



Operating manual



EAC

EA3C-RU-C-DE.BH02.B.00684-21



Digital safety temperature limiter DTL III Ex

Type 17-8865-4.22/2200 3000

Reservation

Technical data subject to change without notice.
Changes, errors and misprints may not be used as a basis for any claims for damages.

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1. Use in accordance with the intended purpose

The DTL III Ex digital temperature limiter serves to monitor the temperature in explosion-proof or media-safe heating installations and heating circuits. The DTL III Ex must always be installed outside the hazardous (potentially explosive) area. When using it, a distinction must be made between:

a) monitoring of explosion-proof heating circuits:

The DTL III Ex is used together with the separately certified Pt100 Ex (Type 27-71...-3..) resistance thermometer.

The "controlled design" methods mentioned in EN 60079-30-1 must be observed.

b) monitoring of non-explosion-proof heating circuits:

The DTL III Ex is used together with a Pt100 M (Item No. 03-9040/00..) media-protected resistance thermometer.

2. Product Description

2.1. General Points

The 16 A load current circuit of the DTL III Ex is opened and interlocked as soon as the temperature of the resistance thermometer exceeds the heating system's permissible limit temperature (permissible upper limit temperature). Once the temperature drops by at least 5 K under the limit value, the load current circuit can be closed again by means of the "reset" button or the remote reset.

In addition, the device has a further temperature alarm function, which is configured as a pre-alarm. This pre-alarm function is neither interlocked nor saved.

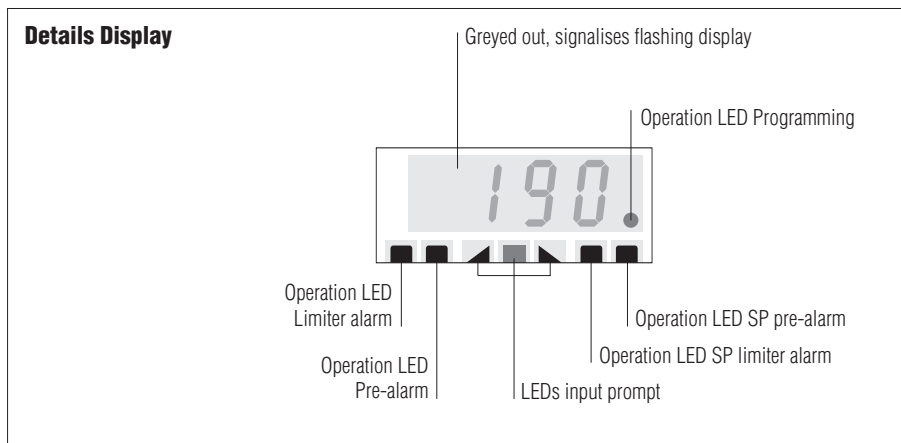
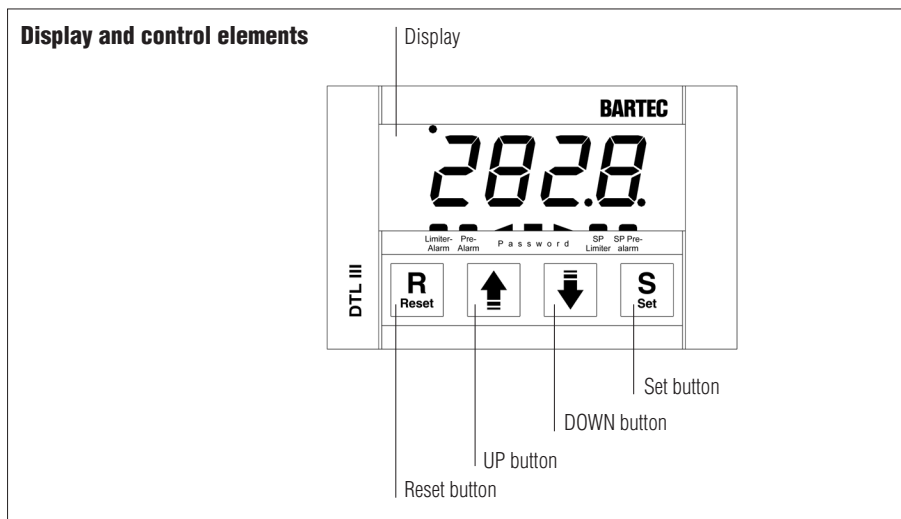
The DTL III Ex device family has a service contact, with which e.g. during the cleaning of pipes with hot steam, the associated heating cable is switched off through the load output, and temperature alarms are blocked.

Signals of the alarms that are not blocked are shown in the display and given by a group alarm contact.

