

# **IECEx Certificate** of Conformity

# INTERNATIONAL ELECTROTECHNICAL COMMISSION **IEC Certification System for Explosive Atmospheres**

for rules and details of the IECEx Scheme visit www.iecex.com

R. Schuller

**IECEx DEK 21.0074X** Certificate No.: Page 1 of 3

Issue No: 0 Status: Current

Date of Issue: 2022-05-13

Applicant: **BARTEC GmbH** 

Max-Eyth- Straße 16 97980 Bad Mergentheim

Germany

Installation Enclosures for Self Regulating Trace Heating System Type 27-54\*\*-\*\*\*\*/\*\*\*\* Equipment:

Optional accessory:

Type of Protection: Ex d, Ex e, Ex i, Ex m, Ex t, 60079-30-1

See Annex 1 to NL/DEK/ExTR20.0057/00 Marking:

Approved for issue on behalf of the IECEx

Certification Body:

Position: **Certification Manager** 

Signature:

(for printed version)

2022-05-13 (for printed version)

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Certificate history:

Certificate issued by:

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**BARTEC GmbH** Manufacturer:

> Max-Evt-Straße 16 97980 Bad Mergentheim

Germany

Manufacturing locations:

**BARTEC GmbH** Max-Eyt-Straße 16 97980 Bad Mergentheim

Germany

**BARTEC BENKE GmbH** 

Schulstrasse 30 94239 Gotteszell Germany

**BARTEC Explosion Proof** Appliances (Shanghai) Co., Ltd New Building 7, No. 188, Xinjun Ring Rd., Shanghai Caohejing Pujiang Hi-Tech Park (Pu Dong Area), Minhang

District, 201114 Shanghai

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

#### STANDARDS:

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements

Edition:7.0

IEC 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"

Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

Edition:6.0

IEC 60079-18:2017 Explosive atmospheres - Part 18: Protection by encapsulation "m"

Edition:4.1

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

Edition:2

IEC 60079-7:2017 Edition:5.1

Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

IEC/IEEE

Explosive atmospheres - Part 30-1: Electrical resistance trace heating - General and testing requirements

60079-30-1:2015 Edition: 1.0

> This Certificate does not indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

#### **TEST & ASSESSMENT REPORTS:**

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

NL/DEK/ExTR20.0057/00

**Quality Assessment Reports:** 

DE/TUN/QAR06.0017/13 NL/DEK/QAR12.0061/08



# IECEx Certificate of Conformity

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Date of issue: 2022-05-13 Issue No: 0

#### **EQUIPMENT:**

Equipment and systems covered by this Certificate are as follows:

Installation Enclosures for Self Regulating Trace Heating, type 27-54\*\*-\*\*\*\* are trace heater accessories (components) for use in Bartec trace heating systems.

The enclosures made of either stainless steel, coated aluminum or GRP (glass fiber reinforced polyester) are in type of protection Ex eb or Ex tb,

For more information see Annex 1 to NL/DEK/ExTR20.0057/00.

#### SPECIFIC CONDITIONS OF USE: YES as shown below:

All power and data line cable entries to the trace heater boxes shall be installed with Ex eb or Ex tb cable glands or blanking elements providing a minimum ingress protection of IP66.

Supply cables and power cable entry glands shall be selected per manufacturer's installation instructions for appropriate conductor size and temperature range.

Trace heater boxes, Aluminium housing type 07-5180-\*\*\*/\*\*\*\*

The enclosure must not be used in areas affected by charge-producing processes, mechanical friction and separation processes, electron emission (e.g. in the vicinity of electrostatic coating equipment), and pneumatically conveyed dust.

Trace heater boxes, Cable entries PS-120-\* type 27-59-G2-\*

For the Box pedestal PS-120-\* measures shall be taken to avoid electrostatic charging hazards.

