m. The standard outer insulation jacket is made of polyolefin. For special applications which require chemical resistance and mechanical strength a fluoropolymer insulation-jacket is optionally available.

Dependant on the start-up temperature respectively the start-up current and the supplied voltages a maximum heating circuit length of 200 m is possible.

03-0330-0473/E-09/2014-BEH-246950/1

Explosion protection

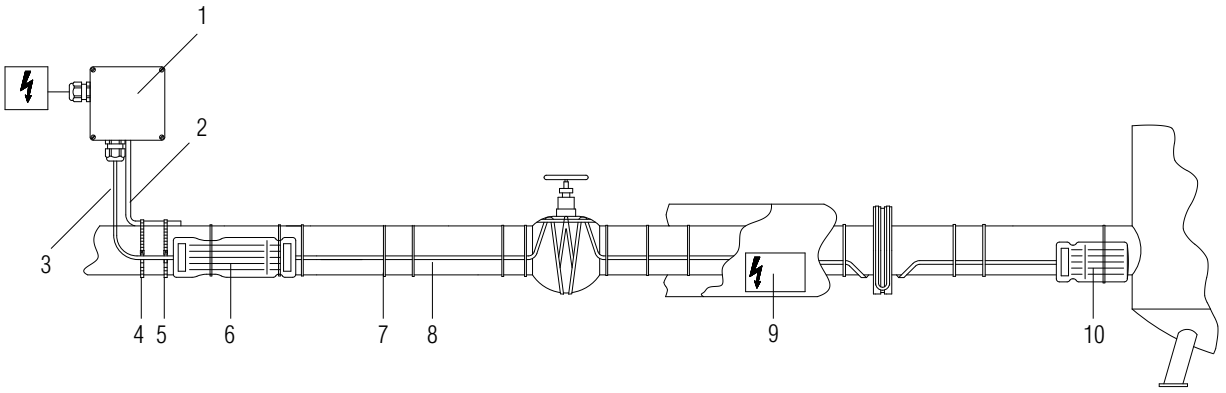
Certification

KEMA 08 ATEX 0111 X
IECEx KEM 09.0084X
TC RU C-DE.ГБ06.B.00230
CSA 1862457

System overview

- Self-limiting parallel heating tape PSB
- Heat shrink technology or silicone cold applied technology or pluggable system PLEXO TCS connection and termination
- Junction box made of polyester, stainless steel and aluminium
- Optional: mechanical or electronic thermostats or control systems

Application example PSB heating system



1 Junction box
2 Mounting bracket/Mounting plate
3 Connection cable for power supply
4 Fixing strap
5 Buckle for fixing strap
6 Connection PLEXO TCS
7 Self adhesive glass fibre fixing tape
8 Heating tape PSB
9 Caution label "Electrically Heated"
10 End termination PLEXO TCS

03-0330-0473/E-09/2014-BEH-246950/2

Features

- Self-limiting
- Can be used in explosive atmospheres without temperature limiter
- Can be cut at random length thanks to its parallel current supply
- Corrosion-proof and resistant to effects of chemicals thanks to its outer sheath
- Electrically and mechanically protected by a tinned copper braiding
- Simple installation thanks to its high flexibility and favourable dimensions

Self-limiting parallel heating tape PSB

1. Conductors: stranded copper wire 1.2 mm², tinned
2. Self-limiting, irradiated polymer heating element
3. Inner polyolefin electrical insulation jacket thermally fused to the heating element (bonded jacket)
4. Outer polyolefin electrical insulation jacket
5. Tinned copper braiding
6. Polyolefin or fluoropolymer protective jacket

Description

A temperature-dependant resistive element between two parallel copper conductors regulates and limits the heat output of the heating tape according to the ambient temperature. If the ambient temperature rises, the power output of the heating tape is reduced. This self-limiting property prevents overheating even when the tapes are crossed. A temperature limiter is not necessary (also not in hazardous areas).

Thanks to the parallel design the heating tape can be cut and installed to any required length. The self-limiting heating tape is available with different power outputs and protective jackets. The protective outer jacket of either fluoropolymer or polyolefin protects the copper braiding from corrosion and chemical impact.

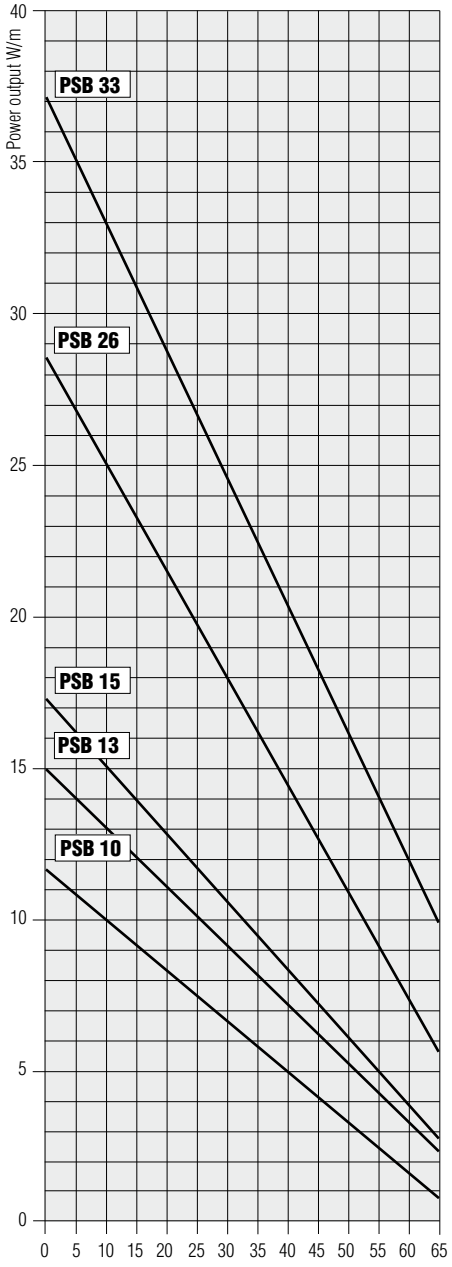
Two jackets under the protective braiding provide electrical insulation. The inner one of the two jackets is thermally fused to the heating element (bonded jacket).

The heating system must be designed to ensure that the maximum operating temperature of 65 °C will not be exceeded when it is energized.

When it is switched off, the heating tape can be exposed to a temperature of 85 °C, not more than 1,000 hours cumulated.

03-0330-0474/F-09/2014-BEH-246951/1

PSB characteristics



Power output on insulated steel pipes at **230 V** under nominal conditions.

Areas of application

The PSB heating tape is suitable for electric trace heating for frost protection of pipelines and vessels.

While the polyolefin protective jacket is used where there are aqueous, inorganic chemicals, the fluoropolymer outer jacket is suitable for organic chemicals.

For questions regarding the chemical resistance please contact your BARTEC sales representative.

Explosion protection

Ex protection type

Ⓔx II 2G Ex e IIC T5, T6 Gb
Ⓔx II 2D Ex tb IIIC T95 °C, T 80 °C Db

Certification

System

KEMA 08 ATEX 0111 X
IECEx KEM 09.0084X
TC RU C-DE.ГБ06.B.00230
CSA 1862457

Heating tape

KEMA 02 ATEX 2326 U
IECEx KEM 07.0047 U

03-0330-0474/F-09/2014-BEH-246951/2

Technical data

Nominal voltage AC 208 V to 254 V, AC 110 V to 120 V

Power setting at +10 °C					
Power output	**PSB 10**	**PSB 13**	**PSB 15**	**PSB 26**	**PSB 33**
at AC 230 V	10 W/m	13 W/m	15 W/m	25 W/m	33 W/m
at AC 120 V	10.6 W/m	13.7 W/m	15.8 W/m	25.8 W/m	33.6 W/m

Max. exposure temperature
switched on +65 °C
switched off +85 °C

Min. installation temperature -55 °C

Min. start-up temperature -40 °C

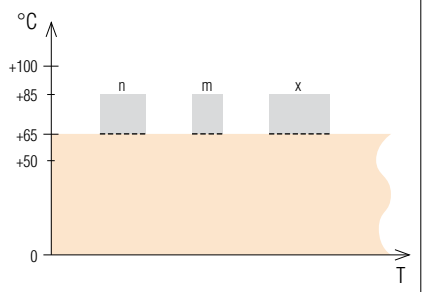
Max. braid resistance < 18.2 Ohm/km

Dimensions
with braiding and Fluoropolymer jacket 11.6 x 5.6 mm

with braiding and Polyolefin jacket 11.8 x 5.8 mm

Min. bending radius 25 mm

Maximum exposure temperature



Continuous operation, switched on heating tape
Period of time in switched-off state , n + m + x ... ≤ 1000 h
(n, m, x... ≤ 48 hours, breaks in between at least 4 weeks)

Max. length of heating circuit at 254 V (for automatic circuit-breakers with C characteristic)					
Circuit breaker size	**PSB 10**	**PSB 13**	**PSB 15**	**PSB 26**	**PSB 33**
16 A, start-up temperature +10 °C	205 m	169 m	145 m	88 m	70 m
16 A, start-up temperature -15 °C	139 m	111 m	93 m	58 m	49 m
16 A, start-up temperature -30 °C	120 m	94 m	77 m	45 m	43 m
20 A, start-up temperature +10 °C	205 m	179 m	162 m	117 m	90 m
20 A, start-up temperature -15 °C	186 m	149 m	125 m	75 m	64 m
20 A, start-up temperature -30 °C	150 m	124 m	106 m	64 m	52 m
25 A, start-up temperature +10 °C	205 m	179 m	162 m	120 m	98 m
25 A, start-up temperature -15 °C	190 m	160 m	142 m	95 m	80 m
25 A, start-up temperature -30 °C	170 m	150 m	135 m	82 m	65 m
32 A, start-up temperature +10 °C	205 m	179 m	162 m	126 m	108 m
32 A, start-up temperature -15 °C	195 m	174 m	160 m	117 m	95 m
32 A, start-up temperature -30 °C	195 m	174 m	160 m	100 m	82 m

Max. length of heating circuit at 120 V (for automatic circuit-breakers with C characteristic)					
Circuit breaker size	**PSB 10**	**PSB 13**	**PSB 15**	**PSB 26**	**PSB 33**
16 A, start-up temperature +10 °C	95 m	78 m	67 m	43 m	33 m
16 A, start-up temperature -15 °C	69 m	55 m	45 m	30 m	25 m
16 A, start-up temperature -30 °C	58 m	47 m	39 m	26 m	21 m
20 A, start-up temperature +10 °C	95 m	86 m	80 m	58 m	45 m
20 A, start-up temperature -15 °C	90 m	72 m	60 m	38 m	32 m
20 A, start-up temperature -30 °C	75 m	59 m	49 m	31 m	26 m
25 A, start-up temperature +10 °C	95 m	86 m	80 m	60 m	50 m
25 A, start-up temperature -15 °C	92 m	80 m	70 m	45 m	38 m
25 A, start-up temperature -30 °C	85 m	72 m	65 m	42 m	34 m
32 A, start-up temperature +10 °C	95 m	86 m	80 m	63 m	54 m
32 A, start-up temperature -15 °C	95 m	86 m	80 m	55 m	45 m
32 A, start-up temperature -30 °C	95 m	86 m	80 m	53 m	43 m

Selection chart PSB

Description	Protective jacket	Type	Order no.
PSB parallel heating tape AC 254 V - self-limiting - Ex explosion protected - Ⓜ media protected	Fluorpolymer	PSB 10	**07-5801-2105**
		PSB 13	**07-5801-2135**
		PSB 15	**07-5801-2155**
		PSB 26	**07-5801-2265**
		PSB 33	**07-5801-2335**
	Polyolefin	PSB 10	**07-5801-2106**
		PSB 13	**07-5801-2136**
		PSB 15	**07-5801-2156**
		PSB 26	**07-5801-2266**
		PSB 33	**07-5801-2336**
PSB parallel heating tape AC 120 V - self-limiting - Ex explosion protected - Ⓜ media protected	Fluorpolymer	PSB 10	**07-5801-1105**
		PSB 13	**07-5801-1135**
		PSB 15	**07-5801-1155**
		PSB 26	**07-5801-1265**
		PSB 33	**07-5801-1335**
	Polyolefin	PSB 10	**07-5801-1106**
		PSB 13	**07-5801-1136**
		PSB 15	**07-5801-1156**
		PSB 26	**07-5801-1266**
		PSB 33	**07-5801-1336**

Technical data subject to change without notice.

03-0330-0474/D-09/2014-BEH-246951/4

Connection system PLEXO TCS

Features

- Cross-section of connection cable up to 4 mm²
- Operating temperature range from -60 °C to +180 °C
- Integrated strain relief; high electrical and mechanical safety
- Quick and easy installation, with standard tools
- System approved with BARTEC self-limiting heating tapes

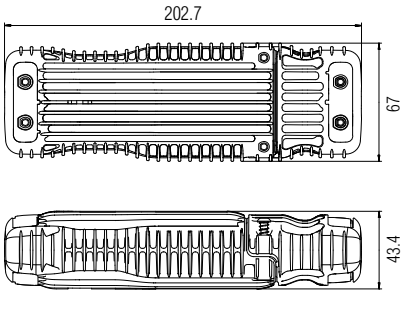
Description

The PLEXO TCS connection system can be used for BARTEC self-limiting heating tapes. This modular connection technology allows an easy and reliable assembly of supply connections, splicing and remote-end terminations. PLEXO TCS is plugged and built up with a patented sealing and clamping technology.

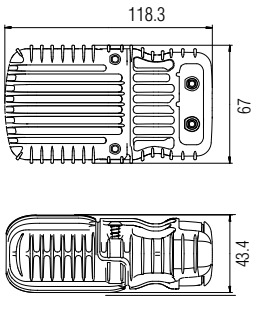
Maintenance work and later modifications on the heating circuit can be done quick and flexible.

The strands from the heating tapes or the supply cable are fixed in place securely by spring-loaded terminals in the internal clamping technology.

Dimensions (in mm)
Type 27-59P1-*0100000 and 27-59P2-01100000



Dimensions (in mm)
Type 27-59P3-00100000



Explosion protection

Ex protection type

PLEXO TCS with heating tape

II 2G Ex e IIC T5, T6 Gb

II 2D Ex tb IIIC T95 °C, T80 °C Db

Certification

PLEXO TCS with heating tape

BVS 13 ATEX E 040 X

IECEx BVS 13.0048X

TC RU C-DE.ГБ06.B.00230

PSB-System

KEMA 08 ATEX 0111 X

IECEx KEM 09.0084X

TC RU C-DE.ГБ06.B.00230

Technical data

Rated voltage

max. 254 V

Rated current

max. 32 A

Protection class

EN 60079-0 IP 65

EN 60529 IP 66/IP 68

Operating temperature range

Ex application: -60 °C to +180 °C

Non Ex application: -60 °C to +200 °C

Rated cross-section of supply cable

max. 4 mm²

Minimum installation temperature

-55 °C

Sealing range supply cable

see type selection

Selection chart PLEXO TCS

Description	Order no.
PLEXO heating tape connection to supply cable	
with sealing range $8 < D_A \leq 10$ mm	**27-59P1-1010**
$10 < D_A \leq 12$ mm	**27-59P1-2010**
$12 < D_A \leq 14$ mm	**27-59P1-3010**
$14 < D_A \leq 16$ mm	**27-59P1-4010**
PLEXO heating tape splice with sealing range for PSB	**27-59P2-0110**
PLEXO heating tape remote-end termination with sealing range for PSB	**27-59P3-0010**

Selection chart Accessories

Description	Order no.
Connection cable	
Heat-resistant connection cable with silicone outer sheath (H05SS-F quality, EWKF outer sheath, -50 °C to +180 °C)	
Cross-section 3 x 1.5 mm² D_A = 8.5 mm	**02-4034-0008**
Cross-section 3 x 2.5 mm² D_A = 9.8 mm	**02-4034-0027**
Mounting bracket The PLEXO TCS can be mounted with the optional mounting bracket outside the thermal insulation.	**05-0105-0385**

Technical data subject to change without notice.

03-0330-0720-09/2014-BEH-348954/2

Junction box

for PLEXO TCS, heat shrink and cold-applied technology

Features

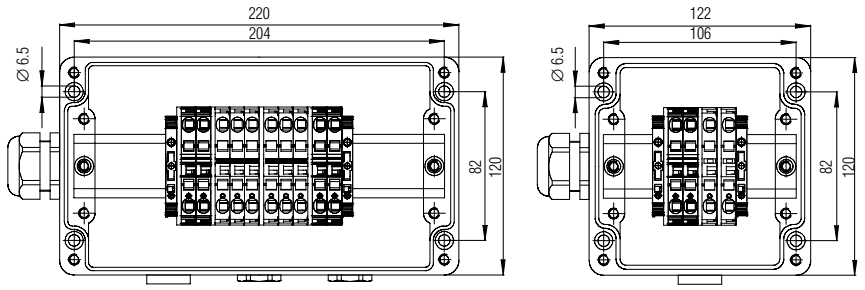
- Wide temperature range
- Can be combined with connection technology PLEXO, heat shrink and cold-applied technology
- Flame-retardant
- Impact-resistant
- System approval

Description

Inside the junction box up to three heating circuits can be connected to the supply voltage.

One cable gland size M25 for the power cable is already assembled at the junction box. The enclosure is prepared with threads for heating tape glands with size M20.

Dimensions (polyester, aluminum)



Explosion protection

Ex protection type
Ⓔx II 2G Ex e IIC T5, T6 Gb
Ⓔx II 2D Ex tb IIIC T95 °C, T80 °C Db

Certification System
KEMA 08 ATEX 0111 X
IECEx KEM 09.0084X
TC RU C-DE.ГБ06.B.00230
CSA 1862457*

* For further details please contact your BARTEC sales representative.

Technical data

Protection class according to EN 60529
seal of cover IP 65
cable gland IP 65

Ambient temperature
-55 °C to +55 °C

Dimensions
see selection chart

Material
Polyester, glass fibre reinforce

Voltage
AC 254 V

Circuit protection
max. 32 A
(dependant on the heating circuit length)

Selection chart

Designation	Description		Dimensions (mm)	Terminals (mm²)	Order no.
Polyester	System 27-1680-..10/....	for 1 heating circuit	122 x 120 x 90	4 x 6; 4 x PE	**27-5452-42111210**
		for 2/3 heating circuits	220 x 120 x 90	12 x 6; 8 x PE	**27-5452-44311210**
Aluminium	System 27-1680-..10/....	for 1 heating circuit	122 x 120 x 90	4 x 6; 4 x PE	**27-5452-52111230**
		for 2/3 heating circuits	220 x 120 x 90	12 x 6; 8 x PE	**27-5452-54311230**
High quality stainless steel	System 27-1680-..10/....	for 1 heating circuit	150 x 150 x 100	4 x 6; 4 x PE	**27-5452-67111230**
		for 2/3 heating circuits	200 x 200 x 120	12 x 6; 8 x PE	**27-5452-68311230**

03-0330-0574/D-09/2014-BEH-301553

Cold-applied technology

explosion protected

media protected

Features

- Direct entry of a heating tape into the junction box
- Connection and termination in one set
- Space-saving and economic solution
- Easy design and assembling with silicone cold applied technology

Description

For direct connection of self-limiting heating tape PSB (Order no. 07-5801-...) into the junction box the 2 supply leads are insulated with silicone glue and a silicone hose. A green yellow protection tube is pulled over the tinned copper braiding inside the insulation sheath.

The copper braiding and the metal cable gland with an extra lead are prepared to be connected to the protective earth. The end of the self-limiting heating tape is insulated with silicone glue and a silicone end cap.

Explosion protection

Ex protection type
Ⓔx II 2G Ex e IIC T5, T6 Gb
Ⓔx II 2D Ex tb IIIC T95 °C, T80 °C Db

Certification System
KEMA 08 ATEX 0111 X
IECEx KEM 09.0084X
TC RU C-DE.ГБ06.B.00230
CSA 1862457*

* For further details please contact your BARTEC sales representative.

Technical data

Ambient temperature range
-55 °C up to +55 °C

Max. operating temperature end cap
+85 °C

Electrical data

see PSB data
10, 13, 15, 26, 33 W/m

Order no.

Installation kit explosion protected
set **05-0091-0130**
10-fold set **05-0091-0136**

Description

For direct connection of self-limiting heating tape PSB (Order no. 07-5801-...) into the junction box the 2 supply leads are insulated by silicone glue and a silicone hose. A green yellow protection tube is pulled over the tinned copper braiding inside the insulation sheath.

The copper braiding is prepared to be connected to the protective earth. The end of the self-limiting heating tape is insulated with silicone glue and a silicone end cap.

Technical data

Ambient temperature range
-40 °C up to +85 °C

Max. operating temperature end cap
+85 °C

Electrical data

see PSB data
10, 13, 15, 26, 33 W/m

Order no.

Installation kit media protected
10-fold set **05-0091-0140**

Technical data subject to change without notice.

03-0330-0573/C-09/2014-BEH-301552

Heat shrink technology

explosion protected

media protected

Features

- Direct insertion of a heating tape into an Ex e junction box
- Space-saving solution
- Easy Installation

Description

Heat shrink technology is a reliable technology to connect heating tapes to the power supply.

The principle is easy. After the preparation of the heating tape, insulation tubes are shrunk over the conductors and the twisted protective braiding and ferules are placed. Basically, the heating tape is connected to terminals in an enclosure that has the protection type "increased safety". The heating circuit end is also closed with shrinkable tubes.

Explosion protection

Ex protection type
Ⓔx II 2G Ex e IIC T5, T6 Gb
Ⓔx II 2D Ex tb IIIC T95 °C, T80 °C Db

Certification System
KEMA 08 ATEX 0111 X
IECEx KEM 09.0084X
TC RU C-DE.ГБ06.B.00230

Technical data

Ambient temperature range
-40 °C up to +55 °C

Max. operating temperature end cap
+85 °C

Electrical data

see PSB data
10, 13, 15, 26, 33 W/m

Order no.

Installation kit, explosion protected
05-0091-0097

Grounding strap with lock nut, required if metal glands are used in polyester junction boxes
05-0012-0082

Description

If the heating tape is directly connected, to the enclosure terminals, the heating tape is first prepared and then insulation tubes are shrunk over the conductors as well as the twisted protective braiding. Afterwards ferrules are placed. The heating tape is connected directly to terminals in a junction box, IP 65 protection class.

As an alternative, the heating tape can be connected directly to a connection cable by means of a butt connector. The heating circuit end is closed in each case with a heat shrinkable end cap.

Technical data

Ambient temperature range
-20 °C up to +85 °C

Max. operating temperature end cap
+85 °C

Electrical data

see PSB data
10, 13, 15, 26, 33 W/m

Order no.

Installation kit, media protected
Connection and termination (direct enclosure entry)
07-5801-0000/9840

Connection and termination (flexible with crimp connector)
07-5801-0000/9810

Connection heating tape - heating tape (with crimp connector)
07-5801-0000/9560

Technical data subject to change without notice.

Connection technology TWISTO-B

Features

- Cost savings because of the reduced assembly time
- High reliability of assembly because of few and simple installation steps

Description

Simpler and safer to use, yet at the same time faster and thus cheaper, is how the major benefits of the TWISTO-B can be described. This method of connection is for use with BARTEC PSB heating tapes of series 07-5801-2....

All that is needed to assemble a heating circuit is a knife and diagonal cutter. This dispenses with the time-consuming work of exposing the two conductors, the laborious splicing and twisting of the protective braiding and then connecting to a terminal. Just a piece of the outer protective jacket is removed, a clamping sheet is fitted over a part of the exposed braiding, the remaining part is pulled back over the clamping sheet.

The heating tape is then inserted into the clamp cutting fixture and by twisting together the two outer sleeves (one sleeve comes ready prepared with a 2 m long supply cable), the heating tape is contacted in the clamp cutting fixture. The end terminal consists of just one part, whereby the end of the heating tape is shortened and inserted into the terminal piece.

Technical data

Nominal voltage
AC 250 V

Nominal current
16 A

Ambient temperature range
-20 °C to +85 °C

Protection class
IP 66

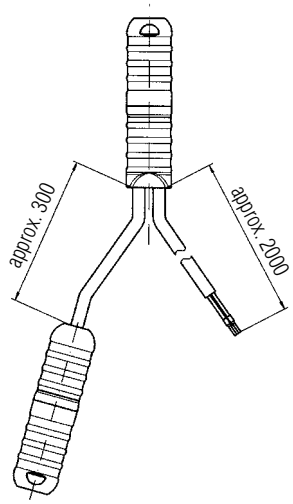
Dimensions
Connection to supply cable/tape connection
Diameter 33 x 125 (135) mm
End termination 23 x 20 x 37.5 mm

Connection
with 2 m ready-prepared
silicone connector cable (3 x 1.5 mm²)

03-0330-0477/C-09/2014-BEH-246954/1

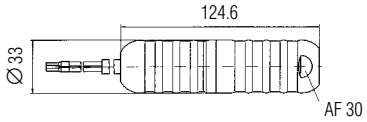
Dimensions (mm)

TWISTO B-TE2

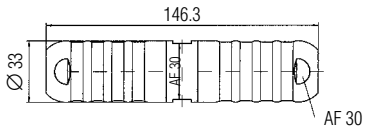


Dimensions (mm)

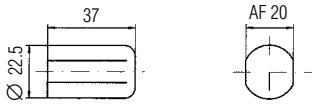
TWISTO B-A



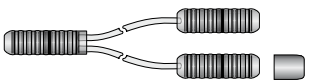
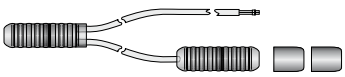
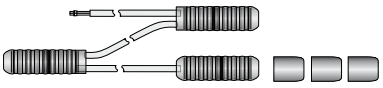
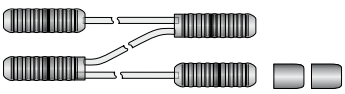
TWISTO B-C



TWISTO B-E



Selection chart

Connection technology	Description	Short form title	Order no.
	Connection to supply cable and end termination **as set**	**TWISTO-B-S**	**27-56KK-DC22 0000**
	Connection to supply cable	**TWISTO-B-A**	**27-56KG-DC22 0000**
	End termination	**TWISTO-B-E**	**27-56KJ-DC00 0000**
	Heating tape connection	**TWISTO-B-C**	**27-56KH-DC00 0000**
	T-branch for 3 x heating tape 1 I/O	**TWISTO-B-T**	**27-56KL-DC00 0000**
	T-branch with power connection and 2 x heating tape 2 I/O	**TWISTO-B-TE2**	**27-56KM-DC22 0000**
	T-branch with power connection and 3 x heating tape 3 I/O	**TWISTO-B-TE3**	**27-56KN-DC22 0000**
	X-branch for 4 x heating tape 2 I/O	**TWISTO-B-X**	**27-56KP-DC00 0000**

Technical data subject to change without notice.

03-0330-0477/B-09/2014-BEH-246954/2

Junction boxes for connection system TWISTO-B

Description

Up to three heating circuits can be connected to the supply voltage with the polyester junction boxes.

The enclosures have the appropriate number of terminals and the necessary cable glands resp. the threaded holes.

Aluminium junction boxes are available on request.

Technical data

Protection class according to EN 60529
Cover gasket IP 65

Cable gland IP 67
for power supply cables

Supply voltage
max. AC 254 V

Rated cross-section of supply cable
see selection chart

Impact resistance
7 Joule

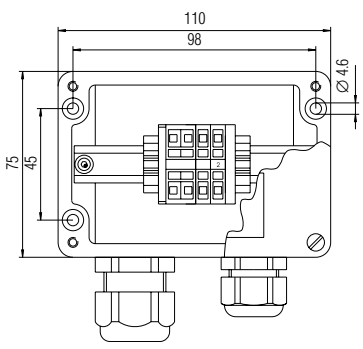
Material
polyester, glass-fibre reinforced

Gland size cable diameter
M20 ∅ 6 to 13 mm
M25 ∅ 7 to 12/17 mm

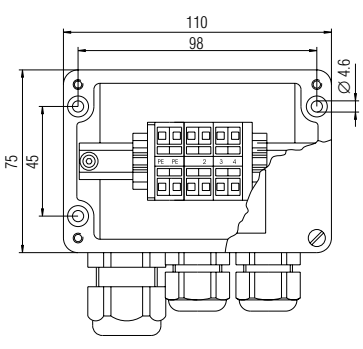
Selection chart

Used for connection system	Junction box	Dimensions mm	Cable gland		Terminals mm²	Order no.
			for power supply	for heating circuit		
TWISTO-B	single	110 x 75 x 55	1 x M25 (∅ 7 to 17 mm)	1 x M20	4 x 2.5; 4 x PE	**07-5177-9021**
	double	110 x 75 x 55	1 x M25 (∅ 7 to 17 mm)	2 x M20	8 x 2.5; 4 x PE	**07-5177-9022**
	triple	122 x 120 x 90	1 x M25 (∅ 7 to 17 mm)	3 x M20	12 x 6; 6 x PE	**07-5177-9023**

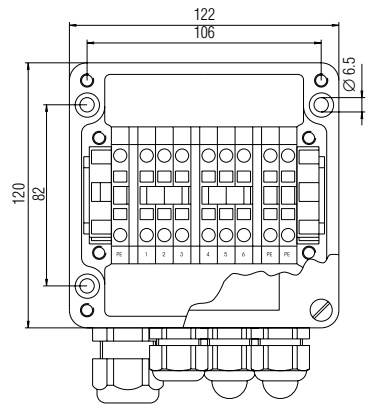
Junction box single



Junction box double



Junction box triple



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Junction boxes

for heat shrink and cold-applied technology

Description

Up to three heating circuits can be connected to the supply voltage with the polyester junction boxes.

The enclosures have the appropriate number of terminals and the necessary cable glands resp. the threaded holes.

Aluminium junction boxes are available on request.

Technical data

Protection class according to EN 60529
Cover gasket IP 65

Cable gland IP 67
for power supply cables

Supply voltage
max. 254 V

Rated cross-section of supply cable
see selection chart

Impact resistance
7 Joule

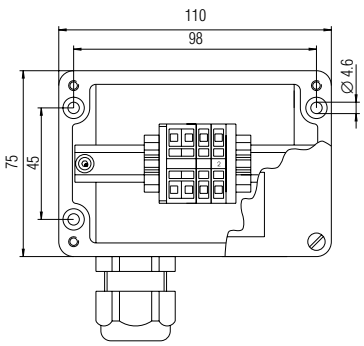
Material
polyester, glass-fibre reinforced

Gland size cable diameter
M 20 ∅ 10 to 14 mm

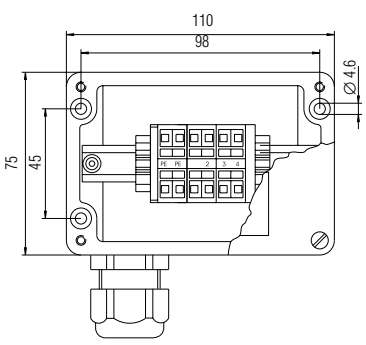
Selection chart

Used for connection system	Junction box	Dimensions mm	Cable gland for power supply	Threaded hole for heating circuit	Terminals mm²	Order no.
Heat shrink or cold-applied technology	single	110 x 75 x 55	1 x M20 (∅ 10 to 14 mm)	1 x M20	4 x 2.5; 4 x PE	07-5177-9024
	double	110 x 75 x 55	1 x M20 (∅ 10 to 14 mm)	2 x M20	8 x 2.5; 4 x PE	07-5177-9025
	triple	122 x 120 x 90	1 x M20 (∅ 10 to 14 mm)	3 x M20	12 x 6; 6 x PE	07-5177-9026

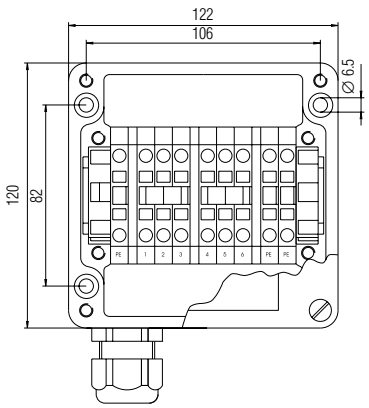
Junction box single



Junction box double

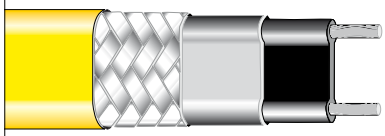


Junction box triple



BARTEC

Heating tape MSB



Junction box

Installation kit

System overview MSB

Features

- Simple project planning of heating circuits
- Easy installation due to on-site assembly
- Installation also in Ex-area, maximum admissible work-piece temperatures of +110 °C (switched-on) and +130 °C (switched-off)
- Certificate for the system according to IEC/EN 60079-30-1
- Junction boxes made of polyester, stainless steel and aluminium available
- Calculation and design-software - Free Download
- Direct entry in a junction box possible

Description

Typical applications are frost protection, temperature maintenance and heat-up in pipes, tanks, vessels or surfaces in Zone 1,2 and 21, 22.

The self-limiting parallel heating tape MSB is available with various nominal power ratings at 10 °C of 10 W/m to 40 W/m. The outer cover is made of thermoplastic elastomer (TPC) default for areas with special requirements to chemical resistance and mechanical strength.

Dependant on the start-up temperature respectively the start-up current and the supplied voltages a maximum heating circuit length of 235 m is possible.

Explosion protection

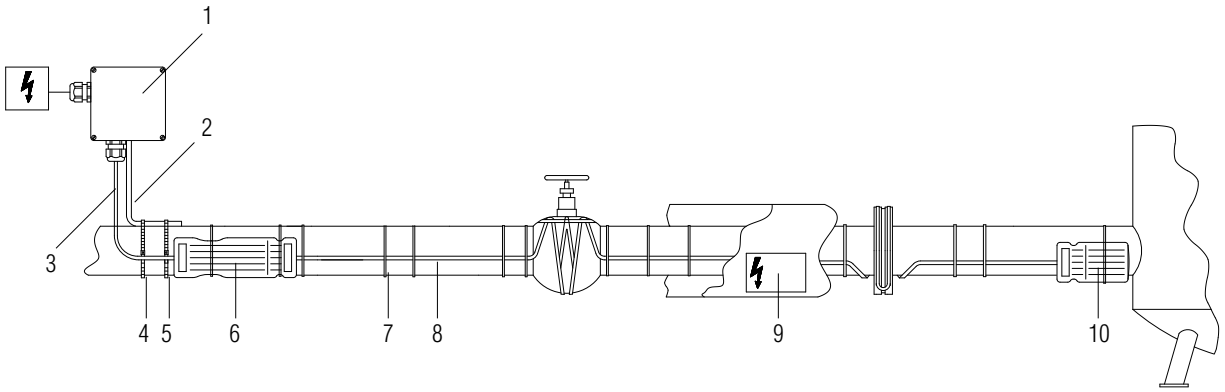
Certification

KEMA 08 ATEX 0110 X
IECEx KEM 09.0083X
TC RU C-DE.ГБ06.B.00230

System overview

- Self-limiting parallel heating tape MSB
- Silicone cold applied technology or pluggable system PLEXO TCS connection and termination
- Junction box made of polyester, stainless steel and aluminium
- Optional: mechanical or electronic thermostats or control systems

Application example MSB heating system



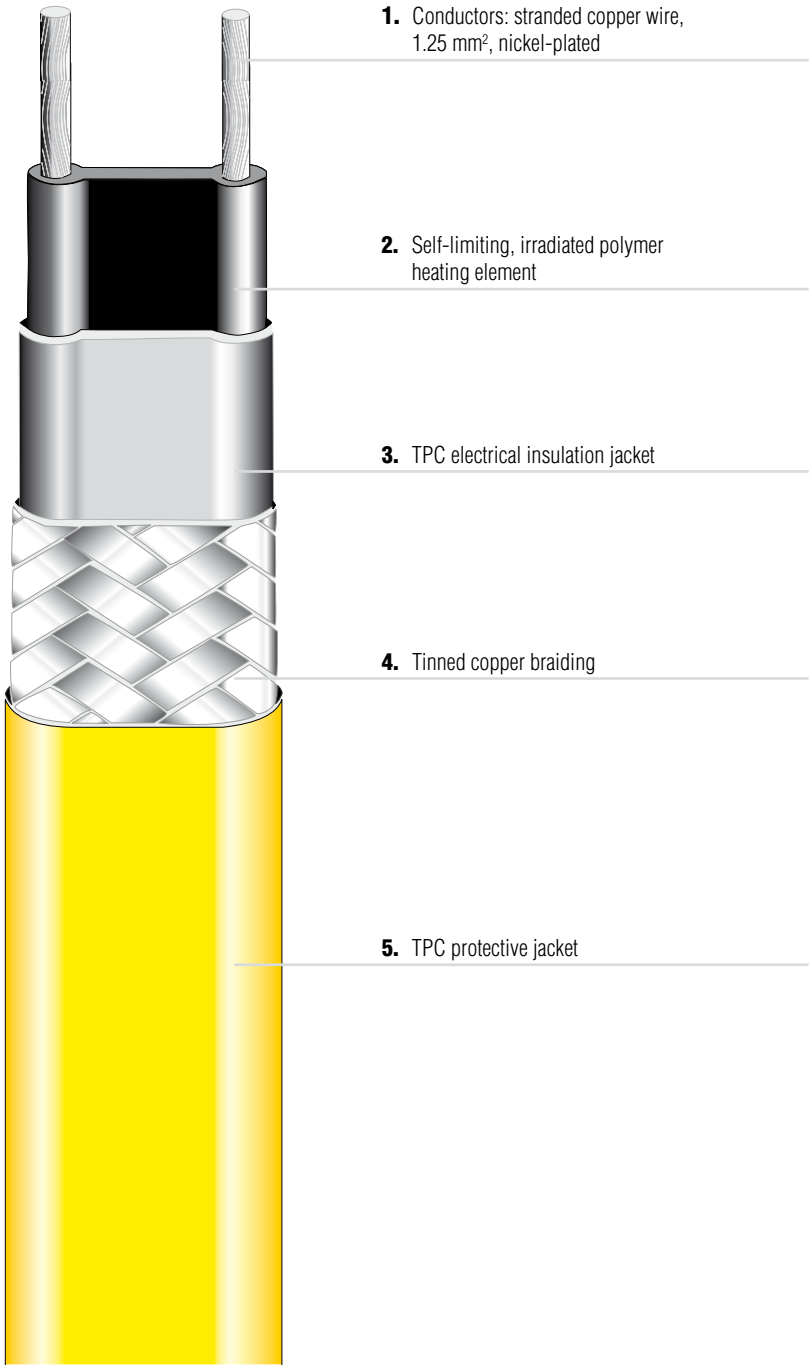
1 Junction box
2 Mounting bracket/Mounting plate
3 Connection cable for power supply
4 Fixing strap
5 Buckle for fixing strap
6 PLEXO TCS connection
7 Self adhesive glass fibre fixing tape
8 Heating tape MSB
9 Caution label "Electrically Heated"
10 PLEXO TCS end termination

03-0330-0742-09/2014-BEH-353454/2

Features

- Self-limiting
- Can be used in temperature class T4 in Ex area
- Can be cut to length at random thanks to its parallel current supply
- Resistant to chemical influences thanks to its protective TPC outer jacket
- Simple installation thanks to its high flexibility and small dimensions

Self-limiting parallel heating tape MSB TPC



Description

A temperature-dependant resistive element between two parallel copper conductors regulates and limits the heat output of the heating tape. This output regulation is carried out automatically along the entire length of the heating tape according to the prevailing ambient temperature. If the ambient temperature rises, the power output of the tape is reduced.

Thanks to the parallel design the heating tape can be cut to any required length. This feature considerably simplifies project planning and installation. The heating tape is cut and terminated directly on the construction site according to the circumstances. If the tape will be damaged, it is not necessary to replace the whole tape.

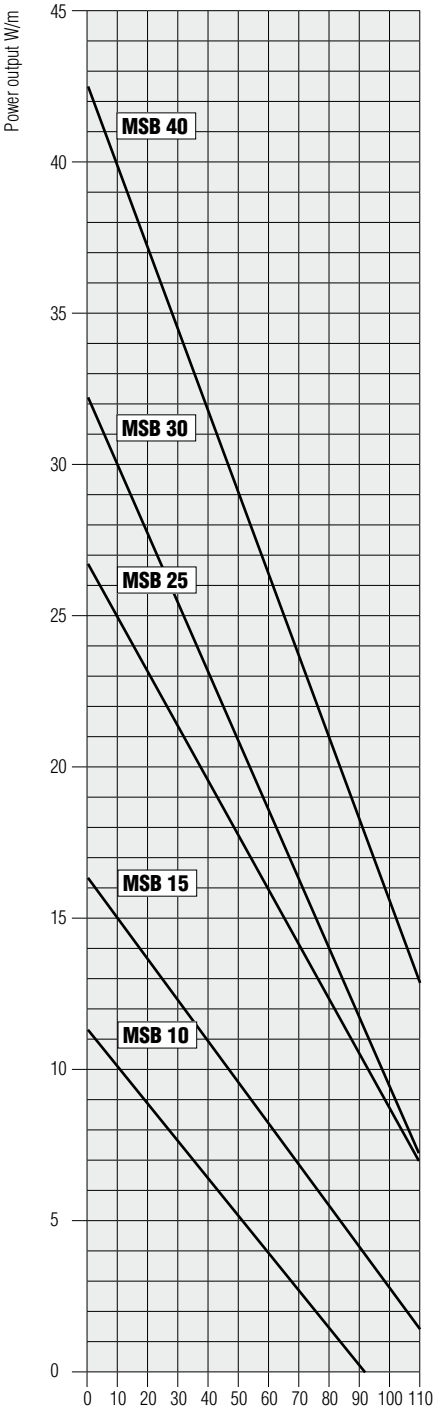
BARTEC MSB is available with different power outputs.

The heating system must be designed to ensure that the maximum operating temperature of +110 °C will not be exceeded when it is energized.

When it is switched off, the heating tape can be exposed to a temperature of 130 °C, not more than 1,000 hours cumulated.

03-0330-0686-09/2014-BEH-321815/1

MSB characteristics



Power output on insulated steel pipes at **230 V** under nominal conditions.

Areas of application

The MSB heating tape is suitable for electric trace heating in the industrial area and can be exposed to a temperature of up to 130 °C (switched off).

With the halogen-free outer jacket, the heating tape is resistant to oil, greases and most chemicals.

For questions regarding the chemical resistance please contact your BARTEC sales representative.

Explosionsschutz

Ex protection type

Ⓔx II 2G Ex e IIC T150 °C (T3), T4 Gb
Ⓔx II 2D Ex tb IIIC T150 °C, T130 °C Db

Certification

System
KEMA 08 ATEX 0110 X
IECEx KEM 09.0083X

Heating tape
DEKRA 12 ATEX 0044 U
IECEx DEK 12.0004 U

03-0330-0686-09/2014-BEH-321815/2

Technical data

Nominal voltage AC 208 V up to 254 V

Power setting at +10 °C					
Power output	**MSB 10**	**MSB 15**	**MSB 25**	**MSB 30**	**MSB 40**
at AC 230 V	10 W/m	15 W/m	25 W/m	30 W/m	40 W/m

Permissible ambient temperature for T class

Nominal voltage	**Heating cable**	**Maximum work-piece temperature**	**T class**
at AC 254 V	all	+110 °C	150 °C (T3)
	MSB 10	+100 °C	T4
	MSB 15	+90 °C	T4
	MSB 25	+80 °C	T4
	MSB 30	+70 °C	T4
	MSB 40	+60 °C	T4

Max. exposure temperature
switched on +110 °C
switched off +130 °C

Min. installation temperature -40 °C

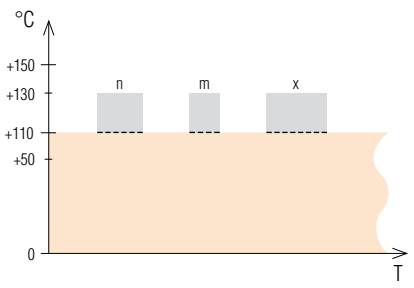
Min. start-up temperature -50 °C

Max. braid resistance < 18.2 Ω/km

Dimensions
with braiding and
TPC jacket 10.2 mm x 4.8 mm

Min. bending radius 25 mm

Maximum exposure temperature



Continuous operation, switched on heating tape
Period of time in switched-off state , n + m + x ... ≤ 1000 h
(n, m, x... ≤ 48 hours, breaks in between at least 4 weeks)

Max. length of heating circuit at ≤ 254 V (for automatic circuit-breakers with C characteristic)					
Circuit breaker size	**MSB 10**	**MSB 15**	**MSB 25**	**MSB 30**	**MSB 40**
16 A, start-up temperature +10 °C	200 m	165 m	120 m	85 m	70 m
16 A, start-up temperature -25 °C	175 m	117 m	88 m	69 m	49 m
16 A, start-up temperature -50 °C	165 m	110 m	80 m	65 m	45 m
20 A, start-up temperature +10 °C	235 m	189 m	140 m	114 m	82 m
20 A, start-up temperature -25 °C	235 m	152 m	120 m	92 m	66 m
20 A, start-up temperature -50 °C	225 m	144 m	114 m	86 m	62 m
32 A, start-up temperature +10 °C	235 m	189 m	140 m	114 m	82 m
32 A, start-up temperature -25 °C	235 m	189 m	140 m	114 m	82 m
32 A, start-up temperature -50 °C	235 m	189 m	136 m	110 m	78 m

Selection chart MSB TPC

Description	Type	Heating output	Code no.
MSB parallel heating tape AC 254 V - self-limiting - Ex explosion protected - Ⓜ media protected	MSB 10	10 W/m	**10**
	MSB 15	15 W/m	**15**
	MSB 25	25 W/m	**25**
	MSB 30	30 W/m	**30**
	MSB 40	40 W/m	**40**

Complete order no. 07-5804-2 ☐☐ Y

Please enter correct code. Technical data subject to change without notice.

03-0330-0686-09/2014-BEH-321815/4

Connection system PLEXO TCS

Features

- Cross-section of connection cable up to 4 mm²
- Operating temperature range from -60 °C to +180 °C
- Integrated strain relief; high electrical and mechanical safety
- Quick and easy installation, with standard tools
- System approval with BARTEC self-limiting heating tapes

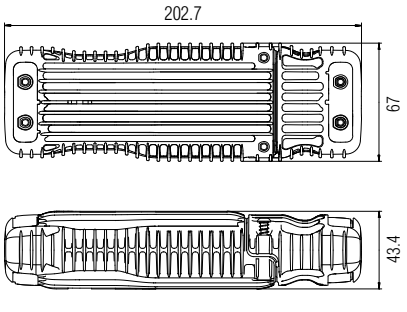
Description

The PLEXO TCS connection system can be used for BARTEC self-limiting heating tapes. This modular connection technology allows an easy and reliable assembly of supply connections, splicing and remote-end terminations. PLEXO TCS is plugged and built up with a patented sealing and clamping technology.

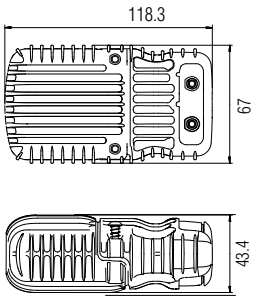
Maintenance work and later modifications on the heating circuit can be done quick and flexible.

The strands from the heating tapes or the supply cable are fixed in place securely by spring-loaded terminals in the internal clamping technology.

Dimensions (in mm)
Type 27-59P1-*0100000 and Type 27-59P2-01100000



Dimensions (in mm)
Type 27-59P3-00100000



Explosion protection

Ex protection type

PLEXO TCS with heating tape

Ⓔx II 2G Ex e IIC T150 °C (T3), T4 Gb

Ⓔx II 2D Ex tb IIIC T150 °C, T130 °C Db

Certification

PLEXO TCS with heating tape

BVS 13 ATEX E 040 X

IECEx BVS 13.0048X

TC RU C-DE.ГБ06.B.00230

MSB-System

KEMA 08 ATEX 0110 X

IECEx KEM 09.0083X

TC RU C-DE.ГБ06.B.00230

Technical data

Rated voltage

max. 254 V

Rated current

max. 32 A

Protection class

EN 60079-0 IP 65

EN 60529 IP 66/IP 68

Operating temperature range

Ex application: -60 °C to +180 °C

Non Ex application: -60 °C to +200 °C

Rated cross-section of supply cable

max. 4 mm²

Minimum installation temperature

-40 °C

Sealing range supply cable

see type selection

Selection chart PLEXO TCS

Description	Order no.
PLEXO heating tape connection to supply cable	
with sealing range $8 < D_A \leq 10$ mm	**27-59P1-1010**
$10 < D_A \leq 12$ mm	**27-59P1-2010**
$12 < D_A \leq 14$ mm	**27-59P1-3010**
$14 < D_A \leq 16$ mm	**27-59P1-4010**
PLEXO heating tape splice with sealing range for MSB	**27-59P2-0110**
PLEXO heating tape remote-end termination with sealing range for MSB	**27-59P3-0010**

Selection chart Accessories

Description	Order no.
Connection cable	
Heat-resistant connection cable with silicone outer sheath (H05SS-F quality, EWKF outer sheath, -50 °C to +180 °C)	
Cross-section 3 x 1.5 mm² D_A = 8.5 mm	**02-4034-0008**
Cross-section 3 x 2.5 mm² D_A = 9.8 mm	**02-4034-0027**
Mounting bracket The PLEXO TCS can be mounted with the optional mounting bracket thermal outside the insulation.	**05-0105-0385**

Technical data subject to change without notice.