The devices also have a measuring current circuit supervision of sensor failure, short circuit, interruption and undershooting or overshooting of the measuring range.

The DTL III Ex is microprocessor-controlled and stores the set data/alarm signals from interlocked alarms in the event of a power failure. Once supply voltage is applied, a self-test is run through and the factory-set limit appears in the display.

The DTL III Ex family is available for the AC/DC 24 V and AC 100 to 240 V voltage ranges.



2.2. Display and Control Elements

- 1.) "S (Set)" button:
Access to the programming mode and input confirmation.
- 2.) "DOWN" button ↓:
Pressing this button decreases the level being set.
Holding this button down returns the user to the previous programming level until the programming mode is exited.
- 3.) "UP" button ↑:
Pressing this button increases the level being set.
Rapid interrogation of the setpoint of the limiter alarm, pre-alarm and the actual level of the sensor.
Holding this button down moves the user on to the next programming level until the programming mode is exited.
- 4.) "R (Reset)" button: reset of saved alarm
- 5.) "Limiter alarm" LED: is the signal for a limiter alarm
- 6.) "Pre-alarm" LED: is the signal for a pre-alarm
- 7.) LED's input prompt: all three LEDs prompt the input of the password.
Two LEDs (ramp) prompt the input of a value alteration
- 8.) "SP limiter alarm" LED: signals the display of the setpoint limiter alarm
- 9.) "SP Pre-alarm" LED: signals the display of the setpoint pre-alarm.
- 10.) LED programming: signals access to the programming mode.
- 11.) 4-digit, blue display: indicates the setpoint limiter alarm.

3. Safety instructions

- Before commissioning, please check the marking on the DTL III Ex for suitability for the intended use.
- For electrical systems, the relevant installation and operating regulations as well as other relevant national regulations must be observed.
- The operator of an electrical system in a hazardous environment must keep the equipment in good condition, operate and monitor it properly and do maintenance and repairs.
- All generally valid statutory rules and the other binding directives on safety at work, accident prevention and the protection of the environment must be adhered to.
- When using the DTL III Ex to monitor the temperatures of the heating and heating circuits in hazardous areas, the following points must be observed:
 - The factory setting of the limiter alarm setpoint is 190 °C (in Temperature Class T3). If the application requires another limit value, this must be set.
 - The limiter alarm setpoint setting must be protected by a password that is accessible only to authorised people. The factory setting of the PAS.2 password ("OFF") must be altered.
 - The resetting of limiter alarms can be protected by a password, whereby the factory setting of the PAS.1 password ("OFF") must be changed.
 - The remote reset use (e.g. by using a key switch) may only be made possible to authorised people.
 - During commissioning a test of correct functioning must be conducted in accordance with EN 60079-30-2.
 - The functionality of the DTL III Ex must be checked in accordance with the specified test intervals of the Industrial Safety Regulation.

4. Assembly, installation and commissioning

4.1. Assembly

The details on the type label and in the EC Type Examination Certificate must be observed. The controller is fitted into a DIN enclosure with 4 HP (horizontal pitch). The device can be latched onto a mounting rail in any mounting position in a row.

In principle, it must be ensured that the device is properly ventilated to ensure that the specified operating temperature limits are not exceeded. Avoid use in areas with additional heat sources so that the permissible ambient temperature of the limiter is not exceeded.

The device must be installed as far away as possible from sources that could cause strong electromagnetic interference (e.g. from motors).

When connecting stranded or fine-stranded conductors, the conductor ends must be adequately prepared.

Assembly instructions for assigning the connection terminals

Conductor	Min. cross-section	Max. cross-section	Minimum length wire end ferrule
rigid	0.2 mm ²	2.5 mm ²	
with wire end ferrule	0.25 mm ²	2.5 mm ²	10 mm
2 conductors rigid	0.2 mm ²	0.75 mm ²	
2 conductors with non-insulated wire end ferrule	0.2 mm ²	0.75 mm ²	10 mm
2 conductors with TWIN wire end ferrule	0.5 mm ²	1.5 mm ²	10 mm

4.2. Installation

- The device must be connected in accordance with the wiring diagram with due consideration to the current/voltage specifications. It is essential to observe the specifications on the type label.
- If the resistance thermometer that is connected to the device is brought into Dust Ex areas, it must be ensured that it has the appropriate approval.
- In principle, the resistance thermometer must be mechanically and temperature-stably attached to the point to be measured in order to ensure reliable thermal coupling. This should be carried out by using temperature-resistant aluminium adhesive tape or similar materials.
- All output circuits connected to the device must be protected by suitable over current protection devices (e.g. CB).

4.3. Commissioning

The device may only be operated in a clean and undamaged condition. In case of visible damage, the device must be deactivated and appropriate repair actions initiated.

