

# CERTIFICATE

## (1) EU-Type Examination

(2) **Equipment or protective systems intended for use in potentially explosive atmospheres - Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number: **DEKRA18ATEX0020 X** Issue Number: **1**

(4) Product: **Temperature Controller, types ESTM / ESTM-L, 17-88C1-\*22H/\*\*\*\***

(5) Manufacturer: **BARTEC GmbH**

(6) Address: **Max-Eyth-Straße 16, 97980 Bad Mergentheim, Germany**

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) DEKRA Certification B.V., Notified Body number 0344 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential test report number NL/DEK/ExTR18.0015/01.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

**EN IEC 60079-0 : 2018**

**EN 60079-7 : 2015 + A1 : 2018**

**EN 60079-11 : 2012**

**EN 60079-18 : 2015 + A1 : 2017**

**EN 60079-31 : 2014**

**EN 60079-30-1 : 2017**

except in respect of those requirements listed at item 18 of the Schedule.

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:



**II 2 G Ex eb mb [ib] [60079-30-1] IIC T6...T5 Gb**  
**II 2 D Ex tb [ib] [60079-30-1] IIIC T80 °C Db**

Date of certification: 29 april 2021

DEKRA Certification B.V.

L.G. van Schie  
Certification Manager

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(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate DEKRA 18ATEX0020 X**

Issue No. 1

(15) **Description**

The Temperature Controller, type ESTM / ESTM-L, 17-88C1-\*22H/\*\*\*\* is suitable for use with remotely installed heaters and trace heating. The enclosure is designed to allow connection of cold lead cables for heaters or series resistance trace heaters and additionally for the direct connection of parallel trace heaters.

The enclosure of the Temperature Controller is non metallic in type of protection Ex eb and Ex tb. It comprises terminals for single phase to neutral power supply, single or two phase supply with neutral for the load and output to the load in type of protection Ex eb. The electronics are encapsulated providing type of protection Ex mb. For temperature sensing up to three terminals for three-wire RTD temperature sensors are provided in type of protection Ex ib.

The optional Limiter of ESTM-L, 17-88C1-\*22H/\*\*\*\* complies with the requirements for limiters as specified in EN 60079-30-1.

For setting up key features of the Temperature Controller an Ex eb terminal is provided inside the enclosure to connect a proprietary temperature limiter set module that prevents changing the set point. Another Ex eb terminal with bridges is provided for selecting single (L1-N) or two phase (L1-L2) power supply to the load.

For programming and monitoring purpose, the local user interface comprises a Bluetooth wireless communication port and a display in type of protection Ex mb with a transparent window in the cover of the Ex eb enclosure. This allows local regular configuration of the equipment without the need to open the enclosure. Provided, the compatible Bluetooth programming device is approved and suitable for use in the environment where the temperature controller is being located at that time.

Remote programming and monitoring is possible utilizing the MODBUS RTU or optional Ethernet TCP/IP data communication terminals in type of protection Ex eb. An end of line MODBUS termination resistor is configurable using a bridge on the Modbus terminal in type of protection Ex eb.

The enclosure provides a degree of protection of at least IP65 in accordance with EN 60079-0 and EN 60529.

The entry to the enclosure shall be provided with IP65 rated Ex eb IIC or Ex tb IIIC approved glands or blind plugs suitable for the size of entry, the cable size and shape, the environment and the application.

For the type designation, thermal and electrical data see the annex to this certificate; Annex 1 to report No. NL/DEK/ExTR18.0015/01.

**Electrical data**

See Annex 1 to this certificate.

**Installation instructions**

The instructions provided with the product shall be followed in detail to assure safe operation.

(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate DEKRA 18ATEX0020 X**

Issue No. 1

(16) **Report Number**

No. NL/DEK/ExTR18.0015/01.

(17) **Specific conditions of use**

Cable glands shall be used that are certified for the applicable type of protection and with suitable ratings. For EPL Db only cable glands with integrated seal or gasket may be used.

In order to ensure safe operation of the Ex ib circuits the ground or earth connections of all electrical circuits connected to the Temperature Controller shall be installed using potential equalization between the hazardous area and the non-hazardous area.

The user of the optional Limiter ESTM-L, 17-88C1-\*22H/\*\*\*\* shall demonstrate his ability to predict the offset ( $\Delta T_{\text{offset}}$ ) between the trace heating sheath temperature and the temperature control device's set point in accordance with clause 4.5.3.1 of EN 60079-30-1 : 2017.

For the electrical data that are not marked, see Annex 1 to report NL/DEK/ExTR18.0015/01.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at item (9).

(19) **Test documentation**

As listed in Report No. NL/DEK/ExTR18.0015/01.

(20) **Certificate history**

Issue 0 - 223104500 initial certificate

Issue 1 - 222113100 update of EN 60079-0 to the current edition of EN IEC 60079-0

## Annex 1 to Report No. NL/DEK/ExTR18.0015/01

Note: In this document [.] is used as decimal separator.