03-0330-0720-09/2014-BEH-348954/2

Junction box

for PLEXO TCS and cold-applied technology

Features

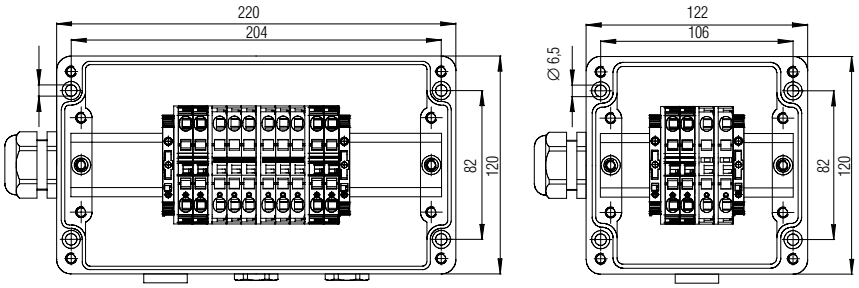
- Wide temperature range
- Combined with PLEXO connection system and cold-applied technology
- Flame-retardant
- Impact-resistant
- System approval

Description

Inside the junction box up to three heating circuits can be connected to the supply voltage.

One cable gland size M25 for the power cable is already assembled at the junction box. The enclosure is prepared with threads for heating cable glands with size M20.

Dimensions (polyester, aluminum)



Explosion protection

Ex protection type

Ex II 2G Ex e IIC T150 °C (T3), T4 Gb
Ex II 2D Ex tb IIIC T150 °C, T130 °C Db

Certification System

KEMA 08 ATEX 0110 X
IECEx KEM 09.0083X
TC RU C-DE.ГБ06.B.00230

Technical data

Protection class according to EN 60529

Seal of cover	IP 65
Cable gland	IP 65

Ambient condition

-55 °C up to + 55 °C

Dimensions

see selection chart

Material

Polyester, glass fibre reinforce

Nominal voltage

AC 254 V

Circuit protection

Max. 32 A
(dependant on the heating circuit length)

Selection chart

Designation	Description		Dimensions (mm)	Terminals (mm²)	Order no.
Polyester	System 27-1780-..10/....	for 1 heating circuit	122 x 120 x 90	4 x 6; 4 x PE	**27-5452-42111210**
		for 2/3 heating circuits	220 x 120 x 90	12 x 6; 8 x PE	**27-5452-44311210**
Aluminium	System 27-1780-..10/....	for 1 heating circuit	122 x 120 x 90	4 x 6; 4 x PE	**27-5452-52111230**
		for 2/3 heating circuits	220 x 120 x 90	12 x 6; 8 x PE	**27-5452-54311230**
High quality stainless steel	System 27-1780-..10/....	for 1 heating circuit	150 x 150 x 100	4 x 6; 4 x PE	**27-5452-67111230**
		for 2/3 heating circuits	200 x 200 x 120	12 x 6; 8 x PE	**27-5452-68311230**

Technical data subject to change without notice.

03-0330-0683-09/2014-BEH-321339

Cold-applied technology

Features

- Direct entry of a heating tape into the junction box
- Connection and termination in one set
- Space-saving and economic solution
- Easy design and assembling with silicone cold-applied technology

Description

For direct connection of self-limiting heating tape MSB (Order no. 07-5804-2..Y) into the junction box the 2 supply leads are insulated with silicone glue and a silicone hose.

A green yellow protection tube is pulled over the tinned copper braiding inside the insulation sheath. The copper braiding and the metal cable gland with an extra lead are prepared to be connected to the protective earth. The end of the self-limiting heating tape is insulated with silicone glue and silicone end cap.

Explosion protection

Ex protection type

Ⓔx II 2G Ex e IIC T150 °C (T3), T4 Gb
Ⓔx II 2D Ex tb IIIC T150 °C, T130 °C Db

Certification System

KEMA 08 ATEX 0110 X
IECEx KEM 09.0083X
TC RU C-DE.ГБ06.B.00230

Technical data

Ambient temperature range

-40 °C up to +55 °C

Max. operating temperature end cap

+130 °C

Electrical data

see MSB data

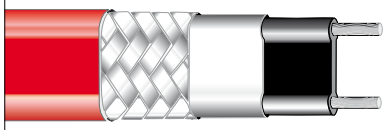
10, 15, 25, 30, 40 W/m

Selection chart

Designation	Description		Order no.
Installation kit	Connection and termination (direct enclosure entry)	set	05-0091-0129
		10-fold set	05-0091-0135
	Connection	10-fold set	05-0091-013501
	End terminal	10-fold set	05-0091-013502
	Connection	50-fold set	05-0091-013503
	End terminal	50-fold set	05-0091-013504

Technical data subject to change without notice.

Heating tape HSB



Junction box

Installation kit

System overview HSB

Features

- Simple project planning of heating circuits
- Self-limiting, without overheating while overlapping
- Limiter is not required
- Easy installation due to on-site assembly
- Installation also in Ex-area, maximum admissible work-piece temperatures of +120 °C (switched-on) and +200 °C (switched-off)
- Certificate for the system according to IEC/EN 60079-30-1 and CSA C22.2 No.130-03
- Junction boxes made of polyester, stainless steel and aluminium available
- Calculation and design-software - Free Download
- Direct entry in a junction box possible

Description

Typical applications are frost protection, temperature maintenance and heat-up in pipes, tanks, vessels or surfaces. The electric trace heating system HSB offers the optimum solution for Zone 1, 2, 21 and 22 as well as Class I Div 2, Class II and III.

The self-limiting heating tape HSB is available with various nominal power ratings from 10 W/m to 60 W/m at 10 °C. The outer insulation jacket is made of fluoropolymer for special applications which require chemical resistance and mechanical strength.

Dependant on the start-up temperature, the start-up current and the supply voltage a maximum heating circuit length of 235 m is possible.

Explosion protection

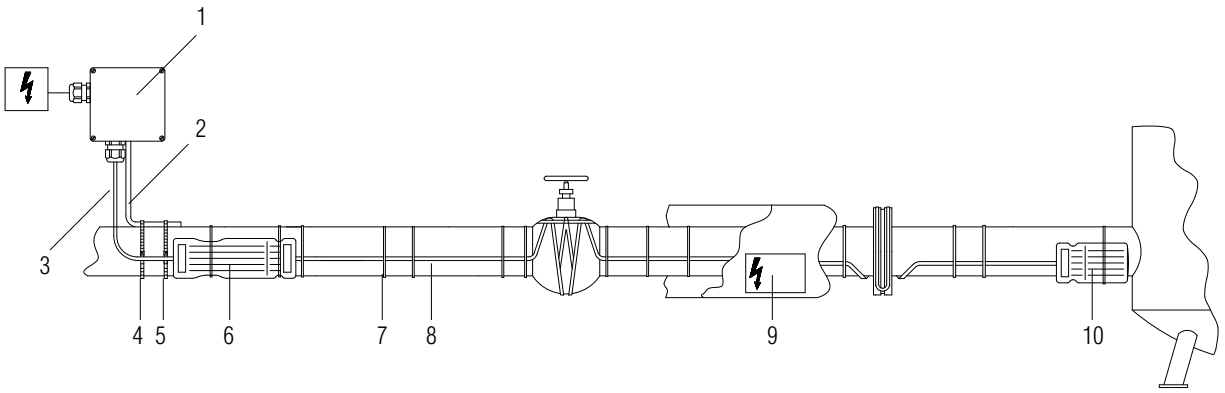
Certification

KEMA 08 ATEX 0110 X
IECEx KEM 09.0083X
TC RU C-DE.ГБ06.B.00230
CSA 1862457

System overview

- Self-limiting parallel heating tape HSB
- Heat shrink technology or silicone cold applied technology or pluggable system PLEXO TCS connection and termination
- Junction box made of polyester, stainless steel and aluminium
- Optional: mechanical or electronic thermostats or control systems

Application example HSB heating system



1 Junction box
2 Mounting bracket/Mounting plate
3 Connection cable for power supply
4 Fixing strap
5 Buckle for fixing strap
6 Connection PLEXO TCS
7 Self adhesive glass fibre fixing tape
8 Heating tape HSB
9 Caution label "Electrically Heated"
10 End termination PLEXO TCS

03-0330-0479/E-09/2014-BEH-246956/2

Features

- Steam purging possible
- Self-limiting
- Can be used in explosive atmospheres without temperature limiter
- Can be cut to length at random thanks to its parallel current supply
- Simple installation thanks favourable dimensions
- Corrosion-proof and resistant to chemical attack thanks to its protective outer jacket of fluoropolymer

Self-limiting parallel heating tape HSB

1. Conductors:
stranded copper wire, 1.2 mm², nickel-plated

2. Self-limiting, irradiated polymer heating element

3. Fluoropolymer electrical insulation jacket

4. Nickel-plated copper braiding

5. Fluoropolymer protective jacket

Description

A temperature-dependant resistive element between two parallel copper conductors regulates and limits the power output of the heating tape. This output regulation is carried out automatically along the entire length of the heating tape according to the prevailing ambient temperature. If the ambient temperature rises, the power output of the tape is reduced. This self-limiting property prevents overheating even when the tapes are crossed.

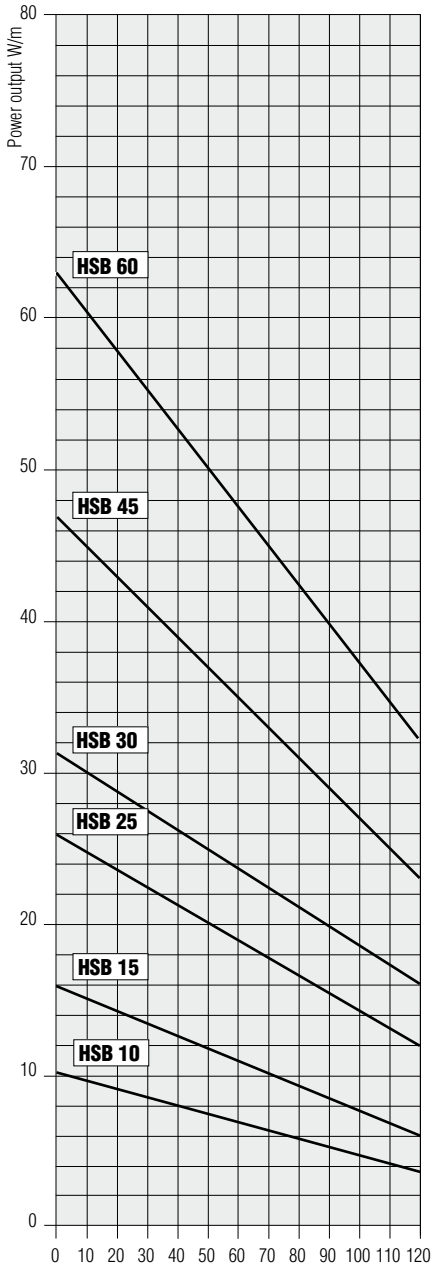
Thanks to the parallel design the heating tape can be cut to any required length. This feature considerably simplifies project planning and installation. The heating tape is cut and terminated directly on the construction site according to the circumstances.

The heating system must be designed to ensure that the maximum operating temperature of +120 °C will not be exceeded when it is energized.

When switched off, the heating tape can be exposed to a temperature of 200 °C for a short time, not more than 1,000 hours cumulated.

03-0330-0480/D-09/2014-BEH-246957/1

HSB characteristics



Power output on insulated steel pipes at **230 V** under nominal conditions.

Areas of application

The HSB heating tape is suitable for frost protecting in industrial areas. The level of its maximum possible heating output allows the heating tape to be used for maintaining high process temperatures.

For questions regarding the chemical resistance please contact your BARTEC sales representative.

Explosion protection

Ex protection type

Ⓔx II 2G Ex e IIC 200 °C (T2), T3, T4 Gb
Ⓔx II 2D Ex tb IIIC T200 °C, T195 °C, T130 °C Db

Certification

System

KEMA 08 ATEX 0110 X
IECEx KEM 09.0083X
TC RU C-DE.ГБ06.B.00230
CSA 1862457

Heating tape

KEMA 02 ATEX 2327 U
IECEx KEM 07.0048 U

03-0330-0480/D-09/2014-BEH-246957/2

Technical data

Nominal voltage AC 208 V to 254 V, AC 110 V to 120 V

Power setting at +10 °C						
Power output	**HSB 10**	**HSB 15**	**HSB 25**	**HSB 30**	**HSB 45**	**HSB 60**
at AC 230 V	10 W/m	15 W/m	25 W/m	30 W/m	45 W/m	60 W/m
at AC 120 V	10.8 W/m	16.1 W/m	26.6 W/m	31.8 W/m	47.1 W/m	62.0 W/m

Max. exposure temperature
switched on +120 °C
switched off +200 °C

Min. installation temperature -60 °C

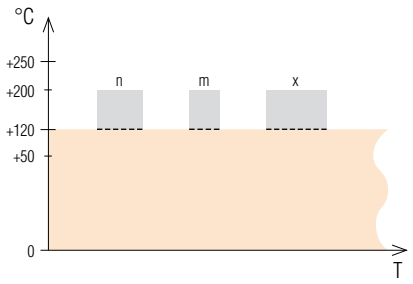
Min. start-up temperature -60 °C

Max. braid resistance < 18.2 Ω/km

Dimensions
with braiding and
Fluoropolymer jacket 10.2 x 4.8 mm

Min. bending radius 25 mm

Maximum exposure temperature



Continuous operation, switched on heating tape
Period of time in switched-off state , n + m + x ... ≤ 1000 h
(n, m, x... ≤ 48 hours, breaks in between at least 4 weeks)

Max. length of heating circuit at 254 V (for automatic circuit-breakers with C characteristic)						
Circuit breaker size	**HSB 10**	**HSB 15**	**HSB 25**	**HSB 30**	**HSB 45**	**HSB 60**
16 A, start-up temperature +10 °C	200 m	165 m	120 m	85 m	70 m	50 m
16 A, start-up temperature -25 °C	175 m	117 m	88 m	69 m	49 m	38 m
16 A, start-up temperature -60 °C	165 m	110 m	80 m	65 m	45 m	35 m
20 A, start-up temperature +10 °C	235 m	189 m	140 m	114 m	82 m	64 m
20 A, start-up temperature -25 °C	235 m	152 m	120 m	92 m	66 m	52 m
20 A, start-up temperature -60 °C	225 m	144 m	114 m	86 m	62 m	48 m
25 A, start-up temperature +10 °C	235 m	189 m	140 m	114 m	82 m	64 m
25 A, start-up temperature -25 °C	235 m	170 m	130 m	100 m	75 m	58 m
25 A, start-up temperature -60 °C	230 m	160 m	120 m	92 m	70 m	52 m
32 A, start-up temperature +10 °C	235 m	189 m	140 m	114 m	82 m	64 m
32 A, start-up temperature -25 °C	235 m	189 m	140 m	114 m	82 m	64 m
32 A, start-up temperature -60 °C	235 m	189 m	136 m	110 m	78 m	60 m

Max. length of heating circuit at 120 V (for automatic circuit-breakers with C characteristic)						
Circuit breaker size	**HSB 10**	**HSB 15**	**HSB 25**	**HSB 30**	**HSB 45**	**HSB 60**
16 A, start-up temperature +10 °C	100 m	80 m	60 m	44 m	35 m	25 m
16 A, start-up temperature -25 °C	89 m	56 m	44 m	35 m	24 m	20 m
16 A, start-up temperature -60 °C	82 m	52 m	40 m	32 m	22 m	17 m
20 A, start-up temperature +10 °C	120 m	95 m	69 m	58 m	41 m	32 m
20 A, start-up temperature -25 °C	120 m	75 m	59 m	45 m	33 m	25 m
20 A, start-up temperature -60 °C	120 m	75 m	55 m	41 m	26 m	21 m
25 A, start-up temperature +10 °C	120 m	95 m	69 m	58 m	41 m	32 m
25 A, start-up temperature -25 °C	120 m	80 m	64 m	50 m	35 m	28 m
25 A, start-up temperature -60 °C	120 m	80 m	60 m	45 m	32 m	26 m
32 A, start-up temperature +10 °C	120 m	95 m	69 m	58 m	41 m	32 m
32 A, start-up temperature -25 °C	120 m	95 m	69 m	58 m	41 m	32 m
32 A, start-up temperature -60 °C	120 m	95 m	69 m	58 m	41 m	32 m

Selection chart HSB

Description	Type	Heating output	Order no.
HSB parallel heating tape AC 254 V - self-limiting - steam purging possible - Ex explosion protected - Ⓜ media protected	HSB 10	10 W	**07-5803-210A**
	HSB 15	15 W	**07-5803-215A**
	HSB 25	25 W	**07-5803-225A**
	HSB 30	30 W	**07-5803-230A**
	HSB 45	45 W	**07-5803-245A**
	HSB 60	60 W	**07-5803-260A**
HSB parallel heating tape AC 120 V - self-limiting - steam purging possible - Ex explosion protected - Ⓜ media protected	HSB 10	10 W	**07-5803-110A**
	HSB 15	15 W	**07-5803-115A**
	HSB 25	25 W	**07-5803-125A**
	HSB 30	30 W	**07-5803-130A**
	HSB 45	45 W	**07-5803-145A**
	HSB 60	60 W	**07-5803-160A**

Technical data subject to change without notice.

03-0330-0480/D-09/2014-BEH-246957/4

Connection system PLEXO TCS

Features

- Cross-section of connection cable up to 4 mm²
- Operating temperature range from -60 °C to +180 °C
- Integrated strain relief; high electrical and mechanical safety
- Quick and easy installation, with standard tools
- System approved with BARTEC self-limiting heating tapes

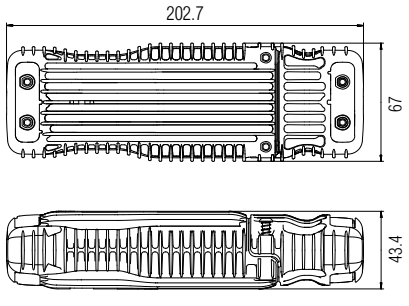
Description

The PLEXO TCS connection system can be used for BARTEC self-limiting heating tapes. This modular connection technology allows an easy and reliable assembly of supply connections, splicing and remote-end terminations. PLEXO TCS is plugged and built up with a patented sealing and clamping technology.

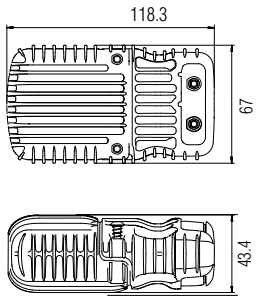
Maintenance work and later modifications on the heating circuit can be done quick and flexible.

The strands from the heating tapes or the supply cable are fixed in place securely by spring-loaded terminals in the internal clamping technology.

Dimensions (in mm)
Type 27-59P1-*0100000 and 27-59P2-01100000



Dimensions (in mm)
Type 27-59P3-00100000



Explosion protection

Ex protection type

PLEXO TCS with heating tape

Ⓔx II 2G Ex e IIC T180 °C (T3), T4 Gb

Ⓔx II 2D Ex tb IIIC T180 °C, T130 °C Db

Certification

PLEXO TCS with heating tape

BVS 13 ATEX E 040 X

IECEx BVS 13.0048X

TC RU C-DE.ГБ06.B.00230

HSB-System

KEMA 08 ATEX 0110 X

IECEx KEM 09.0083X

TC RU C-DE.ГБ06.B.00230

Technical data

Rated voltage

max. 254 V

Rated current

max. 32 A

Protection class

EN 60079-0 IP 65

EN 60529 IP 66/IP 68

Operating temperature range

Ex version: -60 °C to +180 °C

Non Ex version: -60 °C to +200 °C

Rated cross-section of supply cable

max. 4 mm²

Minimum installation temperature

-60 °C

Sealing range supply cable

see type selection

Selection chart PLEXO TCS

Description	Order no.
PLEXO heating cable connection to supply cable	
with sealing range $8 < D_A \leq 10$ mm	**27-59P1-1010**
with sealing range $10 < D_A \leq 12$ mm	**27-59P1-2010**
with sealing range $12 < D_A \leq 14$ mm	**27-59P1-3010**
with sealing range $14 < D_A \leq 16$ mm	**27-59P1-4010**
PLEXO heating cable connection with sealing range for HSB	**27-59P2-0110**
PLEXO heating cable remote-end termination with sealing range for HSB	**27-59P3-0010**

Selection chart Accessories

Description	Order no.
Connection cable Heat-resistant connection cable with silicone outer sheath (H05SS-F quality, EWKF outer sheath, -50 °C to +180 °C)	
Cross-section 3 x 1.5 mm² D_A = 8.5 mm	**02-4034-0008**
Cross-section 3 x 2.5 mm² D_A = 9.8 mm	**02-4034-0027**
Mounting bracket The PLEXO TCS can be mounted with the optional mounting bracket outside the thermal insulation.	**05-0105-0385**

Technical data subject to change without notice.

03-0330-0720-09/2014-BEH-348954/2

Junction boxes

for PLEXO TCS heat shrink and cold-applied technology

Features

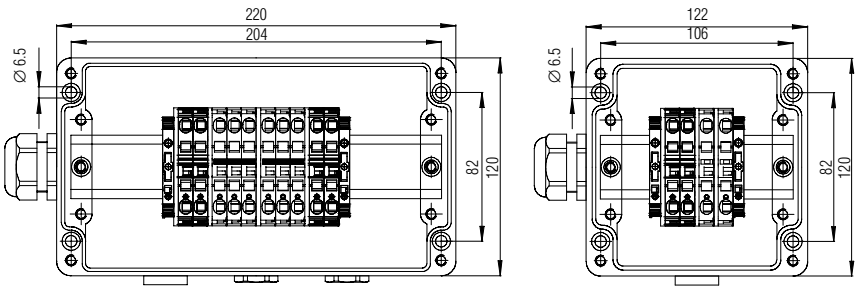
- Wide temperature range
- Can be combined with connection technology PLEXO, heat shrink and cold-applied technology
- Flame-retardant
- Impact-resistant
- System approval

Description

Inside the junction box up to three heating circuits can be connected to the supply voltage.

One cable gland size M25 for the power cable is already assembled at the junction box. The enclosure is prepared with threads for heating tape glands with size M20.

Dimensions (polyester, aluminum)



Explosion protection

Ex protection type

Ex II 2G Ex e IIC 200 °C (T2), T3, T4 Gb
Ex II 2D Ex tb IIIC T200 °C, T195 °C, T130 °C Db

Certification System

KEMA 08 ATEX 0110 X
IECEx KEM09.0083X
TC RU C-DE.ГБ06.B.00230
CSA 1862457*

* For further details please contact your BARTEC sales representative.

Technical data

Protection class according to EN 60529

Seal of cover	IP 65
Cable gland	IP 65

Ambient condition
-55 °C up to + 55 °C

Dimensions
see selection chart

Material
Polyester, glass fibre reinforce

Nominal voltage
AC 254 V

Circuit protection
Max. 32 A
(dependant on the heating circuit length)

Selection chart

Designation	Description		Dimensions (mm)	Terminals (mm²)	Order no.
Polyester	System 27-1780-..10/....	for 1 heating circuit	122 x 120 x 90	4 x 6; 4 x PE	**27-5452-42111210**
		for 2/3 heating circuits	220 x 120 x 90	12 x 6; 8 x PE	**27-5452-44311210**
Aluminium	System 27-1780-..10/....	for 1 heating circuit	122 x 120 x 90	4 x 6; 4 x PE	**27-5452-52111230**
		for 2/3 heating circuits	220 x 120 x 90	12 x 6; 8 x PE	**27-5452-54311230**
Stainless steel	System 27-1780-..10/....	for 1 heating circuit	150 x 150 x 100	4 x 6; 4 x PE	**27-5452-67111230**
		for 2/3 heating circuits	200 x 200 x 120	12 x 6; 8 x PE	**27-5452-68311230**

03-0330-0577/C-09/2014-BEH-301751

Cold-applied technology

Features

- Direct entry of a heating tape into the junction box
- Connection and termination in one set
- Space-saving and economic solution
- Easy design and assembling with silicone cold-applied technology

Description

For direct connection of self-limiting heating tape HSB (Order no. 07-5803-....) into the junction box the 2 supply leads are insulated with silicone glue and a silicone hose.

A green yellow protection tube is pulled over the tinned copper braiding inside the insulation sheath. The copper braiding and the metal cable glands with an extra lead are prepared to be connected to the protective earth. The end of the self-limiting heating tape is insulated with silicone glue and a silicone end cap.

Explosion protection

Ex protection type

Ⓔx II 2G Ex e IIC 200 °C (T2), T3, T4 Gb
Ⓔx II 2D Ex tb IIIC T200 °C, T195 °C, T130 °C Db

Certification System

KEMA 08 ATEX 0110 X
IECEx KEM 09.0083X
TC RU C-DE.ГБ06.B.00230
CSA 1862457*

* For further details please contact your BARTEC sales representative.

Technical data

Ambient temperature range

-55 °C up to +55 °C

Max. operating temperature end cap

+200 °C

Electrical data

see HSB data

10, 15, 25, 30, 45, 60 W/m

Selection chart

Description		Order no.
Installation kit explosion protected Connection and termination (direct enclosure entry)	set	**05-0091-0129**
	10-fold set	**05-0091-0135**

Technical data subject to change without notice.

03-0330-0576/B-09/2014-BEH-301750

Heat shrink technology

explosion protected *media protected*

Features

- Direct entry of a heating tape into an Ex e junction box
- Space-saving dimensions
- Easy installation

Description

The principle is easy. After the preparation of the heating tape, insulation tubes are shrunk over the conductors and the twisted protective braiding and wire end sleeves are placed. Basically, the heating tape is connected to terminals in an enclosure that has the protection type "increased safety".

The heating circuit end is also closed with shrinkable tubes.

Explosion protection

Ex protection type (heating circuit)
Ⓔx II 2G Ex e IIC 200 °C (T2), T3, T4 Gb
Ⓔx II 2D Ex tb IIIC T200 °C, T195 °C, T130 °C Db

Certification System
KEMA 08 ATEX 0110 X
IECEx KEM 09.0083X
TC RU C-DE.ГБ06.B.00230
CSA 1862457*

* For further details please contact your BARTEC sales representative.

Technical data

Ambient temperature range
-40 °C up to +55 °C

Max. operating temperature end cap
+185 °C

Electrical data

see HSB data
10, 15, 25, 30, 45, 60 W/m

Order no.

Installation kit, explosion protected
05-0091-0096
Grounding strap with lock lug, required if metal glands are used in polyester junction boxes
05-0012-0082

Description

If the enclosure is connected directly, the heating tape is first prepared and then insulation tubes are shrunk over the conductors and the twisted protective braiding and wire end sleeves are placed. The heating tape is connected directly to terminals in a junction box, IP 65 protection class.

As an alternative, the heating tape can be connected directly to a connection cable by means of a butt connector. The heating circuit end is closed in each case with a heat shrinkable end cap.

Technical data

Ambient temperature range
-60 °C up to +180 °C

Max. operating temperature end cap
+185 °C

Electrical data

see HSB data
10, 15, 25, 30, 45, 60 W/m

Order no.

Installation kit, media protected
Connection and termination (direct enclosure entry)
07-5803-0000/9860
Connection and termination (flexible with crimp connector up to 130 °C)
07-5803-0000/9820
Connection heating cable - heating cable (with crimp connector)
07-5803-0000/9890

Technical data subject to change without notice.

03-0330-0578/A-09/2014-BEH-301752

Connection system CONPAC

Features

- Quick and easy installation
- Few tools needed for the assembly
- Length of the connecting cable can be flexibly chosen
- UV resistant

Description

CONPAC is the connection system for use with the heating tape HSB in industrial applications.

Its extremely compact design allows CONPAC to be mounted directly on the pipe to be heated under the thermal insulation. Thereby, the risk of damage to the heating tape can be avoided. This was a danger whenever the heating tape had to be led out of the insulation.

The CONPAC connection system can be installed in a quick and easy way with few tools. That splices and connections can be dismantled easily, is easy to service.

Technical data

Protection class
IP 68 (according to EN 60529)

Rated voltage
AC 230 V

Rated current
16 A

Rated cross-section of supply cable
max. 3 x 2.5 mm²

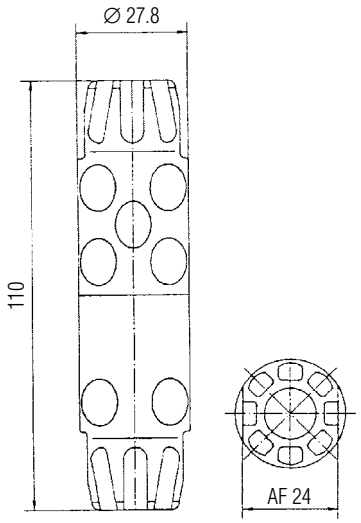
Supply cable
Silicon hose line

Ambient temperature
max. +120 °C for set
max. +190 °C (cumulative 1 000 h)

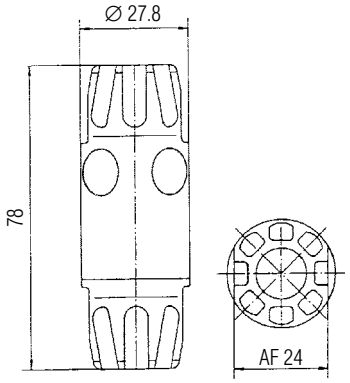
Enclosure material
temperature-resistant polyamide

03-0330-0482/B-09/2014-BEH-246959/3

Dimensions (mm)
CA-H/CV-H



Dimensions (mm)
CE-H



Selection chart

Description	Short form title	Order no.
Heating tape - connection, - end termination **as a set** (without supply cable)		
for supply cables ∅ 3 x 1.5	**CS-H**	**27-563G-SF7P0SEI**
for supply cables ∅ 3 x 2.5	**CS-H**	**27-563G-SF7S0SEI**
Heating tape connection (not including tape)		
for supply cables ∅ 3 x 1.5	**CA-H**	**27-563G-SF7P0I**
for supply cables ∅ 3 x 2.5	**CA-H**	**27-563G-SF7S0I**
Heating tape - end termination	**CE-H**	**27-563G-SF700I**
Splice connection heating tape - heating tape	**CV-H**	**27-563G-SF770I**

Supply cables	Cross section in mm	Outer jacket diameter in mm	Order no.
Silicone hose line	3 x 1.5	8.5 ± 0.5	**02-4034-0008**
with reinforced outer jacket	3 x 2.5	10 ± 0.5	**02-4035-0002**

Technical data subject to change without notice.

Junction boxes
for connection system CONPAC

Description

Up to three heating circuits can be connected to the supply voltage with the polyester junction boxes.

The enclosures have the appropriate number of terminals and the necessary cable glands resp. the threaded holes.

Aluminium junction boxes are available on request.

Technical data

Protection class according to EN 60529
Cover gasket IP 65
Cable gland for power supply cables IP 67

Supply voltage
max. AC 254 V

Rated cross-section of supply cable
see selection chart

Impact resistance
7 Joule

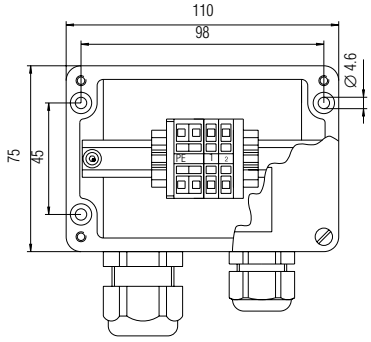
Material
polyester, glass-fibre reinforced

Gland size cable diameter
M20 ∅ 6 to 13 mm
M25 ∅ 7 to 12/17 mm

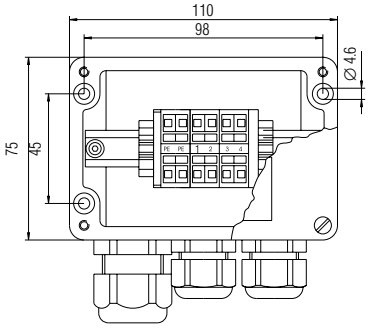
Selection chart

Used for connection system	Heating circuit junction box	Dimensions mm	Cable gland		Terminals mm²	Order no.
			for power supply	for heating circuit		
CONPAC	single	110 x 75 x 55	1 x M25 (∅ 7 to 17 mm)	1 x M20	4 x 2.5; 4 x PE	**07-5177-9021**
	double	110 x 75 x 55	1 x M25 (∅ 7 to 17 mm)	2 x M20	8 x 2.5; 4 x PE	**07-5177-9022**
	triple	122 x 120 x 90	1 x M25 (∅ 7 to 17 mm)	3 x M20	12 x 6; 6 x PE	**07-5177-9023**

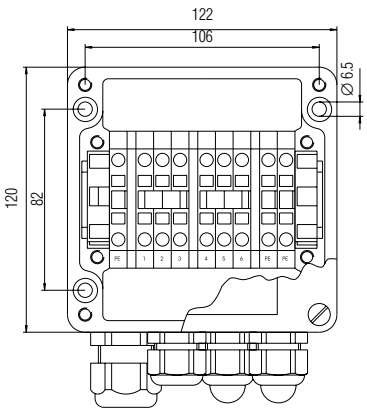
Junction box single



Junction box double



Junction box triple



Technical data subject to change without notice.

03-0330-0483/D-09/2014-BEH-246960/3

Junction boxes

for heat shrink and cold-applied technology

Description

Up to three heating circuits can be connected to the supply voltage with the polyester junction boxes.

The enclosures have the appropriate number of terminals and the necessary cable glands resp. the threaded holes.

Aluminium junction boxes are available on request.

Technical data

Protection class according to EN 60529
Cover gasket IP 65
Cable gland for power supply cables IP 67

Supply voltage
max. 254 V

Rated cross-section of supply cable
see selection chart

Impact resistance
7 Joule

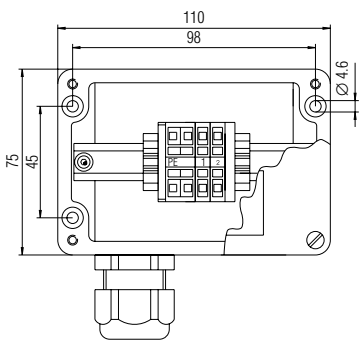
Material
polyester, glass-fibre reinforced

Gland size cable diameter
M20 ∅ 10 to 14 mm

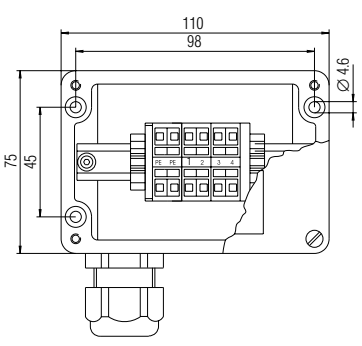
Selection chart

Used for connection system	Heating circuit junction box	Dimensions mm	Cable gland for power supply	Threaded hole for heating circuit	Terminals mm²	Order no.
Heat shrink or cold-applied technology	single	110 x 75 x 55	1 x M20 (∅ 10 to 14 mm)	1 x M20	4 x 2.5; 4 x PE	07-5177-9024
	double	110 x 75 x 55	1 x M20 (∅ 10 to 14 mm)	2 x M20	8 x 2.5; 4 x PE	07-5177-9025
	triple	122 x 120 x 90	1 x M20 (∅ 10 to 14 mm)	3 x M20	12 x 6; 6 x PE	07-5177-9026

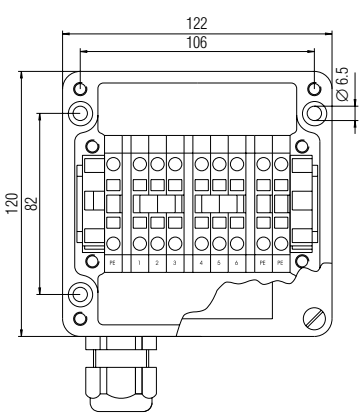
Junction box single



Junction box double



Junction box double/triple



Technical data subject to change without notice.

03-0330-0483/D-09/2014-BEH-246960/4

BARTEC

Heating tape HTSB

Connection system

Junction box

System overview HTSB

Features

- Easy planning of heating circuits
- Simple installation on site
- Use in the hazardous area
- Wide operating temperature range
- Limiter is not required
- Direct entry possible in a junction box

Description

The BARTEC HTSB heating system covers a wide range of applications in trace heating. Frost protection, temperature maintenance and also a combination of temperature increase and temperature maintenance is possible in Zone 1, 2, 21 and 22.

The HTSB heating tape, which is a part of the HTSB system, can be supplied in power outputs between 15 W/m and 90 W/m at 10 °C. This makes it easy to adapt the output to the heat losses.

The protective outer sheath of the cable is made of fluoropolymer plastic.

03-0330-0758-09/2014-BEH-356624/1

Explosion protection

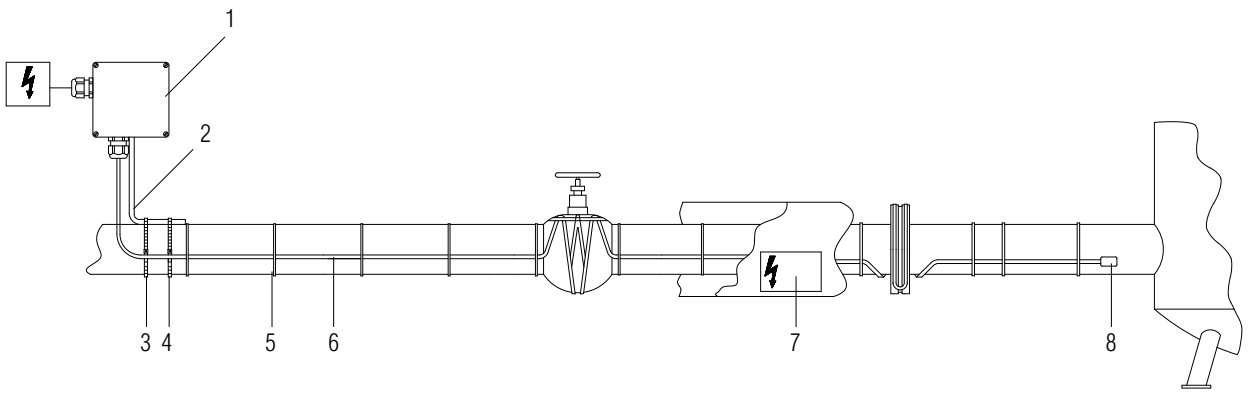
Certification

Sira 14 ATEX 3051 X
IECEx SIR 14.0023X
TC RU C-DE.ГБ06.B.00230

System overview

- Self-limiting parallel heating tape HTSB
- Silicone cold applied technology for connection and terminating
- Optional: Junction box
- Optional: mechanical or electronic thermostats or control systems

Application example HTSB heating system



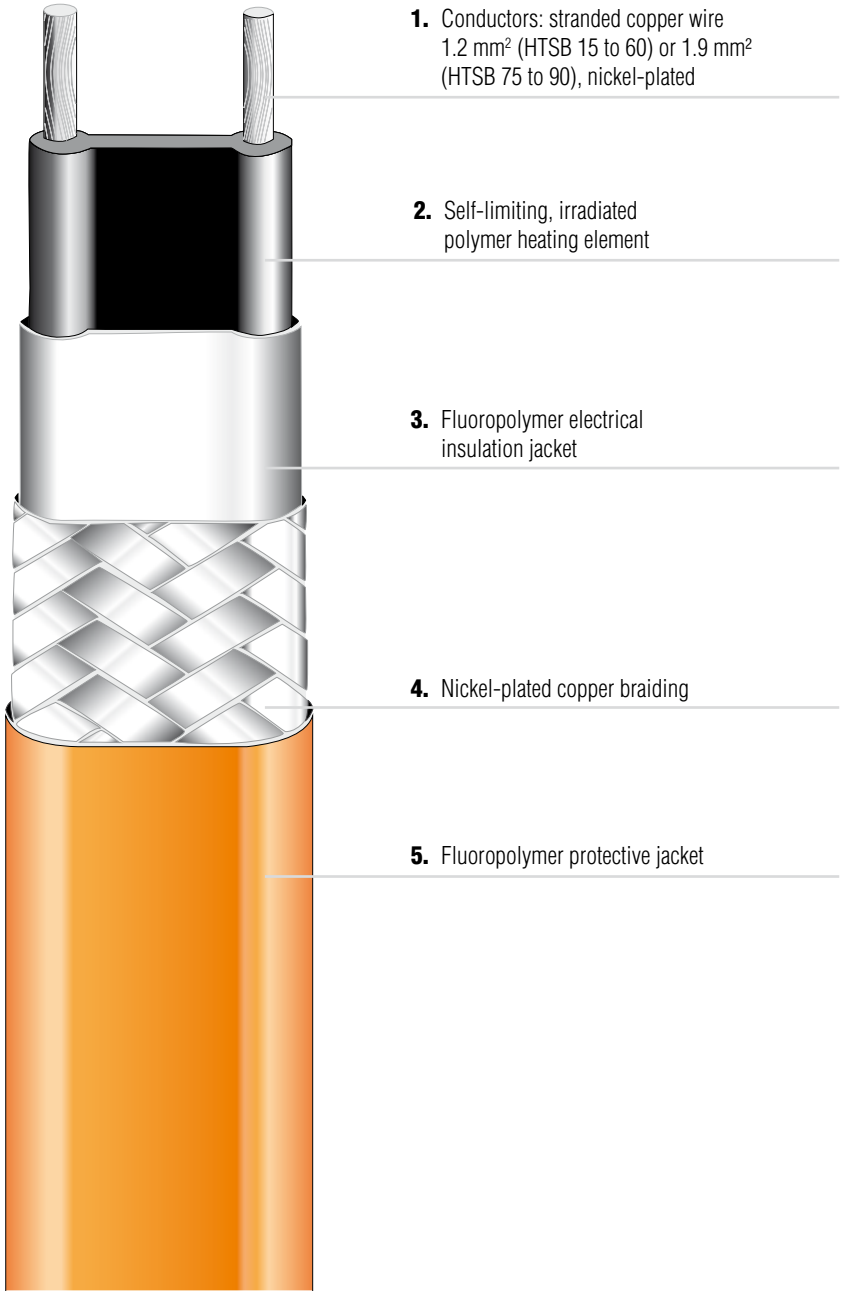
1 Junction box
2 Mounting bracket/Mounting plate
3 Fixing strap
4 Buckle for fixing strap
5 Self adhesive glass fibre fixing tape
6 Heating tape HTSB
7 Caution label "Electrically Heated"
8 Cold applied technology end termination

03-0330-0758-09/2014-BEH-356624/2

Features

- Steam purging possible
- Wide operating temperature range
- Self-limiting
- Can be used in explosive atmospheres without temperature limiter
- Can be cut to length at random thanks to its parallel current supply
- Simple installation thanks to its high flexibility
- Outer protective fluoropolymer jacket ensures resistance to corrosion and chemical influences

Self-limiting parallel heating tape HTSB



Description

A temperature-dependent resistive element between the parallel copper conductors regulates and limits the power output of the heating tape. This output regulation is carried out automatically at every point of the heating tape depending on the prevailing ambient temperature. If the ambient temperature increases, the power output is reduced.

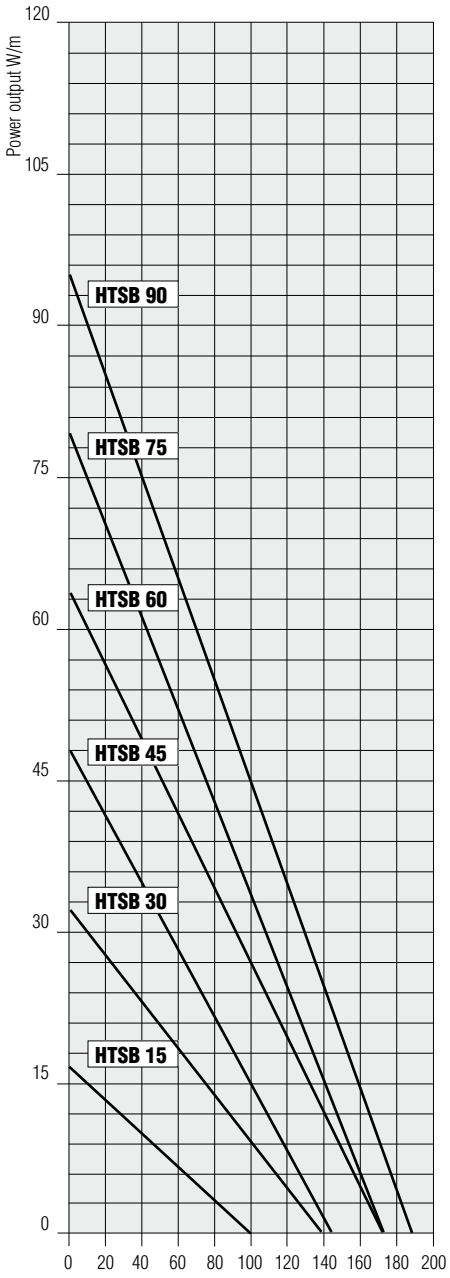
The parallel design allows the heating tape to be cut to any length. This simplifies planning and installation. The heating tape is cut directly on the construction site according the local circumstances.

The heating system must be designed to ensure that the maximum operating temperature of +200 °C will not be exceeded when it is energized.

When switched off, the heating tape may be exposed to a temperature of 250 °C for a short time, not more than 1,000 hours cumulated.

03-0330-0759-09/2014-BEH-356701/1

HTSB characteristics



Power output on insulated steel pipes at **230 V** under nominal conditions.

Applications

The HTSB heating tape is the right solution for frost protection or temperature maintenance in pipelines or vessels in the industrial area.

It is particularly suitable for applications with high ambient temperatures or aggressive chemicals.

For questions regarding the chemical resistance please contact your BARTEC sales representative.

Explosion protection

Ex protection type

Ⓔx II 2G Ex e IIC T2, T3 Gb
Ⓔx II 2D Ex tb IIIC T200 °C, T195 °C Db

Certification

System

Sira 14 ATEX 3051 X
IECEx SIR 14.0023X
TC RU C-DE.ГБ06.B.00230

Heating tape

Sira 13ATEX3312U
IECEx SIR 13.0122U

Technical data

Rated voltage AC 208 V to 254 V

Power setting at +10 °C						
Power output	**HTSB 15**	**HTSB 30**	**HTSB 45**	**HTSB 60**	**HTSB 75**	**HTSB 90**
at AC 230 V	15 W/m	30 W/m	45 W/m	60 W/m	75 W/m	90 W/m

Max. exposure temperature
switched on +200 °C
switched off +250 °C

Min. installation temperature -55 °C

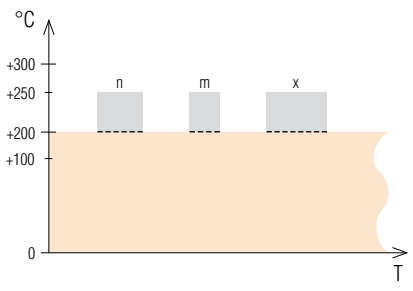
Min. start-up temperature -60 °C

Max. braid resistance < 18.2 Ω/km

Dimensions
with braiding and Fluoropolymer jacket
HTSB 15 to HTSB 60 10.2 mm x 4.8 mm
HTSB 75 and HTSB 90 11.4 mm x 5.2 mm

Min. bending radius 25 mm

Maximum exposure temperature



Continuous operation, switched on heating tape
Period of time in switched-off state , n + m + x ... ≤ 1000 h
(n, m, x... ≤ 48 hours, breaks in between at least 4 weeks)

Max. length of heating circuit at AC 254 V (for automatic circuit-breakers with C characteristic)						
Circuit breaker size	**HTSB 15**	**HTSB 30**	**HTSB 45**	**HTSB 60**	**HTSB 75**	**HTSB 90**
16 A, start-up temperature +10 °C	120 m	75 m	50 m	42 m	22 m	20 m
16 A, start-up temperature -25 °C	100 m	70 m	45 m	36 m	20 m	18 m
16 A, start-up temperature -60 °C	90 m	65 m	40 m	30 m	17 m	15 m
20 A, start-up temperature +10 °C	145 m	90 m	64 m	46 m	26 m	24 m
20 A, start-up temperature -25 °C	130 m	85 m	58 m	42 m	22 m	20 m
20 A, start-up temperature -60 °C	100 m	70 m	50 m	36 m	20 m	20 m
25 A, start-up temperature +10 °C	160 m	110 m	82 m	64 m	34 m	28 m
25 A, start-up temperature -25 °C	140 m	100 m	71 m	56 m	28 m	26 m
25 A, start-up temperature -60 °C	130 m	90 m	60 m	46 m	25 m	22 m
32 A, start-up temperature +10 °C	160 m	110 m	82 m	64 m	42 m	36 m
32 A, start-up temperature -25 °C	160 m	110 m	82 m	64 m	36 m	35 m
32 A, start-up temperature -60 °C	130 m	100 m	80 m	60 m	32 m	30 m

Selection chart Heating tape HTSB

Description	**Type**	**Heating output**	**Order no.**
HTSB parallel heating tape AC 208 to 254 V - self-limiting - steam purging possible - Ⓔx explosion protected - Ⓜ media protected	HTSB 15	15 W/m	**07-5809-215N**
	HTSB 30	30 W/m	**07-5809-230N**
	HTSB 45	45 W/m	**07-5809-245N**
	HTSB 60	60 W/m	**07-5809-260N**
	HTSB 75	75 W/m	**07-5809-275N**
	HTSB 90	90 W/m	**07-5809-290N**

Technical data subject to change without notice.

Cold applied technology
and brass cable gland

Features

- Direct entry of a heating tape into the junction box
- Connection and termination in one set
- Space-saving and economic solution
- Easy design and assembling with silicone cold-applied technology

Description

The heating tape is connected directly in the junction box, the two supply conductors of the self-limiting heating tape HTSB (Type no. 07-5809-2..N) are insulated with silicone glue and a silicone hose. A green/yellow protective tube is pulled over the braiding.

The end of the self-limiting heating tape is insulated with silicone glue and an end cap.

