



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

Ex COMPONENT CERTIFICATE

Certificate No.:	IECEx DEK 19.0014U	Page 1 of 4	Certificate history: Issue 1 (2021-01-14) Issue 0 (2020-01-23)
Status:	Current	Issue No: 2	
Date of Issue:	2025-04-17		
Applicant:	Barksdale GmbH Dorn-Assenheimer Str. 27, 61203, Reichelsheim Germany		
Ex Component:	Thermostat "KELVIN", type BHT*-SC-PR1-*-*		
<i>This component is NOT intended to be used alone and requires additional consideration when incorporated into other equipment or systems for use in explosive atmospheres (refer to IEC 60079-0).</i>			
Type of Protection:	eb, mb, [ib], 60079-30-1		
Marking:	BHTC- and BHTL-SC-PR1-*-*: Ex eb mb [ib] [60079-30-1] IIC Gb [Ex ib 60079-30-1 Db] IIIC BHTLC-SC-PR1-*-*: Ex eb mb [ib] [60079-30-1] IIC Gc [Ex ib 60079-30-1 Dc] IIIC		

Approved for issue on behalf of the IECEx
Certification Body:

R. Schuller

Position:

Certification Manager

Signature:
(for printed version)

Date:
(for printed version)

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.



Certificate issued by:

DEKRA Certification B.V.
Meander 1051
6825 MJ Arnhem
Netherlands





IECEx Certificate of Conformity

Certificate No.: **IECEx DEK 19.0014U**

Page 2 of 4

Date of issue: 2025-04-17

Issue No: 2

Manufacturer: **BARKSDALE GmbH**
Dorn-Assenheimer Str. 27, 61203, Reichelsheim
Germany

Manufacturing
locations: **BARKSDALE GmbH**
Dorn-Assenheimer Str. 27, 61203,
Reichelsheim
Germany

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 component 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 60079-11:2011](#) 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 60079-7:2017](#) Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

[IEC/IEEE 60079-30-1:2015](#) Explosive atmospheres - Part 30-1: Electrical resistance trace heating - General and testing requirements
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 component listed has successfully met the examination and test requirements as recorded in:

Test Report:

[NL/DEK/ExTR19.0020/02](#)

Quality Assessment Report:

[DE/TUN/QAR13.0009/07](#)



IECEx Certificate of Conformity

Certificate No.: **IECEx DEK 19.0014U**

Page 3 of 4

Date of issue: 2025-04-17

Issue No: 2

Ex Component(s) covered by this certificate is described below:

The Thermostat, Types BHT*-SC-PR1-*-* is an electronic temperature measuring/monitoring and controlling device, specially designed for electrical trace heating units.

It is intended to be installed in an enclosure with one or more suitable types of protection per IEC 60079-0.

The Thermostat comprises terminals in type of protection Ex eb for its power supply, for a heater relay, optionally for an alarm relay and for communication. Terminals in type of protection Ex ib are provided for a three-wire RTD temperature sensor. The electronics are partially encapsulated providing type of protection Ex mb in combination with type of protection Ex ib.

For setting up key features of the Thermostat one or more of the following features are provided depending on the model code:

- Modbus data communication for setting up as well as for communication
- Bluetooth communication
- Dial and LED interface

Versions without rotary (dial) switches have a fixed temperature set point configured in the factory.

For programming and monitoring purpose, the local user interface comprises a Bluetooth wireless communication port and an LED is provided in the intrinsically safe electronics. This allows local regular configuration of the equipment without the need to open the enclosure of the final application. Care shall be taken that the 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 data communication terminals in type of protection Ex eb.

The Thermostat, Type BHTC-SC-PR1-*-* , complies with the requirements for temperature control devices as specified in IEC/IEEE 60079-30-1 for trace heating located in environments requiring EPL Gb or Db.

The Thermostat, Type BHTL-SC-PR1-*-* , complies with the requirements for temperature limiting devices as specified in IEC/IEEE 60079-30-1 for trace heating located in environments requiring EPL Gb or Db.