### Type designation

17 - 8 8 C 1 - F 2 2 H / 1 R 0 \*  
 A B C D E F G H I J K L M

Designation	Explanation	Value	Explanation
A	Product group	<b>17</b>	Trace heating
B	Product identifier	<b>8</b>	Temperature Controller
C	Design	<b>8</b>	Installation Enclosures
D	Subtype	<b>C</b>	Electronic thermostat
E	Rated voltage	<b>1</b>	≤ 277 V
F	Function	<b>F</b> <b>V</b>	ESTM Temperature Controller ESTM-L High Temperatre Limiter
G	Supply voltage	<b>2</b>	230 Vac
H	Load voltage	<b>2</b>	230 / 400 V
I	Load contactors	<b>H</b>	Max. 230 / 400 V, see Thermal and electrical data table below
J	Entries	<b>1</b> <b>2...9</b>	1xM25, 2xM20, 6xM16 (Standard) Special (within limitations of applied enclosure)
K	Data communication interface	<b>R</b> <b>T</b>	Bluetooth with MODBUS RTU Bluetooth with Ethernet TCP/IP
L	Display	<b>0</b> <b>1</b>	Remote via Bluetooth 3 digit 7 segment + status LED's
M	Extensions		Not relevant for certification

## Annex 1 to Report No. NL/DEK/ExTR18.0015/01

### Thermal and electrical data

Trace heating circuit or resistive heater, connected with power cable

Ambient Temperature [°C]	U <sub>load</sub> [Vac]	I <sub>max load</sub> [A]	T-Class	Maximum surface temperature "T"
-55 to +45	230 / 400	27	T6	+80°C
-55 to +45	230 / 400	30	T5	
-55 to +55	230 / 400	22	T5	

Constant watt trace heating circuit, connected with cold lead

Cold lead [mm <sup>2</sup> ]	Ambient Temperature [°C]	U <sub>load</sub> [Vac]	I <sub>max load</sub> [A]	T-Class	Maximum surface temperature "T"
2.5	-55 to +45	230 / 400	22	T6	+80°C
		230 / 400	25	T5	
6	-55 to +55	230 / 400	30		
2.5		230 / 400	25		

Self limiting trace heating circuit, connected directly in the enclosure of 17-88C1-\*22H/\*\*\*\*

Trace Heater	Ambient Temperature [°C]	U <sub>load</sub> [Vac]	Max load	T-Class	Maximum surface temperature "T"
PSB MSB HSB	-55 to +55	230	The T-classes and requirements of the separately certified BARTEC trace heating systems shall be observed in accordance with the system design details and installation instructions. The maximum trace heating circuit length and the max circuit breaker (max Load) shall be observed.		

For details such as cable cross-sections, see installation instructions.

Supply circuit (terminals L1 - N) in type of protection Ex eb:

Rated voltage U <sub>supply</sub> :	230 Vac
U <sub>m</sub> :	250 Vac
Rated power without load:	15 VA
Prospective short circuit current:	200 A

Load circuit primary side (terminals and bridges L1 - N / L2) in type of protection Ex eb:

Rated load voltage U <sub>load</sub> (L1 - N):	230 Vac
Rated load voltage U <sub>load</sub> (L1 - L2):	400 Vac (phase-phase)
U <sub>m</sub> :	250 Vac (phase-neutral)
Prospective short circuit current:	200 A
For use with trace heating (resistive load):	
Maximum breaker size:	32A

## Annex 1 to Report No. NL/DEK/ExTR18.0015/01

### Electrical data (continued)

Load circuit secondary side (terminals H1 and H2) in type of protection Ex eb:

Rated voltage: equal to  $U_{load}$ , mentioned above

Rated load current: see tables above

TL SET circuit in type of protection Ex eb:

$U_m$ : 250 Vac

Rated voltage: 5 Vdc

For use with proprietary temperature limiter set module.

Fault / alarm, potential free contacts in type of protection Ex eb:

$U_m$ : 250 Vac

Rated voltage: 230 Vac or 30 Vdc

Rated switch current, resistive load: 2 A

MODBUS RTU In (terminals A – B) and

MODBUS RTU Out (terminals A – B) in type of protection Ex eb:

$U_m$ : 250 Vac

Rated voltage: 5 Vdc

Ext. BUS Ethernet TCP/IP circuit in type of protection Ex eb:

$U_m$ : 250 Vac

Rated voltage: 5 Vdc

Sensor circuits (terminals TC 1, TC2 and TL):

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

$U_o = 5.0$  V;  $I_o = 84$  mA;  $P_o = 105$  mW; linear characteristic;  $C_o =$  see table below;  $L_o =$  see table below.

Ex ib IIC	$L_o$ [mH]	5.0	2.0	1.0	0.5	0.2
	$C_o$ [ $\mu$ F]	1.9	2.7	3.4	4.1	5.4
Ex ib IIB Ex ib IIIB Ex ib IIIC	$L_o$ [mH]	20	10	5.0	1.0	0.2
	$C_o$ [ $\mu$ F]	7.9	10	13	20	33

The Ex ib sensor circuits are not infallibly galvanically separated from each other, nor from the 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.