Explosion protection

Ex protection type

Ex II 2G Ex e IIC T2, T3 Gb
Ex II 2D Ex tb IIIC T200 °C, T195 °C Db

Certification

System

Sira 14 ATEX 3051 X
IECEx SIR 14.0023X
TC RU C-DE.ГБ06.B.00230

Cable gland

Sira 01 ATEX 1270 X
IECEx SIR 05.0020 X

Technical data

Ambient temperature range

Cold applied technology
-55 °C to +200 °C

Cable gland
-55 °C to +180 °C

Electrical data

see HTSB data

15, 30, 45, 60, 75, 90 W/m

Selection chart

Designation	Description	Order no.
Silicone cold applied technology set for HTSB heating tape with cable gland, grounding strap and nut	Set for cable connection and end termination	**05-0091-0218**
Silicone cold applied technology set for HTSB heating tape	Set for cable connection and end termination	**05-0091-0196**
	10 fold set for cable connection and end termination	**05-0091-0197**
Cable gland	M20 x 1.5, brass, Ex e, Ex d -60 °C to +180 °C	**03-6020-0168**

Technical data subject to change without notice.

03-0330-0760-09/2014-356702

Junction boxes

for cold applied technology

Description

Up to three heating circuits can be connected to the supply voltage with the polyester junction boxes.

The enclosures are available with the necessary cable glands resp. the threaded holes.

Explosion protection

Ex protection type
- Ⓔx II 2G Ex e IIC T6, T5 Gb
- Ⓔx II 2D Ex tb IIIC T80 °C, T95 °C Db

Certification
- PTB 08 ATEX 1064
- IECEx PTB 09.0009X
- TC RU C-SI.ГБ08.B.00308

Ambient temperature range
- -55 °C to +40 °C for T6
- -55 °C to +55 °C for T5

Technical data

Protection class according to EN 60529
Cover gasket IP 65

Supply voltage
max. AC 254 V

Thermal rated current*
recommended max. 20 A
(at 254 V and T_a = +55 °C)

Supply cable, cross section
2.5 mm² to 6.0 mm²

Impact resistance
7 Joule

Material
Enclosure
polyester, glass-fibre reinforced

Cable Gland
brass

Gland size Cable diameter
M20 ∅ 6 to 12 mm

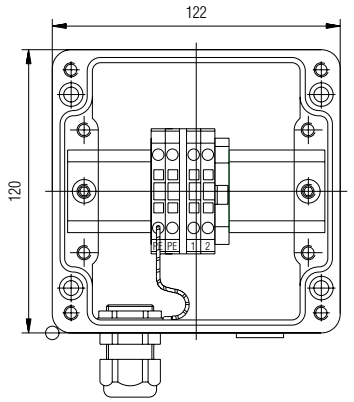
Seals
-55 °C to +100 °C

* not tested as a system

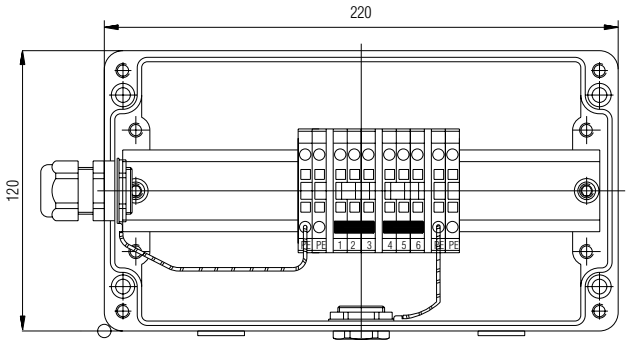
Selection chart

Used for connection system	Heating circuit junction box	Dimensions mm	Cable glands for power supply	Threaded hole for heating circuit	Terminals mm²	Order no.
Ⓔx **Cold applied**	single	122 x 120 x 90	1 x M20 (∅ 6 to 12 mm)	1 x M20	4 x 6; 3 x PE	**07-5103-9213**
-50 °C to +55 °C	double/triple	220 x 120 x 90	1 x M20 (∅ 6 to 12 mm)	3 x M20	12 x 6; 6 x PE	**07-5103-9214**

Junction box single

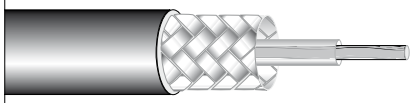


Junction box double, triple



BARTEC

Heating cable EKL



Connection system

Junction box

System overview EKL

EKL light

EKL medium

EKL premium

Features

- Adjustable to customer requirements
- Complete systems from a single source
- Simple tailoring on site
- Suitable for the use in hazardous areas

Description

The BARTEC EKL system helps you meet the most different requirements for electric trace heating systems regarding

- Frost protection
- Temperature maintenance
- Temperature increase

The great variety of systems allows the customer-specific project planning and installation of our electric trace heating systems.

You can choose between 3 different EKL heating cable systems:

- **EKL light**
- **EKL medium** for use in hazardous areas
- **EKL premium** for use in hazardous areas for increased requirements

The BARTEC EKL system is characterised by its universal application possibilities.

The use of high-quality, corrosion-proof material guarantees the application of the systems even under extreme conditions as, for example, prevail in the chemical industry, petrochemical industry and waste incineration plants. The EKL system can be perfectly adjusted to the customer specific requirements.

The EKL systems EKL medium and EKL premium have been certified for the usage in hazardous areas where it offers an extraordinary ease of application. A temperature limiter makes sure that the maximum surface temperature allowed for the heating circuit is not exceeded.

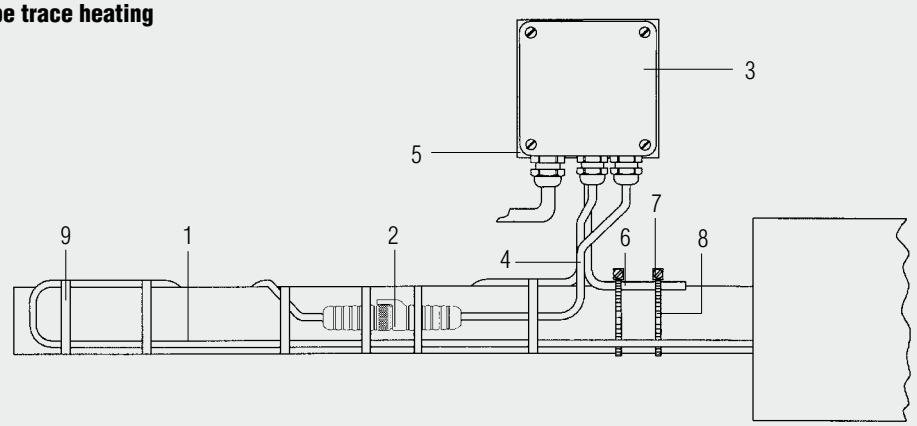
03-0330-0484/A-07/2013-BEH-246961/1

System overview

The EKL connection kits consist of:

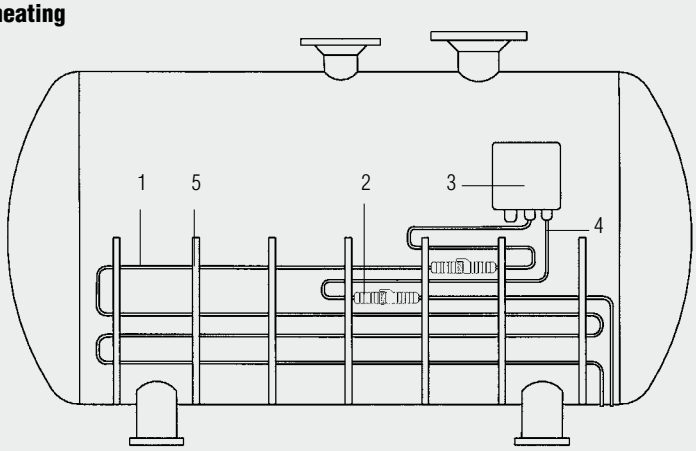
- **EKL heating cable**
- **EKL connection set**
  - Junction box
  - Cold lead
  - Connection system
- **Controller/Limiter**
- **Accessories**
  such as adhesive tapes, fixing brackets with mounting plates, insulation entry, labels.

Pipe trace heating



1 EKL heating cable
2 Connection system
3 Heating circuit terminal box
4 EKL cold lead
5 Mounting plate
6 Mounting bracket
7 Buckle
8 Fixing strap
9 Adhesive tape

Container trace heating



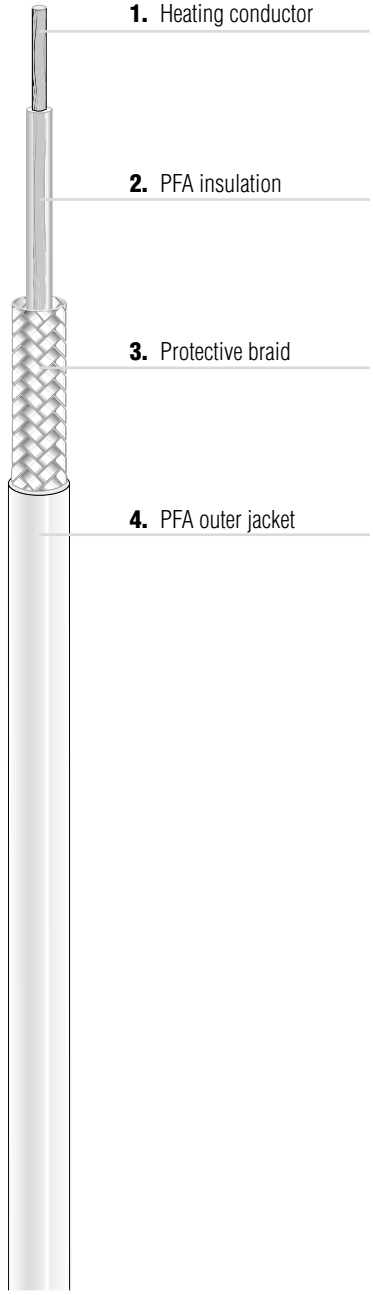
1 EKL heating cable
2 Connection system
3 Heating circuit terminal box
4 EKL cold lead
5 EKL spacing ring

03-0330-0484/A-07/2013-BEH-246961/2

EKL light flexible single-core plastic-insulated heating cable

Features

- Constant power output per meter
- Steam purging resistant, suitable for high temperatures up to +260 °C
- Easy installation, very flexible
- Highly resistant to almost all industrial chemicals and solvents



Description

EKL light is a serial resistant heating cable for use in industrial and commercial areas. It is suitable for frost protection applications and temperature maintenance on pipes and tanks and it is also extremely flexible.

This makes EKL light easy to install, even on irregular shapes such as on pumps, valves and flanges.

The PFA protective jacket gives the EKL light a high degree of chemical and mechanical resistance, even at high temperatures.

In economical terms, EKL light is a genuine alternative to SLHBs when the latter's maximum heating circuit lengths are exceeded.

With pre-assembled cold leads and our connection technology, complete heating circuits can be set up quickly and flexibly.

Technical data

Nominal voltage
500 V

Working temperature
-60 °C to +260 °C

Minimum installation temperature
-60 °C

Minimum bending radius
5 x external diameter

Minimum installation spacing
20 mm

Mechanical strength
4 joules (in conformance to EN 62395-1)

Maximum heating power
25 W/m

Resistance tolerance
-5 %/+10 %

Resistance of protective braid
< 18.2 Ω/km

Resistance values
0.8 Ω/km to 8000 Ω/km

Applied standards

Electrical safety
EN 62395-1

03-0330-0710-07/2014-BEH-345761/1

Selection chart EKL light

Designation	Nominal resistance at 20 °C in Ω/km	Cross-section Heating conductor in mm²	Outer diameter in mm	Order no.
EKL light 00R8	0.8	25.00	10.10	**27-5821-5A6A00R8**
EKL light 01R1	1.1	16.00	9.10	**27-5821-5A6A01R1**
EKL light 01R8	1.8	10.00	7.90	**27-5821-5A6A01R8**
EKL light 02R9	2.9	6.00	6.00	**27-5821-5A6A02R9**
EKL light 04R4	4.4	4.00	5.40	**27-5821-5A6A04R4**
EKL light 0007	7	2.50	4.90	**27-5821-5A6A0007**
EKL light 0010	10	1.72	4.10	**27-5821-5A6A0010**
EKL light 11R7	11.7	1.48	4.00	**27-5821-5A6A11R7**
EKL light 0015	15	1.66	4.00	**27-5822-5A6A0015**
EKL light 17R8	17.8	1.41	3.90	**27-5822-5A6A17R8**
EKL light 0025	25	0.97	3.70	**27-5822-5A6A0025**
EKL light 31R5	31.5	0.79	3.50	**27-5822-5A6A31R5**
EKL light 0050	50	0.60	3.40	**27-5822-5A6A0050**
EKL light 0065	65	0.44	3.20	**27-5822-5A6A0065**
EKL light 0080	80	0.38	3.20	**27-5822-5A6A0080**
EKL light 0100	100	0.50	3.30	**27-5822-5A6A0100**
EKL light 0150	150	0.45	3.20	**27-5822-5A6A0150**
EKL light 0180	180	0.59	3.40	**27-5822-5A6A0180**
EKL light 0200	200	0.50	3.30	**27-5822-5A6A0200**
EKL light 0320	320	0.47	3.20	**27-5822-5A6A0320**
EKL light 0380	380	0.53	3.20	**27-5822-5A6A0380**
EKL light 0480	480	0.52	3.20	**27-5822-5A6A0480**
EKL light 0600	600	0.50	3.20	**27-5822-5A6A0600**
EKL light 0700	700	0.50	3.20	**27-5822-5A6A0700**
EKL light 0810	810	0.59	3.30	**27-5822-5A6A0810**
EKL light 1000	1000	0.48	3.30	**27-5822-5A6A1000**
EKL light 1440	1440	0.48	3.20	**27-5824-5A6A1440**
EKL light 1750	1750	0.62	3.30	**27-5824-5A6A1750**
EKL light 2000	2000	0.55	3.20	**27-5824-5A6A2000**
EKL light 3000	3000	0.36	3.10	**27-5824-5A6A3000**
EKL light 4000	4000	0.27	3.10	**27-5824-5A6A4000**
EKL light 4400	4400	0.25	3.00	**27-5824-5A6A4400**
EKL light 5160	5160	0.21	2.90	**27-5824-5A6A5160**
EKL light 5600	5600	0.19	2.90	**27-5824-5A6A5600**
EKL light 6000	6000	0.18	2.90	**27-5824-5A6A6000**
EKL light 7000	7000	0.16	2.90	**27-5824-5A6A7000**
EKL light 8000	8000	0.14	2.90	**27-5824-5A6A8000**

Recommended cold leads				
				Rated current [A] (1)
EKL light 0007(2)	7	2.50	4.90	**32**
EKL light 04R4	4.4	4.00	5.40	**42**
EKL light 02R9	2.9	6.00	6.00	**54**
EKL light 01R8	1.8	10.00	7.90	**73**
EKL light 01R1	1.1	16.00	9.10	**98**
EKL light 00R8	0.8	25.00	10.10	**129**

Note: not all resistance values of EKL light are available from stocks. Please consult BARTEC for delivery times.
(1) free in air, (2) available as pre-assembled cold lead (1.2 m).

03-0330-0710-07/2013-BEH-345761/2

Heat shrink technology

Features

- Easy & quick installation thanks to the short shrinking times
- Space-saving dimensions
- Low storage, connection or splice
- High resistance to almost all industrial chemicals and solvents

Description

The heat shrink technology is suitable for EKL light und EKL medium. It can be used in industrial and commercial areas.

The set serves to join two cold leads or to form two heating tape connections.

The electrical connection of the heating conductor and protective braid is established by means of a crimp connection. The connection is sealed by the shrinkable tubes.

With pre-assembled cold leads and our connection technology, heating circuits can be set up quickly and flexibly.

Technical data

Max. nominal voltage
750 V

Max. nominal current
25 A

Max. supply cable cross-section
2.5 mm²

Operating temperature
-55 °C to + 200 °C

Mechanical strength
4 joules (in conformance to EN 62395-1)

Dimensions (length)
150 mm

Outer diameter of cable
2.9 mm to 6 mm

Applied standards

Electrical Safety
EN 62395-1

Order no.

EKL Heat shrink technology
Connection kit media-protected
05-0091-0195

BARTEC crimping set
Crimping tools
03-5545-0001

Cold lead
2.5 mm², Length 1.2 m,
cable gland M20
05-0020-0492

Technical data subject to change without notice.

Junction box for EKL light

Features

- Chemical-resistant
- Temperature-resistant
- Flame-retardant
- Absolutely corrosion-proof
- Seawater-proof

Description

Polyester enclosures have proven their worth in many industrial plants. They offer safe protection even when they are used under extremely unfavorable conditions, on exposure to aggressive chemical media or hard mechanical conditions.

The inside base of the enclosure has at its sides, threaded bushings for the fastening of mounting rails or panels.

The enclosure is mounted by means of insulated screws outside of the lid seal.

Technical data

Material
glass-fiber reinforced polyester, EN 50014
surface resistance $>10^{12}$ Ω

Colour
RAL 7000/RAL 7001, grey

Mechanical resistance
impact energy 7 Nm

Protection class
according to EN 60529/IEC 60529
IP 66/IP 67

Cable gland
IP 65

Gland size
7 to 12/17 mm

Supply voltage
500 V

Standard seal
EPDM -20 °C to +100 °C
Silikon -55 °C to +100 °C

Lid screws
Stainless steel cross slot (+ -)

Selection chart

Enclosure Short form title	Enclosure sizes (mm)	Qty/ Terminal sizes	Terminal identification	Qty/Earth terminals	Glands per enclosure	Terminal range	Order no.
300	160 x 160 x 90	2/6 mm²	L, N	2/6 mm²	1 x M25 2 x threaded M20	∅ 7 to 17 mm	**07-5177-9100**
400 S	160 x 160 x 90	3/6 mm²	L1; L2, L3	4/6 mm²	1 x M25 4 x threaded M20	∅ 7 to 17 mm	**07-5177-9098**
400 D	260 x 160 x 90	6/6 mm²	2 x L1; 2 x L2; 2 x L3	each 6/6 mm²	1 x M25 6 x threaded M20	∅ 7 to 17 mm	**07-5177-9099**

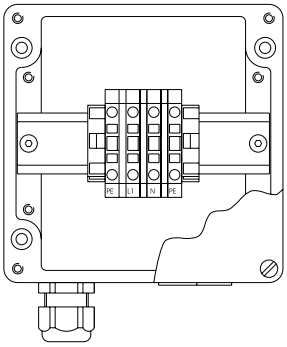
Cold leads cable length 1.2 m, gland M20

Cable cross section 4 mm²	**Order no. 05-0020-0491**
Cable cross section 2.5 mm²	**Order no. 05-0020-0492**

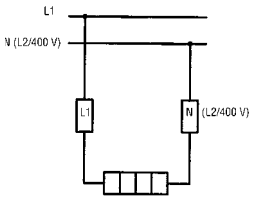
Technical data subject to change without notice.

03-0330-0485/C-06/2014-BEH-246962/3

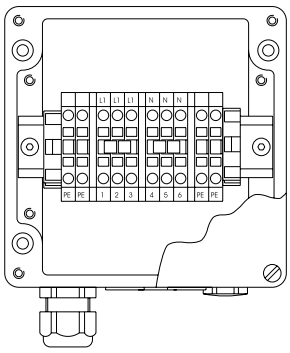
Junction box 300



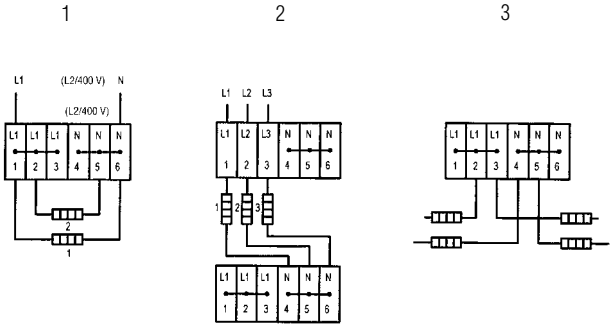
Connection diagramm for junction box 300



Junction/termination box 400 S

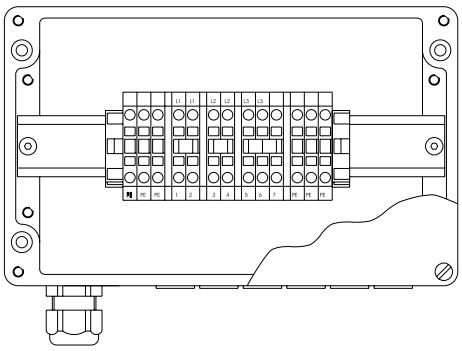


Connection diagramm for junction box 400 S

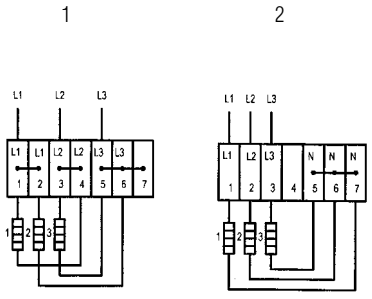


1 Double junction box
2 Star connection
3 Intermediate junction box

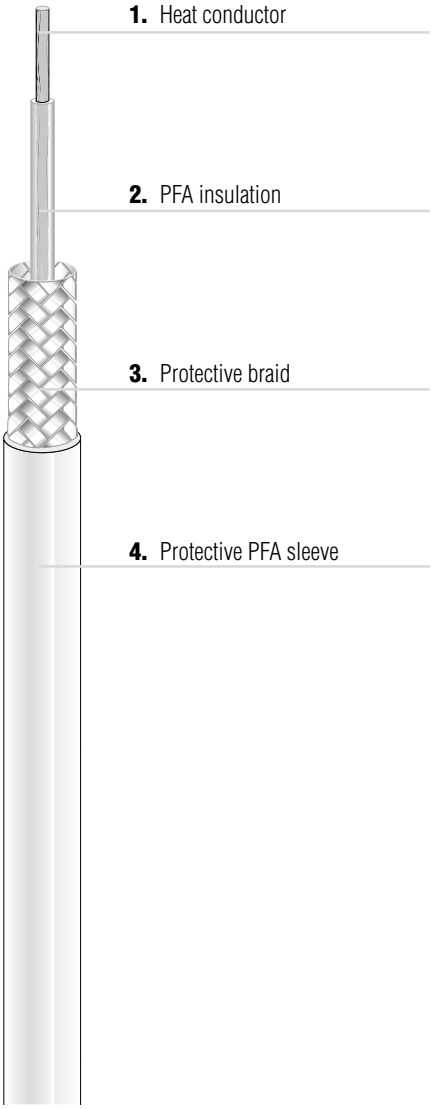
Heating circuit junction box 400 D



Connection diagramm for junction box 400 D



1 Delta connection
2 Star connection



EKL medium flexible single-core plastic-insulated heating cable

Features

- Constant power output per meter
- Steam purging resistant, high chemical resistance
- Easy installation, simple tailoring on site
- ATEX approved according to EN 60079
- Suitable for use in hazardous areas (4 Joules impact resistance)

Description

EKL medium is an extremely flexible heating cable with a fixed specific resistance.

Thanks to its small outer dimensions, the heating cable can be easily installed even on irregularly objects such as pumps, valves and flanges.

The heating cable can be easily tailored on sites and made even easier by the imprinted metre markings.

Explosion protection

Ex protection type
Ex II 2G Ex e II
Ex II 2D Ex tD A21

Certification
KEMA 10 ATEX 0035 U
IECEx KEM 10.0011U

Technical data

Nominal voltage (U_0/U)
450 V/750 V

Test voltage
2.5 kV (lead/braid)

Protective braid resistance
< 18.0 Ω/km

Operating temperature
-60 °C to +260 °C

Min. installation temperature
-60 °C

Min. bending radius
15 mm
25 mm for 1R08 and 1R71

Shock resistance
4 joules (in conformance to EN 60079)

Selection chart EKL medium

Description	Ω/km at +20 °C	Outside diameter, mm	Order no.	Description	Ω/km at +20 °C	Outside diameter, mm	Order no.
EKL premium 1R08[1)]	1.08	10.20	**27-5821-756K1R08**	EKL medium 0150	150	4.27	**27-5822-756G0150**
EKL premium 1R71[1)]	1.71	8.60	**27-5821-756K1R71**	EKL medium 0180	180	3.96	**27-5822-756G0180**
EKL premium 02R9[1)]	2.9	7.60	**27-5821-756K02R9**	EKL medium 0200	200	4.10	**27-5822-756G0200**
EKL premium 0004[1)]	4	6.55	**27-5821-756K0004**	EKL medium 0320	320	4.23	**27-5826-756G0320**
EKL premium 04R4[1)]	4.4	6.70	**27-5821-756K04R4**	EKL medium 0360	360	4.10	**27-5822-756G0360**
EKL medium 07R2	7.2	4.94	**27-5821-756G07R2**	EKL medium 0380	380	4.06	**27-5826-756G0380**
EKL medium 0010	10	4.75	**27-5821-756G0010**	EKL medium 0480	480	4.03	**27-5826-756G0480**
EKL medium 11R7	11.7	4.60	**27-5821-756G11R7**	EKL medium 0600	600	3.99	**27-5826-756G0600**
EKL medium 0015	15	4.42	**27-5821-756G0015**	EKL medium 0650	650	3.95	**27-5826-756G0650**
EKL medium 17R8	17.8	4.30	**27-5821-756G17R8**	EKL medium 0700	700	3.92	**27-5826-756G0700**
EKL medium 0025	25	4.27	**27-5822-756G0025**	EKL medium 0810	810	3.88	**27-5822-756G0810**
EKL medium 31R5	31.5	4.59	**27-5822-756G31R5**	EKL medium 1000	1000	3.89	**27-5822-756G1000**
EKL medium 0050	50	4.27	**27-5822-756G0050**	EKL medium 1440	1440	3.74	**27-5822-756G1440**
EKL medium 0065	65	4.11	**27-5822-756G0065**	EKL medium 1750	1750	3.67	**27-5822-756G1750**
EKL medium 0080	80	4.01	**27-5822-756G0080**	EKL medium 2000	2000	3.92	**27-5824-756G2000**
EKL medium 0100	100	3.90	**27-5822-756G0100**	EKL medium 3000	3000	3.75	**27-5824-756G3000**
				EKL medium 8000	8000	3.47	**27-5824-756G8000**

[1)] solely available as EKL premium

Technical data subject to change without notice.

03-0330-0579-06/2014-BEH-302554

Plug-in connection system PLEXO

Features

- Universal applications thanks to the plug and socket connection technology
- Quick and easy installation
- Easy to service and to maintain

Description

PLEXO is a plug-in connection system for heating cables used in potentially explosive atmospheres. Installation time and expense are substantially reduced with this innovative method. Maintenance work of future modifications of the heating circuit can be carried out more efficiently.

The PLEXO connection consists of a plug and a socket part. The heating cable and power cable strands are connected by means of reliable spring-loaded terminals.

The heating cable and power supply connection cable are connected via safe spring creating the requisite pressure, eliminating any need for unravelling or twisting. A sophisticated sealing system offers safe and reliable protection against adverse weather conditions.

Explosion protection

Ex protection type
Ⓔx II 2G Ex e II
Ⓔx II 2D Ex tD A21 IP 6X

Certification
KEMA 09 ATEX 0184 U
IECEx KEM 09.0086 U

Operating temperatur
-60 °C to +120 °C

Technical data

Protection class
IP 66 according to EN 60529

Min. installation temperature
-30 °C

Diameter
of the heating conductor or the PTC resistor to be used 3 mm to 7.5 mm

Supply voltage
max. 420 V

Rated current
max. 25 A

Rated connection capacity
2.5 mm²

Material

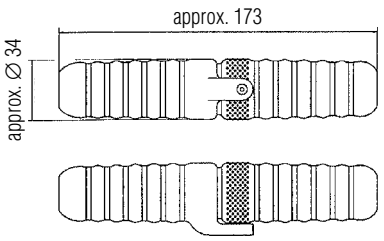
Enclosure	high-temperature thermoplastic
Seals	Silicone rubber

Weight
Plug and socket (splice)
240 g

Selection chart

Description	Designation	Order no.
Connection for EKL medium		
Heating cable splice 10 Ω/km to 8000 Ω/km	**PLEXO E-KK**	**27-59SE-H01710KK**
Heating cable splice 7.2 Ω/km	**PLEXO E-GG**	**27-59SE-H01710GG**
Heating cable connection Side G: 7.2 Ω/km Side K: 10 Ω/km to 8000 Ω/km	**PLEXO E-GK**	**27-59SE-H01710GK**
Blanking cap		
Protective end cap	**PLEXO H-2**	**05-0037-0011**
EKL cold lead Ex		
Length 1.2 m; 2.5 mm²; M20 x 1.5		**05-0020-0530**

Plug and socket/splice



Technical data subject to change without notice.

Junction box for EKL medium

Features

- Chemical-resistant
- Temperature-resistant
- Flame-retardant
- For use in hazardous areas with surface resistance < 10^9 Ω
- Absolutely corrosion-proof
- Seawater-proof

Description

Polyester enclosures have proven their worth in many industrial plants.

They offer safe protection even when they are used under extremely unfavorable conditions, on exposure to aggressive chemical media or hard mechanical conditions.

The inside base of the enclosure has at its sides, threaded bushings for the fastening of mounting rails or panels.

The enclosure is mounted by means of insulated screws outside of the lid seal.

Explosion protection

Ex protection type
Ⓔx II 2G Ex e IIC T6, T5 Gb
Ⓔx II 2D Ex tb IIIC T80 °C, T95 °C Db

Certification
PTB 08 ATEX 1064
IECEx PTB 09.0009X

Technical data

Material
glass-fiber reinforced polyester, surface resistance < 10^9 Ω

Colour
RAL 9005, black

Mechanical resistance
impact energy 7 Nm

Protection class (EN 60529/IEC 60529)
IP 66/67

Cable gland
IP 65

Supply voltage
500 V/690 V (depending on version)

Standard seal
EPDM -20 °C to +100 °C
Silikon -55 °C to +100 °C

Lid screws
Stainless steel cross slot (+ -)

Selection chart

Enclosure Short form title	Enclosure sizes (mm)	Qty/ Terminal size	Terminal identification	Qty/Earth terminal	Glands per enclosure	Terminal range	Order no.
Ex 300	160 x 160 x 90	2/6 mm²	L, N	2/6 mm²	1 x M25 2 x threaded M20	∅ 7 to 17 mm	**07-5103-9054**
Ex 400 S	160 x 160 x 90	3/6 mm²	L1; L2, L3	4/6 mm²	1 x M25 4 x threaded M20	∅ 7 to 17 mm	**07-5103-9055**
Ex 400 D	260 x 160 x 90	6/6 mm²	2 x L1; 2 x L2; 2 x L3	each 6/6 mm²	1 x M25 6 x threaded M20	∅ 7 to 17 mm	**07-5103-9056**
Ex 690	160 x 160 x 90	2/16 mm²	L, N	2/16 mm²	1 x M40 2 x threaded M20	∅ 17 to 28 mm	**07-5103-9219**
Ex 690 S/D	260 x 160 x 90	7/16 mm²	2 x L1; 2 x L2; 2 x L3	6/16 mm²	1 x M40 6 x threaded M20	∅ 17 to 28 mm	**07-5103-9220**

Technical data subject to change without notice.

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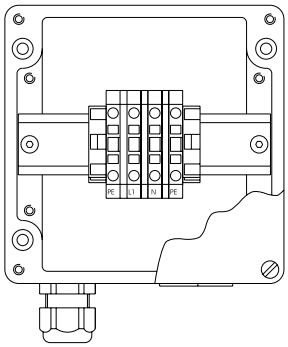
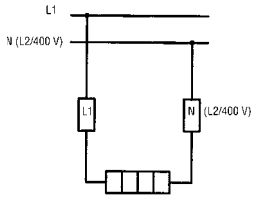
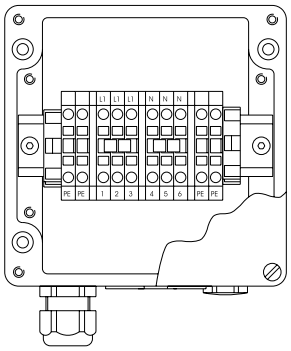
Junction box Ex 300



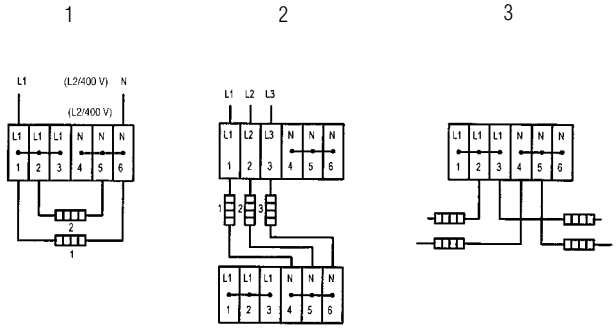
Connection diagram for junction box Ex 300



Junction box/terminal box Ex 400 S

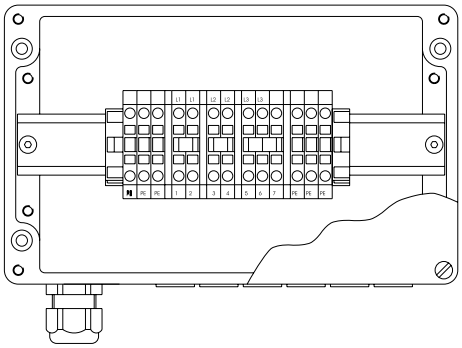


Connection diagram for junction box Ex 400 S

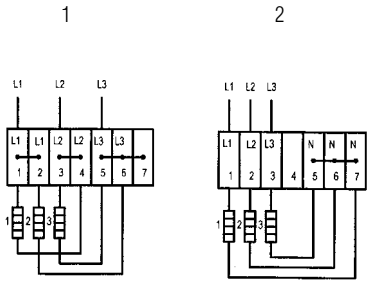


1 Double junction box
2 Star connection
3 Intermediate junction box

Junction box Ex 400 D

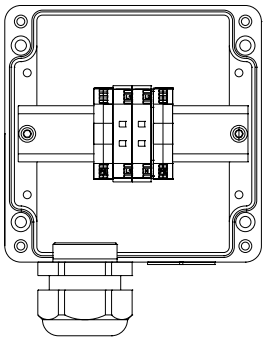


Connection diagram for junction box Ex 400 D

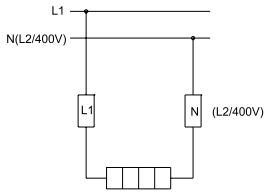


1 Delta connection
2 Star connection

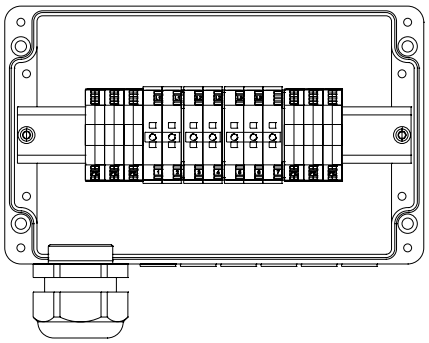
Junction box Ex 690



Connection diagram for junction box Ex 690

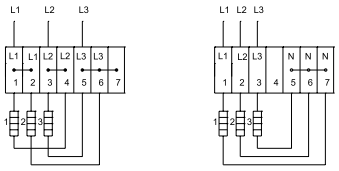


Junction box/terminal box Ex 690 S/D



Connection diagram for junction box Ex 690 S/D

1 2



1 Delta connection
2 Star connection

EKL premium flexible single-core plastic-insulated heating cable

Features

- Constant power output per meter
- Steam purging resistant, high resistant to chemicals
- Easy installation, simple tailoring on site
- ATEX approved according to EN 60079
- Suitable for applications in hazardous area

Description

EKL premium is a flexible heating cable with a fixed specific resistance.

It's small external dimensions make the heating cable easy to install, even on irregularly shaped surfaces such as on pumps, valves and flanges. Assembly on sites is simple and made even easier by the imprinted metre markings.

The reinforced structure facilitates applications of the EKL premium heating cable even under increased mechanical stress (7 Joule).

Explosion protection

ATEX Ex protection type
Ⓔx II 2G Ex e II
Ⓔx II 2D Ex tD A21

Certification
KEMA 10 ATEX 0035 U
IECEx KEM 10.0011U

Technical data

Nominal voltage (U_0/U)
450 V/750 V

Test voltage
2.5 kV (lead/braid)

Protective braid resistance
< 18.0 Ω/km

Operating temperature
-60 °C to +260 °C

Min. installation temperature
-60 °C

Min. bending radius
15 mm
25 mm for 1R08 and 1R71

Shock resistance
7 joules (in conformance to EN 60079)

Selection chart EKL premium

Designation	Ω/km at +20 °C	Outside diameter, mm	Order no.	Designation	Ω/km at +20 °C	Outside diameter mm	Order no.
EKL premium 1R08	1.08	10.20	**27-5821-756K1R08**	EKL premium 0150	150	4.84	**27-5822-756K0150**
EKL premium 1R71	1.71	8.60	**27-5821-756K1R71**	EKL premium 0180	180	4.56	**27-5822-756K0180**
EKL premium 02R9	2.9	7.60	**27-5821-756K02R9**	EKL premium 0200	200	4.70	**27-5822-756K0200**
EKL premium 0004	4	6.55	**27-5821-756K0004**	EKL premium 0320	320	4.83	**27-5826-756K0320**
EKL premium 04R4	4.4	6.70	**27-5821-756K04R4**	EKL premium 0360	360	4.42	**27-5822-756K0360**
EKL premium 07R2	7.2	5.54	**27-5821-756K07R2**	EKL premium 0380	380	4.73	**27-5826-756K0380**
EKL premium 0010	10	5.35	**27-5821-756K0010**	EKL premium 0480	480	4.61	**27-5826-756K0480**
EKL premium 11R7	11.7	5.20	**27-5821-756K11R7**	EKL premium 0600	600	4.50	**27-5826-756K0600**
EKL premium 0015	15	5.02	**27-5821-756K0015**	EKL premium 0650	650	4.46	**27-5826-756K0650**
EKL premium 17R8	17.8	4.90	**27-5821-756K17R8**	EKL premium 0700	700	4.43	**27-5826-756K0700**
EKL premium 0025	25	4.87	**27-5822-756K0025**	EKL premium 0810	810	4.59	**27-5822-756K0810**
EKL premium 31R5	31.5	5.19	**27-5822-756K31R5**	EKL premium 1000	1000	4.49	**27-5822-756K1000**
EKL premium 0050	50	4.87	**27-5822-756K0050**	EKL premium 1440	1440	4.34	**27-5822-756K1440**
EKL premium 0065	65	4.71	**27-5822-756K0065**	EKL premium 1750	1750	4.27	**27-5822-756K1750**
EKL premium 0080	80	4.61	**27-5822-756K0080**	EKL premium 2000	2000	4.52	**27-5824-756K2000**
EKL premium 0100	100	5.16	**27-5822-756K0100**	EKL premium 3000	3000	4.35	**27-5824-756K3000**
				EKL premium 8000	8000	4.07	**27-5824-756K8000**

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Plug-in connection system PLEXO

Features

- Universal applications thanks to the plug and socket connection technology
- Quick and easy installation
- Easy to service and to maintain

Description

PLEXO is a plug-in connection system for heating cables used in potentially explosive atmospheres. Installation time and expense are substantially reduced with this innovative method. Maintenance work of future modifications of the heating circuit can be carried out more efficiently.

The PLEXO connection consists of a plug and a socket part. The heating cable and power cable strands are connected by means of reliable spring-loaded terminals.

The heating cable and power supply connection cable are connected via safe spring creating the requisite pressure, eliminating any need for unravelling or twisting. A sophisticated sealing system offers safe and reliable protection against adverse weather conditions.

Explosion protection

Ex protection type
Ⓔx II 2G Ex e II
Ⓔx II 2D Ex tD A21 IP 6X

Certification
KEMA 09 ATEX 0184 U
IECEx KEM 09.0086 U

Operating temperatur
-60 °C to +120 °C

Technical data

Protection class
IP 66 according to EN 60529

Min. Installation temperature
-30 °C

Diameter
of the heating conductor or the PTC resistor to be used 3 mm to 7.5 mm

Supply voltage
max. 420 V

Rated current
max. 25 A

Rated connection capacity
2.5 mm²

Material

Enclosure	high-temperature thermoplastic
Seals	Silicone rubber

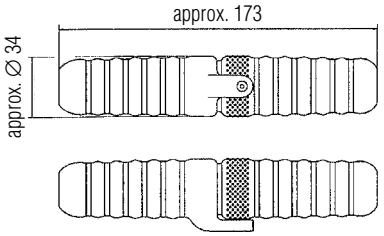
Weight
Plug and socket (splice) 240 g

Selection chart

Description	Designation	Order no.
Connection for EKL premium		
Heating cable splice 10 Ω/km up to 8000 Ω/km	**PLEXO E-KK**	**27-59SE-H01710KK**
Heating cable splice 7.2 Ω/km	**PLEXO E-GG**	**27-59SE-H01710GG**
Heating cable connection Side G: 7.2 Ω/km Side K: 10 Ω/km up to 8000 Ω/km	**PLEXO E-GK**	**27-59SE-H01710GK**
Blanking cap		
Protective end cap	**PLEXO H-2**	**05-0037-0011**
EKL cold lead Ex		
Length 1.2 m; 2.5 mm²; M20 x 1.5		**05-0020-0530**

Technical data subject to change without notice.

Plug and socket/splice



03-0330-0487/C-07/2013-BEH-246964/2

Junction box for EKL premium

Features

- Chemical-resistant
- Temperature-resistant
- Flame-retardant
- For use in hazardous areas with surface resistance < 10^9 Ω
- Absolutely corrosion-proof
- Seawater-proof

Description

Polyester enclosures have proven their worth in many industrial plants.

They offer safe protection even when they are used under extremely unfavorable conditions, on exposure to aggressive chemical media or hard mechanical conditions.

The inside base of the enclosure has at its sides, threaded bushings for the fastening of mounting rails or panels. The enclosure is mounted by means of insulated screws outside of the lid seal.

Explosion protection

Ex protection type
Ⓔx II 2G Ex e IIC T6, T5 Gb
Ⓔx II 2D Ex tb IIIC T80 °C, T95 °C Db

Certification
PTB 08 ATEX 1064
IECEx PTB 09.0009X

Technical data

Material
glass-fiber reinforced polyester, surface resistance < 10^9 Ω

Colour
RAL 9005, black

Mechanical resistance
impact energy 7 Nm

Protection class (EN 60529/IEC 60529)
IP 66/67

Cable gland
IP 65

Supply voltage
500 V/690 V (depending on version)

Standard seal
EPDM -20 °C to +100 °C
Silikon -55 °C to +100 °C

Lid screws
Stainless steel cross slot (+ -)

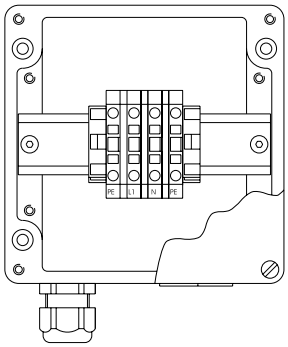
Selection chart

Enclosure short form title	Enclosure sizes (mm)	Qty/ Terminal size	Terminal identification	Qty/Earth terminal	Glands per enclosure	Terminal range	Order no.
Ex 300	160 x 160 x 90	2/6 mm²	L, N	2/6 mm²	1 x M25 2 x threaded M20	⌀ 7 to 17 mm	**07-5103-9054**
Ex 400 S	160 x 160 x 90	3/6 mm²	L1; L2, L3	4/6 mm²	1 x M25 4 x threaded M20	⌀ 7 to 17 mm	**07-5103-9055**
Ex 400 D	260 x 160 x 90	6/6 mm²	2 x L1; 2 x L2; 2 x L3	each 6/6 mm²	1 x M25 6 x threaded M20	⌀ 7 to 17 mm	**07-5103-9056**
Ex 690	160 x 160 x 90	2/16 mm²	L, N	2/16 mm²	1 x M40 2 x threaded M20	⌀ 17 to 28 mm	**07-5103-9219**
Ex 690 S/D	260 x 160 x 90	7/16 mm²	2 x L1; 2 x L2; 2 x L3	6/16 mm²	1 x M40 6 x threaded M20	⌀ 17 to 28 mm	**07-5103-9220**

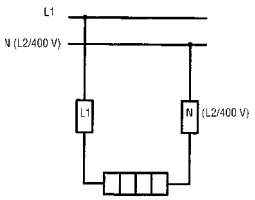
Technical data subject to change without notice.

03-0330-0487/C-07/2013-BEH-246964/3

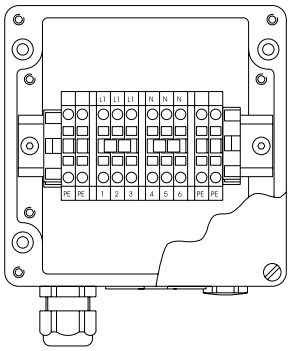
Junction box Ex 300



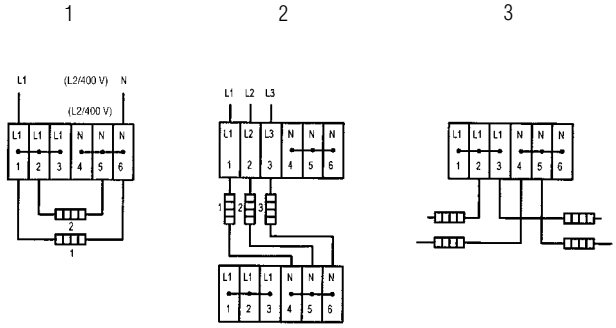
Connection diagram for junction box Ex 300



Junction box/terminal box Ex 400 S

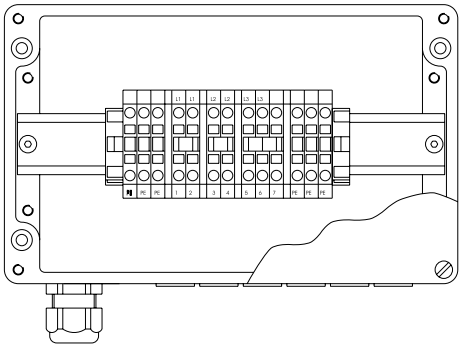


Connection diagram for junction box Ex 400 S

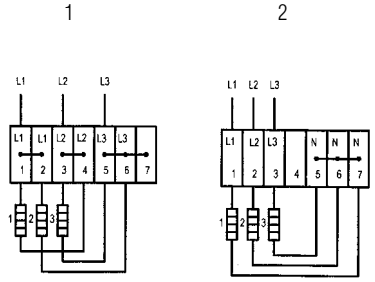


1 Double junction box
2 Star connection
3 Intermediate junction box

Junction box Ex 400 D



Connection diagram for junction box Ex 400 D



1 Delta connection
2 Star connection

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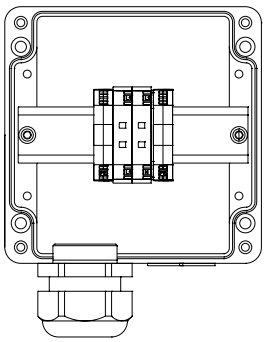
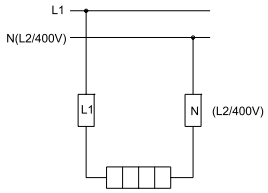
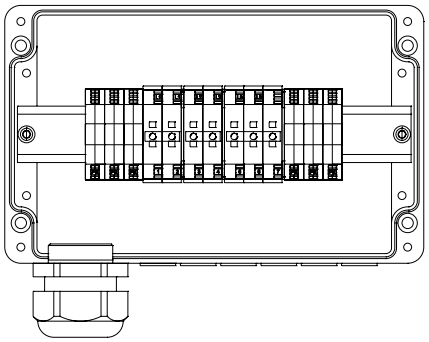
Junction box Ex 690



Connection diagram for junction box Ex 690

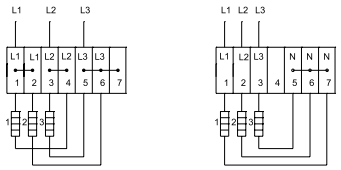


Junction box/terminal box Ex 690 S/D



Connection diagram for junction box Ex 690 S/D

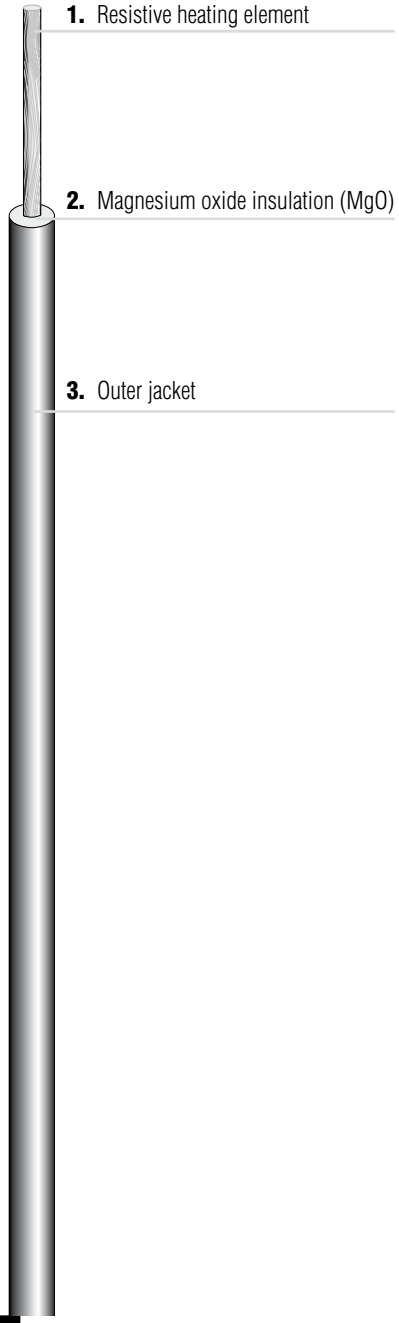
1 2



1 Delta connection
2 Star connection


BARTEC

EMK Single-core mineral-insulated heating cable



Features

- High constant power output per metre
- Extremely high mechanical strength
- Temperature-resistant up to +650 °C
- Highly resistant to chemicals
- Supply voltage of up to 500 V
- Suitable for hazardous areas
- Outer jacket of Incoloy
  - highly resistant to stress corrosion cracking
  - high power output (up to 230 W/m)
  - extremely high chemical resistance

Description

A distinguishing feature of our BARTEC EMK heating cables is that they are extremely robust and require no additional protection against mechanical influences.