The Thermostat, Types BHTLC-SC-PR1-*-* complies with the requirements for a combination of temperature control and limiting device as specified in IEC/IEEE 60079-30-1 for trace heating located in environments requiring EPL Gc or Dc.

For nomenclature, electrical data and thermal data see Annex 1.

SCHEDULE OF LIMITATIONS:

1. The Thermostat shall be mounted in an enclosure in accordance with installation drawing 926-1549 or 926-1550, that provides a degree of protection of at least IP65 in accordance with IEC 60079-0 and IEC 60529. Mounting shall be in such a way that the Thermostat is not susceptible to UV light.
2. The intrinsically safe terminals and (if applicable) field wiring shall be separated from all non-intrinsically safe conductors including earth/frame, per IEC 60079-11.
3. Thermostats Types BHT*-SC-PR1-*-* (with LED interface) have a component surface temperature of maximum 150 °C when considering a local service temperature as well as the application of faults per IEC 60079-11.
4. The user of the limiter function of the Thermostat, Types BHTL-SC-PR1-*-* and BHTLC-SC-PR1-*-* shall demonstrate his ability to predict the offset (ΔT_{offset}) between the trace heating sheath temperature and the temperature control device's set point in accordance with clause 4.5.3.1 of IEC/IEEE 60079-30-1 : 2017.



IECEx Certificate of Conformity

Certificate No.: **IECEx DEK 19.0014U**

Page 4 of 4

Date of issue: 2025-04-17

Issue No: 2

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

1. Add relay lifetime cycle options for Thermostat, Type BHTC-SC-PR1-*-* and BHTL-SC-PR1-*-*.
2. Minor documentation updates.

Annex:

[383890000-ExTR19.0020.02-Annex 1.pdf](#)

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

Type designation

BHT LC - SC - PR1 * - *
I II III IV V VI

Designation	Explanation	Value	Explanation	Marking
I	Model	BHT	Barksdale Hazardous Temperature	
II	Function	C	Controller	IECEX: Ex eb mb [ib] [60079-30-1] IIC Gb [Ex ib 60079-30-1 Db] IIIC ATEX (DEKRA 19ATEX0028U): II 2 G Ex eb mb [ib] [60079-30-1] IIC Gb II (2) D [Ex ib 60079-30-1 Db] IIIC
		L	Limiter	IECEX: Ex eb mb [ib] [60079-30-1] IIC Gb [Ex ib 60079-30-1 Db] IIIC ATEX (DEKRA 19ATEX0028U): II 2 G Ex eb mb [ib] [60079-30-1] IIC Gb II (2) D [Ex ib 60079-30-1 Db] IIIC
		LC	Controller and Limiter	IECEX: Ex eb mb [ib] [60079-30-1] IIC Gc [Ex ib 60079-30-1 Dc] IIIC ATEX (DEKRA 25ATEX0021U): II 3 G Ex eb mb [ib] [60079-30-1] IIC Gc II (3) D [Ex ib 60079-30-1 Dc] IIIC
III	No. of circuits	SC	Single Circuit	
IV	Power Relay	PR1	See below for allowed connections	
V	Alarm Relay	NA	No alarm relay present, not for BHTL or BHTLC	
		AR1	2 A alarm relay	
VI	Communication	N	No LED no dialswitch	
		L	LED interface only	
		D	Dial setpoint	
		LD	LED interface and Dial setpoint	
		S	Modbus	
		LS	LED interface and Modbus	
		B	Bluetooth	
		LB	LED interface and Bluetooth	
		SB	Modbus and Bluetooth	
		LSB	LED interface, Modbus and Bluetooth	

Thermal and electrical data

The relation between the ambient temperature range, maximum load current and maximum surface temperature is shown in the following table, based on installation in a non-metallic enclosure as specified installation drawings 926-1549 and 926-1550.