PBTW, Ex d Temperature Switch Type 07-6D\*\*-\*\*\*\*/\*\*\*\*

The width of gap of the Ex d Temperature Switch is below the maximum values according to IEC 60079-1. Contact BARTEC for maintenance or repair of Ex d Temperature Switch.

#### PBTW, PBTC

- · Shall be applied for maintenance temperature control only.
- The capillary of the PBTW and PT100 wiring shall be part of a fixed installation and shall be effectively clamped to prevent pulling or twisting.

#### Annex:

226207700-ExTR20.0057.00-Annex1\_1.pdf



#### Description

Installation Enclosures for Self Regulating Trace Heating, type 27-54\*\*-\*\*\*\* are trace heater accessories for use in Bartec trace heating systems.

The enclosures made of either stainless steel, coated aluminum or GRP (glassfiber reinforced polyester) are in type of protection Ex eb or Ex tb.

The enclosures may be utilized with M12, M20, M25, M32 entries and/or a custom entry for power cables, temperature sensors and trace heaters.

Entry devices for trace heaters and temperature sensors in type of protection Ex eb or Ex tb are included where applicable. Grommets for sealing the trace heaters may be provided with separately supplied installation kits.

The Installation Enclosures are available in a variety of subtypes:

- Power Boxes PBS or PBM that include the Ex eb terminals only.
- Electronic thermostat PBTC that includes an electronic module in types of protection Ex eb, mb, [ib] and 60079-30-1 and a transparent lens mounted in the cover in type of protection Ex eb or tb.
- Mechanical thermostat PBTW that includes a capillary thermostat with switching unit types of
  protection Ex db and eb, terminals in type of protection Ex eb and a gland for the capillary tube in type
  of protection Ex eb or tb.
- End of Line Lamp ELL that includes an illuminated indicator module in types of protection Ex db and eb and a colored transparent lens mounted in the cover or optionally the top side of the enclosure in type of protection Ex eb or tb.
- End of Line Seal ELS that includes a box pedestal PS-120-2, a PS-E GRP environmental protection cap and an End Seal ES1 with RTV sealant in type of protection Ex 60079-30-1.

The Installation Enclosures are assembled from parts separately assessed as

- Ex Equipment or Ex Component, covered by an IECEx CoC or
- Equipment, component or part covered by a report issued by an IECEx CB.

The Bartec Temperature switch type 07-6D\* is certified per IECEx EPS 11.0007U according to to an older edition of the standard: IEC 60079-0:2011.

No applicable Technical Differences with IEC 60079-0:2017 are found as shown in the ExTR.



# Type designation

Designation	Explanation	Value	Explanation
Α	Product group	27	Trace heating
В	Product identifier	5	Installation material
С	Design	4	Installation Enclosures
D	Subtype	C D E P	PBTC electronic thermostat PBTW mechanical thermostat ELL or ELS End of Line PBS or PBM Power Box
Е	Rated voltage	2	≤ 277 V
F	Enclosure material	4 5 6 A	GRP material Coated aluminium Stainless steel PS-E (GRP environmental protection cap)
G	Enclosure size (minimum outer dimensions)	2 3 4 5 7 8 A	122 x 120 x 90 mm (GRP, coated aluminum) 160 x 160 x 90 mm (GRP, coated aluminum) 220 x 120 x 90 mm (GRP, coated aluminum) 260 x 160 x 90 mm (GRP, coated aluminum) 150 x 150 x 100 mm (stainless steel) 200 x 200 x 120 mm (stainless steel) Cylindrical Ø 50 mm x 80 mm (PS-E)
н	Number of entries for trace heater	1 2 3	one entry two entries three entries
I	Type of entry device for trace heater	1 2 3	TG-P-1, TG-H-1, FG-S-1 or FG-S-C PS-120-2 PS-120-3
J	Affixed components	0 1 3 5 C D E F	ELS, no affixed components PBS or PBM, 6 mm² Ex e terminals PBS or PBM, 10 mm² Ex e terminals PBS or PBM, 16 mm² Ex e terminals PBTW, thermostat mechanic -20 °C to +50 °C PBTW, thermostat mechanic 0 °C to +190 °C PBTC, thermostat electronic ETM-25Ex-C ELL, End of Line Lamp, lens in cover ELL, End of Line Lamp, lens in top of enclosure
К	Size and amount of power cable entries	0 2 3 5 B C	None 1 x suitable for M25 or M32 1 x suitable for M25 or M32 1 x suitable for M25 or M32 2 x suitable for M25 or M32 2 x suitable for M25 or M32
L	Grounding system	0 1 2 3	None Grounding lug via PE-terminal block Grounding plate (ECP) Grounding via metallic box
М	Custom		Not relevant for certification