Function

The application of a supply voltage to the resistance cable generates heat. The quantity of heat is dependent on the resistance value of the heating cable and the supply voltage.

Explosion protection

Ex protection type
Ⓔx II 2G Ex e II T1 to T6 Gb

Certification
Sira 13 ATEX 3363

Technical data

Structure

heating element	copper, chromium nickel, constantan
insulation	magnesium Oxide (MgO)
outer jacket	Stainless steel no. 1.4541 CuNi or Alloy 825/Inconel

Heating circle with EMK

Ex version	Type 27-3621-02../.... Type 27-3621-04../....
Standard version	Type 27-3623-02../.... Type 27-3623-04../....

Nominal voltage
up to 500 V

Test voltage
1.5 kV

Min. installation temperature
-20 °C

Bend radius
3 x OD (Standard version)
5 x OD (Ex version)

Weight
100 to 180 g/m²

Max. jacket withstand temperature

Alloy 825/Inconel	+650 °C (on request)
S/S no. 1.4541	+600 °C
CuNi	+400 °C

03-0330-0240/D-06/2014-BEH-201987/3

Selection chart CuNi

Short form title	Ω/km at +20 °C	Conductor material	Outer diameter (mm)	Outer jacket resistance Ω/km	Order no.
EMK CuNi 0011	11	Copper	4.9	58.30	**27-3833-20490011**
EMK CuNi 0017	17	Copper	4.6	65.60	**27-3833-20460017**
EMK CuNi 0063	25	Copper	3.7	93.30	**27-3833-20370025**
EMK CuNi 0025	40	Copper	3.4	107.60	**27-3833-20340040**
EMK CuNi 0040	63	Copper	3.2	121.00	**27-3833-20320063**
EMK CuNi 0160	160	Constantan	4.9	58.81	**27-3833-20490160**
EMK CuNi 0250	250	Constantan	4.4	71.99	**27-3833-20440250**
EMK CuNi 0400	400	Constantan	4.0	87.69	**27-3833-20400400**
EMK CuNi 0630	630	Constantan	3.7	103.10	**27-3833-20370630**
EMK CuNi 1000	1000	Constantan	3.4	123.00	**27-3833-20341000**
EMK CuNi 1600	1600	Constantan	3.2	139.60	**27-3833-20321600**

Selection chart VA No. 1.4541

Short form title	Ω/km at +20 °C	Conductor material	Outer diameter (mm)	Outer jacket resistance Ω/km	Order no.
EMK VA 0160	160	Chromium Nickel	6.5	92.38	**27-3834-20650160**
EMK VA 0250	250	Chromium Nickel	5.3	137.60	**27-3834-20530250**
EMK VA 0400	400	Chromium Nickel	4.7	173.70	**27-3834-20470400**
EMK VA 0630	630	Chromium Nickel	4.3	152.40	**27-3834-20430630**
EMK VA 1000	1000	Chromium Nickel	3.9	187.00	**27-3834-20391000**
EMK VA 1600	1600	Chromium Nickel	3.6	215.30	**27-3834-20361600**
EMK VA 2500	2500	Chromium Nickel	3.4	235.80	**27-3834-20342500**
EMK VA 4000	4000	Chromium Nickel	3.2	284.20	**27-3834-20324000**
EMK VA 6300	6300	Chromium Nickel	3.2	284.20	**27-3834-20326300**
EMK VA 10K0	10000	Chromium Nickel	3.2	284.20	**27-3834-203210K0**

Technical data subject to change without notice.

03-0330-0240/D-07/2013-BEH-201987/4

EMK Standard connection kit

EMK Ex connection kit

Features

- All necessary connection components in one kit
- Easy selection of the necessary components
- Large variant variety
- Ready assembled, quick to install
- Quality inspection during production

Description

These connection kits have been specifically designed for EMK heating cables and their particular fields of application.

There are two versions of the EMK connection kit available:

- **Standard version**
- **Ex version**
  for use in hazardous areas

The EMK connection kits consist of:

- **Cold leads**
  in the required quantity
- **Hot to cold joints**
  in the required quantity
- **Pre-cut and factory terminated assembly**
  of the cold leads and hot to cold joints with EMK heating cable (heating cables must be ordered separately. See ordering information).

Selection chart EMK Standard heating circuits, pre-assembled

EMK CuNi with cold lead 1.2 m; 2.5 mm², M20 brass

Short form title	Code No.
EMK CuNi 0011	03
EMK CuNi 0017	04
EMK CuNi 0025	05
EMK CuNi 0040	06
EMK CuNi 0063	07
EMK CuNi 0160	08
EMK CuNi 0250	10
EMK CuNi 0400	11
EMK CuNi 0630	12
EMK CuNi 1000	13
EMK CuNi 1600	14

Complete order no.
Please insert correct code.

27-3623-02 □□ 0101

EMK VA with cold lead 1.2 m; 2.5 mm², M20 brass

Short form title	Code No.
EMK VA 0160	15
EMK VA 0250	16
EMK VA 0400	17
EMK VA 0630	18
EMK VA 1000	19
EMK VA 1600	20
EMK VA 2500	21
EMK VA 4000	22
EMK VA 6300	23
EMK VA 10K	24

Complete order no.
Please insert correct code.

27-3623-04 □□ 0101

Selection chart EMK Ex heating circuits, pre-assembled

EMK CuNi with cold lead 1.2 m; 2.5 mm², M20 brass

Short form title	Code No.
EMK CuNi 0011	03
EMK CuNi 0017	04
EMK CuNi 0025	05
EMK CuNi 0040	06
EMK CuNi 0063	07
EMK CuNi 0160	08
EMK CuNi 0250	10
EMK CuNi 0400	11
EMK CuNi 0630	12
EMK CuNi 1000	13
EMK CuNi 1600	14

Complete order no.
Please insert correct code.

27-3621-02 □□ 0101

EMK VA with cold lead 1.2 m; 2.5 mm², M20 brass

Short form title	Code No.
EMK VA 0160	15
EMK VA 0250	16
EMK VA 0400	17
EMK VA 0630	18
EMK VA 1000	19
EMK VA 1600	20
EMK VA 2500	21
EMK VA 4000	22
EMK VA 6300	23
EMK VA 10K	24

Complete order no.
Please insert correct code.

27-3621-04 □□ 0101

Technical data subject to change without notice.

03-0330-0248/D-07/2013-BEH-201995/2

Description

The “Standard” connection kits for EMK heating cables are available in 3 versions:

- EMK Standard 300
- EMK Standard 400 S
- EMK Standard 400 D

The necessary junction box must be ordered for each pre-assembled EMK heating circuit depending on the type of wiring (single-phase, two-phase, star connection, delta connection).

EMK junction box ”Standard”		Cold leads		Hot to cold connection joint	
Technical data		**Technical data**		**Technical data**	
Material	Polyester, glass-fibre reinforced	**Standard length**	1.2 m	**Material**	SS 1.4401
Colour	grey, similar to RAL 7001	**Rated resistance**	7 Ω/km	**Protection class**	IP 65
Surface resistance	> 10^{12} Ω	**Outer diameter**	5.3 mm	**Dimensions**	L = 35 mm ∅ = 10 mm
Protection class	IP 65	**Cross section**	2.5 mm²		
Cable gland	IP 54 to IP 65	**Conductor material**	Copper		
Cover screws	stainless steel	**Outer jacket material**	CuNi, SS 1.4541		
		Bend radius	3 x outer diameter		
		Gland, terminal connection	M20		

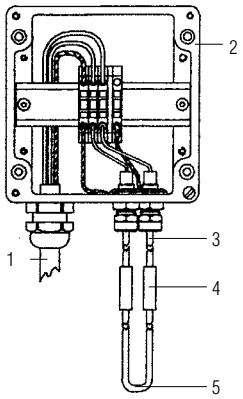
Selection chart EMK heating circuits “Standard“ - Junction box

Version Heating circuit	Supply voltage AC	Qty/ enclosure size (mm)	Qty/ terminal mm²	Terminal identification	Qty/ terminals	Qty/cold leads dry connections	Glands per enclosure	Terminal range	Order no.
300 CuNi **300 VA**	up to 500 V	1 unit 160 x 160 x 90	each 2 with 6 mm²	L N (L1; L2)	2 with 6 mm²	2	1 x M25 2 x threaded M20	∅ 7 to 17 mm	**07-5177-9100**
400 S CuNi **400 S VA**	up to 500 V	2 unit 160 x 160 x 90	each 6 with 6 mm²	3 x L1; 3 x N; 1 - 6 (L2; L3)	4 with 6 mm²	6	1 x M25 4 x threaded M20	∅ 7 to 17 mm	2 units **07-5177-9098**
400 D CuNi **400 D VA**	up to 500 V	1 unit 260 x 160 x 90	each 6 with 6 mm²	2 x L1; 2 x L2; 2 x L3; 1 - 7	6 with 6 mm²	6	1 x M25 3 x threaded M20	∅ 7 to 17 mm	**07-5177-9099**

Technical data subject to change without notice.

03-0330-0248/D-06/2014-BEH-201995/3

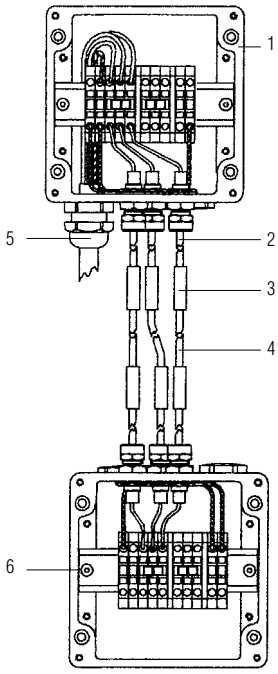
Standard 300



1 Mains supply
2 Heating circuit junction box
3 Cold lead
4 Hot to cold connection joint
5 Heating cable

Standard 400 S

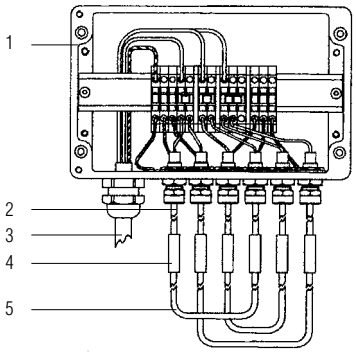
Typical star connection diagram



1 Heating circuit junction box
2 Cold lead
3 Hot to cold connection joint
4 Heating cable
5 Mains supply
6 EMK “Standard“ star connection enclosure

Standard 400 D

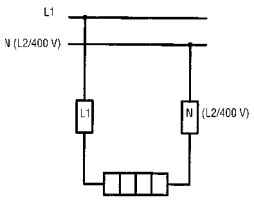
Typical delta connection diagram



1 Heating circuit junction box
2 Cold lead
3 Mains supply
4 Hot to cold connection joint
5 Heating cable

Connection diagram

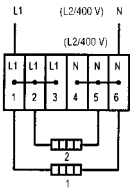
Standard 300



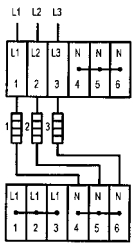
Connection diagram

Standard 400 S

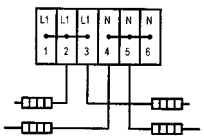
Double junction box



Star connection



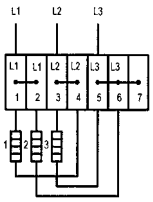
Intermediate junction box



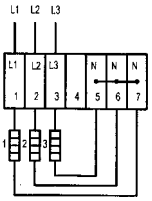
Connection diagram

Standard 400 D

Delta connection



Star connection



03-0330-0248/D-07/2013-BEH-201995/4

Description

The "Ex" connection kits for EMK heating cables are available in 3 versions:

- EMK Ex 300
- EMK Ex 400 S
- EMK Ex 400 D

The necessary junction box must be ordered for each pre-assembled EMK heating circuit depending on the type of wiring (single-phase, two-phase, star connection, delta connection).

EMK "Ex" junction box

Explosion protection

Ex protection type	Ⓔx II 2G Ex e IIC T6, T5 Gb Ⓔx II 2D Ex tb IIIC T80 °C, T95 °C Db
Certification	PTB 08 ATEX 1064 IECEx PTB 09.0009X

Technical data

Material	Polyester, glass-fibre reinforced
Colour	black
Surface resistance	$\leq 10^9\ \Omega$
Protection class	IP 65
Cable gland	IP 65
Cover screws	stainless steel

Cold leads

Technical data

Standard length	1.2 m
Rated resistance	7 Ω/km
Outer diameter	5.3 mm
Cross section	2.5 mm²
Conductor material	Copper
Outer jacket material	CuNi, VA 1.4541
Bend radius	3 x external diameter
Gland, terminal connection	M20

Hot to cold connection joint

Explosion protection

Ex protection type	Ⓔx II 2G Ex e II
Certification	SIRA 13 ATEX 3363

Technical data

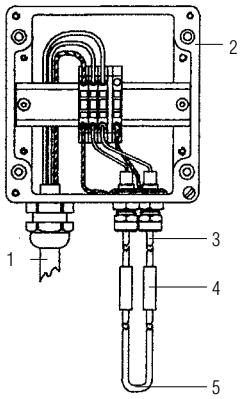
Material	SS 1.4401
Protection class	IP 65
Dimensions	L = 35 mm ∅ = 10 mm

Selection chart EMK "Ex" heating circuits junction boxes

Heating circuit version	Supply voltage AC	Qty/ enclosure size (mm)	Qty/ terminal size mm²	Terminal identification	Qty/earth terminals	Qty/cold leads dry connectors	Glands per enclosure	Terminal range	Order no.
300 CuNi **300 VA**	up to 500 V	1 unit 160 x 160 x 90	each 2 with 6 mm²	L N (L1; L2)	2 with 6 mm²	2	1 x M25 2 x threaded M20	∅ 7 to 17 mm	**07-5103-9054**
400 S CuNi **400 S VA**	up to 500 V	2 units 160 x 160 x 90	each 6 with 6 mm²	3 x L1; 3 x N; 1 - 6 (L2; L3)	4 with 6 mm²	6	1 x M25 4 x threaded M20	∅ 7 to 17 mm	2 units **07-5103-9055**
400 D CuNi **400 D VA**	up to 500 V	1 unit 260 x 160 x 90	each 6 with 6 mm²	2 x L1; 2 x L2; 2 x L3; 1 - 7	6 with 6 mm²	6	1 x M25 3 x threaded M20	∅ 7 to 17 mm	**07-5103-9056**

Technical data subject to change without notice.

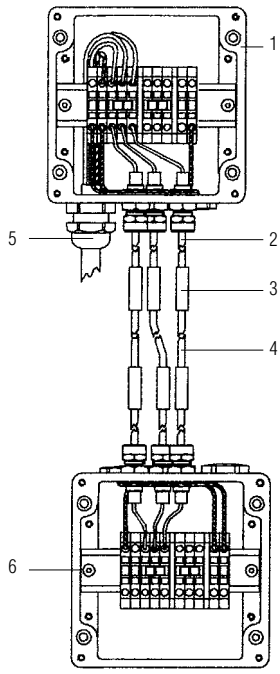
Standard 300



1 Mains supply
2 Heating circuit junction box
3 Cold lead
4 Hot to cold connection joint
5 Heating cable

Standard 400 S

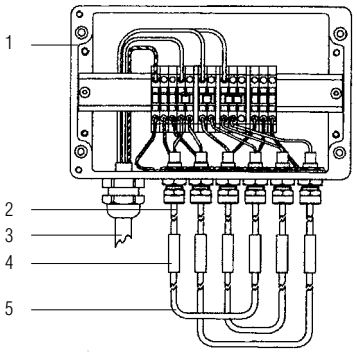
Typical star connection diagram



1 Heating circuit junction box
2 Cold lead
3 Hot to cold connection joint
4 Heating cable
5 Mains supply
6 EMK Standard star connection enclosure

Standard 400 D

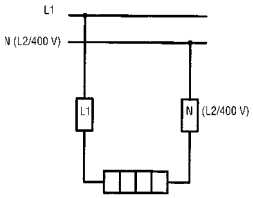
Typical delta connection diagram



1 Heating circuit junction box
2 Cold lead
3 Mains supply
4 Hot to cold connection joint
5 Heating cable

Connection diagram

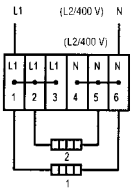
Standard 300



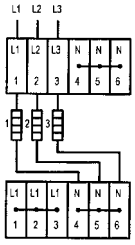
Connection diagram

Standard 400 S

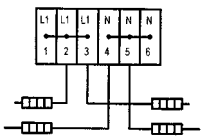
Double junction box



Star connection



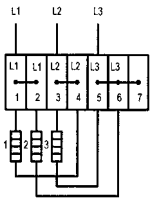
Intermediate junction box



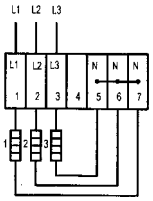
Connection diagram

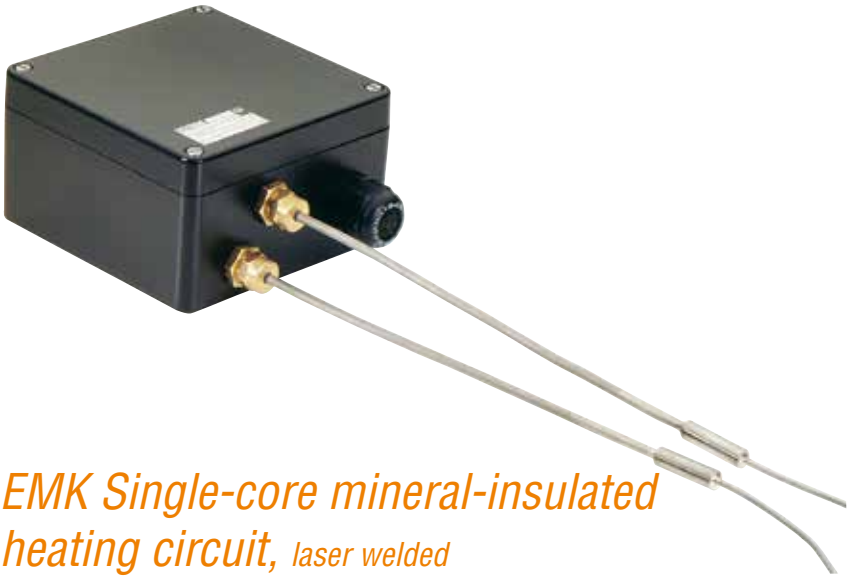
Standard 400 D

Delta connection

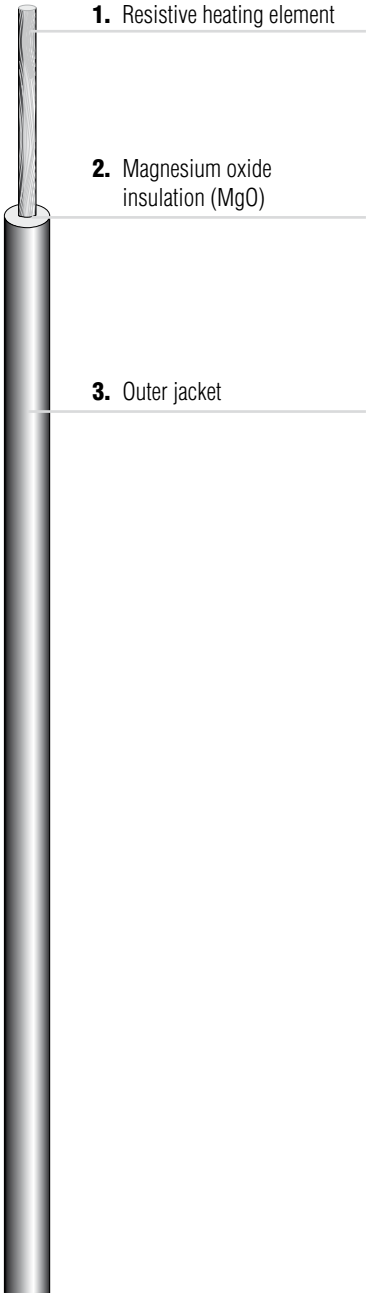


Star connection





EMK Single-core mineral-insulated heating circuit, laser welded



Features

- High constant power output per meter
- Extremely high mechanical strength
- Temperature-resistant up to +1000 °C
- Highly resistant to chemicals
- Supply voltage up to 750 V

Description

The BARTEC EMK heating circuits have the main characteristics that they are extremely robust and mechanical loadable. Additional advantages of the laser welded heating circuits are the suitability for highest operating temperatures and the good chemical resistance.

Typical applications are frost protection, maintaining temperature and heat-up for example in pipes, tanks, pumps, valves and vessels.

Function

The application of a supply voltage to the resistance cable generates heat. The quantity of heat is dependent on the resistance value of the heating cable and the supply voltage.

Explosion protection

Ex protection type
Ⓔx II 2G Ex e IIC Gb
Ⓔx II 2D Ex tb IIIC Db

Certification
BVS 13 ATEX E 034 U
IECEx BVS 13.0042U

Technical data

Structure

Heating element	Copper (Cu) Copper nickel (CuNi) Nickel chromium (NiCr)
Insulation	Magnesium oxide (MgO)
Outer jacket	SS 1.4541 or SS 2.4816 (Inconel)*

Nominal voltage
500 V/750 V

Ambient temperature
-55 °C to +70 °C

Operating temperature	
Version Ex	
Type 27-3641-4…	-70 °C to +600 °C
Type 27-3641-3…	-70 °C to +650 °C
Type 27-3641-7…*	
Version M	
Type 27-3643-1…	-70 °C to +500 °C
Type 27-3643-2…	
Type 27-3643-4…	-70 °C to +600 °C
Type 27-3643-3…	-70 °C to +800 °C
Type 27-3643-7…*	-70 °C to +1000 °C

Min. installation temperature
-20 °C

Max. Power output

150 W/m	27-364.-1…; 27-364.-2…; 27-364.-4…
250 W/m	27-364.-3…; 27-364.-7…*

Bending radius
16 to 33 mm (depending on version)

Cross section cold lead
SS 2.5 mm² (SS 6.0 mm²*)

Length cold lead
1 m (2 m*)

Material cable gland
M20 brass (stainless steel*)
M25 brass* (stainless steel*)

* on request

Selection chart EMK heating circuits pre-assembled

Short form title	Ω/km at +20 °C	Conductor material	Outer diameter (mm)	Order no.
EMK VA 0011 Cu**	11	Cu	4.9	27-3643-1 ☐ 31/00111000
EMK VA 0017 Cu**	17	Cu	4.6	27-3643-1 ☐ 31/00171000
EMK VA 0025 Cu**	25	Cu	3.7	27-3643-1 ☐ 31/00251000
EMK VA 0040 CuNi**	40	CuNi 5	4.0	27-3643-2 ☐ 31/00401000
EMK VA 0063 Cu**	63	Cu	3.2	27-3643-1 ☐ 31/00631000
EMK VA 0160 CuNi	160	CuNi	4.9	27-364 ☐ -4 ☐ 31/01601000
EMK VA 0250 CuNi	250	CuNi	4.4	27-364 ☐ -4 ☐ 31/02501000
EMK VA 0400 CuNi	400	CuNi	4.0	27-364 ☐ -4 ☐ 31/04001000
EMK VA 0630 CuNi	630	CuNi	3.7	27-364 ☐ -4 ☐ 31/06301000
EMK VA 1000 CuNi	1000	CuNi	3.4	27-364 ☐ -4 ☐ 31/10001000
EMK VA 1600 CuNi	1600	CuNi	3.2	27-364 ☐ -4 ☐ 31/16001000
EMK VA 0160 NiCr	160	NiCr	6.5	27-364 ☐ -3 ☐ 31/01601000
EMK VA 0250 NiCr	250	NiCr	5.6	27-364 ☐ -3 ☐ 31/02501000
EMK VA 0400 NiCr	400	NiCr	5.0	27-364 ☐ -3 ☐ 31/04001000
EMK VA 0630 NiCr	630	NiCr	4.5	27-364 ☐ -3 ☐ 31/06301000
EMK VA 1000 NiCr	1000	NiCr	4.1	27-364 ☐ -3 ☐ 31/10001000
EMK VA 1600 NiCr	1600	NiCr	3.8	27-364 ☐ -3 ☐ 31/16001000
EMK VA 2500 NiCr	2500	NiCr	3.6	27-364 ☐ -3 ☐ 31/25001000
EMK VA 4000 NiCr	4000	NiCr	3.2	27-364 ☐ -3 ☐ 31/40001000
EMK VA 6300 NiCr	6300	NiCr	3.2	27-364 ☐ -3 ☐ 31/63001000
EMK VA 010K NiCr	10000	NiCr	3.2	27-364 ☐ -3 ☐ 31/010K1000

Version	Code no.
Ex	1
Non-Ex	3

Nominal voltage	Code no.
500 V	2
750 V**	5

Please enter the correct code number.
Technical data subject to change without notice.
** Only available in version media protected.

03-0330-0730-07/2013-BEH-349787/2

Description

The "Ex" connection kits for EMK heating cables are available in 3 versions:

- EMK Ex 300
- EMK Ex 400 S
- EMK Ex 400 D

The necessary junction box must be ordered for each pre-assembled EMK heating circuit depending on the type of wiring (single-phase, two-phase, star connection, delta connection).

EMK "Ex" junction box

Explosion protection

Ex protection type	Ⓔx II 2G Ex e IIC T6, T5 Gb Ⓔx II 2D Ex tb IIIC T80 °C, T95 °C Db
Certification	PTB 08 ATEX 1064 IECEx PTB 09.0009X

Technical data

Material	Polyester, glass-fibre reinforced
Colour	black
Surface resistance	$\leq 10^9\ \Omega$
Protection class	IP 65
Cable gland	IP 65
Cover screws	stainless steel

Cold leads

Technical data

Standard length	1.0 m
Outer diameter	4.9 mm
Cross section	2.5 mm²
Conductor material	Copper
Outer jacket material	VA 1.4541
Bend radius	25 mm
Gland, terminal connection	M20

Hot to cold connection joint

Explosion protection

Ex protection type	Ⓔx II 2G Ex e IIC Gb Ⓔx II 2D Ex tb IIIC Db
Certification	BVS 13 ATEX E 034 U IECEx BVS 13.0042U

Technical data

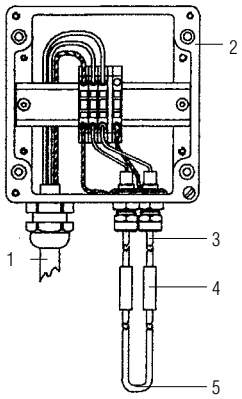
Material	SS 1.4541

Selection chart EMK "Ex" heating circuits- Junction box

Heating circuit version	Supply voltage AC	Qty/ enclosure size (mm)	Qty/ terminal size mm²	Terminal identification	Qty/earth terminals	Qty/cold leads dry connectors	Glands per enclosure	Terminal range	Order no.
300 CuNi **300 SS**	up to 500 V	1 unit 160 x 160 x 90	each 2 with 6 mm²	L N (L1; L2)	2 with 6 mm²	2	1 x M25 2 x threaded M20	∅ 7 to 17 mm	**07-5103-9054**
400 S CuNi **400 S SS**	up to 500 V	2 units 160 x 160 x 90	each 6 with 6 mm²	3 x L1; 3 x N; 1 - 6 (L2; L3)	4 with 6 mm²	6	1 x M25 4 x threaded M20	∅ 7 to 17 mm	2 units **07-5103-9055**
400 D CuNi **400 D SS**	up to 500 V	1 unit 260 x 160 x 90	each 6 with 6 mm²	2 x L1; 2 x L2; 2 x L3; 1 - 7	6 with 6 mm²	6	1 x M25 3 x threaded M20	∅ 7 to 17 mm	**07-5103-9056**

Technical data subject to change without notice.

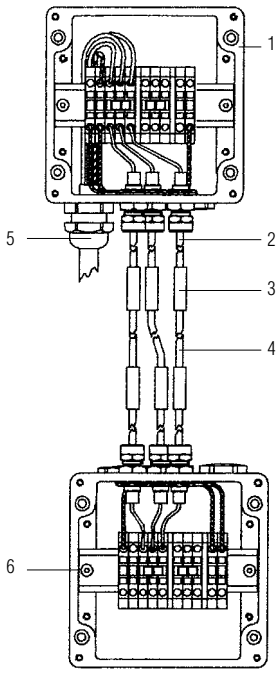
Standard 300



1 Mains supply
2 Heating circuit junction box
3 Cold lead
4 Hot to cold connection joint
5 Heating cable

Standard 400 S

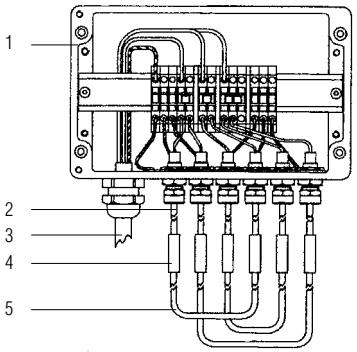
Typical star connection diagram



1 Heating circuit junction box
2 Cold lead
3 Hot to cold connection joint
4 Heating cable
5 Mains supply
6 EMK Standard star connection enclosure

Standard 400 D

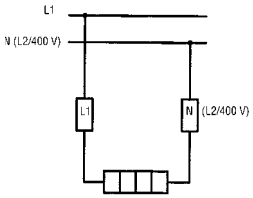
Typical delta connection diagram



1 Heating circuit junction box
2 Cold lead
3 Mains supply
4 Hot to cold connection joint
5 Heating cable

Connection diagram

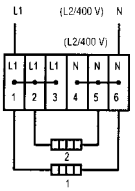
Standard 300



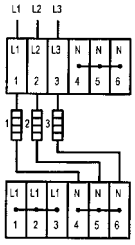
Connection diagram

Standard 400 S

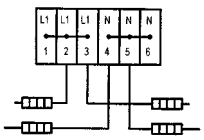
Double junction box



Star connection



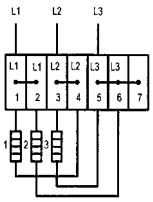
Intermediate junction box



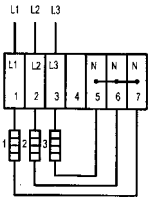
Connection diagram

Standard 400 D

Delta connection



Star connection



Description

The "Standard" connection kits for EMK heating cables are available in 5 versions:

- EMK Standard 300
- EMK Standard 400 S
- EMK Standard 400 D
- EMK Standard 690
- EMK Standard 690 S/D

The necessary junction box must be ordered for each pre-assembled EMK heating circuit depending on the required mains voltage and the type of wiring (single-phase, two-phase, star connection, delta connection).

EMK junction box "Standard"

Technical data

Material	Polyester, glass-fibre reinforced
Colour	grey, black
Surface resistance	> 10^{12} Ω
Protection class	IP 65
Cable gland	IP 54 to IP 65
Cover screws	stainless steel

Cold leads

Technical data

Standard length	1.0 m
Outer diameter	4.9 mm
Cross section	2.5 mm²
Conductor material	Copper
Outer jacket material	SS 1.4541
Bend radius	25 mm
Gland, terminal connection	M20

Hot to cold connection joint

Technical data

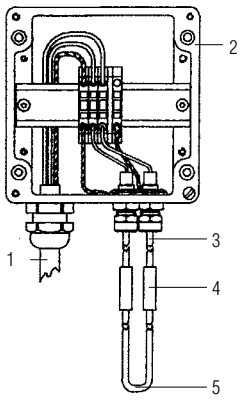
Material	SS 1.4541

Selection chart EMK heating circuits "Standard" - Junction box

Version Heating circuit	Supply voltage AC	Qty/ enclosure size (mm)	Qty/ terminal mm²	Terminal identification	Qty/ termnals	Qty/cold leads dry connections	Glands per enclosure	Terminal range	Order no.
300 CuNi 300 SS	up to 500 V	1 unit 160 x 160 x 90	each 2 with 6 mm²	L N (L1; L2)	2 with 6 mm²	2	1 x M25 2 x threaded M20	∅ 7 to 17 mm	**07-5177-9100**
400 S CuNi 400 S SS	up to 500 V	2 units 160 x 160 x 90	each 6 with 6 mm²	3 x L1; 3 x N; 1 - 6 (L2; L3)	4 with 6 mm²	6	1 x M25 4 x threaded M20	∅ 7 to 17 mm	2 units **07-5177-9098**
400 D CuNi 400 D SS	up to 500 V	1 unit 260 x 160 x 90	each 6 with 6 mm²	2 x L1; 2 x L2; 2 x L3; 1 - 7	6 with 6 mm²	6	1 x M25 3 x threaded M20	∅ 7 to 17 mm	**07-5177-9099**
690	up to 690 V	1 unit 160 x 160 x 90	each 2 with 16 mm²	L N (L1; L2)	2 with 16 mm²	2	1 x M40 2 x threaded M20	∅ 17 to 28 mm	**07-5103-9219**
690 S/D	up to 690 V	1 unit 260 x 160 x 90	each 7 with 16 mm²	2 x L1; 2 x L2; 2 x L3; 1 - 7	6 with 16 mm²	6	1 x M40 6 x threaded M20	∅ 17 to 28 mm	**07-5103-9220**

Technical data subject to change without notice.

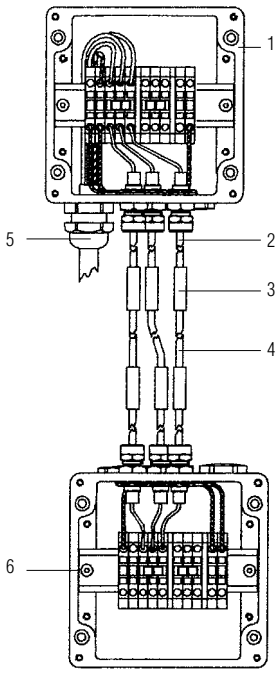
Standard 300



1 Mains supply
2 Heating circuit junction box
3 Cold lead
4 Hot to cold connection joint
5 Heating cable

Standard 400 S

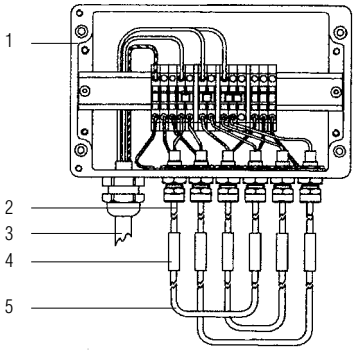
Typical star connection diagram



1 Heating circuit junction box
2 Cold lead
3 Hot to cold connection joint
4 Heating cable
5 Mains supply
6 EMK “Standard“ star connection enclosure

Standard 400 D

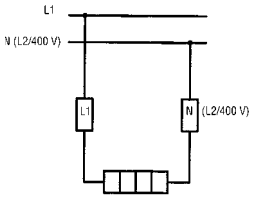
Typical delta connection diagram



1 Heating circuit junction box
2 Cold lead
3 Mains supply
4 Hot to cold connection joint
5 Heating cable

Connection diagram

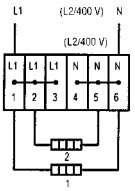
Standard 300



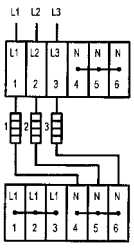
Connection diagram

Standard 400 S

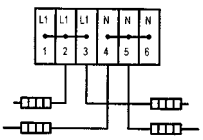
Double junction box



Star connection



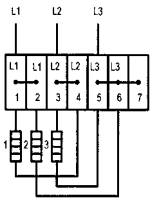
Intermediate junction box



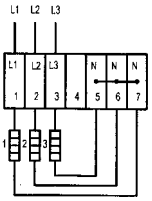
Connection diagram

Standard 400 D

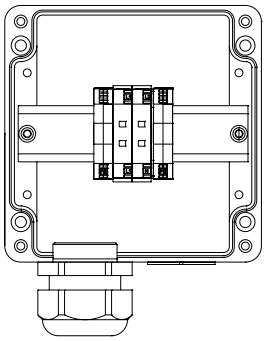
Delta connection



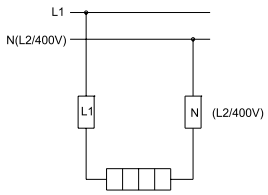
Star connection



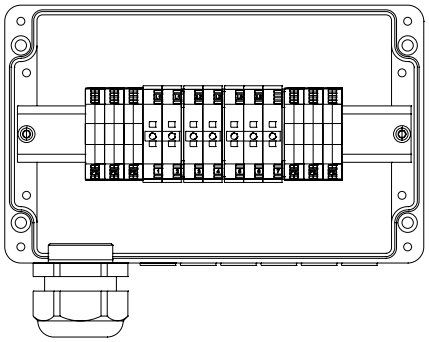
Junction box Ex 690



Connection diagram for junction box Ex 690

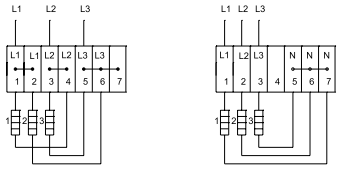


Junction box/terminal box Ex 690 S/D



Connection diagram for junction box Ex 690 S/D

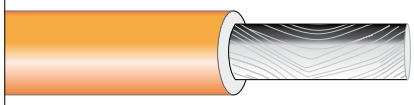
1 2



1 Delta connection
2 Star connection

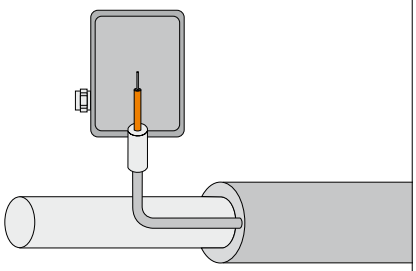
BARTEC

SEH Heating cable



Pull & splice box

Power feeding and end box



System overview SEH

Features

- Most cost effective solution to maintain temperature at long or unlimited distance lengths with least number of feeding points
- Components with temperature resistance of up to 260°C
- Heating tube made of carbon steel provides additional mechanical safety for SEH cable
- Electrical safety thanks to zero potential on the outer surface of heating tube
- Design according to IEEE844 standard
- Wide ambient temperature range

Description

The Skin Effect Heating system is an electrical heating system using the AC phenomenon with a remarkable effect on the inner surface of a ferromagnetic tube.

The heating element is a plastic insulated conductor inside a ferromagnetic carbon steel tube. The heating circuit is to be designed to any needs by variation heat pipe size, electrical conductor size, supply voltage and insulation material.

BARTEC provides the complete component range and a full package of documentation.

The typical applications of SEH systems are temperature maintenance, frost protection and heating-up of long pipelines.

All parts of the system are grounded providing additional electrical safety.

Power feeding point equipment is designed and constructed customized, according to project requirements. When increased power output is necessary several runs can be installed.

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Explosion protection

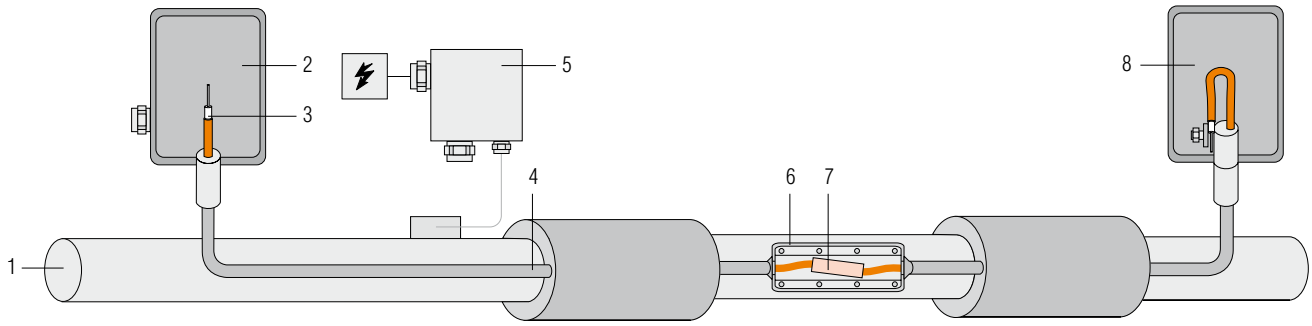
Ex protection type
Ⓔx II 2G Ex e IIC T3 or T4 Gb

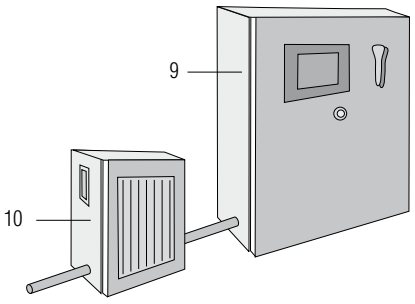
Certification System
ITS11ATEX37350X
TC RU C-DE.ГБ08.В.00310

System overview

- SEH heating cable (120 °C/260 °C) with connection equipment
- SEH feeding and end box (up to 5 kV) with connection equipment
- Pull & splice box
- Distribution panel, control equipment and transformer

Skin Effect Heating system components





1 Carrier pipe
2 Power feeding box
3 Heating cable
4 Heat tube
5 Thermostat
6 Pull & splice box
7 Splice set
8 Power end box
9 Control and distribution board SEH
10 Special transformer

For more information, please contact your local BARTEC sales representative.

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Insulation entry bush		PU	Order no.
An insulation entry bush is used to prevent the heating cable being damaged where it passes through the thermal insulation outer cladding.			
Insulation entry for 	PSB/PSBL, connecting cable (3 x 1.5 mm²; 3 x 2.5 mm²)	unit	**05-0020-0472**
	MSB/HSB	unit	**05-0020-0091**
	HTSB (metal screw)	unit	**05-0020-0516**
	Pt100 Ex (M25)	unit	**05-0020-0261**
	EKL single/1 x Pt100 M (media-protected)	unit	**05-0020-0262**
	EKL double/2 x Pt100 M (media-protected)	unit	**05-0020-0343**

Adhesive tapes		PU	Order no.
Aluminium self-adhesive tape +80 °C*	Roll: 50 m long, 50 mm wide Temp.: up to +80 °C; weight: 560	roll	**02-5500-0003**
Aluminium self-adhesive tape +150 °C*	Roll: 55 m long, 50 mm wide Temp.: up to +150 °C; weight 440 g	roll	**02-5500-0014**
Aluminium foil, 1 000/100 m	Roll: 100 m long, 1000 mm wide; 0.05 mm thick	roll	**02-2430-0002**
Aluminium foil, 1 000/10 m	Roll: 10 m long, 1000 mm wide; 0.05 mm thick	roll	**02-2430-0003**
Textile self-adhesive tape +90 °C	Roll: 50 m long, 12 mm wide Temp.: up to +90 °C; weight 180 g	roll	**02-5500-0001**
Polyester self-adhesive tape +100 °C	Roll: 50 m long, 19 mm wide Temp.: up to +100 °C; weight 150 g	roll	**02-5500-0005**
Glass-fibre self-adhesive tape +250 °C**	Roll: 50 m lang, 12 mm wide Temp.: up to +200 °C continuous, short-term: +250 °C; weight: 120 g	roll	**02-5500-0035**

* The aluminium self-adhesive tape is recommended for improving thermal conductivity and is indispensable for heating plastic pipes.

** The glass-fibre self-adhesive tape is recommended for attaching heating cables onto stainless steel and smooth surfaces in the high-temperature range.

Over insulation caution labels		PU	Order no.
Self-adhesive label* 	„Elektrisch beheizt“, weight: 4 g	unit	**05-2144-0046**
	"Electrically heated", weight: 4 g	unit	**05-2144-0047**
	"Traçage électrique", weight: 4 g	unit	**05-2144-0703**
*****other languages on request	"Электрообогрев", weight: 4 g	unit	**05-2144-0860**

Connection cables		PU	Order no.
Heat-resistant	3 x 1.5 mm², Cross section D_A 8.5 mm (Quality HO5SS-F, outer jacket EWKF, -50 °C to +180 °C)	metre	**02-4034-0008**
	3 x 2.5 mm², Cross section D_A 9.8 mm (Quality HO5SS-F, outer jacket EWKF, -50 °C to +180 °C)	metre	**02-4034-0027**

Crimping Accessories		PU	Order no.
Crimping Set EKL	Crimping pliers in the boot and crimp insert 1.5 to 10 mm²	unit	**03-5545-0001**
	Butt Connectors Nickel 1.5 to 2.5 mm², 100 pieces	box	**03-7035-0008**

Mounting plates and brackets		PU	Order no.
Mounting plates and brackets in stainless steel (1.4301) For securing enclosures and thermostats to pipework and vessels			
	Mounting bracket MWG/MWU 270 stainless steel	unit	**05-0091-0051**
	Mounting plate SS 110 for polyester enclosure, dimensions 110 x 75 x 55	unit	**05-0091-0010**
	Mounting plate SS 122 for polyester enclosure, dimensions 122 x 120 x 90	unit	**05-0091-0011**
	Mounting plate SS 220 for polyester enclosure, dimensions 220 x 120 x 90	unit	**05-0091-0012**
	Mounting plate SS 160 for polyester enclosure, dimensions 160 x 160 x 90	unit	**05-0091-0013**
	Mounting plate SS 260 for polyester enclosure, dimensions 260 x 160 x 90	unit	**05-0091-0014**
	Mounting plate SS 360 for polyester enclosure, dimensions 360 x 160 x 90	unit	**05-0091-0015**
	Mounting plate SS 255 for polyester enclosure, dimensions 255 x 160 x 90	unit	**05-0091-0016**
	Mounting plate SS 400 for polyester enclosure, dimensions 400 x 160 x 90	unit	**05-0091-0017**
	Mounting plate SS for DTW/DTB	unit	**05-0091-0221**
Mounting plates and brackets in galvanised steel Each mounting bracket requires a mounting plate to fit the size of the enclosure			
	Mounting bracket, twisted, mounting distance 200 mm	unit	**05-0105-0162**
	Mounting bracket, U-shaped, mounting distance 200 mm	unit	**05-0105-0163**
	Mounting plate for polyester enclosure, dimensions 110 x 75 x 55	unit	**05-0005-0014**
	Mounting plate for polyester enclosure, dimensions 122 x 120 x 90	unit	**05-0005-0015**
	Mounting plate for polyester enclosure, dimensions 220 x 120 x 90	unit	**05-0005-0016**
	Mounting plate for polyester enclosure, dimensions 160 x 160 x 90	unit	**05-0005-0017**
	Mounting plate for polyester enclosure, dimensions 260 x 160 x 90	unit	**05-0005-0018**
	Mounting plate for DTW/DTB	unit	**05-0091-0222**
	Mounting plates for aluminium enclosures on request		

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Cable ties		PU	Order no.
Clamping clip KB 1		unit	**03-5510-0004**
Stainless steel cable ties (1.4301)	up to DN 15, length: 127 mm, 100 unit	pack	**03-6510-0211**
	up to DN 40, length: 201 mm, 100 unit	pack	**03-6510-0207**
	up to DN 80, length: 362 mm, 100 unit	pack	**03-6510-0208**
	up to DN 150, length: 679 mm, 100 unit	pack	**03-6510-0209**
	up to DN 300, length: 1067 mm, 25 unit	pack	**03-6510-0210**
Nylon cable ties Nylon cable ties for fixing heating cables to wire mats (max. temperature +105 °C)			
	Length: 92 mm, 1000 piece	box	**03-6500-0014**
	Length: 200 mm, 1000 piece	box	**03-6500-0015**

Fixing straps		PU	Order no.
Special fixing straps	for fixing mounting brackets on pipes, indicate required length in plain text, SS continuous width: 14 mm, weight: 55 g/m	metre	**03-6510-0202**
Buckle	for special fixing strap 14 mm, AF 8, weight: 16 g fastened with open-ended spanner	unit	**03-6515-0200**
SS fixing strap 3/8"	weight: 60g/m; length: 30 mm	roll	**03-6510-0203**
SS buckle 3/8"	for SS fixing strap 3/8'', fix with tensioning tool, weight: 15 g, box: 100 pieces	box	**03-6515-0201**
SS fixing strap 3/4"	weight: 110 g; length: 30 mm	roll	**03-6510-0204**
SS buckle 3/4"	for SS fixing strap 3/4'', fix with tensioning tool, weight: 15 g, 2 pieces a corner; box 100 pieces	box	**03-6515-0202**
Tensioning tool	for SS fixing strap	unit	**03-5510-0003**
Polyester fixing strap	for fixing heating tapes to tanks/vessels width: 16 mm, temp: up to +105 °C, weight: 20 g/m indicate required length in plain text	metre	**03-6500-0100**
Buckle	for polyester fixing strap width: 16 mm, weight: 13 g ea.	unit	**03-6515-0203**
Wire mesh	width: 0.5 m, length: 25 m, zinc-coated, pitch: 12 mm	roll	**02-2210-0001**
	width: 1.0 m, length: 25 m, zinc-coated, pitch: 12 mm	roll	**02-2210-0002**
	width: 1.0 m, length: 25 m, stainless steel, pitch: 16 mm	roll	**02-2210-0003**
Lacing wire	Diameter = 0.65 mm, zinc-coated	roll	**02-2310-0003**
	Diameter = 0.65 mm, stainless steel	roll	**02-2310-0002**
Securing pins	SS (1000/box), ∅ 2.1 mm, length: 30 mm	box	**02-5470-0002**
	Cu zinc-coated (1000/box), ∅ 2.1 mm, length: 32 mm	box	**02-5470-0001**
Self retaining washers	SS (1000/box), ∅ 30 mm for securing pins	box	**02-5479-0001**
	Cu zinc-coated (1000/box), ∅ 30 mm for securing pins	box	**02-5479-0002**
Spacing strips	EKL spacing strip; length: 20 m	roll	**03-6510-0219**
	EKL spacing strip; length: 50 m	roll	**03-6510-0200**
	EMK spacing strip, stainless steel, length: 20 m	roll	**03-6510-0201**

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Summary of closed- and open-loop control systems

	STW II	BSTW II	BSTB II	DTW
	Ex capillary tube thermostat	Ex fail-safe temperature monitor	Ex fail-safe temperature limiter	Explosion proof temperature monitor
Explosion protection				
Ex protection type	Ⓔx II 2G Ex de IIC T6 or T5	Ⓔx II 2G Ex de IIC T6, T5, T4, T3	Ⓔx II 2G Ex de IIC T6 or T5	Ⓔx II 2G Ex d IIC T6 Ⓔx II 2D Ex tD A21 IP 6X T80 °C
Technical data				
Temperature display	-	-	-	-
Adjustable temperature range	-20 °C to +500 °C	-20 °C to +500 °C	-20 °C to +500 °C	-4 °C to +163 °C
Switching capacity	16 A/AC 250 V	25 A/AC 230 V 16 A/AC 400 V	25 A/AC 230 V 16 A/AC 400 V	22 A/AC 480 V
Electronic/mechanical	Mechanical (Capillary tube system)	Mechanical (Capillary tube system)	Mechanical (Capillary tube system)	Mechanical (Capillary tube system)
Contacts	1 x W [1)]	1 x W [1)]	1 x W [1)]	1 x W [1)]

	DTB	MTE	KTE	KRM
	Explosion proof temperature limiter	Mini-thermostat	Cable thermostat	Capillary tube thermostat
Explosion protection				
Ex protection type	Ⓔx II 2G Ex d IIC T6 Ⓔx II 2D Ex tD A21 IP 6X T80 °C	EEx d IIC T6 resp. T5	Ⓔx II 2G Ex db IIC T6 Ⓔx II 2D Ex tb IIIC T85 °C Ⓔx II 2G EEx m IIC T6 Ⓔx II 2D IP 65 T80 °C	-
Technical data				
Temperature display	-	-	-	-
Adjustable temperature range	-4 °C to +163 °C	fixed	fixed	0 °C to +300 °C
Switching capacity	16 A/AC 250 V 15 A/AC 480 V	6 A/AC 230 V	10 A/AC 250 V + analog out + Logic output	10 A/AC 400 V 16 A/AC 230 V
Electronic/mechanical	Mechanical (Capillary tube system)	Mechanical (Bimetallic system)	Mechanical (Bimetallic system)	Mechanical (Capillary tube system)
Contacts	1 x W [1)]	1 x Ö [1]	1 x Ö [1]	1 x W [1)]

[1)] c/o = changeover contact, NC = normally closed contact, NO = normally open contact

Summary of closed- and open-loop control systems

	DEPU	DPC$_{front}$	DPC III
	Complete digital solution controller - limiter - power setpoint	Digital programmable controllertafelmon (front panel)	Digital e programmable controller (DIN rail mounting)
Explosion protection			
Ex protection type	Ⓔx II 2G EEx m e ib [ib] IIC T4	with Pt100 Ex Ⓔx II 2G Ex mb IIC T6 Ⓔx II 2D Ex mbD 21 T80 °C	with Pt100 Ex Ⓔx II 2G Ex mb IIC T6 Ⓔx II 2D Ex mbD 21 T80 °C
Technical data			
Temperature display	yes	double	single
Adjustable temperature range	0 °C to +450 °C	diverse	diverse
Switching capacity	25 A/AC 230 V	5 A/8 A/AC 250 V + Logic output	8 A/16 A/AC 250 V
Electronic/mechanical	Electronic	Electronic	Electronic
Contacts	Thyristor	1 x S [1]/2 x S [1]	1 x S [1]/1 x W [1]

	DTL III Ex	DEC	MPC II
	Digital temperature limiter	Digital energy controller	24-channel multiplex controller
Explosion protection			
Ex protection type	Ⓔx II (2)G [Ex e II]	-	with Pt100 Ex Ⓔx II 2G Ex mb IIC T6 Ⓔx II 2D Ex mbD 21 T80 °C
Technical data			
Temperature display	single	-	double
Adjustable temperature range	-200 °C to +850 °C	-	-200 °C to +850 °C
Switching capacity	8 A/16 A/AC 250 V	20 A/AC 230 V	Logic output
Electronic/mechanical	Electronic	Electronic	Electronic
Contacts	1 x S/1 x W [1]	Thyristor	8 x S/1 x W [1]

[1] c/o = changeover contact, NC = normally closed contact, NO = normally open contact

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STW II capillary tube thermostat

Features

- Small construction
- Varying temperature ranges can be combined in one enclosure
- Can be mounted directly in Zone 1
- Temperature can be set in Zone 1
- Many variants available

Description

The STW II is a compact ON/OFF type capillary tube thermostat, housed in an Ex e certified polyester enclosure.