Ambient Temperature [°C]	$T_{\text{surface}} \leq 80 \text{ °C}$	$T_{\text{surface}} \leq 95 \text{ °C}$
	$I_{\text{max load}}$ [A]	$I_{\text{max load}}$ [A]
-40 to +10	21.7	24.2 (22.0)*
-40 to +15	20.8	23.3 (22.0)*
-40 to +20	19.1	22.5 (22.0)*
-40 to +25	16.9	21.7
-40 to +30	14.3	20.8
-40 to +35	11.2	19.8
-40 to +40	6.9	18.8
-40 to +45		17.8
-40 to +50		16.4
-40 to +55		13.8
-40 to +60		10.5
-40 to +65		5.6
NOTE: * 22 A limitation of $I_{\text{max load}}$ applies to Thermostat, Type BHTLC-SC-PR1-*-* only		

Alternatively, the equivalent relation is given below using the service temperature, being the temperature inside any enclosure measured in the air above the compound surface.

Service Temperature [°C]	$T_{\text{surface}} \leq 80 \text{ °C}$	$T_{\text{surface}} \leq 95 \text{ °C}$
	$I_{\text{max load}}$ [A]	$I_{\text{max load}}$ [A]
-40 to +15	30.0 (22.0)*	30.0 (22.0)*
-40 to +20	29.1 (22.0)*	30.0 (22.0)*
-40 to +25	27.8 (22.0)*	30.0 (22.0)*
-40 to +30	26.4 (22.0)*	30.0 (22.0)*
-40 to +35	24.9 (22.0)*	29.1 (22.0)*
-40 to +40	23.4 (22.0)*	27.8 (22.0)*
-40 to +45	16.3	26.4 (22.0)*
-40 to +50		24.9 (22.0)*
-40 to +55		23.4 (22.0)*
-40 to +60		21.7
-40 to +65		19.9
-40 to +70		12.5
NOTE: * 22 A limitation of $I_{\text{max load}}$ applies to Thermostat, Type BHTLC-SC-PR1-*-* only		

When used within the above specifications, components with a surface area smaller than 1000 mm² outside the casting compound becomes at most;

143 °C for variants where type designation 'b' contains 'L' (LED interface)

T_{surface} °C for all other variants (no LED interface)

The relation between the maximum relay lifetime cycles, the maximum voltage and the maximum load current for Thermostat, Type BHTC-SC-PR1-*-* and Type BHTL-SC-PR1-*-* is shown in the table below.

Max. relay lifetime cycles	Max. voltage [Vac]	Max. Switching / Load current [A]
250 000	250	15
200 000		20
150 000		25
100 000	277	30

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

Rated voltage U_{supply} : 85 to 277* / 250 Vac (BHTC-SC-PR1-*. and BHTL-SC-PR1-*.*)
85 to 250 Vac (Thermostat, Type BHTLC-SC-PR1-*. only)
 U_m : 305 Vac
Rated power without load: 4.5 W
* Only valid for relay lifetime of max. 100 000 cycles, see table above.

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

Trace heating circuit or resistive heater, connected with power cable
Rated load voltage U_{load} (L1 - N): 85 to 277* / 250 Vac (BHTC-SC-PR1-*. and BHTL-SC-PR1-*.*)
85 to 250 Vac (Thermostat, Type BHTLC-SC-PR1-*. only)
 U_m : 305 Vac (phase-neutral-PE)
For use with trace heating (resistive load):
Maximum breaker size: shall be dimensioned to ensure not to exceed limits in tables under Thermal and electrical data, but not greater than 32A.
* Only valid for relay lifetime of max. 100 000 cycles, see table above.

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

Rated voltage: 277* / 250 Vac or 36 Vdc
 U_m : 305 Vac
Rated switch current, resistive load: 2 A
* Only valid for relay lifetime of max. 100 000 cycles, see table above.

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

U_m : 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:
 $U_o = 6.6 \text{ V}$; $I_o = 827 \text{ mA}$; $P_o = 1.28 \text{ W}$; linear characteristic; $C_o =$ see table below; $L_o =$ see table below.

Ex ib IIC	L_o	32 μH
	C_o	6.7 μF
Ex ib IIB Ex ib IIIB Ex ib IIIC	L_o	128 μH
	C_o	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.