#### Thermal and mechanical data

Maximum ambient temperature:						
- general [°C]	+55					
- enclosure comprising ELL [°C]	+40					
Minimum ambient temperature:						
- with connected trace heater types PSB, MSB, HSB	-55					
<ul><li>with connected trace heater types HSB+, HTSB</li><li>enclosure comprising PBTC [°C]</li></ul>	-40					
Degree of ingress protection						
- general, in accordance with IEC 60529 and IEC 60079-0	IP66					
- enclosure comprising ELL and / or PBTC, in accordance with IEC 60529 and IEC 60079-0	IP64					
- enclosure comprising ELL and / or PBTC, in accordance with IEC 60529	IP66					

#### Electrical data of trace heater circuits

Rated voltage [V]:	277			
Maximum rating of over current protection:				
- general [A]	32			
- enclosure comprising PBTW [A]	16			

#### Marking

Power boxes with separately certified power cable glands and breather drain plugs or blind plugs: **PBS**, **PBM type 27-54P2-\*\*\***/\*\*\*\*

Ex eb 60079-30-1 IIC T6...110 °C (T4) Gb Ex tb 60079-30-1 IIIC T<sub>L</sub> 80 °C... T<sub>L</sub> 110 °C Db

Temperature controller in enclosure with separately certified power cable glands and blind plugs: PBTC type 27-54C2-\*\*\*\*/E\*\*\*

Ex eb mb [ib] 60079-30-1 IIC T6...110 °C (T4) Gb Ex tb [ib] 60079-30-1 IIIC  $T_{L}$  80 °C...  $T_{L}$  110 °C Db

Temperature controller in enclosure with separately certified power cable glands and blind plugs: PBTW type 27-54D2-\*\*\*\*/\*\*\*\*

Ex db eb 60079-30-1 IIC T6...110 °C (T4) Gb Ex tb 60079-30-1 IIIC  $T_L$  80 °C...  $T_L$  110 °C Db

End of line termination in enclosure:

ELL type 27-54E2-\*\*\*/\*\*\*\*

Ex db eb 60079-30-1 IIC T6...110 °C (T4) Gb Ex tb 60079-30-1 IIIC  $T_{\rm L}$  80 °C...  $T_{\rm L}$  110 °C Db



#### Electrical data for electronic thermostat PBTC type 27-54C2-\*\*\*\*/E\*\*\*

Supply circuit (terminals L - N) in type of protection Ex eb:  $U_m$ : 305 Vac Rated power without load: 4.5 W

Load circuit (terminals L - N) in type of protection Ex eb:

U<sub>m</sub>: 305 Vac (phase-neutral-PE)

Maximum steady state current: see Electrical data, temperature class and specified

maximum surface temperature "T" below, column "PBTC"

Alarm Relay, potential free contacts in type of protection Ex eb:

Rated voltage: 277 Vac or 36 Vdc

 $U_m$ : 305 Vac Rated switch current, resistive load: 2 A

Modbus (terminals A, B and C) in type of protection Ex eb:

U<sub>m</sub>: 250 Vac Rated voltage: 5 Vdc

#### Sensor circuit (RTD/Pt100 terminals):

In types of protection intrinsic safety Ex ib IIC, Ex ib IIB, Ex ib IIIB and Ex ib IIIC with the following maximum values:

 $U_0 = 6.6 \text{ V}$ ;  $I_0 = 827 \text{ mA}$ ;  $P_0 = 1.28 \text{ W}$ ; linear characteristic;  $C_0 = \text{see}$  table below;  $L_0 = \text{see}$  table below.