Heaters, fans, motors and other equipment are energised and de-energised by means of this thermostat when specific temperature ranges are exceeded. This device can also be used to control the temperature in air or on various surfaces.

Function

Any change in temperature at the sensor bulb causes a change in the volume of fluid in the measuring system, which in turn results in a movement of the diaphragm membrane. This membrane is connected to a mechanical device that activates a microswitch. If the temperature at the sensor bulb exceeds the pre-set value, terminals 1 and 4 are opened.

If there is a rupture or break in the sensor tube (leakage), then the switch remains permanently open (fail-safe). If the temperature falls below the minimum setting, the autocontrol opens the circuit but closes again on temperature rise.

Application example

The STW II thermostat can directly switch temperature-dependent equipment loads (heaters etc.) of up to 16 A.

Higher rated currents can be switched by means of a contactor; the STW II switches the contactor coil. If an interlock is installed by means of an additional relay (according to DIN VDE 0116), the STW II can also be used as a limiter.

Explosion protection

Ex protection type
Ⓔx II 2G Ex de IIC T6, T5

Certification
EPS 11 ATEX 1356 X

Technical data

Protection class
IP 65/EN 60529

Enclosure material
polyester

Ambient temperature
-55 °C to +50 °C

Capillary tube

length	up to 5000 mm
OD sensor line	1.5 mm
min. bend radius	5 mm
Sensor bulb diameter	4 to 6 mm
Sensor material	
stainless steel	SS 1.4571

Dimensions (L x W x H)
120 mm x 122 mm x 90 mm

Weight
approx. 400 g

Electrical data

Switching current at 230 V

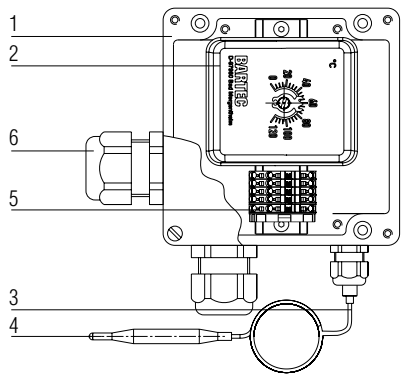
open contact:	16 A (AC-1)
closed contact:	2.5 A (AC-1)

Minimum contact load
AC/DC 24 V, 100 mA

Switching hysteresis
7 % of full scale value

Switching accuracy
depending on type , see selection table

Device for 1 heating circuit
(Heating cable connection direct via sheathed cable/Plexo or cold lead)



1 Enclosure
2 Switch insert
3 Capillaries
4 Sensor
5 Rail-mounted terminals
6 Blind plug M20

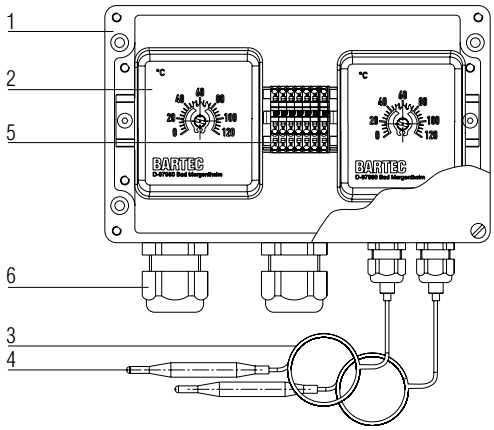
Technical data

Dimensions	120 x 122 x 90 mm
Terminals	4 x 2.5 mm² + 1 PE
Heating cable connections	2 x M25

Selection chart Easy device

Description	Switching temperature/ accuracy	Order no.
STW II	-20 °C to +50 °C +5 K/-0 K	**27-6DF2-5215/1200**
	+0 °C to +200 °C +16 K/-0 K	**27-6DF2-5215/1300**
	+50 °C to +300 °C +24 K/-0 K	**27-6DF2-5215/1600**

Device for 2 heating circuits
(Heating cable connection direct via sheathed cable/Plexo or cold lead)



1 Enclosure
2 Switch insert
3 Capillaries
4 Sensor
5 Rail-mounted terminals
6 Blind plug M25

Technical data

Dimensions	220 x 120 x 90 mm
Terminals	6 x 2.5 mm² + 2 PE
Heating cable connections	2 x M25

Selection chart Double device

Description	Switching temperature/ accuracy	Order no.
STW II/STW II	-20 °C to +50 °C +5 K/-0 K	**27-6DT2-5225/1220**
	+0 °C to +200 °C +16 K/-0 K	**27-6DT2-5225/1330**
	+50 °C to +300 °C +24 K/-0 K	**27-6DT2-5225/1660**

Technical data subject to change without notice.

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Safety temperature monitor and limiter

Features

- Direct connection of self-limiting heating tapes
  by means of BARTEC's cold-applied technology reduces wiring and materials
- Switching voltage up to 400 V and 2 M20 x 1.5 boreholes as standard
  for an enhanced operation of EKL heating circuits
- Safety cut-out temperature -45 °C or -55 °C
  for reliable operation, even in very cold conditions
- Minimum operating temperature -55 °C
  for all standard variants for use all over the world without restrictions
- Wide regulating range from -20 °C to +500 °C, depending on the switch insert

Description

BSTW II temperature monitors and BTB II/BSTB II temperature limiters are ON/OFF thermostats in Ex e certified polyester enclosures.

In addition to the use of conventional power cables, BSTW II and BTB II/BSTW II are approved for the direct connection of self-limiting BARTEC heating circuits in the enclosure terminals. A verification of thermal safety and a further approval by any third party authority is not necessary.

The benefit to the customer is obvious. Any directly connected self-limiting heating circuit considerably reduces the number of junction boxes and installation cost.

BSTW II and BTB II/BSTB II monitor ambient temperatures as well as different surface temperatures. In accordance with EN 60079-30-1, BTB II and BSTB II fail-safe temperature limiters are designed to switch off and remain switched off when the preset limit temperature is reached. The restart lockout requires manual resetting directly at the device.

Function

Any change in temperature in the sensor causes a change in the volume in the liquid-filled measuring system, which in turn results in a movement of the diaphragm membrane, which is connected to a transmission mechanism, and this opens a microswitch.

If the sensor temperature exceeds the set value, the contacts 1 and 2 remain continuously open. The contacts in the BTB II/BSTB II remain continuously open until there is a manual intervention.

Explosion protection

Ex protection type
Ⓔx II 2G Ex de IIC T6, T5, T4, T3

Certification
EPS 11 ATEX 1356 X

Technical data

Protection class
IP 65/EN 60529

Min. ambient temperature
-55 °C (Standard)

Max. ambient temperature
depends on the type of
heating cable connection

Storage temperature
-55 °C to +65 °C

Capillary tube

Length	1000 mm
OD sensor line	1.5 mm
Min. bend radius	5 mm
Sensor bulb diameter	6 mm
Sensor material	SS 1.4571

Contacts 1 SPDT
Contact decks 1 to 2:
AC 400 V/16 A, AC 230 V/25 A

Contact decks 1 to 4:
AC 400 V/6.3 A, AC 230 V/6.3 A

Switching hysteresis
approx. 7 %

BSTW II
fail-safe safety temperature monitor

- Falling calibration to maintain the temperature during the process
- Turns on and off automatically whenever the temperature exceeds or drops below the setpoint value

BTB II
fail-safe temperature limiter

- Rising calibration to limit temperature during the process
- switches off and remains switched off once the limit temperatures are reached

BSTB II
fail-safe safety temperature limiter

- The BSTB II functions in the same manner as the BTB II temperature limiter, whereby the setting range is limited here to 0 °C to 130 °C or 130 °C to 190 °C based on the temperature classes T3 and T4.

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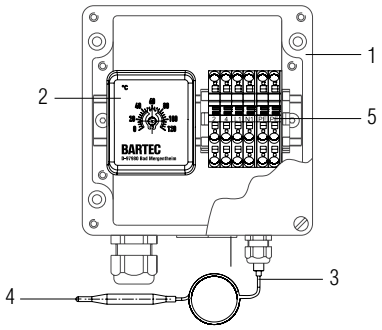
Device for 1 heating circuit
(Heating cable connection direct via sheathed cable/Plexo or cold lead)



1 Enclosure
2 Switch insert
3 Capillaries
4 Sensor
5 Rail-mounted terminals
6 Blind plug M20

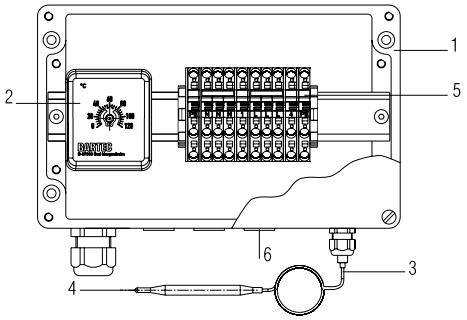
Technical data

Dimensions
160 mm x 160 mm x 90 mm

Terminals
4 x 6 mm² + 2 x PE

Heating cable connections
2 x M20, closed with blind plug

Device for 1 to 3 heating circuits
(Heating cable connection direct, via sheathed cable/Plexo or cold lead)



1 Enclosure
2 Switch insert
3 Capillaries
4 Sensor
5 Rail-mounted terminals
6 Blind plug M20

Technical data

Dimensions
260 mm x 160 mm x 90 mm

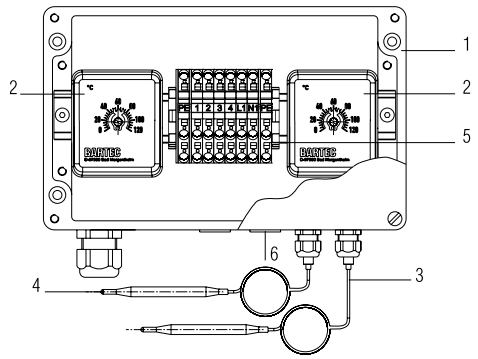
Terminals
8 x 6 mm² + 3 x PE

Heating cable connections
3 x M20, closed with blind plug

Load side connection variant heating circuits	Fuse (C characteristics)	Ambient temperature	Temperature class
PSBL system 27-1580-.910/....	1 x 16 A	-55 °C to +50 °C	T5
PSB system 27-1680-.910/....	1 x 25 A	-55 °C to +40 °C	T6
	1 x 25 A	-55 °C to +50 °C	T5
MSB system 27-1980-.910/....	1 x 25 A	-55 °C to +50 °C	T4
HSB system 27-1780-.910/....	1 x 25 A	-55 °C to +50 °C	T3
Sheathed cable/ PLEXO or cold lead	1 x 16 A	-55 °C to +50 °C	T5
	1 x 20 A	-55 °C to +40 °C	T5
	1 x 25 A	-55 °C to +40 °C	T4

03-0330-0712-05/2014-BEH-346644/2

Combination unit Safety temperature monitor and limiter
(Heating cable connection direct via sheathed cable/Plexo or cold lead)



1 Enclosure
2 Switch insert
3 Capillaries
4 Sensor
5 Rail-mounted terminals
6 Blind plug M20

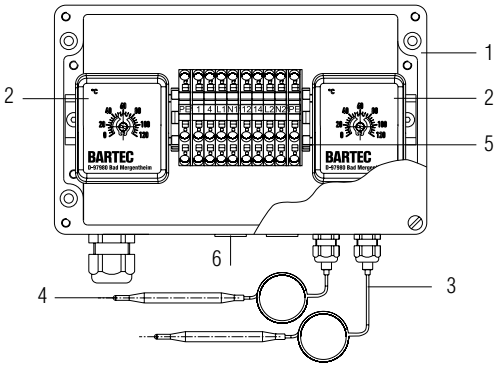
Technical data

Dimensions
260 mm x 160 mm x 90 mm

Terminals
6 x 6 mm² + 3 x PE

Heating cable connections
2 x M20, closed with blind plug

Combination unit Safety temperature monitor
(Heating cable connection direct, via sheathed cable/Plexo or cold lead)



1 Enclosure
2 Switch insert
3 Capillaries
4 Sensor
5 Rail-mounted terminals
6 Blind plug M20

Technical data

Dimensions
260 mm x 160 mm x 90 mm

Terminals
8 x 6 mm² + 3 x PE

Heating cable connections
2 x M20, closed with blind plug

Load side connection variant heating circuits	Fuse (C characteristics)	Ambient temperature	Temperature class	Fuse (C characteristics)	Ambient temperature	Temperature class
PSBL system 27-1580-.910/....	1 x 16 A	-55 °C to +50 °C	T5	2 x 16 A	-55 °C to +50 °C	T5
PSB system 27-1680-.910/....	1 x 25 A	-55 °C to +40 °C	T6	2 x 25 A	-55 °C to +40 °C	T6
	1 x 25 A	-55 °C to +50 °C	T5	2 x 25 A	-55 °C to +40 °C	T5
MSB system 27-1980-.910/....	1 x 25 A	-55 °C to +50 °C	T4	2 x 25 A	-55 °C to +40 °C	T4
HSB system 27-1780-.910/....	1 x 25 A	-55 °C to +50 °C	T3	2 x 25 A	-55 °C to +40 °C	T3
Sheathed cable/ PLEXO or cold lead	1 x 16 A	-55 °C to +50 °C	T5	2 x 16 A	-55 °C to +50 °C	T5
	1 x 20 A	-55 °C to +40 °C	T5	-	-	-
	1 x 25 A	-55 °C to +40 °C	T4	-	-	-

Selection chart

Device for 1 heating circuit

Designation	Switching temperature	Switching point deviation	Order no.
BSTW II	-20 °C to +50 °C	+5 K/-0 K	**27-6DF2-5232/1200**
	0 °C to +200 °C	+16 K/-0 K	**27-6DF2-5232/1300**
	+50 °C to +300 °C	+24 K/-0 K	**27-6DF2-5232/1600**
BTB II	0 °C to +200 °C	+0 K/-16 K	**27-6DJ2-5232/1300**
	+50 °C to +300 °C	+0 K/-24 K	**27-6DJ2-5232/1600**
BSTB II	0 °C to +130 °C	+0 K/-16 K	**27-6DG2-5232/1700**
	+130 °C to +190 °C	+0 K/-16 K	**27-6DG2-5232/1800**

Device for 3 heating circuits

Designation	Switching temperature	Switching point deviation	Order no.
BSTW II	-20 °C to +50 °C	+5 K/-0 K	**27-6DF2-5243/1200**
	0 °C to +200 °C	+16 K/-0 K	**27-6DF2-5243/1300**
	+50 °C to +300 °C	+24 K/-0 K	**27-6DF2-5243/1600**

Combination unit

Designation	Switching temperature	Switching point deviation	Order no.
BSTW II/BTB II	-20 °C to +50 °C -20 °C to +50 °C	+5 K/-0 K +0 K/-5 K	**27-6DU2-5242/1220**
	0 °C to +200 °C 0 °C to +200 °C	+16 K/-0 K +0 K/-16 K	**27-6DU2-5242/1330**
	+50 °C to +300 °C +50 °C to +300 °C	+24 K/-0 K +0 K/-24 K	**27-6DU2-5242/1660**
	-20 °C to +50 °C -50 °C to +300 °C	+5 K/-0 K +0 K/-24 K	**27-6DU2-5242/1260**
	0 °C to +200 °C +50 °C to +300 °C	+16 K/-0 K +0 K/-24 K	**27-6DU2-5242/1360**

Combination unit

Designation	Switching temperature	Switching point deviation	Order no.
BSTW II/BSTW II	-20 °C to +50 °C	each +5 K/-0 K	**27-6DT2-5242/1220**
	0 °C to +200 °C	each +16 K/-0 K	**27-6DT2-5242/1330**

Technical data subject to change without notice.

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DTW/DTB
Flame-proof temperature monitor/limiter

Features

- 22 A switching capacity
- Can be used directly in Zone 1 and 2
- Flame-proof enclosure
- ATEX, UL, CSA, FM Approval

Description

The flame-proof encapsulated temperature controllers/limiters (DTW/DTB) are designed for (trace)-heating applications in the Ex area. They can be used both for protection against frost and for maintenance temperature applications.

Heating units and other operating equipment are switched on and off by means of the temperature controller when the temperature is too high or too low.

The DTB temperature limiter is designed with resetting lockout; resetting (restarting) is only possible on the device.

Can be used for monitoring temperature in the air or on surfaces.

Function

A change in temperature in the sensor causes a change in volume in the fluid filled in the measuring system, which in turn results in a movement of a membrane, which is connected to transmission mechanics and activates a microswitch. If the sensor temperature exceeds the pre-set level, the contact is actuated.

The temperature limiter switches off permanently if the temperature is exceeded. Once the temperature drops, the temperature limiter can be unlocked manually.

If there is a break in the measuring system (leakage), the circuit remains open permanently.

Application example

DTW and DTB switch temperature-dependent equipment (heating units) of up to 22/16 A directly. Higher switching currents or 3-phase applications are switched by means of a contactor.

Explosion protection

Ex protection type
Ⓔx II 2G Ex d IIC T6
Ⓔx II 2D tD A21 IP 6X T80 °C

Certification
LCIE 08 ATEX 6073 X

Other variants available for:
USA, Canada

Technical data

Temperature setting range
-4 °C to +163 °C

Ambient temperature device
-40 °C to +60 °C

Operating temperature sensor
-40 °C to +215 °C

Storage temperature
-40 °C to +60 °C

Repeat accuracy
±1.7 K

Switching differential temperature controller
5 K

Switching hysteresis temperature limiter
10 K

Switching point accuracy
±4.5 C at 50 °C sensor temperature and 21 °C ambient temperature (falling)

Capillary tube made of stainless steel

Length	3000 mm
Diameter	2 mm
Bending radius	15 mm
Operating temperature range	-50 °C to +215 °C

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Sensor made of stainless steel

Length	203 mm
Diameter	8 mm
Operating temperature range	-50 °C to +215 °C

Weight
1.7 kg

Protection class
IP 65/NEMA 4, 7, 9

Terminals
Terminal screws 4/2.5 mm²
AWG 10-14

Cable entries
2 x M25 borehole

Enclosure
Aluminium die-casting, lacquered, with internal lid seal

Electrical data

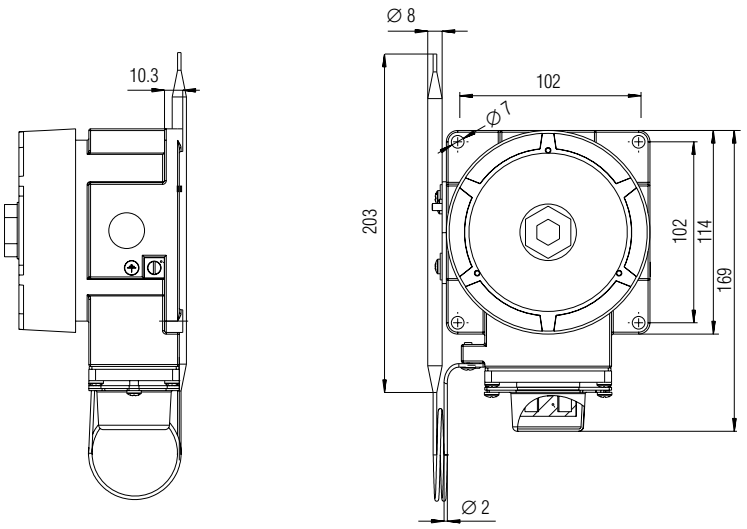
Rated voltage
AC 6/12/24/125/250/480 V, 50/60 Hz

Switching current for monitor
22 A at AC 6/12/24/125/250/480 V

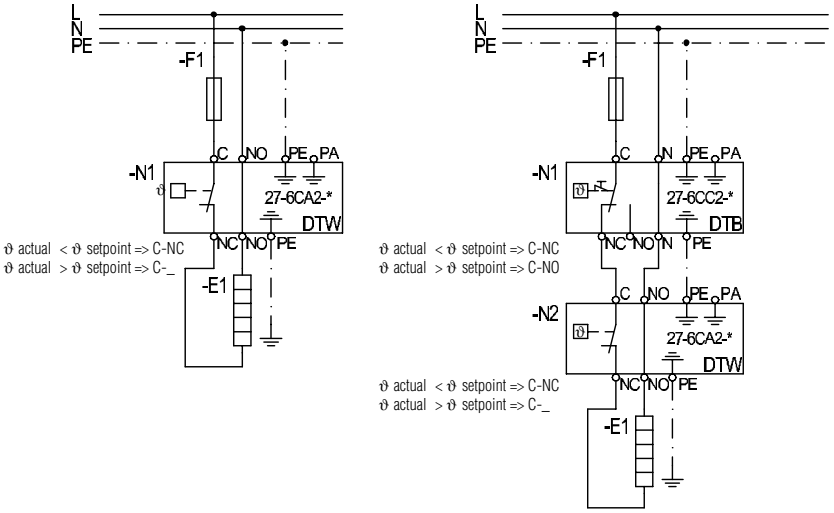
Switching current for limiter
16 A at AC 6/12/24/125/250 V, 15 A at AC 480 V

Contact
1 SPDT
100,000 switching cycles

Dimensions



Circuit diagram



Selection chart

Designation	Order no.
DTW flame-proof temperature monitor	**27-6CA2-24112000**
DTB flame-proof temperature limiter	**27-6CC2-14112000**

Technical data subject to change without notice.

03-0330-0529/A-03/2014-BEH-291057/2

MTE Mini-thermostat

Features

- Little space needed thanks to its small compact construction
- High switching capacity
- Extremely adaptable to the surrounding conditions
- Protection class IP 66

Description

This Mini-thermostat is used to monitor the ambient temperature of heating systems as well as for the control of internal temperatures inside protective transmitter boxes or control and switchgear cabinets. In addition, it can be used for the control (signalling) of too low or too high a temperature or as an alarm contact.

Structure

A temperature sensor is encapsulated in an explosion-proof metal tube. The standard version features an external M20 thread. You can choose either a version with a cast rubber cord or one that is directly mounted to an Ex terminal box.
A special version is also available with a flange fixing.

Explosion protection

Ex protection type
Ex d IIC Gb T6, T5
Ex de IIC Gb T6, T5
Ex tb III C Db T85 °C, T100 °C

Certification
EPS 14 ATEX 1 696

Ambient temperature
-20 °C to +40 °C

Technical data

Version with external thread or flange mounting

Protection class
IP 66/EN 60529

Supply cable
H05VV-F 3G 0.75
(AD 7.2 ± 0.8 mm)
standard length 1 m

Enclosure material
nickel plated brass

Max. temperature at the connection
+70 °C

Electrical data

Switching capacity
AC 230 V/6 A

Switch contacts
1 normally closed contact as standard version
(opens as the temperature rises)
alternative configurations on request

Version with junction box

Supply cable cross section
2.5 mm²

Material
junction box of polyester, black, glass-fibre reinforced

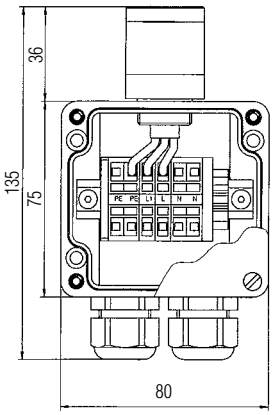
Protection class
IP 65/EN 60529

Electrical data

Temperature switch tolerances

14 °C	±	5 K
4 °C	±	3 K
25 °C	±	3.5 K
15 °C	±	3.5 K

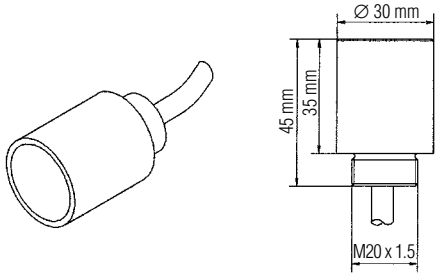
Dimensions



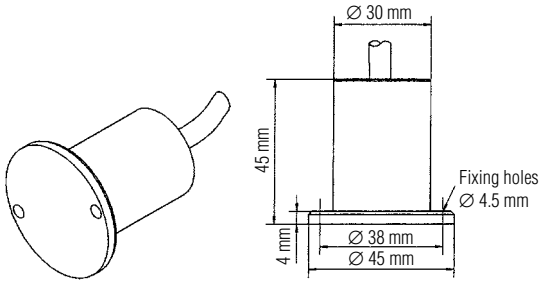
2 x cable entries M20 x 1.5
cable diameter D = 6 to 12 mm

Dimensions

with external thread

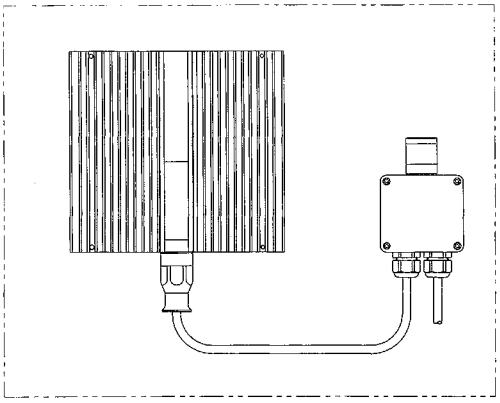


flange mounted

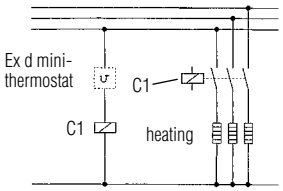


Typical application

Temperature sensor for Ex heating system in a control panel/enclosure



Frost control in an Ex area



Selection chart

Version	Switch-off temperature	Switch-on temperature	Code no.
with external thread M20	14 °C	4 °C	**25**
	25 °C	15 °C	**26**
with EEx e terminal box	14 °C	4 °C	**27**
	25 °C	15 °C	**28**
with flange mounting (special version)	14 °C	4 °C	**13**
	25 °C	15 °C	**14**

Complete order no. 07-6111-94 ☐☐

Please enter code number.

Technical data subject to change without notice.

KTE-m
Cable thermostat

Features

- Very small construction
- ATEX gas and dust approval
- High switching current
- Wide operating temperature range
- Ready for connection, maintenance-free

Description

The extremely compact BARTEC bimetallic thermostat integrated in a cable is mostly used in hazardous (potentially explosive) areas for applications in which devices are to be protected against frost. This thermostat can be used to regulate internal temperatures of switch and control cabinets, transmitter protection boxes, measuring equipment etc..

It can also be used to monitor (indicate) excessively high or low temperatures or also as an alarm contact.

The application assures the greatest possible reliability because of the conformance to the required minimum temperatures.

Structure

The thermostat is built into a casting element and can be mounted either over the borehole in the mounting sheet or suspended freely in the air.

Function

The ambient temperature is measured through the surface of the thermostat. The integrated, explosion-proof bimetallic thermostat switches the connected heating in accordance with this ambient temperature.

Explosion protection

Ex protection type
Ⓔx II 2G EEx m II T6
Ⓔx II 2D IP 65 T80 °C

Certification
PTB 04 ATEX 2113 X

Technical data

Thermostat connection points
10 °C ON/18 °C OFF (+/-3 ° K)
(others on request)

Operating temperature range
-50 °C to +80 °C

Ambient temperature range
-50 °C to +80 °C

Switching voltage
max. AC 230 V
(others on request)

Switching current
AC 10 A

Connection
Flexible cable EWKF 2 x 1.5 mm²;
∅ 8.1 mm

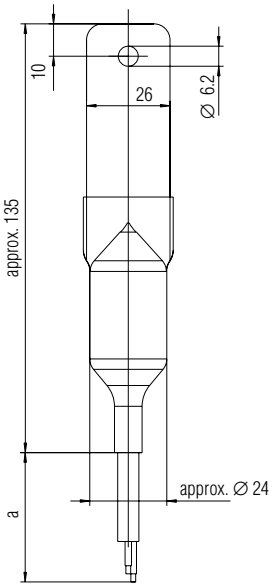
Mounting
Through hole d = 6.2 mm at
Fixing plate resp. loose

Material
Casting cylinder, shrink fitting

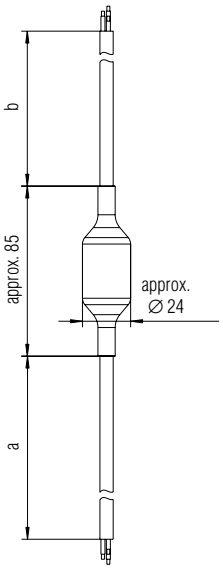
Protection class
IP 65

Dimensions KTE-m (mm)

Picture 1

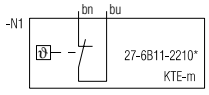


Picture 2



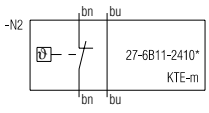
Circuit diagram

Picture 1



ϑ actual < ϑ setpoint => NC
ϑ actual > ϑ setpoint => NO

Picture 2



ϑ actual < ϑ setpoint => NC
ϑ actual > ϑ setpoint => NO

Selection chart

Type	Illustration	Switch-off temperature	Switch-on temperature	Cable length a/b	Mounting	Weight (netto)	Order no.
KTE-m 10	Picture 1	18 °C	10 °C	1 m	Fixing plate/ through hole d = 6 mm	0.2 kg	**27-6B11-2210/BZ00**
KTE-m 10	Picture 2	18 °C	10 °C	2 x 1.0 m	freely in the air	0.2 kg	**27-6B11-2410/BZ10**

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KTE-d
Cable thermostat

Features

- Very small construction
- ATEX gas and dust approval
- High switching current
- Wide operating temperature range
- Ready for connection, maintenance-free

Description

The compact BARTEC bimetallic thermostat integrated in a cable is mostly used in hazardous (potentially explosive) areas for applications in which devices are to be protected against frost.

This thermostat can be inserted both for the outside temperature monitoring and for the regulation of interior temperatures of switch and control cabinets, transmitter protection boxes, measuring equipment etc. It can also be used to monitor (indicate) excessively high or low temperatures or also as an alarm contact.

The application assures the greatest possible reliability because of the conformance to the required minimum temperatures.

Structure

The thermostat is built into an aluminum body. The thermostat can be installed either over the mounting hole with M6 thread or with the M20 connecting thread.

Function

The ambient temperature is measured through the surface of the thermostat. The integrated, explosion-proof bimetallic thermostat switches the connected heating in accordance with this ambient temperature.

Explosion protection

Ex protection type

Ex II 2G Ex db IIC T6
Ex II 2D Ex tb IIIC T80 °C

Certification

PTB 04 ATEX 1064 X
IECEx PTB 14.0016

Technical data

Thermostat connection points
10 °C ON/18 °C OFF (+/- 3 ° K)
(others on request)

Operating temperature range
-50 °C to +180 °C

Ambient temperature range
-50 °C to +60 °C

Switching voltage
max. AC 250 V (others on request)

Switching current
AC 10 A

Connection
Flexible cable EWKF 3 x 1.5 mm²;
∅ 8.1 mm or single cores

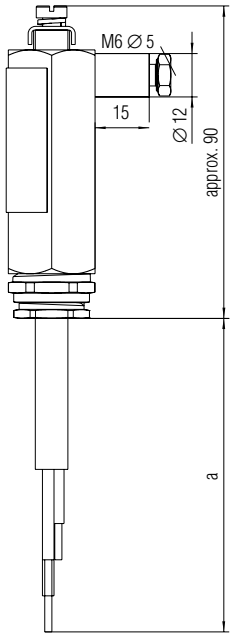
Mounting
M6 internal thread/
Through hole d = 5 mm
or M20 connection thread

Material
black anodised aluminium,
seawater proof

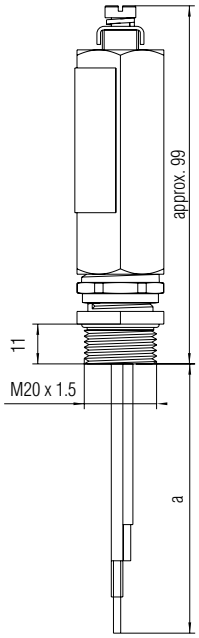
Protection class
IP 68

Dimensions KTE-d

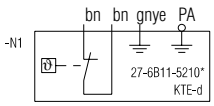
Picture 1



Picture 2



Circuit diagram



ϑ actual < ϑ setpoint => NC
ϑ actual > ϑ setpoint => NO

Selection chart

Type	Illustration	Switch-of temperature	Switch-on temperature	Cable length a/b	Mounting	Weight (netto)	Order no.
KTE-d 10	Picture 1	18 °C	10 °C	1 m	M6 internal thread/ through hole d = 5 mm	0.2 kg	**27-6B11-5210/BZ00**
KTE-d 10 M20	Picture 2	18 °C	10 °C (single core)	0.1 m	M20 external thread	0.1 kg	**27-6B11-5201/BZ000001**

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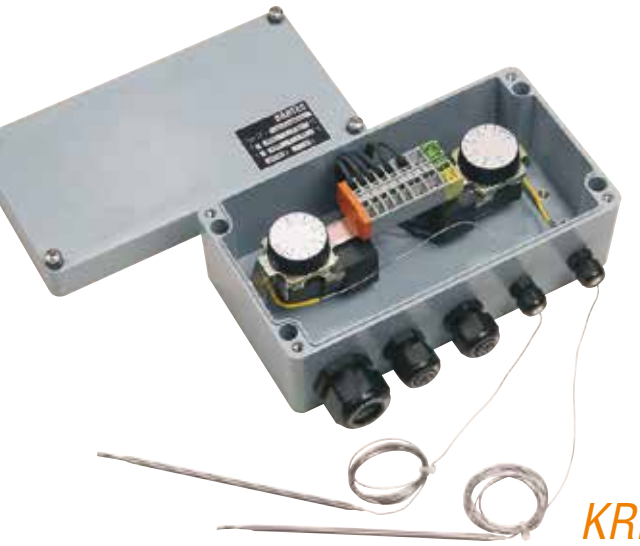


KRM Capillary tube thermostat 16 A

Features

- 16 A switching capacity
- Capillary tube length of 1600 mm giving installation flexibility
- Compact enclosure
- Double units are standard

Description

The weather-proof capillary tube thermostat, KRM, is a mechanical change-over controller housed in a polyester enclosure. Heaters, fans, motors and other equipment are energised and de-energised when temperatures fall below or rise above certain limits. It can also be used to control the temperature in air, liquids and on various surfaces.

Function

Any change in temperature at the sensor causes a change in the volume of fluid in the measuring system, which in turn results in a movement of the diaphragm membrane. This membrane is connected to a mechanical device that activates a microswitch. If the temperature at the sensor bulb exceeds the pre-set value, terminals 1 and 2 are opened. If the temperature falls below the minimum setting, the contacts automatically close.

Application example

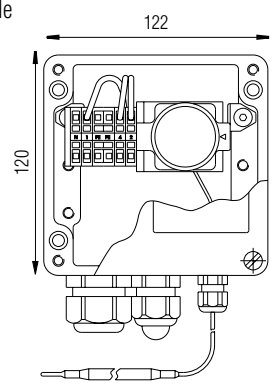
The KRM thermostat can directly switch temperature-dependent equipment loads (heaters etc.) of up to 16 A. Higher switching currents of 3-phase applications are switched by means of a contactor.

Technical data

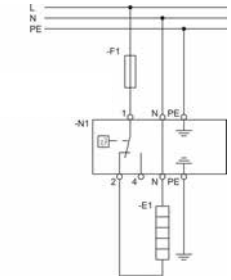
Temperature setting range	**0 °C to +100 °C**	**0 °C to +300 °C**
Rated voltage	AC 400 V/50 Hz	AC 400 V/50 Hz
Switching capacity	AC 230 V/16 A AC 400 V/10 A	AC 230 V/16 A AC 400 V/10 A
Supply cable, cross section	2.5 mm²	2.5 mm²
Protective earth terminal	4 x 2.5 mm²	4 x 2.5 mm²
Switching differential	ca. 3 K	ca. 8 K
Protection class according to EN 60529	IP 65	IP 65
Capillary tube length	1600 mm	1600 mm
Min. bend radius	20 mm	20 mm
Max. sensor temperature	+115 °C	+345 °C
Min. sensor temperature	-40 °C	-15 °C
Sensor diameter	6 mm	4 mm
Sensor length	140 mm	165 mm
Cable glands	1 x M25, clamping range 9 to 16 mm 1 x M20, clamping range 6 to 12 mm	
Cable glands KRM, single	1 x M25, 1 x M20	
KRM combination	1 x M25, 2 x M20 (2 x M20 blanking plug included)	
Electrical data		
Contacts	1 change-over contact	
Terminals	4 x 2.5 mm² + 2 PE	
Application temperature range	-20 °C to +65 °C	

03-0330-0255/B-09/2014-BEH-202002/1

Dimensions (mm)
KRM, single

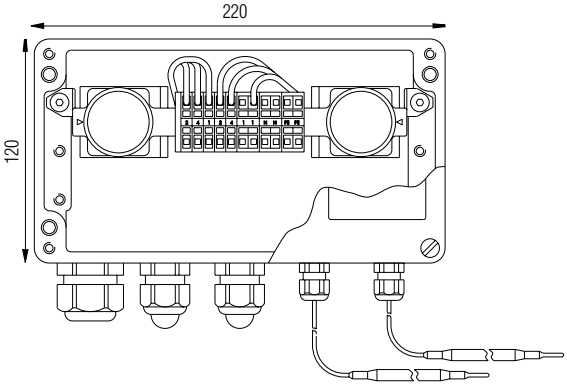


Circuit diagram

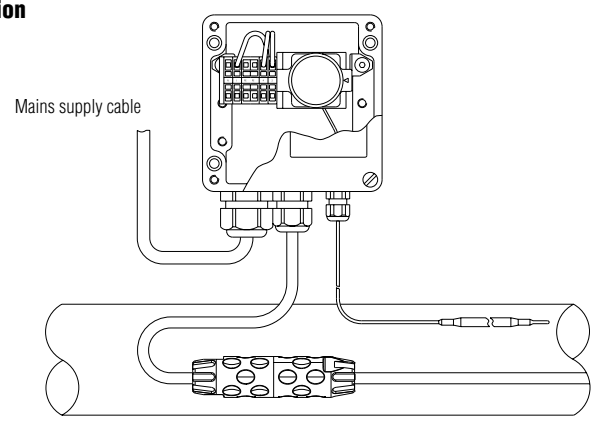


ϑ actual < ϑ setpoint => NC 1-4
ϑ actual > ϑ setpoint => NO 1-2

Dimensions (mm)
KRM, double



Typical installation



Selection chart

Designation	Dimensions (mm)	Temperature setting range	Order no.
1 thermostat in polyester enclosure GRP	122 x 120 x 90	0 °C to +100 °C	**27-6AA3-61522000**
1 thermostat in polyester enclosure GRP	122 x 120 x 90	0 °C to +300 °C	**27-6AA3-615B2000**
2 thermostats in polyester enclosure GRP	220 x 120 x 90	2 x 0 °C to +100 °C	**27-6AK3-61622000**
2 thermostats in polyester enclosure GRP	220 x 120 x 90	2 x 0 °C to +300 °C	**27-6AK3-616B2000**
2 thermostats in polyester enclosure GRP	220 x 120 x 90	1 x 0 °C to +100 °C 1 x 0 °C to +300 °C	**27-6AK3-61602P2B**

03-0330-0255/B-09/2014-BEH-202002/2

Features

- Complete solution for tubular steam trace heaters-controllers, limiters and power setpoint adjusters all in one unit
- Alteration of adjusting parameters also possible in potentially explosive areas
- Current carrying capacity 25 A
- Fault-free full wave control
- Sensor input, intrinsically safe
- Allows easy output adaptation to heating circuit changes

DEPU – Complete Digital Solution

Description

DEPU serves as complete solution for pipe heating and provides temperature control, limitation and power output control in one device. DEPU is ATEX-certified and approved for use in potentially explosive areas.

Structure

All functional units are integrated in a standard Ex e aluminium enclosure. Connection to mains is established through 6 mm² tension clamp terminals.

Function

The controller is designed as a ON/OFF controller and measures the temperature through RTD sensor inputs.

The limiter works as an independent system and measures the temperature at the hot spot with its own sensor. If the temperature exceeds the limit value the limiter interrupts the heating circuit permanently from mains and a fault alarm signal is given.

The power output controller works in interference free full wave control mode by means of a semiconductor relay.

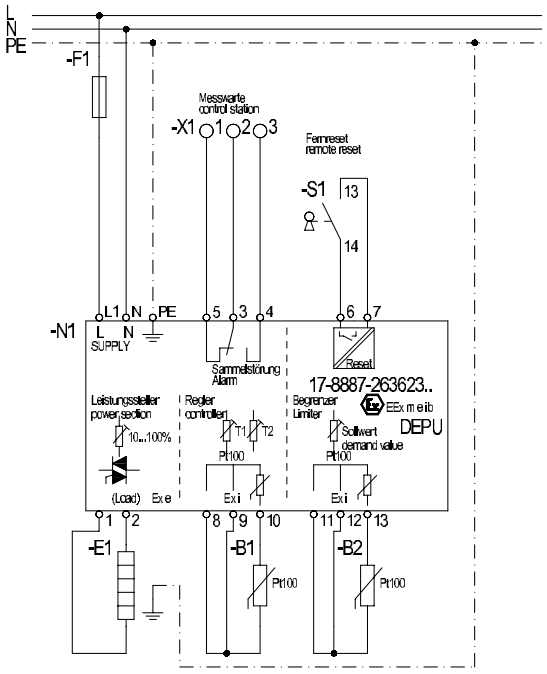
Two 7-segment displays guarantee good readability of the controller and limiter temperature values through the lid's window.

Additional products

3-wire Pt100

up to 200 °C **Order no. 03-9040-0006**
up to 400 °C **Order no. 03-9040-0016**

Circuit diagram



Explosion protection

Ex protection type
Ⓔx II 2G EEx m e ib [ib] IIC T4

Certification
TÜV 03 ATEX 2088

Technical data

Enclosure
Standard enclosure of aluminium, grey

Protection class
IP 65

Terminals
Wago cage clamp

Cable entries

Mains supply line	1 x M25 (M32 opt.)
Heating cable/cold end	1 x M20
Fault alarm	1 x M20
Remote reset	1 x M20
Sensor	2 x M16

Storage temperature
-30 °C to +70 °C

Ambient temperature
-20 °C to +40 °C

Weight
6 kg

Guidelines
Directive 94/9/EC
NAMUR NE 21
EN 50020, EN 50019, EN 50028, EN 50014

Electrical data

Supply voltage
AC 230 V +10 %/-15 % (50 to 60 Hz)
(special voltage 254 V on request)

Rated current - power setpoint adjuster
max. 25 A

Power consumption
no load: P = 11 VA
full load: P_{max} = 5.7 kVA

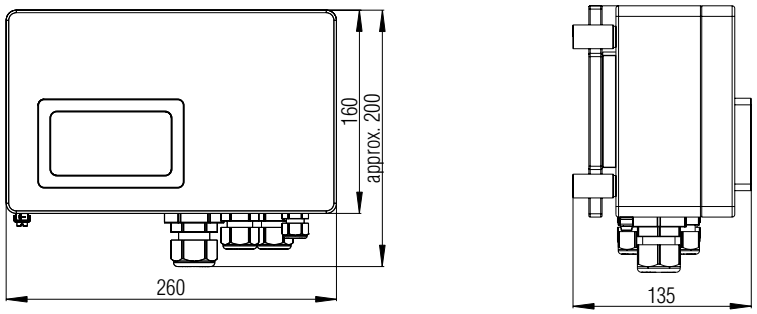
Relay outputs
Master fault control-1 changeover contact
250 V/5 A

Measuring input (intrinsically safe)
Pt100 (2 or 3 conductors)

Measuring range Pt100
0 °C to +450 °C

Resolution/measuring accuracy
1 K

Dimensions (mm)



Order no.
17-8887-2636/2300

Technical data subject to change without notice.

03-0330-0376/C-09/2014-BEH-222363/2

DPC$_{front}$ Temperature control device family

Features

- Dual display (setpoint/actual value display)
- Wide-range voltage input
- Sensor monitoring
- Programmable with CodeKey
- Can be used in conjunction with Pt100 Ex, for temperature regulation in explosion-protected heating circuits

DPC$_{front}$ Standard

- Pre-parameterisation as ON/OFF controller
- Also usable as a PID controller
- Pt100, mV standard signals, thermocouples

DPC$_{front}$ Komfort

- Pre-parameterisation as a PID controller
- Also usable as ON/OFF controller
- Pt100, mV standard signals, thermocouples
- Process-value feedback through 4 to 20 mA analog output

DPC$_{front}$ Monitor

- Pre-parameterisation as a PID controller
- Monitor version with heating current monitoring
- Universal measuring input
- Process-value feedback through 4 to 20 mA analog output
- RS485 interface/Modbus RTU

Description

The DPC$_{front}$ temperature control device series consists of three standardised temperature control devices that are adapted to the (trace) heating applications.

Having two 7-segment displays, the operator can read both set- and measured temperature at first sight. By pressing a single button, the controllers power output is displayed, allowing an evaluate of the heating circuits quality.

The control devices can act as ON/OFF or PID control devices. If desired, the autotuning function will automatically determine the optimum (PID) adjusting parameters for the control path. In all models the regulation can be switched off for maintenance work by pressing a single button.

On account of the wide-range voltage input the devices can be used almost everywhere in the world.

Assembly

The control device is mounted into the front panel. The compact dimensions of the front (48 x 48 mm) allow a space-saving control cabinet design. The electrical connection is set up through terminal screws on the rear.

Function

Temperature alterations in the sensor are evaluated in the DPC$_{front}$ and shown as temperature readings on the top LED display.

If the reading falls short of or exceeds the temperature value that can be seen in the bottom LED display, the output being used will automatically switch itself on or off to set the manipulated variable to the required value. To monitor the temperature, a high & low alarm function is pre-programmed.

The devices detect malfunctioning at the sensor and in the control circuit and report these as faults. Each type of alarm is signalled as a group alarm via a relay.

Technical data

Operating temperature range
0 °C to +50 °C

Storage temperature
-10 °C to +60 °C

Dimensions (length x width x depth)
48 mm x 48 mm x 108 mm

Installation
Front panel
(Cut-out 45.5 mm x 45.5 mm)

Weight
180 g

Protection class
IP 54 or IP 65 with installation sealing

Terminals
Terminal screws 2 x 1.5 mm^2

Enclosure material
Plastic UL 94 V0

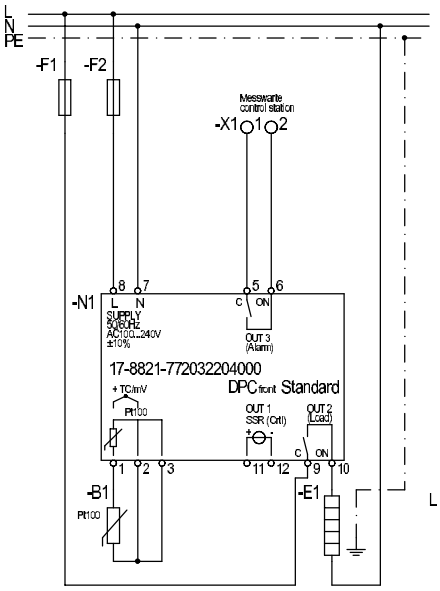
Electrical data

Nominal voltage
AC 100 V to AC 240 V +/- 10 %
50/60 Hz

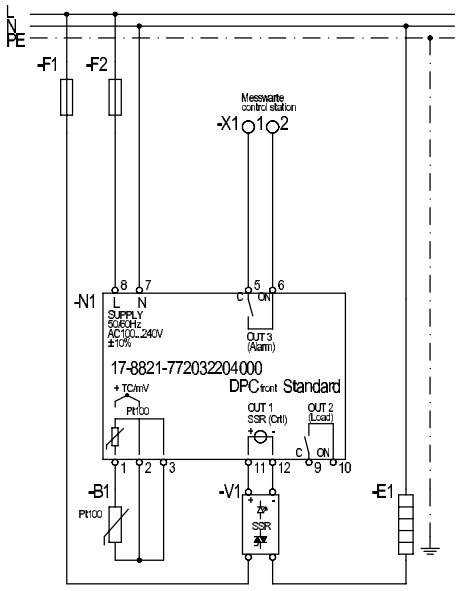
03-0330-0465/D-09/2014-BEH-246826

DPC$_{front}$ Standard

Circuit diagram DPC$_{front}$ Standard as ON/OFF control device



Circuit diagram DPC$_{front}$ Standard as PID control device



Features

- Pre parameterisation as ON/OFF control devices
- Can also be used as PID control devices
- Easy Setup

Description

Basic control device that can be used in the factory setting as ON/OFF control device with two relay outputs for regulation and alarm signalling for normal applications. Due to the factory basic setting only the setpoint and the alarm value(s) need to be set. The Easy Start-up function makes this extremely user-friendly. As an alternative, the same device can also be used as a control device with PID control characteristics and an external semi-conductor relay.

Technical data

Control characteristics	ON/OFF, alternatively PID
Sensor input	Pt100, mV standard signals, thermocouple J,K,S
Input impedance	at mV: 1 MΩ
Measuring ranges	depending on the sensor version
Measuring accuracy	**in resistance thermometers** ±0.5 % of the actual value or ±1 °C; the higher value applies ±1 digit **in thermocouples** ±0.5 % of actual value or ±1 °C; the higher value applies ±1 digit (see also reference junction accuracy) **in standard signals** (±0.5 % of actual value) ±1 digit
Accuracy of the reference junction in thermocouple measurements	0.04 °C for each °C operating temperature of the control device (after 20 min. operating time of the control device)
Sampling frequency at the sensor input	7.5 Hz
Output 1	Logic output for SSR control (DC 11 V/20 mA)
Output 2	Relay output 1 normally open contact (8 A - AC 1, 250 V)
Output 3	Relay output 1 normally open contact (5 A - AC 1, 250 V)
Electrical service life of the relay outputs	at least 100.000 switching cycles
Protection class	II
Power consumption	max. 5 VA (depending on connection of outputs)
Weight	0.2 kg

Order no. 17-8821-7720/32204000

Technical data subject to change without notice.

DPC$_{front}$ Komfort

Features

- Convenience version of the temperature control devices with process-value feedback over 4 to 20 mA analog output
- Logic output for SSR
- Universal measuring input
- Pre-parameterisation as PID control device
- Very good measuring accuracy

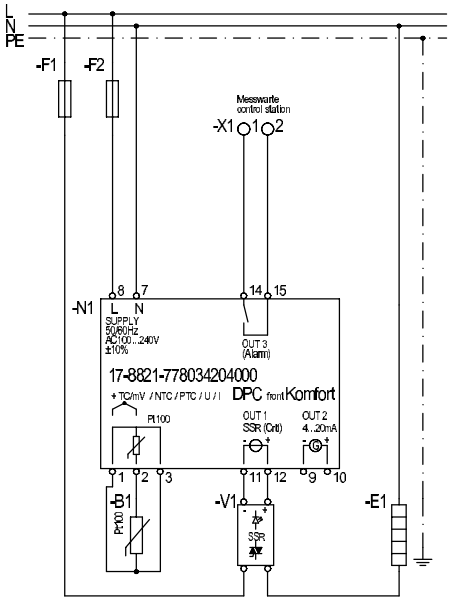
Description

The DPC$_{front}$ Komfort temperature control device is designed with extra convenient features. In the factory setting it works as a PID Control device with a logic output and a relay output. As an alternative, the same device can also be used as a ON/OFF controller.

For regulation the device uses a logic output for solid state relays. The relay output is used for alarm signalling. The high and low alarm function, sensor monitoring and heating circuit monitoring offer additional safety for the temperature regulation.

When using the device with the factory setting, a simple setup with just a few buttons is used to start operation for the first time. It is only necessary to set the setpoint, analog output limits, low alarm, and if required, high alarm.

Circuit diagram



Technical data

Control characteristics	PID; alternatively ON/OFF
Sensor input	Pt100, NTC, PTC Standard signals 4 to 20 mA; 0/1 to 5 V, 0/2 to 10 V Standard signals 0 to 50 mV, 0 to 60 mV, 12 to 60 mV Thermocouple J, K, S (etc.)
Input impedance	at 4 to 20 mA 51 Ω at mV 1 MΩ
Measuring ranges	depending on the sensor version
Measuring accuracy	**with resistance thermometers** ± 0.15 % of actual value or ± 1 °C; (the higher value applies) ± 1 digit **with thermocouples** ± 0.15 % of actual value or ± 1 °C; (the higher value applies) ± 1 digit (see in addition reference junction accuracy) **with standard signals** ± 0.15 % of actual value ± 1 digit
Accuracy of reference junction with thermocouple measurements	0.04 °C for each °C of the control device's operating temperature (after 20 min. of the control device's operating time)
Sampling frequency at the sensor input	7.5 Hz
Output 1	Logic output for SSR control (DC 20 V/20 mA)
Output 2	Analog output 4 to 20 mA, maximum load: 300 Ω
Output 3	Relay output 1 normally open contact (5 A - AC 1, 250 V)
Output auxiliary supply	DC 12 V/max. 20 mA
Electrical service life of the relay outputs	at least 100.000 witching cycles
Protection class	II
Power consumption	max. 5 VA (depending on connection of outputs)
Weight	0.2 kg

Order no. 17-8821-7780/34204000

Technical data subject to change without notice.

03-0330-0467/B-09/2014-BEH-246828

DPC$_{front}$ Monitor

Features

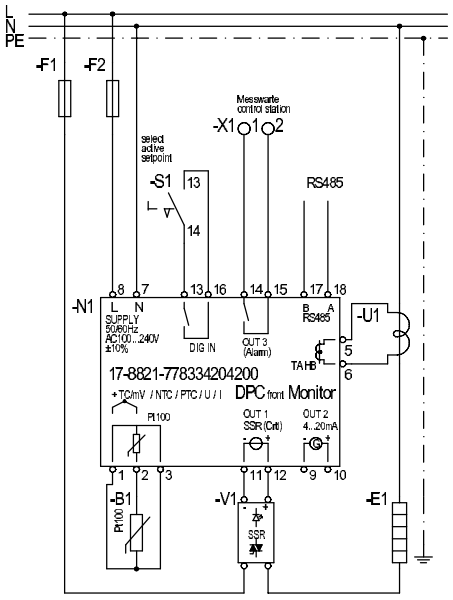
- Monitor version with heating current monitoring
- Process-value feedback over 4 to 20 mA analog output
- Logic output for SSR
- Universal measuring input
- Pre-parameterisation as PID control devices
- Interface
- Very good measuring accuracy

Description

The DPC$_{front}$ Monitor temperature control device is designed as a control device with special functions: heating current monitoring, external setpoint switching and communication through RS 485. It works in the factory setting as a PID control device with a logic output and a relay output.

As an alternative, the same device can also be used as a ON/OFF control device. The device is used to regulate a logic output for solid state relays. The relay output is used for alarm signalling. In addition a digital input can be used to choose between different setpoints. The high and low alarm function, sensor monitoring, heating circuit monitoring and heating current monitoring offer additional safety for temperature regulation. When using the device with the factory setting, a simple setup is used for putting into operation for the first time. For example the setpoint, analog output limits, heating currents, low alarm, and if desired, the high alarm must be set.

Circuit diagram



Technical data

Control characteristics	PID; alternatively ON/OFF
Sensor input	Pt 100, NTC, PTC Standard signals 4 to 20 mA; 0/1 to 5 V, 0/2 to 10 V Standard signals 0 to 50 mV, 0 to 60 mV, 12 to 60 mV Thermocouple J, K, S (etc.)
Input impedance	at 4 to 20 mA 51 Ω at mV 1 MΩ
Measuring ranges	depending on the sensor version
Measuring accuracy	**with resistance thermometers** ± 0.15 % of actual value or ± 1 °C, the higher value applies ± 1 digit
Measuring accuracy	**with thermocouples** ± 0.15 % of actual value or ± 1°C, the higher value applies ± 1 digit (see in addition reference junction accuracy) **at standard signals** ± 0.15 % of actual value ± 1 digit
Accuracy of reference junction with thermocouple measurements	0.04 °C for each °C of the control device's operating temperature (20 min. of the control device's operating time)
Sampling frequency at the sensor input	7.5 Hz
Current transformer input	max. 50 mA
Digital input	on-floating, i. e. floating contact required
Output 1	Logic output for SSR control (DC 20 V/20 mA)
Output 2	Analog output 4 to 20 mA, maximum load: 300 Ω
Output 3	Relay output 1 normally open contact (5 A - AC 1, 250 V)
Output auxiliary supply	DC 12 V/max. 20 mA
Electrical service life of the relay outputs	At least 100.000 switching cycles
Interface	RS485 (optically isolated)
Communikation protocol	Modbus RTU
Transmission speed	1200 to 38400 bauds
Protection class	II
Power consumption	max. 9 VA (depending on connection of outputs)
Weight	0.2 kg

Order no. 17-8821-7783/34204200

Technical data subject to change without notice.

03-0330-0468/B-09/2014-BEH-246829

Features

- Optimised for trace heating applications
- Wide-range voltage input
- Sensor monitoring
- Programmable with CodeKey
- Can be used in conjunction with Pt100 Ex for temperature regulation in explosion-protected heating circuits

Temperature control device family DPC III

DPC III Standard

DPC III Monitor

Description

The DPC III temperature controller series consists of two standardised temperature controllers which are suited to (trace) heating applications.

The digital controller monitors measuring circuits for sensor failures, interruption or short circuit and under-range and over-range measurements in order to ensure process reliability.

The DPC III can be used universally as an ON/OFF or PID controller. The integrated wide-range voltage input allows the devices to be used practically anywhere in the world.

Assembly

The DPC III is integrated in a snap-on housing for TS 35 DIN rail mounting. Pt100 resistance thermometers and thermocouples are connected at the measuring input.

The controller is equipped with a 16 A load relay for ON/OFF control, an 8 A group error message relay, a logical voltage output for the PID control and two programmable digital inputs.

The voltage for the controller is supplied through an integrated power pack with wide-range voltage. The electrical connection is established with terminal screws operating on the screw cage clamp principle. The DPC III Controller is completely downwardly compatible with the previous DPC Controller.

Function

Changes in temperature at the Pt100 sensor are evaluated in the DPC III and are visible as temperature readings on the LED display. If a deviation from the preset level is detected, the device regulates the heating circuit of the trace heating in accordance with the pre-selected control characteristic (ON/OFF or PID).

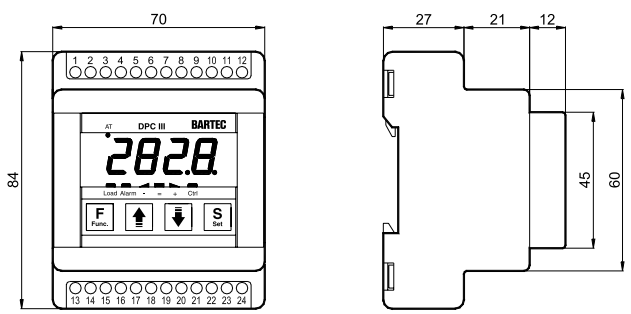
An auto-tuning function, available for the PID control, analyses the control path (heating circuit) and automatically determines and saves the PID control parameters. The control's output power can be displayed at the touch of a button. One of the benefits of this function is the possibility of evaluating the quality of the heating circuit.

In addition to the control parameters, customized high- and low-temperature alarms can be set by the operators.

For servicing purposes, the heating circuit can be switched off on the device or through digital input. The temperature alarms can also be disabled. The process reliability is further enhanced by the control circuit's additional monitoring functions and the connected measurement sensor. The programming interface allows the device parameters to be read out with a code key and transferred to other controllers.

For effective parameter protection a multi-stage password management system can be activated. Furthermore, the manual control or soft start functions can be activated for the system start-up.

Dimensions (mm)



Features

- Pre-defined parameters for two-position controller
- Can also be used as a PID controller
- Easy setup for very short commissioning times
- Load relay/alarm relay/logic output for semi-conductor relay

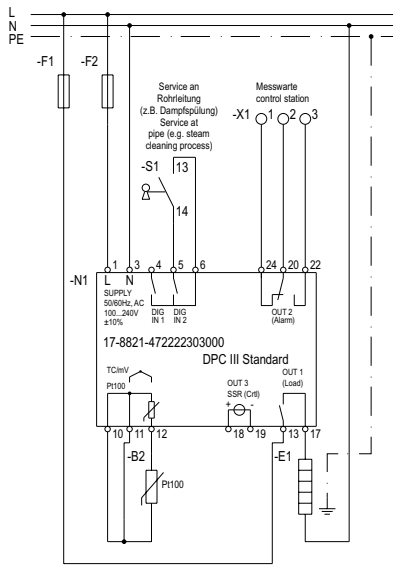
Description

The DPC III Standard Temperature Controller is a basic controller, which in the factory setting can be used as a two-position controller with two-relay outputs for control and alarm signalling for standard applications. Due to the default basic setting only the setpoint and the alarm level(s) need to be set.

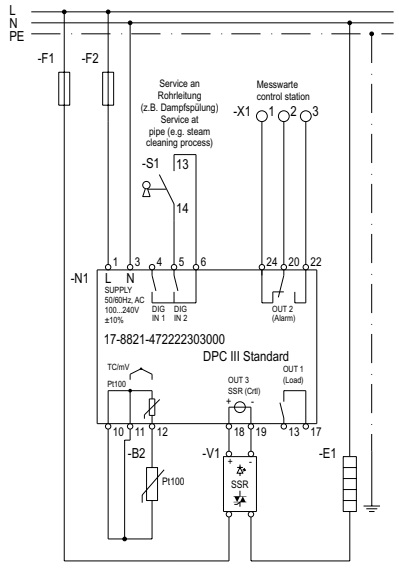
The easy start-up function makes this extremely user-friendly. As an alternative, the same device can also be used as a controller with PID control characteristics and an external semi-conductor relay.

DPC III Standard

Circuit diagram
DPC III Standard as two-position controller



Circuit diagram
DPC III Standard as PID controller



Technical data

Control characteristic
ON/OFF, PID

Sensor input
Pt100, mV Standard signals
Thermocouple J, K, S

Inputs impedance
at mV: 1 MΩ

Measuring ranges
depending on the sensor version

Measuring accuracy
with resistance thermometers
(±0.5 % of the actual level or ±1 °C; the higher level applies) ±1 digit

with thermocouples
(±0.5 % of the actual level or ±1 °C; the higher level applies) ±1 digit
(see additional reference junction accuracy)

Accuracy of the reference junction with thermocouple measurement
0.04 °C for each °C of the controller's operating temperature
(after 20 min. of controller operating time)

Sampling frequency at the sensor input
7.5 Hz

Ambient temperature range
0 °C to +50 °C

Weight
0.2 kg

Electrical data

Digital input
two, non-floating,
i. e. floating contact(s) required
(contact loadability minimum 5 V, 5 mA)

Output 1
Relay output 1 normally open contact
(16 A - AC 1, 250 V)

Output 2
Relay output 1 change-over contact
(8 A - AC 1, 250 V)

Output 3
Logic output for SSR control
(DC 11 V/20 mA)

Electrical service life of the relay outputs
At least 100,000 switching cycles

Protection class
II

Power consumption
max. 5 VA
(depending on the output connection)

Selection chart

Supply voltage	Code no.
AC 100 to 240 V	**7**
AC/DC 24 V	**C**

Complete order no. 17-8821-4 ☐ 22/22303000
Please enter code no. Technical data subject to change without notice.

03-0330-0501/A-09/2014-BEH-286448

DPC III Monitor

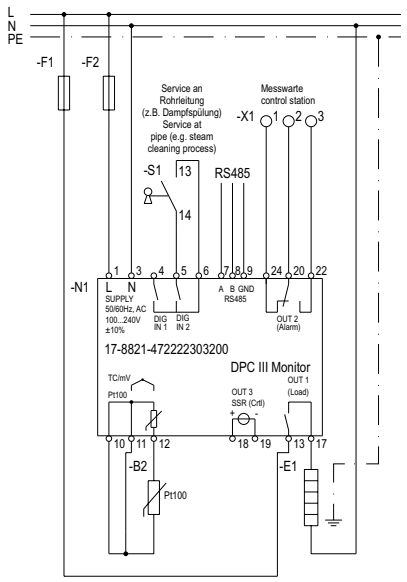
Features

- Pre-defined parameters for two-position controller
- Can also be used as a PID controller
- Easy setup for very short commissioning time
- Load relay/alarm relay/logic output for semi-conductor relay
- RS485

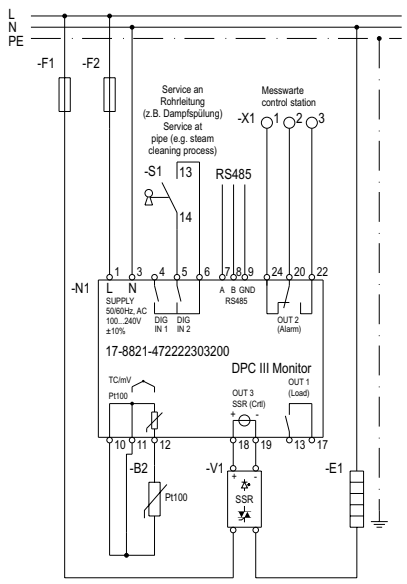
Description

The DPC III Monitor Temperature Controller is a basic controller which in the factory setting can be used as a ON/OFF controller with two relay outputs for control and alarm signalling for standard applications. Due to the default basic setting only the setpoint and the alarm level(s) need to be set. The easy start-up function makes this extremely user-friendly. As an alternative, the same device can also be used as a controller with PID control characteristics and an external semi-conductor relay. The monitor version is equipped with an RS485 interface and MODBUS protocol.

Circuit diagram
DPC III Monitor as two-position controller



Circuit diagram
DPC III Monitor as PID Controller



Technical data

Control characteristic
ON/OFF, PID

Sensor input
Pt100, mV Standard signals
Thermocouple J, K, S

Inputs impedance
at mV: 1 MΩ

Measuring ranges
depending on the sensor version

Measuring accuracy
at resistance thermometers
(± 0.5 % of the actual level or ± 1 °C; the higher level applies) ± 1 digit

with thermocouples
(± 0.5 % of the actual level or ± 1 °C; the higher level applies) ± 1 digit
(see additional reference junction accuracy)

Accuracy of the reference junction with thermocouple measuring
0.04 °C for each °C of the controller's operating temperature
(after 20 min. of controller operating time)

Sampling frequency at the sensor input
7.5 Hz

Electrical data

Ambient temperature
0 °C to +50 °C

Weight
0.2 kg

Digital input
two, non-floating,
i. e. floating contact(s) required
(Contact loadability at least 5 V, 5 mA)

Output 1
Relay output 1
normally open contact (16 A - AC 1, 250 V)

Output 2
Relay output 1 change-over contact
(8 A - AC 1, 250 V)

Output 3
Logic output for SSR control
(DC 11 V/20 mA)

Electrical service life of the relay outputs
At least 100,000 switching cycles

Protection class
II

Power consumption
Max. 5 VA
(depending on the connection of the outputs)

Interface
RS 485 (optically isolated)

Communication protocol
MODBUS RTU

Transmission speed
1200 to 38400 bauds

Selection chart

Supply voltage	Code no.
AC 100 to 240 V	**7**
AC/DC 24 V	**C**

Complete order no. 17-8821-4 ☐ 22/22303200
Please enter code no. Technical data subject to change without notice.

DTL III Ex

Features

- ATEX approval
- Optimised for trace heating applications (with service entry)
- Wide-range voltage input
- Sensor surveillance
- In conjunction with Pt100 Ex, it can be used for monitoring temperature in explosion-protected heating circuits

Description

The DTL III Ex digital temperature limiter, which is adapted to (trace) heating applications, serves to monitor heating and heating circuits. The device is installed in the non-hazardous area. The heating or heating circuits can be installed both in media-protected and also in hazardous areas.

Thanks to their integrated power supply unit with wide-range voltage, the devices can be used almost everywhere in the world.

Function

If the temperature at the Pt100 exceeds the set limit value, the DTL III Ex permanently interrupts the normally closed 16 A switch contact. This situation is detected by a volt-free alarm contact (change-over contact) and passes on the signal to the control panel. After a temperature drop of 5 K below the limit set point, or after a fault has been remedied, the limiter can be re-activated by means of a re-set button on the device itself or via a remote re-set control. The DTL will also interrupt the switch contact in the event of a sensor open or short circuit.

Process reliability is increased by additional monitoring functions such as supply voltage monitoring, pre-alarm, measuring circuit monitoring for sensor break, interruption and short-circuit as well as undershooting/overshooting of the measuring range.

A multi-stage password management is available for effective parameter protection. When doing service work on the heating circuit, the load output can be turned off by means of a digital input and the temperature alarms can be disabled.

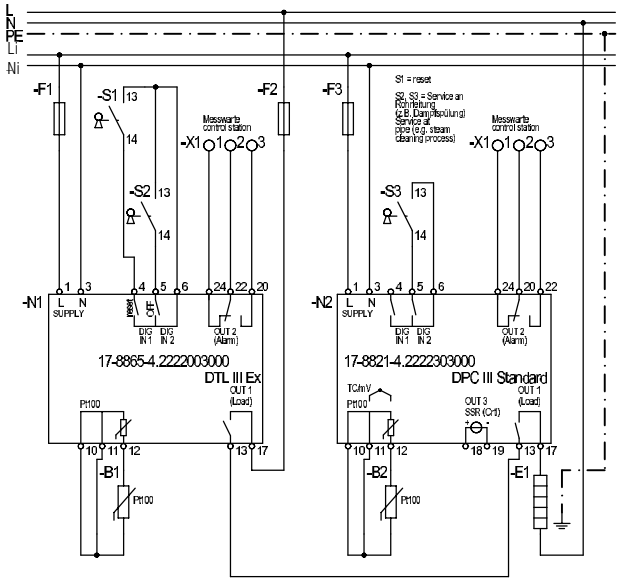
Using the programming interface, the device parameters can be read out with a programming key and transmitted to other devices.

Structure

The DTL III Ex is integrated in a latch-on enclosure for TS 35 mounting rails. The alarm relay is produced as a change-over contact and the limit relay as a normally open contact.

The voltage is supplied to the control device through an integrated power supply unit with wide-range voltage. The electrical connection is established with terminal screws operating on the screw cage clamp principle, ensuring a safe connection that is gentle on conductors.

Circuit diagram



Explosion protection

Ex protection type
Ⓔx II (2)GD [Ex e II]

Certification
TÜV 08 ATEX 554871

Technical data

Mode of Operation
limiting function

Sensor input
Pt100

Measuring range
-200 °C to +850 °C

Measuring accuracy
(± 0.5 % of the actual value or ± 1 °C; the higher level applies) ± digit

Sampling frequency at the sensor input
7.5 Hz

Ambient temperature range
0 °C to +50 °C

Weight
0.2 kg

Electrical data

Digital inputs
Input 1: remote RESET
Input 2: SERVICE
Non-floating, i. e.
floating contact(s) required
(contact loadability minimum 5 V, 5 mA)

Output 1 (load output)
Relay output 1 normally open contact
(AC 250 V, 16 A - cos φ = 1)

Output 2 (alarm output)
Relay output 1 change-over contact
(AC 250 V, 8 A - cos φ = 1)

Electrical service life of the relay outputs
Minimum of 100,000 switching cycles

Protection class
II

Power consumption
Max. 4 VA

Selection chart

Supply voltage	Code no.
AC 100 to 240 V	**7**
AC/DC 24 V	**C**

17-8865-4 ☐ 22/22003000
Complete order no.
Please enter code number.

Technical data subject to change without notice.

Features

- Easy programming of DPC devices
- Operation independent of voltage supply
- SMART converter function USB/RS485

DPC CodeKey

Description

The DPC CodeKey makes it easier to set parameters for the DPC device family. Once a reference device has been successfully programmed, the operating parameters are available in a device-memory read-out.

The parameters filed in the CodeKey can be copied into other devices any number of times. This reduces the programming work to a minimum.

In addition, the CodeKey can be used as an interface converter between the USB and RS485.

Mode of Operation

A DIP switch can be used to select the device function required. The DPC$_{front}$ and DPC III have at the side or under the display cover a 5-pin interface into which the CodeKey is inserted. The transmission is started at the press of a button. Once done, a status LED flashes. Voltage is supplied to the CodeKey through the interface.

Technical data

Voltage supply (external, optional)
DC 9 V to 12 V
via 1.3 mm jack

Operating temperature
0 °C to +50 °C

Storage temperature
-20 °C to +70 °

Air humidity
20 % to 80 % relative humidity

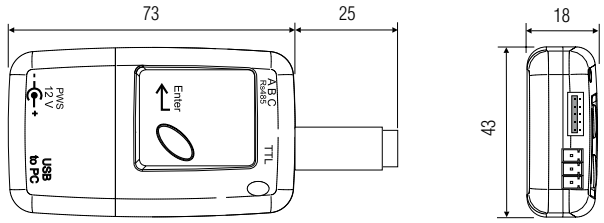
Degree of contamination
2

■ **Interfaces**

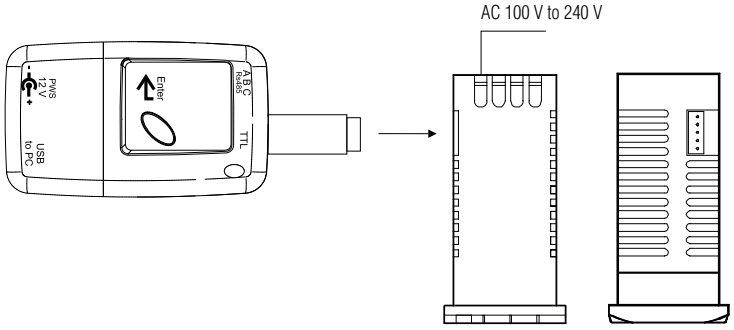
RS 485
not insulated, Phoenix MC 1.5/3-G-3.5
3 m max. cable length
Baud rate: 1200 to 38400 baud

TTL
not insulated, JST S 5B-PH-KL - 2 mm
3 m max. cable length
baud rate: 1200 to 38400 baud

Dimensions (in mm)



Connection example with DPC$_{front}$



Selection chart

Version	Code no.
for DPC III, DTL III Ex and DPC$_{front}$ Standard	4
for DPC$_{front}$ Komfort and DPC$_{front}$ Monitor	5

05-0089-007 ☐
Complete order no.
Please enter code no. Technical data subject to change without notice.

MPC^net multi-channel control system

Features

- Simple system design
- Unlimited number of controllable heating circuits
- Predictive maintenance
- Stepless power setpoint adjustment from 10 % to 100 %
- Cuttable to specific lengths: EKL and EMK, similar to BARTEC's SLHBs
- Programming skills not necessary

Description

MPC^net is a versatile and flexible system for controlling and monitoring electric trace heating applications.

The construction of the control system is based on standard I/O bus systems and was developed specially to meet the demands of electric trace heating. The system is modular and can be adapted to the respective application's specific requirements by combining individual modules.

MPC^net enables solutions extending from simple temperature recording systems to centrally controlled temperature regulation, limitation and monitoring.

The system is easy to plan and configure. PLC programming skills are not necessary. The software and touch panel make it simple for the operator to set parameters for the individual heating circuits.

Construction

The system is modular in construction and can therefore be adapted flexibly to the respective requirements of the plant or equipment.

Diverse function modules are available to allow its operation as a two-state controller. They register temperature, load and residual current and diverse control signals, e.g. output signals from limiters.

An output module provides floating contacts to emit alarms. It is also used to actuate the external contactor for switching the heating circuits.

Independent complete modules are available for each heating circuit to allow its operation as a proportional controller. These regulate the outputted heating power as well as the holding temperature. The load and residual current are registered for that purpose. The heating circuits are activated through an integrated triac then.

The MC32 controller module accesses the various modules through the system bus. A controller module provides up to 32 heating circuits. This number can be increased by adding more modules to the bus.

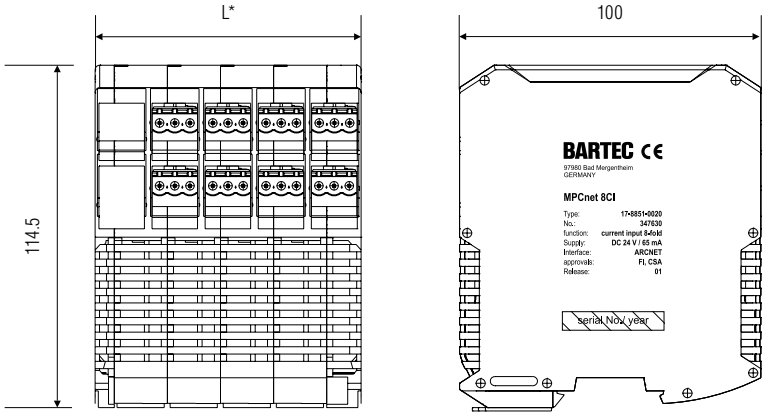
An optional gateway ensures communication to the higher-ranking control system and to the touch panel. The parameters for the modules can be set by means of software or a touch panel.

Function

The load and residual current monitor constantly checks the entire heating system and ensures that the heating cables and temperature sensors always function reliably. Alarms are given if values exceed or fall below the pre-defined load or leakage-current limits.

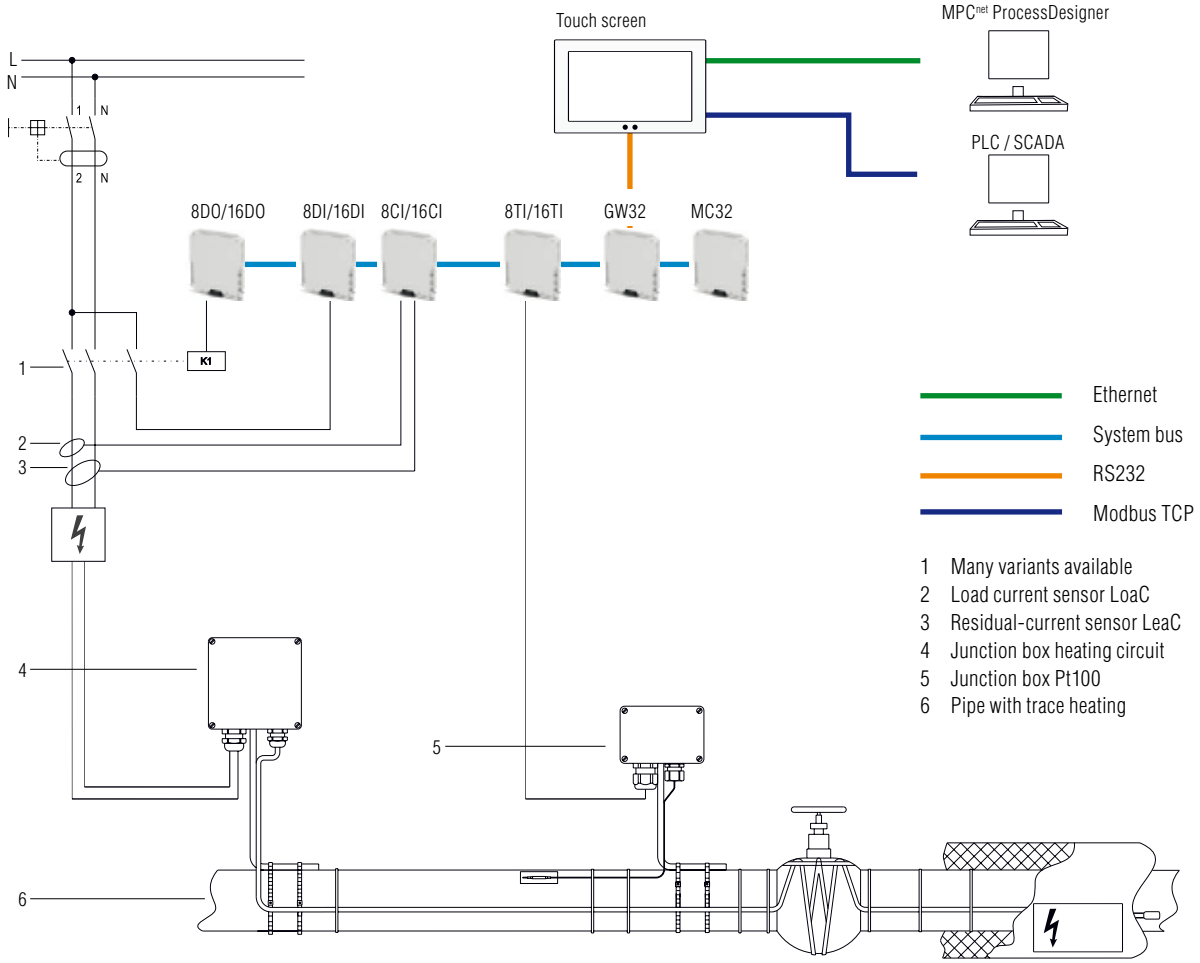
The MPC^net Process Designer software can be adapted individually to the user's requirements and constantly show the state of the heating system. Statistical data on the current and energy consumption are determined by means of the integrated data logger. This provides information on the condition and ageing status of the material that is being used.

Dimensions (in mm)



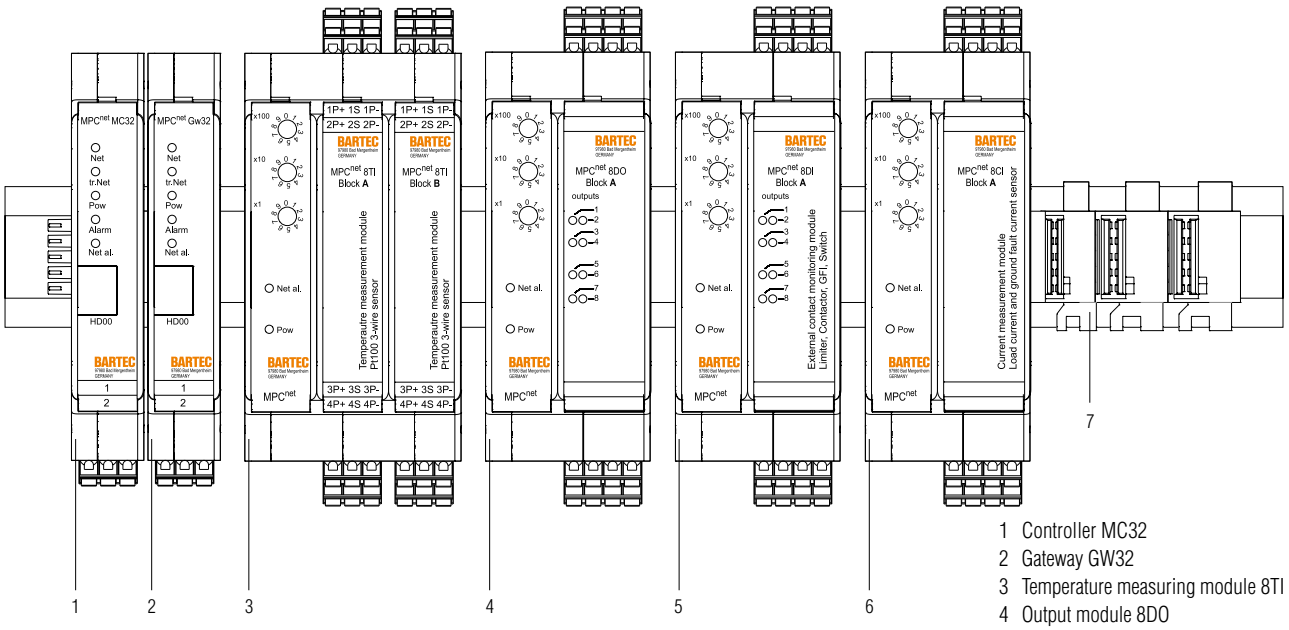
* = Please refer to the data sheets for the modules

System configuration two-point control



1 Many variants available
2 Load current sensor LoaC
3 Residual-current sensor LeaC
4 Junction box heating circuit
5 Junction box Pt100
6 Pipe with trace heating

Example of installation



1 Controller MC32
2 Gateway GW32
3 Temperature measuring module 8TI
4 Output module 8DO
5 Input module 8DI
6 Current measuring module 8CI
7 Bus connector

GW32 Gateway

Features

- Connection of touch panel
- Communication with software MPC^net ProcessDesigner
- Integration in a control system via MODBUS in conjunction with the touch panel

Technical data

Enclosure material
Polyamide PA

Protection class (EN 60529)
IP 20

Electrical connections
RJ-45 plug connectors, RS-232

Fastening onto mounting rail
TH 35-15 DIN EN 60715 (metal)

Dimensions (W x H x D)
17.5 mm x 100 mm x 114.5 mm

Weight
108 g

Storage and transport temperature
-30 °C to +70 °C

Operating temperature
0 °C to +60 °C

Degree of contamination
2

Electrical data

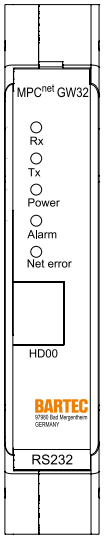
Interface
RS232 via RJ45 connectors

Voltage supply
DC 24 V through internal bus

Current consumption
65 mA

Displays
LEDs in the front of the enclosure:
Operation voltage OK, alarm, network error, Data transfer, data receiving

Wiring diagram/terminal assignment



Description

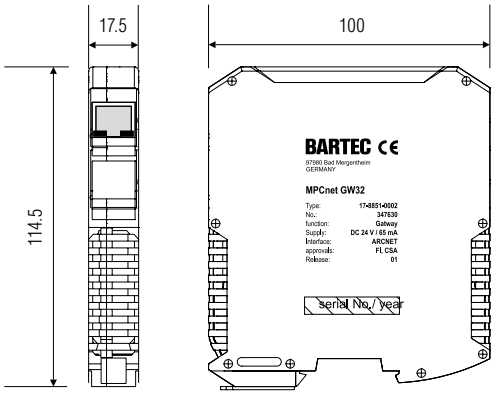
The GW32 gateway connects the MC32 modules, which operate independently of each other, into a complete system. It serves as an interface between the controller hardware and the MPC^net ProcessDesigner software.

The PA00 touch panel also accesses the control system's parameters through the gateway. The physical connection is established by means of the RS232 interface.

In conjunction with the PA00 touch panel, the GW32 also establishes communication between a higher-ranking control system and the MPC^net. The PA00 touch panel serves as the interface here.

See the System Description for the Installation Instructions.

Dimensions



Order no.

MPC^net GW32 Gateway
17-8851-0002

Accessories
MPC^net PA00 touch panel
17-8851-0003

Technical data subject to change without notice.

03-0330-0724-07/2014-BEH-349141

MC32 controller module

Features

- Regulation of up to 32 heating circuits per module
- User-defined group alarms
- Number of heating circuits extendable at will

Description

The MC32 controller module regulates and monitors up to 32 heating circuits. It flexibly accesses the individual I/O modules by means of the bus system integrated in the DIN rail.

By inserting more MC32 modules into the bus, the number of heating circuits to be monitored can be increased at will. Two setpoint values can be assigned to each heating circuit and changed by means of an external switching contact.

The MC32 monitors parameters, such as temperature, overheating, load current, residual current, and external status signals such as rccb auxiliary contacts, limiter alarms, manual switches etc. for each of the 32 heating circuits individually

Up to three temperature sensors per circuit are monitored, whereby the controlled variable is fixed in relation to one sensor. The other sensors serve to monitor a high and a low alarm value.

Individual upper and lower limits can be assigned to each monitored value and individual alarms emitted by means of the MPC^net control system's digital outputs.

In addition, all individual alarms can be emitted through the MC32 module's group alarm contact to an indicator light or suchlike. The bus status signals and alarms are also indicated by means of LEDs.

Connecting the GW32 gateway and PA00 touchpanel allows a transfer not only of the setpoint and actual values but also of all alarms into a higher ranking control. All of the control system's parameters and alarms can be altered or acknowledged from the control centre.

See System Description for the Installation Instructions.

Technical data

Enclosure material
Polyamide PA

Protection class (EN 60529)
IP 20

Electrical connections
plug-in screw-type terminal, 3-pole
terminal range 0.2 to 2.5 mm²
RJ45 jack

Fastening to mounting rail
TH 35-15 DIN EN 60715 (metal)

Dimensions (W x H x D)
17.5 mm x 100 mm x 114.5 mm

Weight
108 g

Storage and transport temperature
-30 °C to +70 °C

Operating temperature
0 °C to +60 °C

Degree of contamination
2

Electrical data

Voltage supply
DC 24 V by means of an internal bus

Current consumption
65 mA

Displays
LEDs in the front of the enclosure:
Bus status, TRIAC status, alarm, power

Bus connection to I/O modules

Configurable inputs per heating circuit

Temperature measurements
each 1 x temperature,
controller, limiter and alarm sensor

Digital inputs
Setpoint selection, alarm suppression,
Alarm contact monitoring by contactor,
circuit-breaker and residual-current protective device, Heating output reduction
(25 %, 50 %, 75 %), Heating switch-off,
limiter monitoring

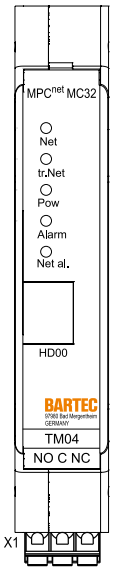
Current measurement
Load current (1ph and 3ph)
Residual current

Configurable outputs per heating circuit

Control outputs
Digital output for activation of power contactor or direct activation of the heating circuit through TRIAC

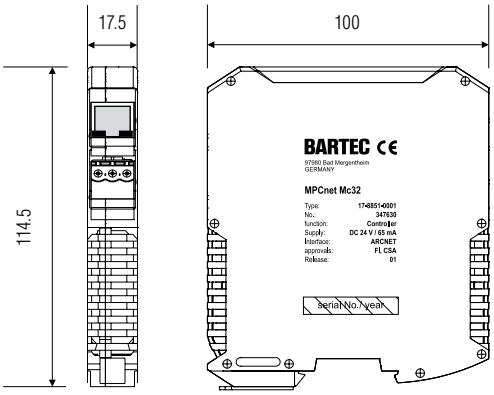
Alarm outputs
Overheating
Triggering of limiter
Group alarm
Residual-current alarm

Wiring diagram/terminal assignment



Terminal block	Terminal	Description
X1	NO	normally open contact
	C	common
	NC	normally closed contact

Dimensions (in mm)



Order no.
MPC^net MC32 controller module
17-8851-0001

Technical data subject to change without notice.

MPC^net 8TI/16TI

Features

- Up to 16 temperature inputs
- 3-wire Pt100
- Galvanic isolation between the inputs and the system
- Open-circuit/short-circuit detection

Description

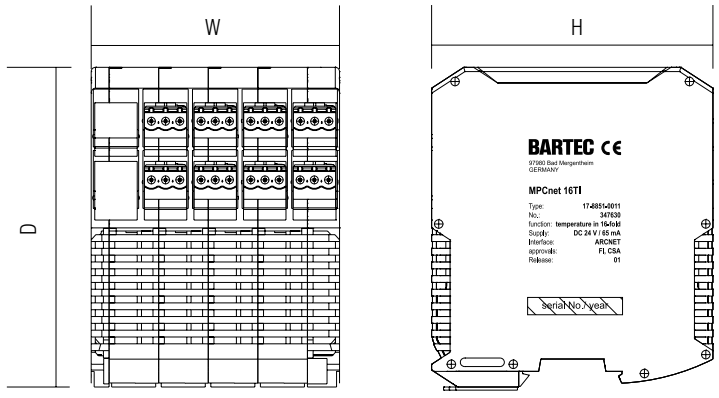
The 8TI and 16TI temperature registering modules are suitable for the direct connection of 3-wire Pt100 temperature sensors.

They are operated and supplied by means of the MC32 controller. The internal, galvanically isolated bus connection is established by simply joining the modules.

The modules feature open-circuit/short-circuit detection. LEDs display the bus status messages and fault signals.

See System Description for the Installation Instructions.

Dimensions (in mm)



	W	H	D
8 TI	54.0	100	114.5
16 TI	88.0	100	114.5

Technical data

Enclosure material
Polyamide PA

Protection class (EN 60529)
IP 20

Electrical connections
plug-in screw-type terminal, 3-pole
Terminal range 0.2 to 2.5 mm² numbered

Attachment to mounting rail
TH 35-15 DIN EN 60715 (metal)

Dimensions (W x H x D)
8TI 54.0 mm x 100 mm x 114.5 mm
16TI 88.0 mm x 100 mm x 114.5 mm

Weight
8TI 274 g
16TI 398 g

Storage and transport temperature
-30 °C to +70 °C

Operating temperature
0 °C to +60 °C

Degree of contamination
2

Electrical data

Number of channels
8TI 8 inputs
16TI 16 inputs
for 3-wire Pt100 in each case

Measuring range
-49 °C to +650 °C

Galvanic isolation
between inputs and internal bus

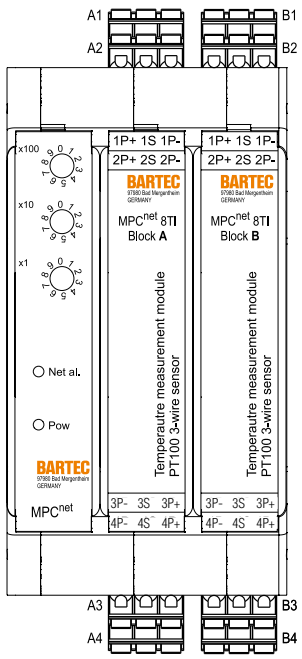
Line break/short circuit
per channel
automatic reporting by means of controller

Voltage supply
DC 24 V by means of an internal bus

Current consumption
8TI 91 mA
16TI 117 mA

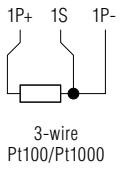
Displays
LEDs in the front of the enclosure:
Status Net al. Pow.

Wiring diagram/terminal assignment



Terminal block	Terminal	Description		Terminal block	Terminal	Description
A1	1P+	Supply +		B1	1P+	Supply +
	1S	Signal			1S	Signal
	1P-	Supply -			1P-	Supply -
A2	2P+	Supply +		B2	2P+	Supply +
	2S	Signal			2S	Signal
	2P-	Supply -			2P-	Supply -
A3	3P-	Supply -		B3	3P-	Supply -
	3S	Signal			3S	Signal
	3P+	Supply +			3P+	Supply +
A4	4P-	Supply -		B4	4P-	Supply -
	4S	Signal			4S	Signal
	4P+	Supply +			4P+	Supply +

Example of connection



3-wire
Pt100/Pt1000

Order no.

Remote MPC^net 8TI I/O module
17-8851-0010

Remote MPC^net 16TI I/O module
17-8851-0011

Accessories
Pt100Ex 27-71-13..

Technical data subject to change without notice.

MPC^{net} 8DO/16DO

Features

- 8 and 16 floating N/O contacts
- Galvanic isolation between the inputs and the system
- Activation of power contactors/SSRs
- Output of alarms

Description

The 8DO and 16DO output modules are suitable for indirectly switching heating cables by means of a power contactor.

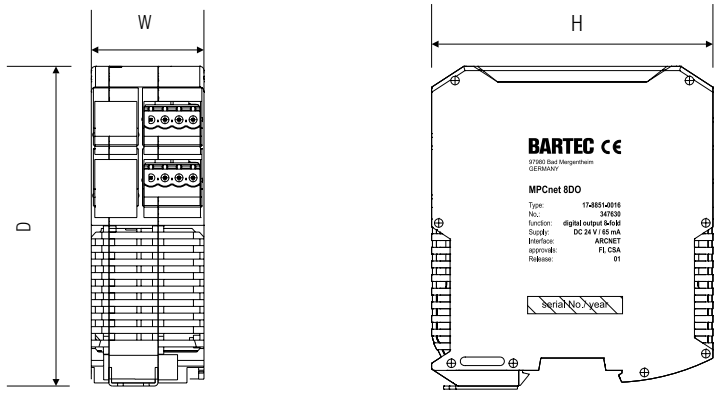
In addition, the individually adjustable alarms can be outputted through the digital outputs.