Ex ib IIC	Lo	32 μΗ
EX ID IIC	Co	6.7 μF
Ex ib IIB Ex ib IIIB Ex ib IIIC	Lo	128 μH
	C。	484 μF

The Ex ib sensor circuit is infallibly galvanically separated from the Alarm Relay circuit.

The Ex ib sensor circuit is not infallibly galvanically separated from all other non-intrinsically safe circuits. Therefore the earth connection of the equipment shall be connected to the potential equalizing (P.E.) system in accordance with the applicable installation standard.



#### Electrical data, temperature class and specified maximum surface temperature "TL"

Con- nected heater trace rated power heater output		Tamb max	Limitation of operating current (steady state) of trace heating circuit at T <sub>amb max</sub> [A]			Max. s tempera [°	T-class	
type	output [W/m]	[°C]	PBS / PBM	PBTC	PBTW **	Instal. encl. #	Trace heater ##	System ###
			30	19	16	+110	+80	T4
		+40	27	18	15	+95	+80	T5
	10 15		23	N/A	9	+80	+80	T6
	10, 15		26	12	16	+110	+80	T4
PSB		+55	24	12	15	+95	+80	T5
FSB			18	N/A	9	+80	+80	T6
		+40	30	19	16	+110	+95	T4
	25, 33	+40	27	18	15	+95	+95	T5
	25, 35	+55	26	12	16	+110	+95	T4
			24	12	15	+95	+95	T5
	10, 15	+40	20	19	16	+110	+130	T4
MSB	10, 13	+55	18	* 12	16	+110	+130	T4
HSB	30, 45, 60	+40	20	19	16	+110	+170	T3
	30, 43, 60	+55	18	* 12	16	+110	+170	T3
	10, 15, 30,	+40	20	19	16	+110	+200	T3
HSB+	45, 60	+55	18	* 12	16	+110	+200	Т3
HSD+	75	+40	20	19	16	+110	+300	T2
	75	+55	18	* 12	16	+110	+300	T2
	10, 15, 30,	+40	20	19	16	+110	+200	T3
HTSB	45, 60	+55	18	* 12	16	+110	+200	Т3
ПІЗВ	75, 90	+40	20	19	16	+110	+300	T2
	75, 90	+55	18	* 12	16	+110	+300	T2

#### Notes

- Limitations may apply to the trace heater circuit length, in order not to exceed the maximum allowed operating current (steady state). Consult the manufacturers trace heating system design documentation, containing the calculated operating current of the applicable trace heating circuit.
- \*\* PBTW is limited to use in trace heating circuits protected by a 16 A rated over current protection, see electrical data above.
- # Maximum surface temperature of installation enclosures:
  - with trace heaters installed and operating (with steady state operating current);
  - with the installation enclosures positioned in the worst case orientation with maximum amount of accumulated dust layer (limitations to the orientation of installation do not apply).
- ## Maximum sheath temperature trace heater, installed on workpiece (type assessment of trace heaters according to IEC/IEEE 60079-30-1 is not part of this ExTR).
- \*\*\*\* System comprising installation enclosure and trace heaters (type assessment of trace heaters according to IEC/IEEE 60079-30-1 is not part of this ExTR).



# Nomenclature, application and detailed description of Installation Enclosures

Name	For use with				Contents				
Туре	Description	Power	PSB MSB HSB	HSB+ HTSB	(listed parts may be shown in other lines)				
Power Boxes Types of protection:									
PBS-200-E PBM-200-E 27-54P2-***2/1*** 27-54P2-***3/1***	Power and or splice connection	х	х	х	Trace heater box with 6 mm² terminals, CAK-SRS and PS-120-2 (PBS) or PS-120-3 (PBM)				
PBS-200-E10 PBM-200-E10 27-54P2-***2/3*** 27-54P2-***3/3***	Power and or splice connection	х	х	х	Trace heater box with 10 mm² terminals, CAK-SRS and PS-120-2 (PBS) or PS-120-3 (PBM)				
PBS-200-E16 PBM-200-E16 27-54P2-***2/5*** 27-54P2-***3/5***	Power and or splice connection	х	х	х	Trace heater box with 16 mm² terminals, CAK-SRS and PS-120-2 (PBS) or PS-120-3 (PBM)				
<b>PB*-300-E</b> 27-54P2-***1/1***	Power and or splice connection	х	х	#	Trace heater box with 6 mm² terminals and CAK-SRG				
PB*-300-E10 27-54P2-***1/3***	Power and or splice connection	х	х	#	Trace heater box with 10 mm² terminals and CAK-SRG				
<b>PB*-300-E16</b> 27-54P2-***1/5***	Power and or splice connection	х	х	#	Trace heater box with 16 mm² terminals and CAK-SRG				
Temperature controllerypes of protection:	er in enclosure Ex eb mb [ib] 60079-3 Ex tb [ib] 60079-30-1	0-1							
PBTC-200-E 27-54C2-**12/E***	Electronic thermostat with Ex ib sensor interface	х	x	x	Trace heater box with electronic thermostat, Pt-100, CAK-SRS and PS-120-2 for a single trace heater				
PBTC-300-E 27-54C2-**11/E***	Electronic thermostat with Ex ib sensor interface	х	х	#	Trace heater box with electronic thermostat, Pt-100 and CAK-SRG for a single trace heater				
Temperature controller in enclosure Types of protection: Ex db eb 60079-30-1 Ex tb 60079-30-1									
PBTW-200-E 27-54D2-***2/*** 27-54D2-***3/***	Mechanical thermostat with capillary and bulb	х	х	х	Trace heater box with mechnical thermostat, CAK-SRS and PS-120-2 or PS-120-3				
<b>PBTW-300-E</b> 27-54D2-***1/****	Mechanical thermostat with capillary and bulb	х	х	#	Trace heater box with mechanical thermostat and CAK-SRG				
Note # for use of CAK-SRG kit with FG-S-* only									



# Nomenclature, application and detailed description of Installation Enclosures (continued)

Name		F	or use wi	th	Contents		
Туре	Description	Power	PSB MSB HSB	HSB+ HTSB	(listed parts may be shown in other lines)		
End of line termination Types of protection:							
ELL-200-E 27-54E2-**12/****	End of line lamp		х	х	Trace heater box with illuminated indicator module, red or green transparent lens, CAK-SRS and PS-120-2		
ELL-300-E 27-54E2-**11/****	End of line lamp		х	#	Trace heater box with illuminated indicator module, red or green transparent lens and CAK-SRG		
End of line protected seal Types of protection: Ex 60079-30-1							
ELS-200 27-54E2-AA12/****	End of line seal		х	х	GRP environmental protection cap with ES1 ##, RTV sealant and PS-120-2		
Notes # for use of CAK-SRG kit with FG-S-* only ## part of CAK-* termination kits							

# Description of kits or components supplied with installation enclosures

Name		For use with			Contonto
Туре	Description	Power	PSB MSB HSB	HSB+ HTSB	Contents (listed parts may be shown in other lines)
Cold applied cable c Types of protection:	terminatio	n kit			
CAK-SRS	Connection and end			х	SP1, ES1, RTV sealant and grommet for PS-120-*
27-59CX-9C**/****	termination kit, pedestal entry		Х		
CAK-SRG	Connection and end				SP1, ES1, RTV sealant, and:
27-59CX-7***/****	termination system, gland entry		x		TG-*-1 or
27-59CX-9***/***	giand entry		x	x	FG-S-*
CAK-M25	Splice and end			х х	SP1, ES1, RTV sealant and non-metallic blanking plug for M25 power cable entry
27-59CX-0G**/***	termination kit	X	X		
CAK-M32	Splice and end termination system		х	х	SP1, ES1, RTV sealant, and non-metallic blanking plug for M32 power cable
27-59CX-0H**/***	toiadion ojotom				entry