They are operated and supplied with the aid of the MC32 controller. The internal, galvanically isolated bus connection is established by simply joining the modules together.

LEDs display the bus status signals and the status signals per channel.

See System Description for Installation Instructions.

Dimensions (in mm)



	W	H	D
8 DO	41,0	100	114,5
16 DO	63,5	100	114,5

Technical data

Enclosure material
Polyamide PA

Protection class (EN 60529)
IP 20

Electrical connections
plug-in screw-type terminal, 3-pole
terminal range 0.2 to 2.5 mm² numbered

Attachment to mounting rail
TH 35-15 DIN EN 60715 (metal)

Dimensions (W x H x D)
8DO 41.0 mm x 100 mm x 114.5 mm
16DO 63.5 mm x 100 mm x 114.5 mm

Weight
8DO 253 g
16DO 368 g

Storage and transport temperature
-40 °C to +70 °C

Operating temperature
-40 °C to +46 °C

Degree of contamination
2

Electrical data

Number of Channels
8DO 8 outputs
16DO 16 outputs
floating contacts in each case

Contact rating

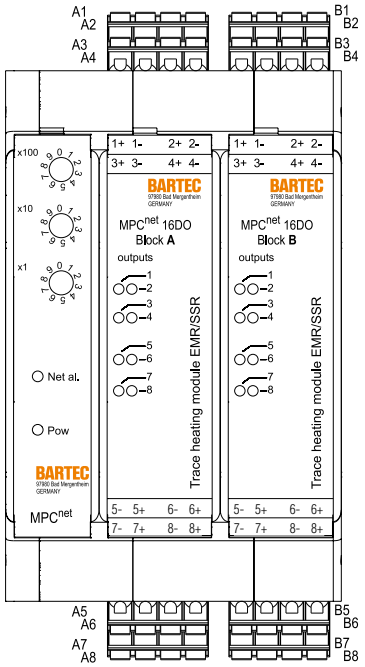
direct switching	4 A - AC 1, 250 V
by means of power contactor	0.5 A - AC 15, 230 V

Voltage supply
DC 24 V through internal bus

Current consumption
8DO max. 169 mA
16DO max. 273 mA

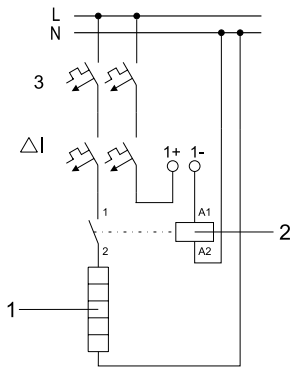
Displays
LEDs in the front of the enclosure
Status Net al. Pow. Output status

Wiring diagram/terminal assignment



Terminal block	Terminal	Description	Terminal block	Terminal	Description
A1	1+	load/relay +	B1	1+	load/relay +
	1-	load/relay -		1-	load/relay -
A2	2+	load/relay +	B2	2+	load/relay +
	2-	load/relay -		2-	load/relay -
A3	3+	load/relay +	B3	3+	load/relay +
	3-	load/relay -		3-	load/relay -
A4	4+	load/relay +	B4	4+	load/relay +
	4-	load/relay -		4-	load/relay -
A5	5-	load/relay -	B5	5-	load/relay -
	5+	load/relay +		5+	load/relay +
A6	6-	load/relay -	B6	6-	load/relay -
	6+	load/relay +		6+	load/relay +
A7	7-	load/relay -	B7	7-	load/relay -
	7+	load/relay +		7+	load/relay +
A8	8-	load/relay -	B8	8-	load/relay -
	8+	load/relay +		8+	load/relay +

Example of connection



1 Heating tape
2 Power contactor, 0.5 A to AC 15, 250 V
3 Power circuit breaker, C characteristics

Order no.

Remote I/O module MPC^net 8DO
17-8851-0016

Remote I/O module MPC^net 16DO
17-8851-0017

Technical data subject to change without notice.

MPC^net 8DI/16DI

Features

- Up to 16 inputs
- Galvanic isolation between the inputs and the system
- Monitoring of safety temperature limiters
- Monitoring of rccbs, contactors etc.

Description

The 8DI and 16DI digital input modules register and monitor diverse status signals. The inputs are floating, and this means that non-floating contacts are required for transmitting signals.

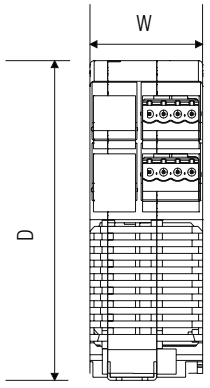
They are operated and supplied through the MC32 controller.

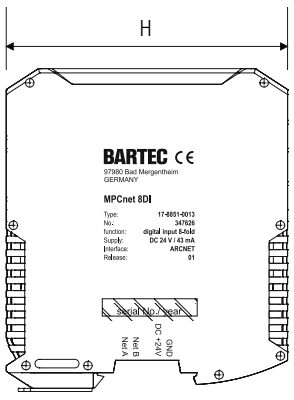
The internal, galvanically isolated bus connection is established by simply joining the modules together.

LEDs display the bus status messages and other status messages per channel.

See the System Description for the Installation Instructions.

Dimensions (in mm)





	W	H	D
8 DI	41.0	110	114.5
16 DI	63.5	110	114.5

Technical data

Enclosure material
Polyamide PA

Protection class (EN 60529)
IP 20

Electrical connections
plug-in screw-type terminal, 3-pole
Terminal range 0.2 to 2.5 mm² numbered

Attachment to mounting rail
TH 35-15 DIN EN 60715 (metal)

Dimensions (W x H x D)
8DI 41.0 mm x 100 mm x 114.5 mm
16DI 63.5 mm x 100 mm x 114.5 mm

Weight
8DI 220 g
16DI 304 g

Storage and transport temperature
-40 °C to +70 °C

Operating temperature
-40 °C to +60 °C

Degree of contamination
2

Electrical data

Number of channels
8DI 8 inputs
16DI 16 inputs
each for connecting
non-floating auxiliary contacts for
rccbs, contactors, limiters, buttons etc.

Input loading capability
AC/DC 22 to 280 V, CAT II

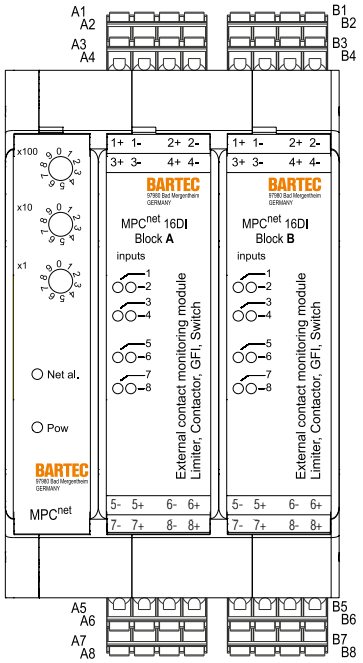
Galvanic isolation
between inputs and internal bus

Voltage supply
DC 24 V through internal bus

Current consumption
8DI 43 mA
16DI 65 mA

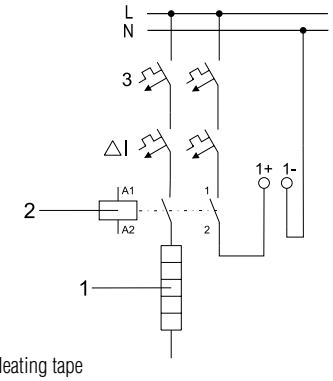
Displays
LEDs in The front of the enclosure:
Status Net al. Pow. Input status

Wiring diagram/terminal assignment



Terminal block	Terminal	Description		Terminal block	Terminal	Description
A1	1+	L/signal +		B1	1+	L/signal +
	1-	N/signal -			1-	N/signal -
A2	2+	L/signal +		B2	2+	L/signal +
	2-	N/signal -			2-	N/signal -
A3	3+	L/signal +		B3	3+	L/signal +
	3-	N/signal -			3-	N/signal -
A4	4+	L/signal +		B4	4+	L/signal +
	4-	N/signal -			4-	N/signal -
A5	5-	L/signal -		B5	5-	L/signal -
	5+	N/signal +			5+	N/signal +
A6	6-	L/signal -		B6	6-	L/signal -
	6+	N/signal +			6+	N/signal +
A7	7-	L/signal -		B7	7-	L/signal -
	7+	N/signal +			7+	N/signal +
A8	8-	L/signal -		B8	8-	L/signal -
	8+	N/signal +			8+	N/signal +

Example of connection



1 Heating tape
2 Power contactor, 2 x N/C contacts
3 Capacity circuit breaker, C characteristics

Order no.

Remote I/O module MPC^net 8DI
17-8851-0013

Remote I/O module MPC^net 16DI
17-8851-0014

Technical data subject to change without notice.

MPC^net 8CI/16CI

Features

- Up to 16 inputs
- Measurement of load or residual current up to 100 A
- Galvanic isolation between the inputs and the system
- Monitoring of up to three phases

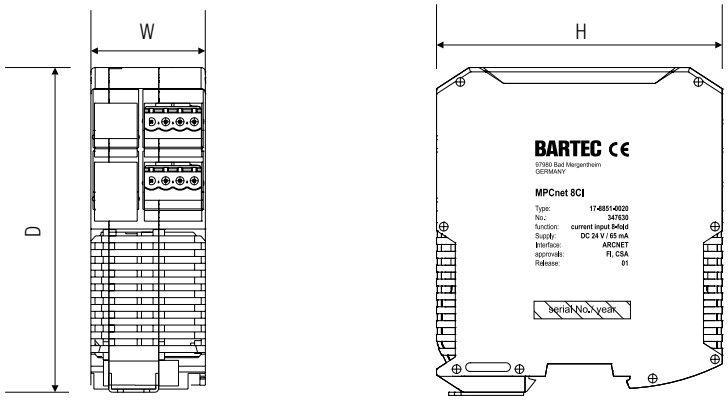
Description

The 8CI and 16CI current measuring modules register load and residual currents in conjunction with the LoaC and LeaC measuring transducers. Up to three phases and the total current can be monitored for each heating circuit. The individual inputs are assigned and configured either by means of the MPC^net ProcessDesigner software or by the touch panel.

The modules are operated and supplied through the MC32 controller. The internal, galvanically isolated bus connection is established by simply joining the modules together.

See the System Description for the Installation Instructions.

Dimensions (in mm)



	W	H	D
8 CI	41.0	110	114.5
16 CI	63.5	110	114.5

Technical data

Enclosure material
Polyamide PA

Protection class (EN 60529)
IP 20

Electrical connections
plug-in screw-type terminal, 3-pole
terminal range 0.2 to 2.5 mm² numbered

Fastened to mounting rail
TH 35-15 DIN EN 60715 (metal)

Dimensions (W x H x D)
8CI 41.0 mm x 110 mm x 114.5 mm
16CI 63.5 mm x 110 mm x 114.5 mm

Weight
8CI 274 g
16CI 398 g

Storage and transport temperature
-30 °C to +70 °C

Operating temperature
0 °C to +60 °C

Degree of contamination
2

Electrical data

Number of channels
8CI 8 inputs
16CI 16 inputs
each for LoaC and LeaC measuring transducers

Measuring range
LoaC 0 to 70 A
LeaC 0 to 700 mA

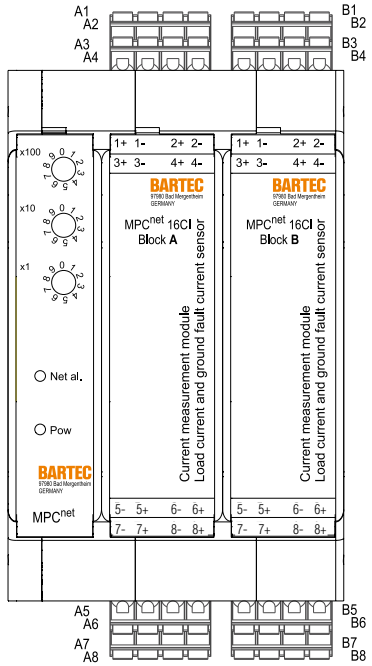
Galvanic isolation
between inputs and internal bus

Voltage supply
DC 24 V through internal bus

Current consumption
8CI 91 mA
16CI 117 mA

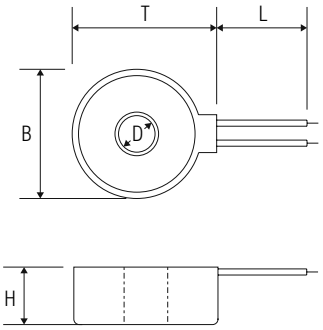
Displays
LEDs in The front of the enclosure:
Status Net al. Pow.

Wiring diagram/terminal assignment



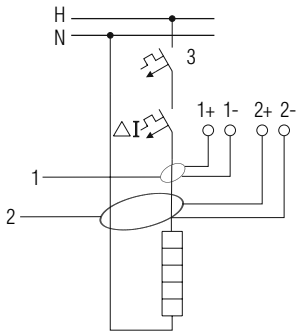
Terminal block	Terminal	Description		Terminal block	Terminal	Description
A1	1+	current transformer +		B1	1+	current transformer +
	1-	current transformer -			1-	current transformer -
A2	2+	current transformer +		B2	2+	current transformer +
	2-	current transformer -			2-	current transformer -
A3	3+	current transformer +		B3	3+	current transformer +
	3-	current transformer -			3-	current transformer -
A4	4+	current transformer +		B4	4+	current transformer +
	4-	current transformer -			4-	current transformer -
A5	5-	current transformer -		B5	5-	current transformer -
	5+	current transformer +			5+	current transformer +
A6	6-	current transformer -		B6	6-	current transformer -
	6+	current transformer +			6+	current transformer +
A7	7-	current transformer -		B7	7-	current transformer -
	7+	current transformer +			7+	current transformer +
A8	8-	current transformer -		B8	8-	current transformer -
	8+	current transformer +			8+	current transformer +

Accessories



	B	H	T	L
LeaC	30.4	9	33.4	250
LoaC	23.6	11	26.8	250

Example of connection



1 Load current transformer LoaC
2 Total current transformer LeaC
3 Power circuit breaker, C characteristics

Order no.

Remote I/O modul MPC^net 8CI
17-8851-0020
Remote I/O modul MPC^net 16CI
17-8851-0021

Accessories
MPC^net
LoaC load current transformer
17-8851-0023

MPC^net
LeaC total current transformer
17-8851-0024

Technical data subject to change without notice.

MPCnet TM04/TS04

Features

- Integration of the TR16, TR36 and TR38 modules into the MPCnet
- Up to 4 power modules for each communication module
- Easily extendable by adding more modules

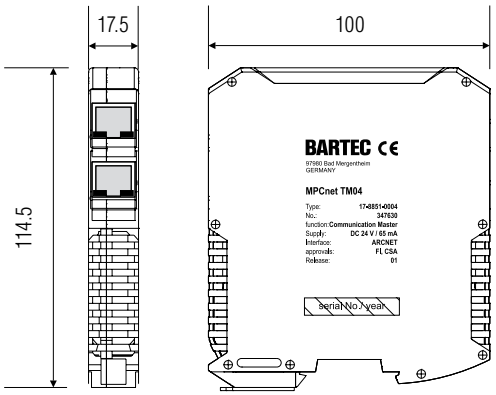
Description

The TR16, TR26 and TR38 power modules are integrated into the MPCnet network architecture by means of the TM04 and TS04 communication modules, whereby up to 4 power modules can be connected to each communication module.

The communication between the individual power modules and the MC32 controller is established by means of the TM04 master module. By inserting more TS04 communication modules into the bus, the number of connectable power modules can be extended to 32.

See System Description for the Installation Instructions.

Dimensions (in mm)



Technical data

Enclosure material
Polyamide PA

Protection class (EN 60529)
IP 20

Electrical connections
RJ-45 connectors, RS-485

Fastening to mounting rail
TH 35-15 DIN EN 60715 (metal)

Dimensions (W x H x D)
17.5 mm x 100 mm x 114.5 mm

Weight
148 g

Storage and transport temperature
-40 °C to +70 °C

Operating temperature
-40 °C to +60 °C

Degree of contamination
2

Electrical data

Total number of communication modules
8 modules

Total number of power modules
32 modules

Connection power modules
via 8-pole RJ-45 plug-in connector

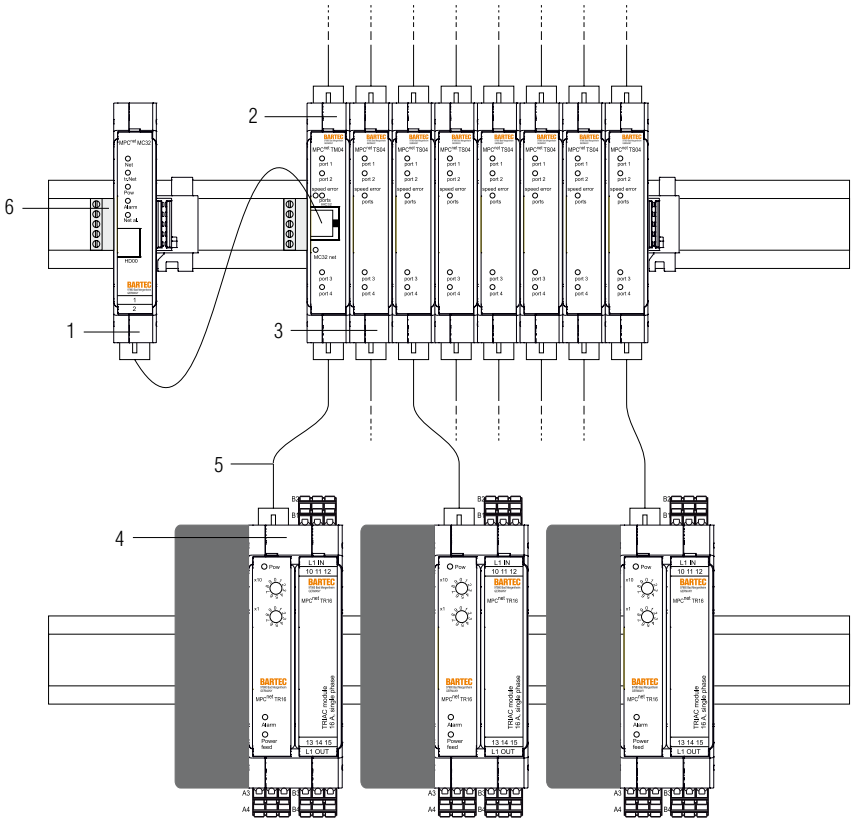
Connection of TM04 and TS04 modules
via bus connectors integrated into the DIN rail

Voltage supply
DC 24 V by means of an internal bus

Current consumption
65 mA

Displays
LEDs in the front of the enclosure:
TM04: Port status, error, MC32 error
TS04: Port status, error

Example of connections



1 MC32 controller
2 TM04 master module
3 TS04 slave module
4 TR16/36/38 power module
5 Ethernet cable
6 Bus connector

Order no.

MPC^net communication master module

17-8851-0004

MPC^net communication slave module

17-8851-0005

Technical data subject to change without notice.

MPCnet TR16/TR36

Features

- Temperature monitoring and power setpoint adjustment in one module
- Measurement of load or residual current up to 16 A
- Power setpoint adjustment 1- and 3-phase
- Recording of up to two temperatures

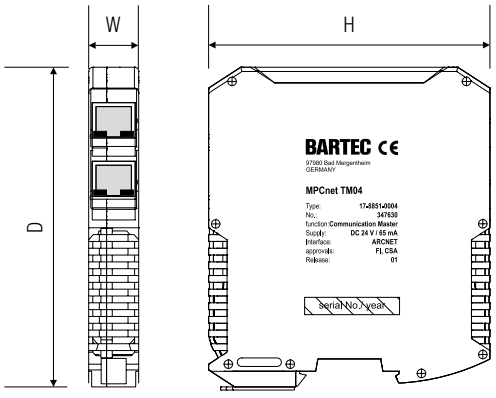
Description

The TR16 and TR36 power modules combine the functions of all MPCnet I/O modules in one single module. Each module has two Pt100 inputs and digital inputs for monitoring RCCBs and limiters. For each heating circuit the heating power can be adjusted steplessly between 10 % and 100 % for up to three phases, whereby the load and total current are monitored.

The modules are operated and supplied via the TM04 or TS04 power module controllers. The set point value is determined by the MC32 controller.

The internal, galvanically isolated bus connection is established by simply joining the modules together by means of RJ-45 plug connectors.

Dimensions (in mm)



	W	H	D
TR16	62.5	110	114.5
TR36	126	110	114.5

Technical data

Enclosure material
Polyamide PA

Protection class (EN 60529)
IP 20

Electrical connections
plug-in screw-type terminals, 3-pole
terminal range 0.2 to 2.5 mm² numbered
plug connectors RJ-45, RS485

Fastening onto mounting rail
TH 35-15 DIN EN 60715 (metal)

Abmessungen (W x H x D)
TR16 62.5 mm x 110 mm x 114.5 mm
TR36 126 mm x 110 mm x 114.5 mm

Masse
TR16 410 g
TR36 775 g

Lager- und Transporttemperatur
-30 °C bis +70 °C

Betriebstemperatur
0 °C bis +45 °C

Verschmutzungsgrad
2

Electrical data

Number of channels
TR16 1 x L (1-phase)
TR36 1 x L1, 1 x L2, 1 x L3
each AC 230 V/16 A

Inputs
2 x Pt100 (controllers and limiters)
2 x digital input
(RCCB and limiter monitoring)
Load input L1, L2, L3 and N

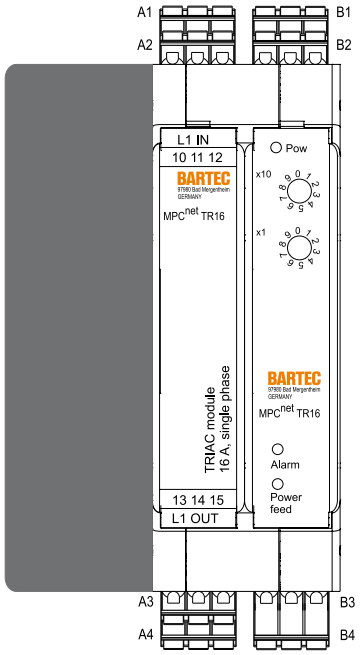
Galvanic isolation
between inputs and internal bus

Voltage supply
DC 24 V through RJ45 cable, RS485

Current consumption
TR16 91 mA
TR36 91 mA

Displays
LEDs in the front of enclosure:
Status, net alarm, power

Wiring diagram/Terminal assignment



Terminal block	Terminal	Description		Terminal block	Terminal	Description
A1 (C1/D1 in TR36)	L1 (2/3) IN	Supply L		B1 (TC)	1	Supply +
	L1 (2/3) IN	Supply L			2	Signal
	L1 (2/3) IN	Supply L			3	Supply -
A2	10	N		B2 (TL)	4	Supply +
	11	Supply +			5	Signal
	12	not assigned			6	Supply -
A3	13	Limiter monitoring		B3	RJ45	Connection of TM04
	14	Limiter monitoring				
	15	Limiter monitoring				
A4 (C4/D4 in TR36	L1 (2/3) OUT	eating cable L		B4	7	Connection of FI
	L1 (2/3) OUT	eating cable L			8	Connection of FI
	L1 (2/3) OUT	eating cable L			9	not assigned

Order no.

MPC^net TR16 power module
17-8851-0006

MPC^net TR36 power module
17-8851-0007

Technical data subject to change without notice.

03-0330-0733-09/2014-BEH-351584/2

MPC^net TL Ex temperature limiter

Features

- ATEX approval
- Optimised for trace heating applications (with service entry)
- Fault monitoring
- In conjunction with Pt100 Ex, it can be used for monitoring temperature in explosion-protected heating circuits

Description

The TL Ex safety temperature limiter is a constituent part of the MPC^net system and is used to monitor heatings and heating circuits. The device is for installation in non-hazardous areas. The heatings or heating circuits can be installed both in media-protected and also in hazardous (potentially explosive) areas.

Function

If the temperature at the Pt100 sensor exceeds the set limit value, the TL Ex disconnects the load output permanently. At the same time a floating alarm contact is triggered. The alarm contact status is detected and processed by means of the digital inputs in the 8DI and 16DI modules and the digital input in the TR16, TR36 and TR38 power modules in the MPCnet.

Once the temperature drops by 2 K below the switch-off point or after a fault has been remedied, the limiter can be re-activated by means of a re-set button on the device.

The TL Ex can transmit the temperature detected at the measuring input to the MPCnet by means of an integrated sequential system with a signal that is proportional to the actual value measured. This allows the temperature at the limiter to be evaluated in the control system also. The limiter function can be suppressed by a digital input when carrying out servicing work on the heating circuit, e.g. steam cleaning.

Construction

The TL Ex is installed in a clip-on enclosure for TS35 mounting rails. The alarm relay and the limit relay are produced as change-over contacts. The 24-V d.c. voltage is supplied through the use of a top-hat rail on the underside. The electrical connection is established by means of screw-type terminals operating on the screw cage clamp principle, which ensures a reliable connection and is also gentle on conductors.

Explosion protection

Ex protection type
Ⓔx II (2)G [Ex e]

Certification
VTT 13 ATEX 043X

Technical data

Enclosure material
Polyamide PA

Protection class (EN 60529)
IP 20

Electrical connections
plug-in screw-type terminals, 3-pole
Clamping range 0.2 to 2.5 mm²

Attachment onto mounting rail
TH 35-15 DIN EN 60715 (metal)

Dimensions (W x H x D)
22.5 mm x 100 mm x 114.5 mm

Weight
156 g

Storage and transport temperature
-40 °C to +70 °C

Operating temperature
-20 °C to +40 °C

Degree of contamination
2

SIL Level
SIL 1

Electrical data

Voltage supply
DC 24 V

Current consumption
105 mA, maximum 2.7 W

Input

temperature:	3-wire Pt100
alarm suppression:	AC 70 to 230 V

Contact loadability

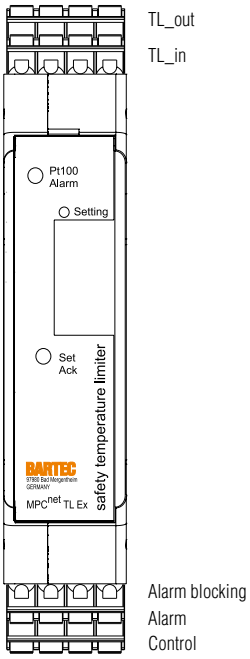
direct switching:	8 A - AC 1, 250 V
by means of power contactor:	0.7 A - AC 15, 250 V

Measurement

accuracy:	+/-1°C
measuring range:	-50 °C to +600 °C
hysteresis:	< 2 K

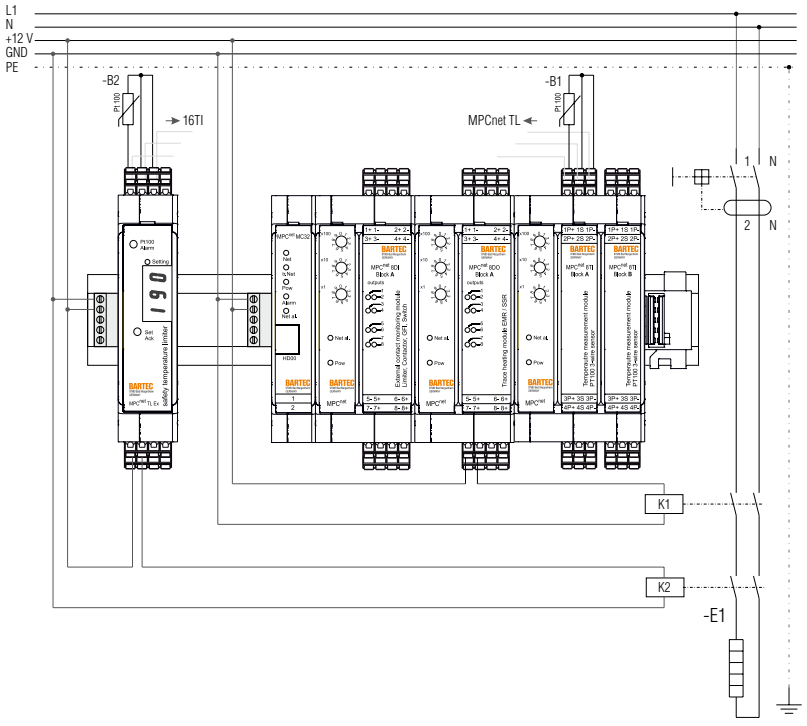
03-0330-0794-07/2014-BEH-365909/1

Terminal assignment



Terminal block	Terminal	Description
TL_out	1	not assigned
	2	Supply +
	3	Signal
	4	Supply -
TL_in	5	not assigned
	6	Supply +
	7	Signal
	8	Supply -
Alarm blocking	9	N/signal
	10	L/signal
	11	not assigned
	12	not assigned
Alarm	13	COM
	14	NO contact
	15	NC contact
	16	not assigned
Control	17	COM
	18	NO contact
	19	NC contact
	20	not assigned

Wiring diagram



Order no.
MPC^net TL Ex
17-8851-0030/0000

Technical data subject to change without notice.

MPC II Multi-channel control system

Features

- Economical
  one device regulates up to 24 heating circuits
- Easy integration
  into existing control systems
- Top functional reliability
  thanks to constant monitoring of the load and leakage currents
- Easy programming
  by PC/software via Ethernet

MPC II Standard

- Excellent compact controller at an attractive price

MPC II Komfort

- Compact controller for controlling complex heating systems

MPC II Professional

- Complete solution in a high-end version

Description

The new MPC II control system is a multi-channel two-point controller for electrical trace heating. The controller is characterised by high cost effectiveness. One device regulates up to 24 heating circuits safely and reliably.

The MPC II system is suitable for setting up compact control cabinet solutions and can be integrated into existing controls too.The MPC II is available in three different versions to meet the requirements of a wide variety of applications and tasks.

Construction

The MPC II is fitted directly into the front panel of a control cabinet. The advantage here is that the actual values and states can be read comfortably and safely on the large LCD displays. The displayed information can be compiled individually.

Depending on the equipment variant, the MPC II has up to 24 status and alarm LED displays and 8 separate status LED displays for the relay outputs.

Connections for temperature sensors, current and voltage transducers are located on the back of the device. The heating circuits are switched by external electromechanical contractors or semi-conductor relays. All connections are wired by means of pre-assembled cables included in the scope of supply.

The parameters are set locally by means of the intuitive user menu or a PC. Remote querying or configuration through the RS485 interface is possible.

Function

The setpoints set on the device are constantly compared with the temperature levels measured on the heating circuit.

If there are deviations, the external relays are triggered accordingly. The temperature deviation is 1 K at most. An alarm is triggered if the temperature drops below or exceeds a set limit. The alarm message is also displayed on the LED display. The load and leakage current and the heat output can be monitored also.

Technical data

Working temperature range
0 °C to +55 °C

Dimensions (height x width x depth)
72 mm x 144 mm x 250 mm

Installation
Front panel (cut-out 68.5 mm x 137 mm)

Protection class
IP 54/EN 60529

Weight
1 kg

Connections
Pre-assembled supply cable
to connect the contactor, temperature sensors and measuring transducers 0.5 mm²

Enclosure material
Aluminium, black anodised

Electrical data

Control characteristics
Two positions (on/off)

Nominal voltage
AC 90 V to 260 V
50/60 Hz
AC/DC 24 V

Power consumption
max. 10 VA

03-0330-0734-03/2014-BEH-352422

MPC II Standard

Features

- Economical solution for max. 8 heating circuits
- Inputs for temperature measurement with default parameter settings
- Easy start: immediate commissioning after input of setpoints

Description

The MPC II Standard is the ideal solution for compact control cabinets and can regulate up to 8 heating circuits.

The inputs have been preconfigured completely and each is permanently assigned to one output.

Thanks to the easy-start function, it can be put into operation as soon as the temperature setpoints and alarm values have been entered.

Alternatively, the inputs and outputs can be programmed on site by means of the clearly organised and user-friendly control menu.

Technical data

Inputs
8 sensor inputs, pre-configured for Pt100, alternatively reprogrammable
0 to 5 V, 1 to 5 V, 4 to 20 mA

Input impedance
1 MΩ

Measuring current (Pt100)
1 mA

Measuring range
-199.9 °C to 850 °C for Pt100
-1999 to +9999 counters for current and voltage measurement

Measuring accuracy
± 0.1% of the display range ±1 digit

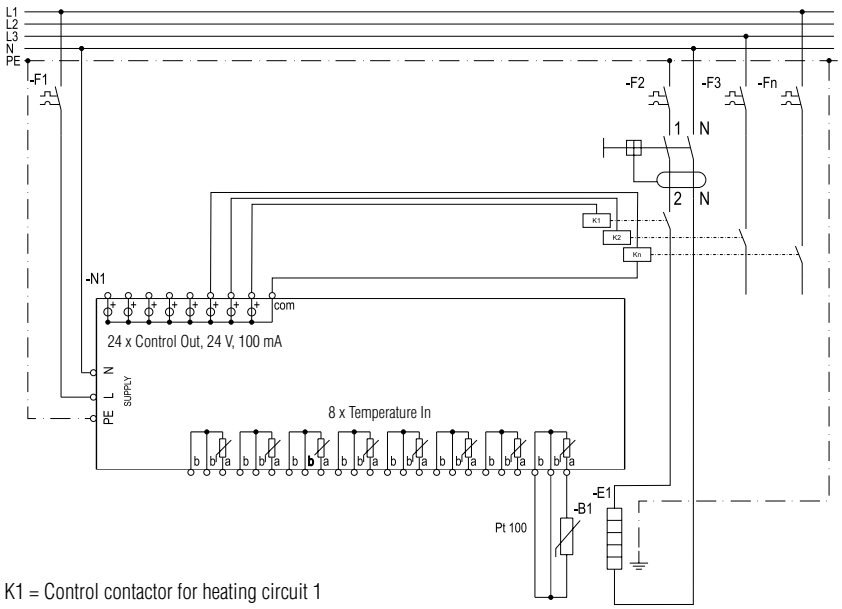
Outputs
24 logic outputs to actuate the relay (contactor with integrated varistor/SSR)
DC 24 V, 100 mA

Interface
RS485 (optically isolated)

Communication protocol
Modbus RTU

Speed
1200 to 38400 baud

Wiring diagram for the MPC II Standard



K1 = Control contactor for heating circuit 1
K2 = Control contactor for heating circuit 2
Kn = Control contactor for heating circuit n
F1, F2, Fn = breaker for regulators, heating , etc.
B1 = Pt100 for heating circuit 1

Selection chart

Supply voltage	Code no.
AC 100 to 240 V	7
AC/DC 24 V	2

17-8841-13☐0/0200
Complete order no.
Please enter code number. Technical data subject to change without notice.

03-0330-0735-03/2014-BEH-352423

MPC II Komfort

Features

- Cost-effective solution for max. 16 heating circuits
- Inputs for temperature measurement and current monitoring with default parameter setting
- RS485 interface for integrating into the process control technology
- Easy-Start: three measuring inputs are directly assigned to each output, commissioning directly after input of setpoints

Description

The MPC II Komfort is designed as an entry-level systems for regulating temperature in compact trace heating solutions with up to 16 heating circuits.

The inputs are preconfigured here for the operation and current monitoring of 5 heating circuits, alternatively all inputs can also be programmed exclusively for managing temperature.

Alternatively, inputs and outputs can be programmed locally through the clearly organised and user-friendly control menu.

Technical data

Inputs
16 sensor inputs, pre-configured for Pt100, alternatively reprogrammable
0 to 5 V, 1 to 5 V, 4 to 20 mA

Input impedance
1 MΩ

Measuring current (Pt100)
1 mA

Measuring range
-199.9 °C to 850 °C for Pt100
-1999 to +9999 counters for current and voltage measurement

Measuring accuracy
±0.1% of the display range ±1 digit

Outputs
24 logic outputs for relay actuation (contactor with integrated varistor/SSR) DC 24 V, 100 mA

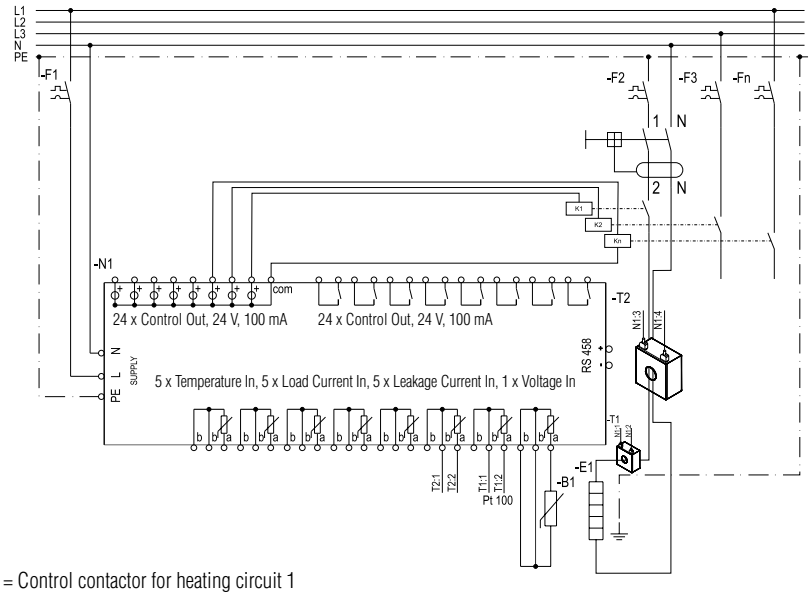
8 relay outputs
N/C contact for triggering alarms, (2 A - AC 1, 230 V)

Interface
RS485 (optically isolated)

Communication protocol
Modbus RTU

Speed
1200 to 38400 bauds

Wiring diagram for MPC II Komfort



K1 = Control contactor for heating circuit 1
K2 = Control contactor for heating circuit 2
Kn = Control contactor for heating circuit n
F1, F2, Fn = breaker for regulators, heating , etc.
B1 = Pt100 for heating circuit 1

Selection chart

Supply voltage	Code no.
AC 100 to 240 V	**7**
AC/DC 24 V	**2**

17-8841-23☐1/0400
Complete order no.
Please enter code number. Technical data subject to change without notice.

03-0330-0736/A-09/2014-BEH-352424

MPC II Professional

Features

- Cost-effective solution for max. 24 heating circuits
- Inputs for temperature measurement and current monitoring with default parameter settings
- Easy-Start: three measuring inputs are directly assigned to each output, commissioning directly after input of setpoints

Description

The MPC II Professional, as the highest configuration level, rounds off the MPC II family. The device is pre-configured for monitoring 8 heating circuits but the temperature regulation of up to 24 heating circuits can be enabled by reprogramming the inputs.

Alternatively, the MPC II Professional has an Ethernet interface for local programming and can be programmed directly via software. The RS485 interface allows easy integration into the process control technology.

In addition to the LED displays, status messages and fault alarms are emitted through the additional relay outputs.

Technical data

Inputs
16 sensor inputs, pre-configured for Pt100, alternatively reprogrammable
0 to 5 V, 1 to 5 V, 4 to 20 mA

Input impedance
1 MΩ

Measuring current (Pt100)
1 mA

Measuring range
-199.9 °C to 850 °C for Pt100
-1999 to +9999 counters for current and voltage measurement

Measuring accuracy
±0.1% of the display range ±1 digit

Outputs
24 logic outputs for relay actuation (contactor with integrated varistor/SSR) DC 24 V, 100 mA

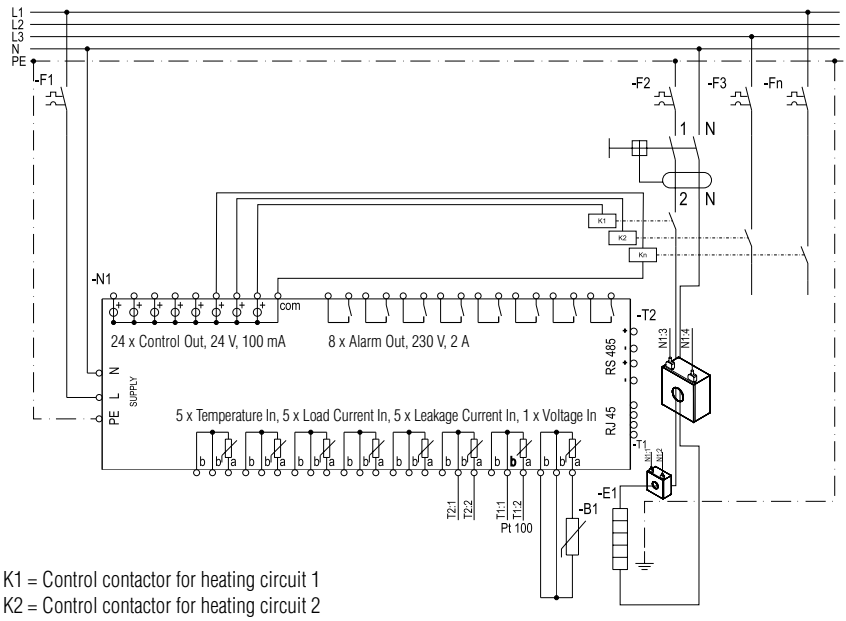
8 relay outputs N/C contacts, to emit alarms, (2 A - AC 1, 230 V)

Interface
2 x RS485 (optically isolated)
1 x RJ45

Communication protocol
Modbus RTU
Ethernet TCP/IP

Speed
1200 to 19200 bauds

Wiring diagram MPC II Professional



K1 = Control contactor for heating circuit 1
K2 = Control contactor for heating circuit 2
Kn = Control contactor for heating circuit n
F1, F2, Fn = breaker for regulators, heating , etc.
B1 = Pt100 for heating circuit 1

Selection chart

Supply voltage	Code no.
AC 100 to 240 V	**7**
AC/DC 24 V	**2**

17-8845-33 ☐ 4/1400
Complete order no.
Please enter code number. Technical data subject to change without notice.

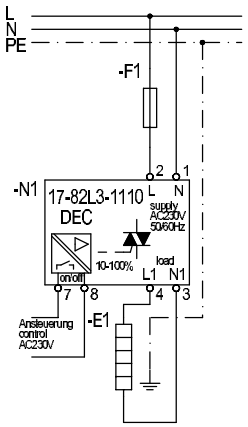
03-0330-0737/A-09/2014-BEH-352435

DEC Digital energy controller

Features

- AC 230 V control
- AC 230 V supply voltage
- Can be snaped on DIN rail
- Adjustable power output from 10 % to 100 % in steps of 10
- Switching capacity AC 230 V, 20 A
- Display: supply voltage, heating on

Circuit diagram



Description

The DEC is an adjustable energy controller. It allows perfect adaption of the power output from 10 % to 100 % in 10 %-steps. Combined with the DPC-Family, the DTL III Ex and Pt100 Ex, the DEC can also be used to control heating systems in hazardous (potentially explosive) areas.

Structure

The DEC case can be snapped onto a DIN rail allowing quick and easy installation. The energy controller is energised via 230 V mains supply voltage.

The terminals can accommodate conductors with a cross section of up to 2.5 mm². DEC control via AC 230 V. The front fascia of the case provides a 10-step switch for the power adaption from 10 % to 100 %. An LED on the front fascia indicates whether supply voltage is applied to the DEC. A second LED signals an active/non active DEC output.

Function

The DEC is controlled via a AC 230 V supply periodic group control is activated via a 10-step switch and the output power of the DEC adjusted from 10 % to 100 %.

Additional products

DPC III, Digital programmable controller
Type 17-8821-4.22/22303.00

DTL III Ex, Digital temperature limiter
Type 17-8865-4.22/22003000

Pt100 Ex, explosion protected
Type 27-71..-13.....

Technical data

Protection class
IP 20

Min. ambient temperature
0 °C

Max. ambient temperature
+40 °C

LED displays
Supply voltage ON
Heating ON

Mounting
snaps onto TS 35 (DIN rail)

Enclosure material
ABS plastic

Dimensions (without heat-sink)

Length	(105 mm) 164 mm
Width	90 mm
Depth	59 mm

Weight 520 g

Electrical data

Rated voltage
AC 230 V/50 Hz

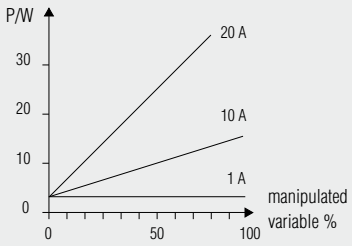
Switching capacity
max. switched current AC 20 A
max. voltage AC 250 V
min. AC 230 V
min. 50 mA

Control
AC 230 V

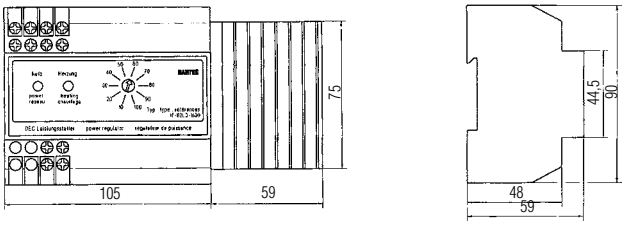
Adjustable power output
from 10 % up to 100 % in steps of 10

Terminals
2.5 mm² solid or
1.5 mm² stranded with sleeve

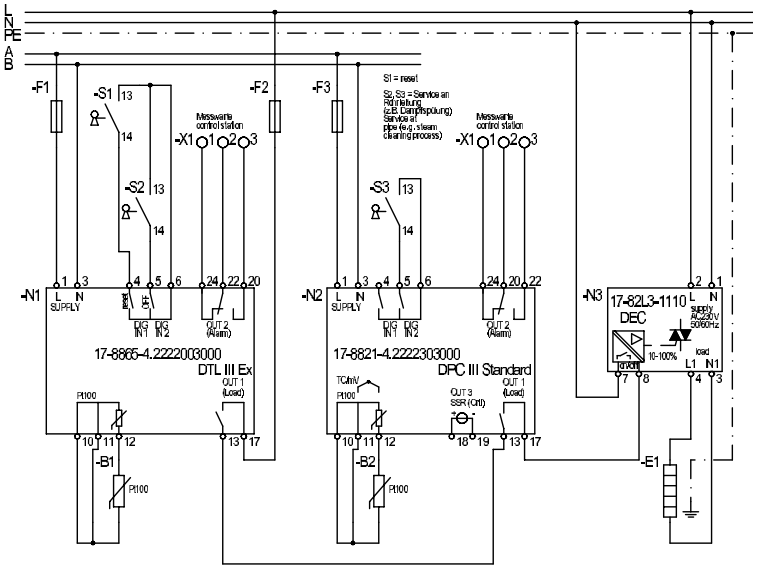
Power dissipation
dependent of the manipulated variable



Dimensions (mm)



System circuit diagram



Order no.
Digital energy controller DEC
17-82L3-1110

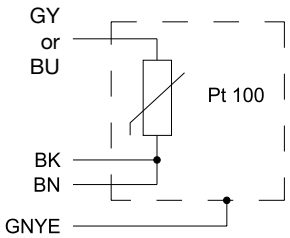
Technical data subject to change without notice.

Pt100 Ex Resistance thermometer

Features

- Very fast response time
- Compact dimensions, compact design
- Extensive temperature range
- Flexible supply cable

Electrical connection 3-wire



Description

This Pt100 Ex sheathed resistance thermometer has been particularly designed for use in potentially explosive areas. As it meets the requirements of the Ex m type of protection, intrinsically safe circuits can be dispensed with. Thanks to the pliable part of the resistance thermometer, the device is excellently suitable for application areas requiring a high degree of flexibility and replaceability (e.g. chemical and power plants).

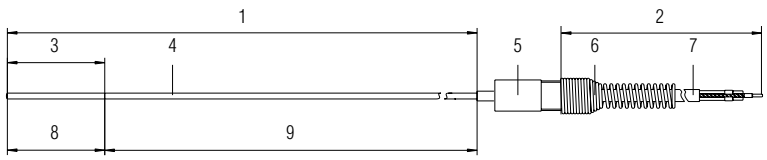
Structure

The resistance thermometer is made of a 3 mm thick light plastic-sheathed cable with different lengths. This light plastic-sheathed cable is filled with magnesium oxide.
The pliable part of the resistance thermometer starts after 50 mm. Via a transition gland, the connection to a flexible supply cable is created.

Function

Metals increase the electrical resistance with rising temperatures. The platinum element of the resistance thermometer has a resistance of 100 Ω at 0 °C. This characteristic is used for this type of resistance thermometers to get an image of the temperature. The resistance changes of the Pt100 Ex are converted into a temperature value and displayed by a control unit.