# Description of kits or components supplied with installation enclosures (continued)

Name		F	or use wi	th	Contents
Туре	Description	Power	PSB MSB HSB	HSB+ HTSB	Contents (listed parts may be shown in other lines)
Trace heater box and Types of protection:	d accessories Ex eb Ex tb				
Trace heater box  Part of kits	Stainless steel, coated aluminum or GRP enclosure	х	х	х	Trace heater box with Terminals and M12, M20, M25, M32 and/or custom PS-120-* entries for power cables, temperature sensors, signaling cables and trace heaters.
Earth continuity plate  Custom made	Earth continuity plate in brass to bond multiple entry devices	х	Х	х	Earth continuity plate with threaded bolt connection, anty skid washer, lock nut
Earth continuity wire Part of earth continuity plate	Bonding wire to bond earth continuity plate to earth				Yellow green wire with crimp lug and conductor end crimp ferrule.
Trace heater entry de Types of protection:	evices Ex eb Ex tb				
<b>PS-120-2</b> 27-59G2-2O**/****	Box pedestal for 2 trace heaters		х	х	PS-120-2, sealing to trace heater box and lock nut. Excluding grommets.
<b>PS-120-3</b> 27-59G2-3O**/****	Box pedestal for 3 trace heaters		х	х	PS-120-3, sealing to trace heater box and lock nut. Excluding grommets.
Grommet 27-59G2-0O**/****	Combined blanking plug and trace heater grommet for PS-120-*		х	х	Part of kits and sperately supplied in bag.
<b>TG-P-1</b> 27-59G1-*P**/****	M20 trace heater gland in stainless steel or nickel plated brass		PSB		TG-P-1, P-grommet, earth lug and lock nut.
<b>TG-H-1</b> 27-59G1-*H**/****	M20 trace heater gland in stainless steel or nickel plated brass		MSB HSB		TG-H-1, H-grommet, earth lug and lock nut.
<b>FG-S-1</b> 27-59G5-*S**/****	M20 or M25 trace heater gland in stainless steel, brass		Х	х	A8*F/*/20S/M2*, earth tag, lock nut and PTFE sealing washer
FG-S-C 27-59G6-*S**/****	or nickel plated brass  M20 or M25 trace heater gland in stainless steel, brass or nickel plated brass		X	X	A8CF*FM20/*/20S/M2*, with M20 female conduit connection, earth tag, lock nut and PTFE sealing
Earth tag  Part of trace heater glands	M20 or M25 lug in brass for bonding entry devices to earth				washer.  Yellow green wire with M20 or M25 crimp lug and and conductor end crimp ferrule and crimp lug.



# Description of kits or components supplied with installation enclosures (continued)

Name		F	or use wit	h	Contents
Туре	Description	Power	PSB MSB HSB	HSB+ HTSB	(listed parts may be shown in other lines)
Environmental protect					
Types of protection:	Not required (trace hea	ater end to	erminatior	1 is Ex 60	079-30-1)
PS-E	GRP environmental protection cap for trace		х	Х	Part of kits.
27-59G3-1O**/****	heater end termination.				
Cold applied cable co Types of protection:	onnection and end termina Ex 60079-30-1	tion syste	em		
SP1	Parallel trace heater silicone conductor		x	х	Green yellow tube and optional conductor sleeves and optional conductor end crimp ferrules.
27-59CX-9***/0000	insulation boot for power termination.				
ES1	Trace heater silicone		x	х	Part of kits.
27-59CX-9000/00**	end seal		X		
RTV	Silicone selant				Part of kits.
Part of kits	Silicone Seidill				Fait Of Nits.