Structure



1 NL-20	4 Sheathed cable	7 connection cable
2 AL	5 Transition gland	8 rigid
3 Length 50 mm	6 Anti-kink protection	9 flexible

Explosion protection

Ex protection type
Ⓔx II 2G Ex mb II T6
Ⓔx II 2D Ex mbD 21 T80 °C

Certification
PTB 03 ATEX 2152 X

Technical data

Transducer
in 3-wire circuit

Temperature range
-50 °C to +600 °C or
-200 °C to +600 °C
tolerancen: class B (EN 60751)

Ambient temperature range
-20 °C to +60 °C or
-50 °C to +70 °C

Dimensions

sensor tube diameter	3 mm
sensor length	280 resp. 980 mm
active sensor length	50 mm
flexible part	230 resp. 930 mm
bending radius	min. 20 mm

Sheath material
stainless steel 1.4541

Connection cable
Rubber or silicone hose
4 x 0.75 mm²

Protection class
IP 65/EN 60529

Electrical data

Operating voltage
max. AC/DC 60 V

Signal circuit
max. AC/DC 6 V
max. AC/DC 10 mA
max. AC/DC 60 mW

Selection chart

Measurement range	Ambient temperature range	Nominal length NL	Connecting cable AL Length	Connecting cable Version	Order no.
-50 °C to +600 °C	-20 °C to +60 °C	300 mm	2 m	rubber	**27-7125-13330220**
-50 °C to +600 °C	-20 °C to +60 °C	300 mm	5 m	rubber	**27-7125-13330520**
-200 °C to +600 °C	-20 °C to +60 °C	300 mm	2 m	rubber	**27-7128-13330220**
-50 °C to +600 °C	-50 °C to +70 °C	300 mm	2 m	silicone	**27-7125-13330250**
-50 °C to +600 °C	-50 °C to +70 °C	300 mm	5 m	silicone	**27-7125-13330550**
-200 °C to +600 °C	-50 °C to +70 °C	300 mm	2 m	silicone	**27-7128-13330250**
-200 °C to +600 °C	-50 °C to +70 °C	1000 mm	2 m	silicone	**27-7128-13130250**

03-0330-0265/B-09/2014-BEH-202012

Junction boxes for Pt100 Ex

Explosion protection

Ex protection type
- II 2G Ex e ia IIC T6 or T5 Gb
- II 2D Ex tb IIIC T80 °C, T95 °C Db

Certification
PTB 08 ATEX 1064
IECEx PTB 09.0009

Other variants available for:
USA, Canada, Russia

Technical data

Protection class according to EN 60529
Cover gasket IP 65
Cable gland for power supply cables IP 67

Nominal voltage
max. AC 60 V

Supply cable, cross section
2.5 mm²

Impact resistance
7 Nm

Material
polyester, glass-fibre reinforced

Ambient temperature range
-20 °C to +40 °C T6
-20 °C to +55 °C T5

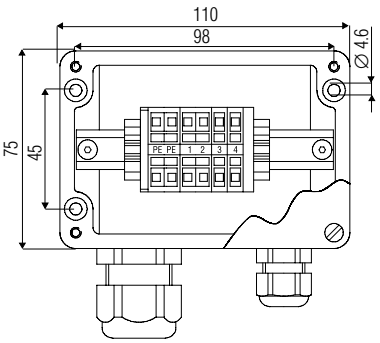
Description

The Pt100 Ex junction boxes allow one or more two-wire or three-wire Pt100 resistance thermometers to be connected to the signal line.

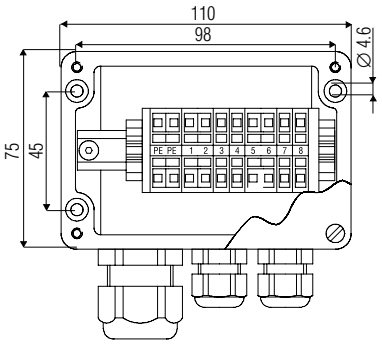
The enclosures have the appropriate terminals and the required cable glands.

Aluminium junction boxes are available upon request.

Junction box single



Junction box double



Selection chart

Used for	Junction box	Dimensions mm	Cable gland		Terminals mm²	Order no.
			for the signal line	Pt100		
Ex **Pt100**, Ex e	single	110 x 75 x 55	1 x M25 (∅ 7 to 17 mm)	1 x M16 (∅ 4 to 9 mm)	8 x 2.5; 4 x PE	**07-5103-9024**
	double	110 x 75 x 55	1 x M25 (∅ 7 to 17 mm)	2 x M16 (∅ 4 to 9 mm)	16 x 2.5; 4 x PE	**07-5103-9025**
Ex **Pt100**, Ex i	single	110 x 75 x 55	1 x M25 (∅ 7 to 17 mm)	1 x M16 (∅ 3 to 6 mm)	8 x 2.5	**07-5107-9003**
	double	110 x 75 x 55	1 x M25 (∅ 7 to 17 mm)	2 x M16 (∅ 3 to 6 mm)	16 x 2.5	**07-5107-9004**

Technical data subject to change without notice.

03-0330-0569/A-09/2014-BEH-301382

Pt100 M Resistance thermometer

Features

- Fast response time
- Flexible connection cable for easy installation
- Compact dimensions, compact design
- Suitable for use at high temperatures

Description

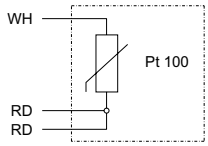
For applications in non-hazardous areas, the Pt100 resistance-measuring sensor is also available as an industrial version. We also supply different versions to suit various temperature requirements. For the different temperature areas you can choose between several versions in three-wire-connection.

Structure

The Pt100 M sensor is embedded in a stainless steel sleeve. A temperature-resistant supply cable runs into the sleeve.

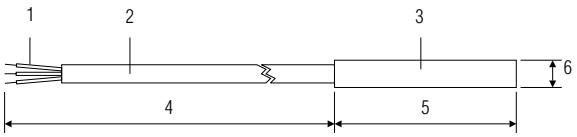
We offer three sleeve versions with different temperature ranges.

Electrical connection



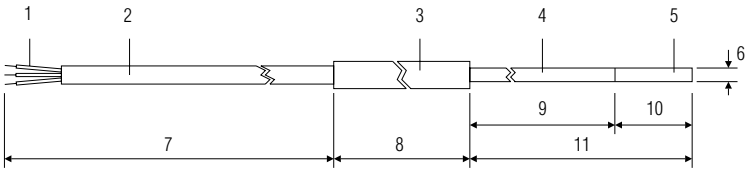
compensating wire

Structure Picture 1



1 Free leads
2 Connecting cable
3 Protected sleeve
4 Connecting cable length
5 Sensor length
6 Sensor diameter

Structure Picture 2



1 Free leads
2 Connection cable
3 Connection sleeve
4 Sheated cable
5 Protected sleeve
6 Diameter
7 Connection cable length
8 Connection sleeve, length 35 mm
9 Sheated cable, flexible 970 mm
10 Protected sleeve, rigid 30 mm
11 Sensor length

Technical data

Transducer
in 3-wire circuit

Measuring range/Operating temperature
see Selection chart

Measuring tolerance
Class B in conformance to EN 60751

Dimensions
see Selection chart

Supply cable
see Selection chart

Protection class
see Selection chart

Electrical data

Capacity (silicone cable)
≤ 50 pF/m

Inductance (silicone cable)
≤ 2 µH/m

Selection chart

Measuring range	Sensor Length	Connection cable					Protection class	Structure	Order no.
		Diameter	Material	Length	Version	Operating temperature			
-50 °C to +200 °C	40 mm	6 mm	stainless steel	1.50 m	silicone	-50 °C to +200 °C	IP 65	picture 1	**03-9040-0006**
-50 °C to +200 °C	40 mm	6 mm	stainless steel	5.00 m	silicone	-50 °C to +200 °C	IP 65	picture 1	**03-9040-0010**
-50 °C to +400 °C	50 mm	6 mm	stainless steel	1.50 m	stainless steel braid	-50 °C to +400 °C	IP 40	picture 1	**03-9040-0016**
-50 °C to +500 °C	1000 mm	3 mm	stainless steel	1.50 m	silicone	-50 °C to +200 °C	IP 54	picture 2	**03-9040-0017**

03-0330-0266/C-09/2014-BEH-202013

Junction boxes for Pt100 M

Technical data

Protection class according to EN 60529
Cover gasket IP 65

Cable gland for power supply cables IP 67

Nominal voltage
max. AC 60 V

Supply cable, cross section
2.5 mm²

Impact resistance
7 Nm

Material
polyester, glass-fibre reinforced

Ambient temperature range
-20 °C to +70 °C

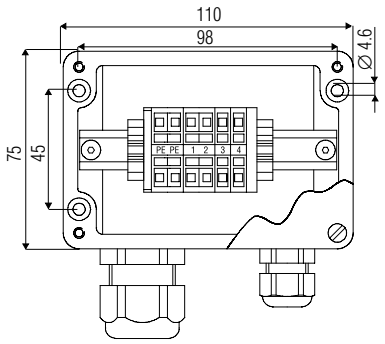
Description

The polyester junction boxes allow one or more two-wire or three-wire Pt100 M resistance thermometers to be connected to the signal line.

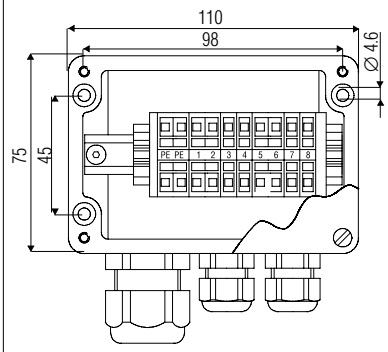
The enclosures have the appropriate terminals and the required cable glands.

Aluminium junction boxes are available upon request.

Junction box single



Junction box double



Selection chart

Used for	Junction box	Dimensions mm	Cable gland		Terminals mm²	Order no.
			for the signal line	Pt100		
Pt100, media-protected	single	110 x 75 x 55	1 x M25 (∅ 8 to 15 mm)	1 x M16 (∅ 2 to 6 mm)	8 x 2.5	**07-5177-9082**
	double	110 x 75 x 55	1 x M25 (∅ 8 to 15 mm)	2 x M16 (∅ 2 to 6 mm)	16 x 2.5	**07-5177-9083**

Technical data subject to change without notice.

03-0330-0570-09/2014-BEH-301383

Mini-heater

Features

- Small, compact structure
- No temperature control necessary
- Available in different voltages
- Easy wiring

Description

The Mini-heater protects from frost and prevents the formation of condensation water inside enclosures and small electrical control panels.

The explosion-proof version can be mounted in Ex-enclosures according to EN 60079-7.

Structure

A heating resistor is flameproof encapsulated in an anodised aluminium enclosure. The terminal leads integrated on both sides make the device a ready-to-connect heater.

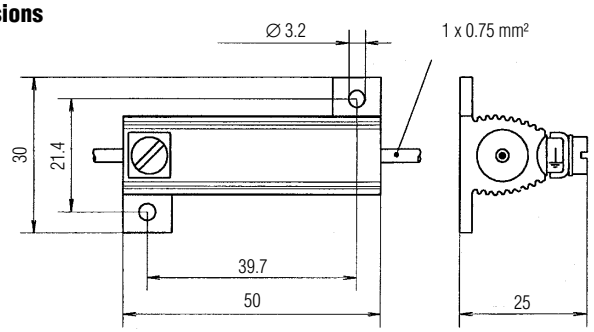
The heater is mounted by means of two fixing holes of ∅ 3.2 mm. A heater of similar dimensions and power output is available for use in safe areas. This version is supplied without the earth connection.

Function

The Mini-heater can be used without a temperature limiter in hazardous areas providing the installation instructions are carefully adhered to.

Attaching the Mini-heater to a metal body can reduce the surface temperature.

Dimensions



Explosion protection

Ex protection type
Ⓔx II 2G Ex d IIC

Certification
PTB 00 ATEX 1124 U

Installation instructions for use in Ex areas:

The temperature class can be specified:

- via a routine thermal test and approval by an authorised Ex inspector
- via a prototype test, e.g. together with other equipment based on presentation by a recognised testing agency.

Installation exclusively in Ex enclosures according to EN 60079-7

Technical data

Nominal voltage
230 V
special voltages (6 to 400 V) available on request

Nominal output
6 W

Max. permissible surface temperature
+95 °C

Enclosure material
anodised aluminium

Connection leads
H07G-K or N4GAF - 0.75 mm²
standard length 0.5 m each side

Fixing details
2 fixing holes, ∅ 3.2 mm

Weight
approx. 46 g

Order no.

Mini-heater explosion-protected 27-2301-3806

Mini-heater media-protected 27-2302-3806

Technical data subject to change without notice.

03-0330-0269/A-09/2014-BEH-202016/2

HCS Radiator

Features

- Various compact types of construction, therefore favourable mounting dimensions
- High heating capacity
- Integrated antifreezing protection device in the connection cable
- Large, black anodized convector surface
- Ready for connection, maintenance-free

Description

BARTEC compact radiators are used as anti-freezing and anticondensate heaters in potentially explosive areas.

Their use guarantees maximum operating safety, since temperature fluctuations are effectively prevented or the required minimum temperatures are maintained.

They reliably ensure that no malfunctioning through leakage current in electrical components, or other disturbances through corrosion formation on mechanical installation parts, can occur.

Places of use include switch and control cabinets, transmitter protective boxes, measuring equipment, analytical cabinets for sample preparation etc..

Function

The thermostat located in the connection cable keeps the inside temperature in the required range and reliably prevents overshooting the permissible ambient temperature of the heater.

In order to prevent accumulation of heat the specified fitting distances must be observed.

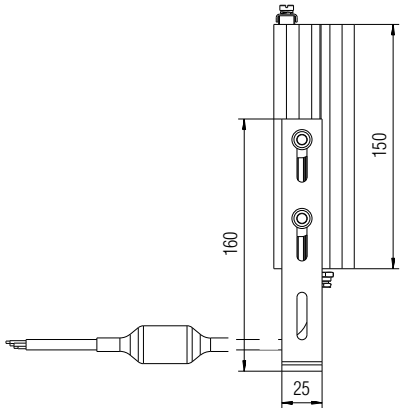
Do not cover the fins, in order that free convection is not hindered. For applications involving higher holding temperatures, please contact us.

Construction

The radiators are fitted with a constant ohmic resistance. Through the special construction of the aluminium profile a chimney effect is produced which gives a uniform temperature distribution in the interior of enclosures and cabinets.

In case of overheating, the heaters are permanently isolated from the mains supply, since the heat source is coupled with a temperature safety fuse.

Dimensions



Explosion protection

Ex protection type

Ex II 2G Ex db IIC T4
Ex II 2D Ex tb IIIC T135 °C

Certification

PTB 03 ATEX 1139 X

Technical data

Protection class

IP 65, NEMA 4

Application temperature range

-50 °C to +80 °C

Ambient temperature range

-50 °C to +60 °C

Nominal voltage

AC 230 V

Connection

Hose line
EWKF 3 x 1.5 mm²; ⌀ 8.1 mm;
length 3 m

Mounting position

Vertical flow through fins

Material

black anodized aluminium
resistant to sea water

Selection chart

Designation	Nominal power	Version	Dimensions in mm (l x w x h)	Temperature class	Order no.
HCS 40-T4-10-3	40 W	with antifreezing protective device +10 °C ON +18 °C OFF	52 x 50 x 155	T4	**27-2063-3704/B300**

03-0330-0377/E-03/2014-BEH-222364

HCM Radiator

Features

- Various compact types of construction, therefore favourable mounting dimensions
- High heating capacity
- Integrated antifreezing protection device in the connection cable
- Large, black anodized convector surface
- Ready for connection, maintenance-free

Description

BARTEC compact radiators are used as anti-freezing and anticondensate heaters in potentially explosive areas.

Their use guarantees maximum operating safety, since temperature fluctuations are effectively prevented or the required minimum temperatures are maintained.

They reliably ensure that no malfunctioning through leakage current in electrical components, or other disturbances through corrosion formation on mechanical installation parts, can occur.

Places of use include switch and control cabinets, transmitter protective boxes, measuring equipment, analytical cabinets for sample preparation etc..

Function

The thermostat located in the connection cable keeps the inside temperature in the required range and reliably prevents overshooting the permissible ambient temperature of the heater.

In order to prevent accumulation of heat the specified fitting distances must be observed.

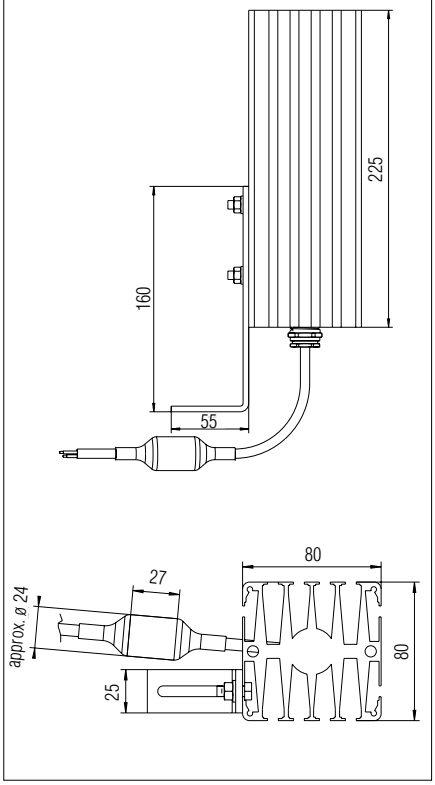
Do not cover the fins, in order that free convection is not hindered. For applications involving higher holding temperatures, please contact us.

Construction

The radiators are fitted with a constant ohmic resistance. Through the special construction of the aluminium profile a chimney effect is produced which gives a uniform temperature distribution in the interior of enclosures and cabinets.

In case of overheating, the heaters are permanently isolated from the mains supply, since the heat source is coupled with a temperature safety fuse.

Dimensions



Explosion protection

Ex protection type

Ⓔx II 2G Ex db IIC T4, T3
Ⓔx II 2D Ex tb IIIC T135 °C, T200 °C

Certification

PTB 03 ATEX 1139 X

Technical data

Protection class

IP 65, NEMA 4

Application temperature range

-50 °C to +80 °C

Ambient temperature range

-50 °C to +60 °C

Nominal voltage

AC 230 V

Connection

Hose line
EWKF 3 x 1.5 mm²; ⌀ 8.1 mm;
length 3 m

Mounting position

Vertical flow through fins

Material

black anodized aluminium
resistant to sea water

Selection chart

Designation	Nominal power	Version	Dimensions in mm (l x w x h)	Temperature class	Order no
HCM 100-T4-10-3	100 W	with antifreezing protective device +10 °C ON +18 °C OFF	80 x 80 x 225	T4	**27-2163-5710/B300**
HCM 250-T3-10-3	250 W		80 x 80 x 225	T3	**27-2161-5725/B300**

03-0330-0461/D-03/2014-BEH-246822

HCL Radiator

Features

- Various compact types of construction, therefore favourable mounting dimensions
- High heating capacity
- Integrated antifreezing protection device in the connection cable
- Large, black anodized convector surface
- Ready for connection, maintenance-free

Description

BARTEC compact radiators are used as anti-freezing and anticondensate heaters in potentially explosive areas. Their use guarantees maximum operating safety, since temperature fluctuations are effectively prevented or the required minimum temperatures are maintained.

They reliably ensure that no malfunctioning through leakage current in electrical components, or other disturbances through corrosion formation on mechanical installation parts, can occur.

Places of use include switch and control cabinets, transmitter protective boxes, measuring equipment, analytical cabinets for sample preparation etc..

Construction

The radiators are fitted with a constant ohmic resistance. Through the special construction of the aluminium profile a chimney effect is produced which gives a uniform temperature distribution in the interior of enclosures and cabinets.

In case of overheating, the heaters are permanently isolated from the mains supply, since the heat source is coupled with a temperature safety fuse.

Function

The thermostat located in the connection cable keeps the inside temperature in the required range and reliably prevents overshooting the permissible ambient temperature of the heater.

In order to prevent accumulation of heat the specified fitting distances must be observed. Do not cover the fins, in order that free convection is not hindered. For applications involving higher holding temperatures, please contact us.

03-0330-0460B-03/2014-BEH-246821/1

Explosion protection

Ex protection type

II 2G Ex db IIC T4, T3
II 2D Ex tb IIIC T135 °C, T200 °C

Certification

PTB 03 ATEX 1139 X

Technical data

Protection class

IP 65, NEMA 4

Application temperature range

-50 °C to +80 °C

Ambient temperature range

-50 °C to +60 °C

Nominal voltage

AC 230 V

Connection

Hose line
EWKF 3 x 1.5 mm²; ⌀ 8.1 mm; length 3 m

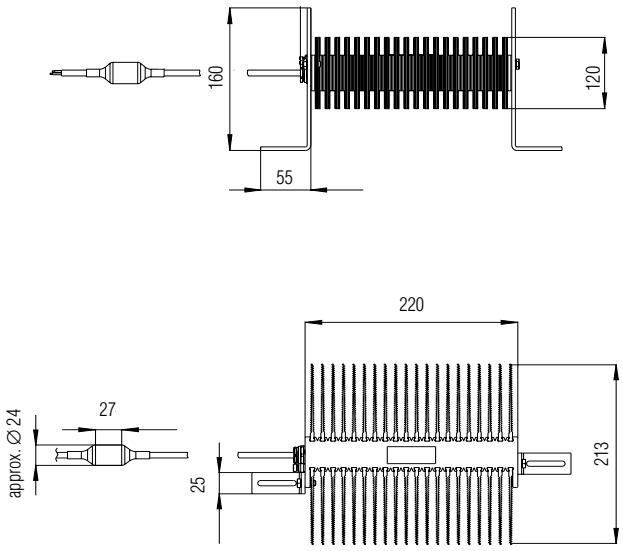
Mounting position

Vertical flow through fins

Material

black anodized aluminium
resistant to sea water

Dimensions



Selection chart

Designation	Nominal power	Version	Dimensions in mm (l x w x h)	Temperature class	Order no.
HCL 300-T4-10-3	300 W	with antifreezing protective device +10 °C ON +18 °C OFF	220 x 213 x 120	T4	**27-2269-4730/B312**
HCL 600-T3-10-3	600 W		220 x 213 x 120	T3	**27-2261-4760/B312**

Technical data subject to change without notice.

03-0330-0460B-03/2014-BEH-246821/2

HSF 300

HSF 120/HSF 200

HSF 50/HSF 100

Features

- Self-limiting characteristic
- Random mounting position
- Extremely flat design
- ATEX gas and dust application approval
- Wide rated voltage range
- Large, black, anodized convector surface
- Ready-to connect, maintenance-free

Description

The extremely flat BARTEC HSF heater plates are mainly used in potentially explosive areas for applications, which require the maintenance of a specific temperature. The use of these heater plates guarantees a maximum degree of operational safety, as temperature fluctuations can be efficiently avoided and, yet, the required minimum temperatures can be maintained.

The heater plates reliably protect electrical installations against function failures due to creepage currents and also offer protection against other failures caused by corrosion formation at mechanical system components. The application areas of these heaters comprise switch and control cabinets, transmitter protection boxes, measuring equipment, analyzer cabinets for sample preparation, and many more.

Construction

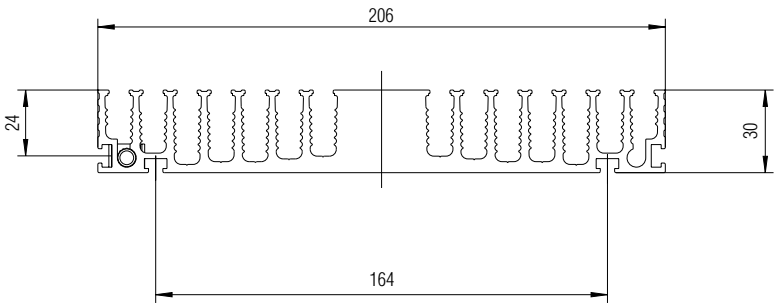
The HSF heater plates are based on a PTC (positive temperature coefficient) heating element. The special design of the aluminum profile facilitates an even temperature distribution in the interior of housings and cabinets. For an optimum free convection, the fins should not be covered.

Function

The PTC heating elements increase their electrical resistance as the temperatures rises. A high resistance results in a low heating output. At high temperatures, the heating capacity is reduced to a minimum heating output, which ensures that the limit temperature of the respective temperature class cannot be exceeded . Moreover, these heating elements regulate their resistance in dependence of the voltage. Therefore, the HSF heating plates can be applied in a wide supply voltage range.

Should you require further information on the detailed layout of the heating capacity in holding temperature applications, please contact us.

Dimensions



Explosion protection

Ex protection type
II 2G Ex db IIC T4, T3
II 2D Ex tb IIIC T135 °C/T200 °C

Certification
PTB 03 ATEX 1221 X

Technical data

Protection class
IP 68, NEMA 4X

Application temperature range
-50 °C to +180 °C

Ambient temperature range
-50 °C to +60 °C

Rated voltage
AC/DC 120 V to 240 V

Nominal power
50, 100, 120, 200 and 300 W
(at 0 °C application temperature)

Connection
Hose line
EWKF 3 x 1.5 mm²; ⌀ 8.1 mm

Mounting position
random

Material
black, anodized aluminum,
resistant to sea water

Selection chart

Designation	Nominal power	Cable length	Weight (netto)	Dimensions mm (l x w x h)	Temperature class	Order no.
HSF 50 T4-1	50 W	1 m	0.9 kg	105 x 206 x 30	T4	**27-2C54-7054110Z1000**
HSF 50-T4-5	50 W	5 m	1.3 kg	105 x 206 x 30	T4	**27-2C54-7054110Z5000**
HSF 100-T3-1	100 W	1 m	0.9 kg	105 x 206 x 30	T3	**27-2A53-7104110Z1000**
HSF 100-T3-5	100 W	5 m	1.3 kg	105 x 206 x 30	T3	**27-2A53-7104110Z5000**
HSF 120-T4-1	120 W	1 m	1.8 kg	225 x 206 x 30	T4	**27-2B54-7124150Z1000**
HSF 120-T4-5	120 W	5 m	2.2 kg	225 x 206 x 30	T4	**27-2B54-7124150Z5000**
HSF 200-T3-1	200 W	1 m	1.8 kg	225 x 206 x 30	T3	**27-2B53-7204150Z1000**
HSF 200-T3-5	200 W	5 m	2.2 kg	225 x 206 x 30	T3	**27-2B53-7204150Z5000**
HSF 300-T3-1	300 W	1 m	2.5 kg	325 x 206 x 30	T3	**27-2J53-7304170Z1000**
HSF 300-T3-5	300 W	5 m	2.9 kg	325 x 206 x 30	T3	**27-2J53-7304170Z5000**

Technical data subject to change without notice.

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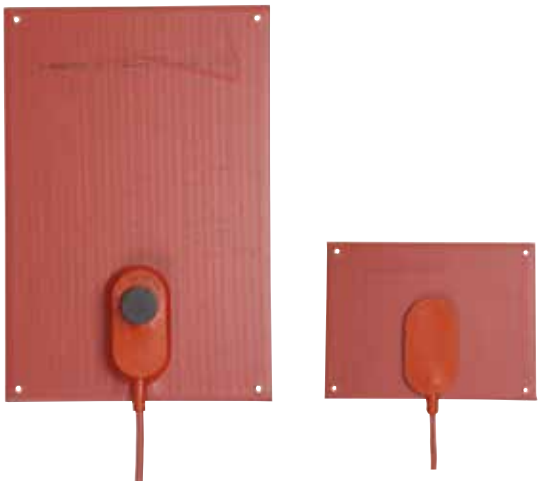


SSM Silicone heater plate for control cabinets

Features

- Space saving thanks to its flat structure
- Good and uniform heat distribution thanks to the uniplanar structure
- Random mounting position
- Excellent resistance to chemicals

Description

The SSM heater plate can be used for frost protection and as an anti-condensation heater. Its application ensures complete operational safety as the plates prevent malfunctions often due to leakage currents on electrical installations or the corrosion of metal components. Typical applications are switchgear and controlgear cabinets, instrument housings, analyser cases, glove boxes and other enclosures.

Structure

The heater plate consists of a thin, anodised aluminium baseplate, vulcanised with silicone-impregnated glass-fibre mats with an embedded heating coil. A bimetallic switch integrated in the terminal block limits the surface temperature of the heater approx. +70 °C. An alternative version is available for adjusting the surface temperature from +30 °C to +150 °C.

Additional products

Thanks to the unusual structure of silicone heaters, it is possible to manufacture different versions for every application.

The following **parameters** can be altered for individual applications:

Geometry/Shape

Flexible large-area heaters up to a size of 2.5 m x 1.2 m and about 2.5 mm thick can be achieved. Cutouts, threads etc. can be provided at random. Heaters for cylindrical bodies (5 to 200 mm diameters) are preformed according to the required radius as a sleeve.

Fixing method

Large-area heaters can be installed with self-adhesive tape, with a special glue, by means of a clamping plate or tension springs.

Nominal voltage

6 V to 230 V; 3 N AC 100 V to 3 N AC 400 V are possible.

Power density

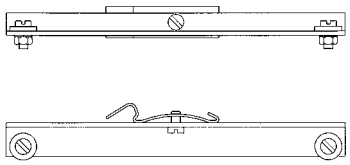
approx. 0.65 W/cm^2 for self-stabilisation; up to 2.0 W/cm^2 if limited by a thermostat.

Temperature control

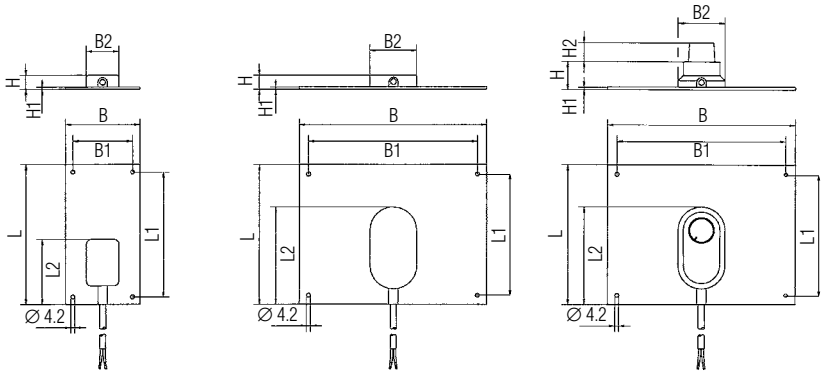
The surface temperature of the heater is influenced by the particular power density W/cm^2, temperature sensors for the control and limitation can be directly integrated in the heating system, sensor receptacles for external temperature sensors can be provided on the heater surface.

The direct contact and large area format result in a very favourable heat flow in the desired direction. This means lower temperature differences between heater and object (medium).

Dimensions
Snap-on rail mounting TS 35



Dimensions Silicone heater



Technical data

VDE certificate
License no. 101109

Norms
EN 60335-1

Min. ambient temperature
-60 °C

Max. ambient temperature
+80 °C (at Type 27-0222)

Plate temperature
+70 °C (pre-set value)
adjustable from +30 °C to +150 °C

Fixing details
- with 4 x M4 screws
- with a special glue
- with mounting rails

Materials

baseplate	aluminium sheet, anodised 1.0 or 1.5 mm thick
Insulation	silicone rubber approx. 1.5 mm thick
heating element	CrNi or constantan wire
supply cable	of silicone 2 x 0.75 mm², 0.5 m long

Protection class

Type 27-0212-..	IP 53
Type 27-0222-..	IP 51

Electrical data

Heat output
40 W/100 W/250 W

Nominal voltage
AC 230 V/50 Hz

Di-electric strength
up to 12 KV/mm

Dimensions in mm

L	L1	L2	B	B1	B2	H	H1	H2	Order no.
150	134	70	80	64	35	15	2.5	without	**27-0212-1704**
150	130	105	200	180	50	15	3	without	**27-0212-2710**
150	130	105	200	180	50	30	3	20	**27-0222-2710**
300	280	105	200	180	50	15	3	without	**27-0212-3725**
300	280	105	200	180	50	30	3	20	**27-0222-3725**

Selection chart for heater plate

Heat output	+70 °C pre-set	adjustable from +30 °C to +150 °C
	Order no.	Order no.
40 Watt	**27-0212-1704**	-
100 Watt	**27-0212-2710**	**27-0222-2710**
250 Watt	**27-0212-3725**	**27-0222-3725**

Selection chart for accessories - Fixing bracket for TS 35

Installation sizes L x B	Order no.
for heater 150 x 80 mm, 150 x 200 mm	**05-0010-0056**
for heater 300 x 200 mm	**05-0010-0057**

Technical data subject to change without notice.

03-0330-0270/A-09/2014-BEH-202017/2

MSH Anti-condensation motor heater

Special versions on request

- Differing supply voltage
- Differing heating cables
- Special heating cable length

Technical data

Material

Heating elements	CuNi or NiCr
Insulation	alkali-free glass-fibre with silicone rubber
Connection leads	2 x FEP-insulated stranded copper flex, 0.5 mm² with crimped sleeve

Bending radius ≥ 25 mm

Electrical data

Heat output
12.5 W, 25 W, 50 W, 75 W, 100 W

Watts density
50 W/m at nominal voltage

Nominal voltage
standard 230 V
(special 110 V, others on request)

Permissible excess voltage
1.2 x nominal voltage

Test voltage
2000 V to earth

Temperature resistance class
H = +180 °C

Temperature range
-50 °C to +180 °C

Features

- Easy to connect thanks to its parallel structure
- High watts density power output
- Extremely flexible in a temperature range -50 °C to +180 °C with high di-electric strength

Description

This highly flexible heating cable is used as an anti-condensation heater for electric motors and generators. The device offers added protection against corrosion damage that usually results in machine breakdowns by effectively preventing the formation of condensation water even under extreme climatic conditions.

Structure

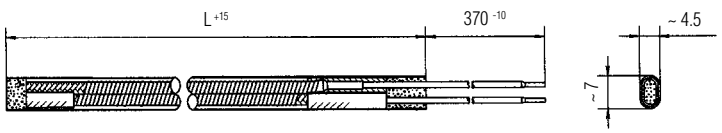
MSH ant-condensation heaters are pre-wired, ready-to-use parallel heating cables with cold lead ends. Consisting of two parallel flexible copper leads with silicone glass-fibre insulation, the heating element of CuNi or NiCr alloy is wound around the cable.

The 0.37 m long cold lead ends of FEP insulated stranded copper flex terminate the heating cable. The outer jacket consists of glass-fibre, covered with silicone rubber. Both ends of the heating cable are sealed with silicone rubber.

Function

The heating cables are integrated directly into the windings, i.e. built around the winding armature. Heat transfer is improved dramatically since the windings during the impregnation process.

Dimensions



Selection chart

Operating voltage	Code no.	Heating output	Cable length	Code no.
110 V	**6**	12.5 W	250 mm	**012**
		25 W	500 mm	**025**
230 V	**7**	50 W	1000 mm	**050**
		75 W	1500 mm	**075**
Special voltage	**9**	100 W	2000 mm	**100**

Complete order no. 27-1811- ☐☐☐☐

Please enter code number. Technical data subject to change without notice.

MSH^{ex} Anti-condensation motor heater

Features

- Silicone-free
- Self-limiting
- Other lengths on request

Description

This flexible heating tape is used in explosive atmospheres to heat electric motors and generators at standstill. It provides reliable protection against corrosion damage and the associated mechanical breakdowns because it effectively prevents condensation from forming, even under extreme conditions.

The heater is supplied ready to connect, which is done via an M20 screwed cable connection fed into an Ex e distributor, or is directly clamped to terminals in an Ex room without a screwed connection.

As these heating tapes are self-limiting, overheating is prevented, even if they are laid on top of each other.

An additional temperature limiter is not required.

Structure of the heating tape

- Copper power conductor wire 1.2 mm², nickel-plated
- Self-limiting plastic heating element
- Insulation sleeve made of FEP
- Tin-plated copper braiding
- Protective sleeve made of FEP

Explosion protection

Ex protection type
Ⓔx II 2G Ex e IIC 200 °C (T2), T3 Gb

Certification
KEMA 08 ATEX 0109
IECEx KEM 09.0082

Thermal safety
EN 60519-2; Section 13, class 0

Temperature class
Version 110 V T2, T3 on request
Version 230 V T3

Technical data

Max. temperatures at place of use
switched-on
permanently -40 °C to +120 °C
switched-off -40 °C to +170 °C

Nominal voltage
208 V to 254 V or 110 V to 120 V

Heating output at 10 °C
12 W, 24 W, 48 W and 96 W
at a specific heating output of 45 W/m

Insulation testing
AC 1500 V for 1 minute

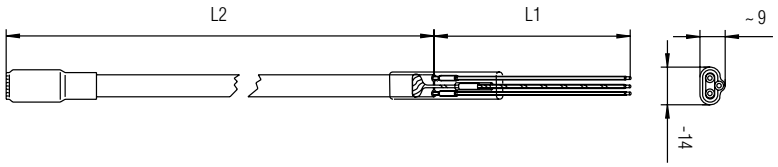
Terminal wires with FEP isolation
fine-stranded with tin-plated copper wires 1.5 mm²,
green and yellow protective earth conductor 2.5 mm²

Heat conuctor closing
shrink-fit hose made of PTFE/FEP

Min. bending radius
25 mm

Size of heating tape diameter
10.2 mm x 4.8 mm

Dimensions



Selection chart HSB heating cable Type 45

Heating output	Strand length (mm) L1	Heating cable length (mm) L2	Complete order no.
12 W	300	270	27-1776- □ 0300012
24 W	300	540	27-1776- □ 0300024
48 W	1000	1070	27-1776- □ 1000048
96 W	1000	2140	27-1776- □ 1000096

Nominal voltage	Code no.
110 V	6
230 V	7

Please enter code number.
Technical data subject to change without notice.

03-0330-0464/B-07/2014-BEH-246825

BARTEC

Water leakage detection system

Sensor

Monitoring electronics

System overview

Features

- Easy and quick installation, modular principle
- No system calibration required
- Simple integration into the building surveillance
- Visual and acoustic alarm signal, galvanically isolated indicator relay
- Sensor cable and point sensor can be combined, Line break monitoring
- Durable and reliable

Description

Water leak monitoring in buildings with sensitive electric and electronic equipment or valuables is today an elementary part of building supervision and guarding. If the recommendations in the "IT-Grundschutz" (information security) catalogue are followed, server rooms can be monitored reliably for the detection of water leaks in the cooling systems.

The BARTEC water leakage detection systems are used for the surveillance of rooms, piping and individual items. Each leakage is detected with metre accuracy and reported directly in the building surveillance. This ensures that the location of the leakage can be found quickly so that countermeasures can be introduced immediately. The sensor cable and point sensors can be combined at will. The monitoring electronics are available with or without locating.

Fields of application

Computer centres, telephone exchanges, libraries, museums, archives, book stores, clean air rooms, air-conditioning and heating centres, etc.

- **Surfaces** double floors above or below computer equipment
- **Piping** heating cables, process cables
- **Individual** items drip pans

System components

- **Sensor**
  - SCR sensor cable
  - PS point sensor
- **Monitoring**
  - RLW monitoring electronics with locating as a wall-mounted enclosure
  - RDW 03 monitoring electronics without locating as a wall-mounted enclosure
  - RDA 01 monitoring electronics without locating for installation in the control cabinet

Conductive measurement principle

The BARTEC water leakage detection systems detect leakages of electrically conductive liquids quickly and reliably. The measuring circuits work with a.c. voltage, which allows a permanent avoidance of galvanic processes at the electrodes.

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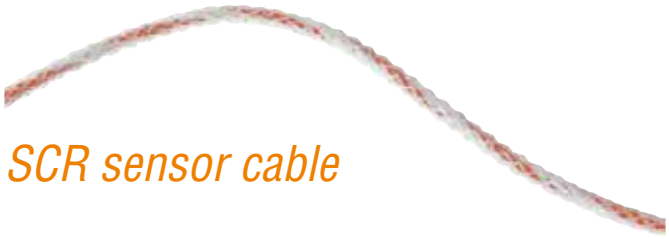


SCR sensor cable

Features

- Simple and quick installation
- Highly flexible; supplied in running metres

Description

The SCR sensor cable is used for detecting electrically conductive liquids such as water, acids and alkalis. This sensor cable can detect the location of the leak precisely. The SCR is a 4-core flexible round cable with protective braiding.

Technical data

Sensors	2 x 0.25 mm², protected by partially permeable PTFE insulation Colour: red, white Rated resistance: 6 Ω/m
Return conductor	2 x 0.25 mm² with FEP insulation Colour: red, white
Protective braiding	made of FEP Colour: natural
Cable diameter	5 mm
Minimum bending radius	6 x cable diameter
Tensile strength	210 N
Temperature resistance	-50 °C to +180 °C
Fire protection	V0 according to fire protection standard UL 1581

Selection chart

Designation	Order no.
Sensor cable SCR Supplied by the metre	**17-85M1-1761**
Accessories	
Supplied by the metre LIYY 4 x 0.5 mm²	**02-4042-0011**
SCR end plug	**05-0080-0161**
SCR end resistor	**05-0080-0164**
SCR zone divider module	**05-0080-0162**
SCR tee branch	**17-85Z4-3200**
Fixing tape (pack of 50)	**05-0091-0045**
Label “Sensitive sensor cable“	**05-2144-0777**
Connection kit, SCR connector	**05-0091-0054**
Connection kit, SCR socket	**05-0091-0055**

PS point sensor

Technical data

Model	flat point sensor with cable gland and waterproof terminal area
Dimensions	∅ 80 mm x 26 mm height
Cable gland	M 12 x 1.5 terminal area 3 to 6.5 mm
Enclosure material	PVC
Temperature resistance	-10 °C to +50 °C
Leakage alarm	as of 3 mm water level
Electrodes	2 stainless steel plates
Connecting terminals	terminal screws at the input and output
Miscellaneous	integrated end resistor 220 kΩ

Features

- Individual connection lengths with easy and quick installation
- Series connection, up to 50 point sensors are possible
- Can be combined with SCR sensor cable
- Locating possible

Description

The point sensor is used to detect electrically conductive liquids such as e. g. water. With this point sensor the location of the leak can be detected quickly.

Order no.

PS point sensor

17-85M1-3832/0A00

Technical data subject to change without notice.

03-0330-0525/B-02/2013-BEH-291053/2

RLW monitoring electronics with locating

Features

- System status with plain text report
- Quick and precise localisation of the leakage location
- Monitoring lengths to 3.000 m
- No system calibration required
- Simple integration into the building surveillance
- Password protection
- With combinable sensor cable and point sensor

Description

The RLW monitoring electronics can be easily integrated into the building surveillance. System calibration is not necessary.

To safeguard the system, the software is password-protected. RLW can be combined both with the sensor cable and also with the point sensor.

The system status appears as a plain text report. The menu texts in the display are stored in 3 languages, German, English and French. The front membrane texts are in three languages as standard.

The location of the leakage appears in the display quickly and precisely. This ensures that the location of the leakage can be found rapidly and countermeasures introduced immediately.

The max. monitoring length is 3000 m and can be displayed in metres or feet. For each measuring channel up to 1500 m of sensor cable can be connected. The monitoring length can be divided into 50 zones per measuring channel.

Technical data

Model	plastic wall-mounted enclosure with transparent protective cover, terminal connection chamber and cable glands
Dimensions	284 x 217 x 143 mm (W x H x D); (dimension H without cable glands)
Inputs	- voltage supply (standard) AC 230 V or AC 115 V/50 to 60 Hz/8 VA or DC 12 V or DC 24 V/7 W - sensor connection
Outputs	- two floating change-over contacts for leakage report: per measuring channel (3 A at AC 230 V) - two floating change-over contacts for fault (fail-safe) power failure surveillance: 3 A at AC 230 V - RS 232 interface (standard) and RS 485 (options) block-oriented, secured single-master protocol for connecting to the building services management
Event logger	storage of the last 20 events with date, time and plain text
Measuring accuracy	± 0.1 % of the measurement range end level
Method of measurement	conductive (conductive liquids > 30 µS)
Self-monitoring	sensor rupture and power failure
Date/time	automatic switch-over from summer/winter time
Operating elements	membrane keyboard operation of all functions including the plain text inputs
Signal	optical: LED displays; operation/leakage/rupture/fault acoustic: piezoelectric buzzer (can be switched on and off)
Ambient temperature	0 °C to +50 °C
Protection class	IP 65

Selection chart

Monitoring electronics	Order no.
RLW with locating, single-channel	**17-85G1-2121**
RLW with locating, dual-channel	**17-85G1-2221**
RLW with locating and RS485, single-channel	**17-85G1-2122**
RLW with locating and RS485, dual-channel	**17-85G1-2222**

Technical data subject to change without notice.

03-0330-0526/A-06/2013-BEH-291054

RDW 03 monitoring electronics without locating

Features

- Rapid detection of leaks
- Monitoring lengths to 1000 m
- No system calibration required
- Simple integration into the building surveillance
- Can be combined with sensor cable and point sensor

Description

The system detects even small liquid leakages quickly and reliably. There is an optical and acoustic alarm signal.

At the same time floating contacts are set for signals to the building services management and control tasks.

Technical data

Model	Wall-mounted enclosure with membrane keyboard and separate terminal area
Dimensions	166 x 160 x 84 mm (W x H x D)
Inputs	voltage supply AC 230 V/50 to 60 Hz/8 VA or DC 24 V/7 W as standard
	sensor via two-wire lead
	sensor cable length max. 1000 m point sensors max. quantity of 50
Outputs	alarm relay, two separate change-over contacts (6 A at AC 230 V/6 A at DC 24 V)
	rupture/power failure relay, 1 change-over contact in fail safe function (6 A at AC 230 V/6 A at DC 24 V)
Memory	alarm/rupture relay memory
Method of measurement	conductive (conductive liquids > 2 µS)
Response sensitivity	adjustable
Self-monitoring	sensor rupture and power failure
Operating elements	two-stage confirm button (stage 1: buzzer off); on/off button
Signal	optical: LED displays operation/alarm/rupture acoustic: piezoelectric buzzer
Ambient temperature	0 °C to +60 °C
Protection class	IP 54

Order no.

RDW 03

17-85F3-8322

Technical data subject to change without notice.

03-0330-0527/A-06/2013-BEH-291055

RDA 01 monitoring electronics without locating

Features

- Rapid detection of leakages
- Monitoring lengths to 1 000 m
- No system calibration required
- Simple integration into the building surveillance
- Can be combined with sensor cable and point sensor

Description

The system detects quickly and reliably even small quantities of liquid leaks. An optical and acoustic alarm signal is given.

At the same time floating contacts are set for signals to the building services management and control tasks.

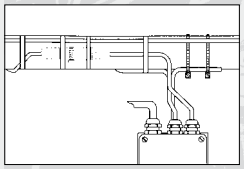
Technical data

Model	clip-on enclosure for mounting rail TS 35
Dimensions	22.5 x 82 x 101 mm (W x H x D)
Inputs	- Voltage supply Type 2322 AC 230 V/50 to 60 Hz/1.2 VA Type 2422 DC 24 V/0.8 W - Sensor via two-wire lead Sensor cable length: max. 1 000 m Point sensors: max. 50 pcs
Outputs	Group alarm relay, two change-over contacts 0.25 A at AC 230 V/1 A at DC 24 V
Memory	Alarm/rupture relay memory
Method of measurement	conductive (conductive liquids > 2 µS)
Response sensitivity	adjustable
Self-monitoring	sensor rupture and power failure
Operating elements	reset button
Signal	optical: LED displays; operation/alarm/rupture acoustic: piezoelectric buzzer
Ambient temperature	-25 °C to +60 °C
Protection class	IP 20

Selection chart

Monitoring electronics	Order no.
RDA 01 without locating, clip-on enclosure AC 230 V	**17-85F4-2322**
RDA 01 without locating, clip-on enclosure DC 24 V	**17-85F4-2422**

Technical data subject to change without notice.



Project Planning Information for Electric Trace Heating Systems for Pipes

BARTEC

Name	Street	Phone
Company	Town/county/post code	Fax

Pipework information

Length of pipe		m	Indicate type of pipe suspension/support		
Nominal bore of pipe		mm			
Pipe material			Location (e.g. pipe bridge, indoors, outdoors, buried)		
Wall thickness of pipe		mm	If necessary attach drawings, isometrics		
Internal coating					
Number of valves and fittings		No.			
Number of flanges		No.	Thermal insulation material		
Number of pumps, filters		No.	Thermal insulation thickness		mm
Please attach sketch or drawings			Thermal conductivity		W/mK

Electrical data

Supply voltage		V			Hz
Installation in potentially explosive atmospheres		yes			no
Certifications and approvals		ATEX			IECEx
Temperature classification T					

Temperature limitations

Max. surface temperature of thermal insulation cladding		°C	Max. product temperature		°C
Max. surface temperature of pipe wall		°C	Is the pipe steam cleaned?		yes / no
Max. exposure temperature of internal coating		°C	If yes, at what temperature?		°C

Additional information, required for heat raise application:

Specific heat of the pipe material		kJ/kgK	Pipe weight per metre		kg

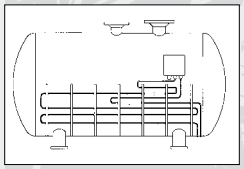
Productinformation

Medium			Required maintain temperature of the product		°C
Specific gravity		kg/m³	Max. ambient temperature		°C
Specific heat capacity		kJ/kg	Min. ambient temperature		°C
Heat of fusion (Latent Heat)		J/kg	Wind velocity		m/s
Melting point (Point of Vapourisation)		°C			

For heating up product

Initial temperature		°C			
Final temperature		°C	Required heat up period		h

03-0330-0273/B-05/2010-BEH-202030/1



Project Planning Information for Electric Trace Heating Systems for Tanks and Vessels

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Name	Street	Phone
Company	Town/county/post code	Fax

Tank/Vessel information

Tank/Vessel diameter		m	Position	vertical	horizontal
Tank/Vessel height/length		m		on legs	floor mounted
(Please attach drawings)			Construction type:		
Tank/Vessel material	_____		Top/Ends:	flat	curved
Tank/Vessel wall thickness		mm	Bottom:	flat	curved
Internal coating	_____		If conical, height of cone		m
Level of fluid	min. ☐ m norm. ☐ m		Thermal insulation material		_____
Thermal conductivity of the insulation		W/mk	Thermal insulation thickness		mm

Electrical data

Supply voltage	☐ V ☐ Hz		Certifications and approvals	☐ ATEX ☐ IECEx	
Installation in potentially explosive atmospheres	☐ yes ☐ no		Temperature classification		

Temperature limitations

Max. surface temperature of thermal insulation cladding		°C	Max. Product temperature		°C
Max. surface temperature of tank wall		°C	Is the tank/vessel steam cleaned?	☐ yes ☐ no	
Max. exposure temperature of internal coating		°C	If yes, at what temperature?		°C

Additional information, required for heat raise application:

Specific heat of the tank(vessel material		kJ/kgK	Weight of the tank/vessel		kg

Product information

Medium	_____		Required maintain temperature of the product		°C
Specific gravity		kg/m³	Max. ambient temperature		°C
Specific heat capacity		kJ/kg	Min. ambient temperature		°C
Heat of fusion (Latent Heat)		J/kg	Wind velocity		m/s
Melting point (Point of Vapourisation)		°C			

For heating up product

Initial temperature		°C			
Final temperature		°C	Required heat up period		h

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