Commissioning must be carried out in the following steps:

- Connect the device to electric power
- Set the limiter alarm setpoint and the pre-alarm setpoint that suits the application.
- Set the access password for the system parameters (incl. the setpoint for the limiter alarm).
- If required, set the password for resetting the limiter alarms
- Note: When controlling Ex heating circuits, the access password for the setpoint limit alarm and the password for resetting limiter alarms must be set, since the setting of the DTL III Ex in accordance with EN 60079-7 or EN 60079-30-1 must be "secured" and "sealed" for interaction with explosion-protected heating circuits.

With the DTL III Ex, this is achieved by using separate passwords for

- Resetting limiter alarms
- Setting the set point Limiter alarm

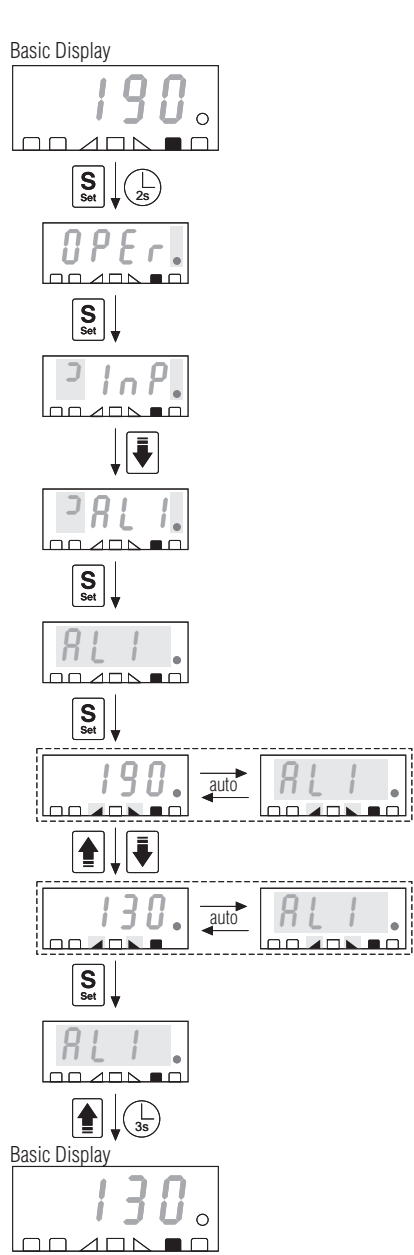
5. Basic setting for the system parameters

5.1. General points

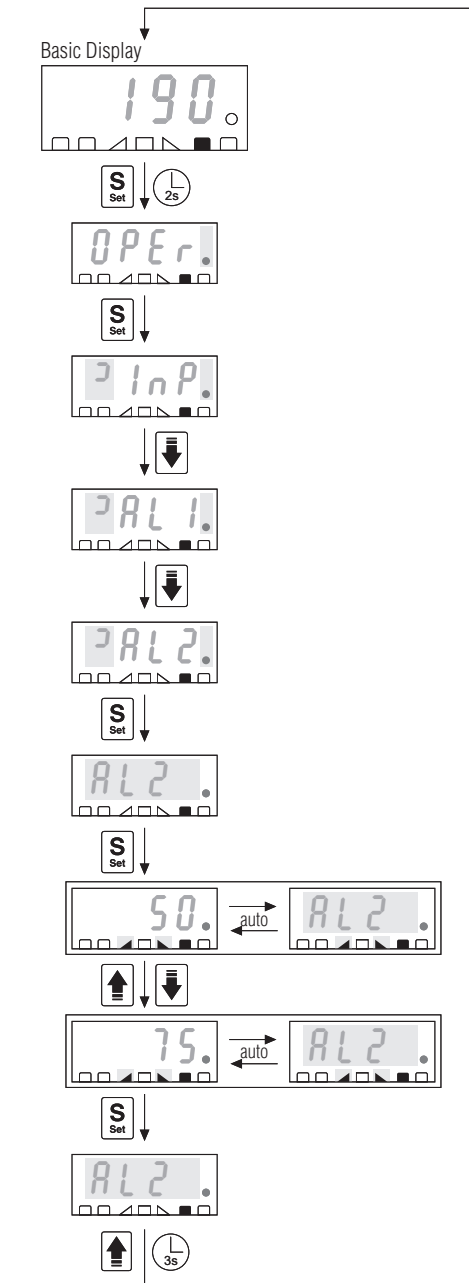
If there is no key actuation for approx. 15 seconds in programming mode, the parameter level is quit automatically and the basic display appears.

Warning: The set parameters must be in accordance with any relevant standards. Incorrectly set parameters can lead to over or under temperature control.

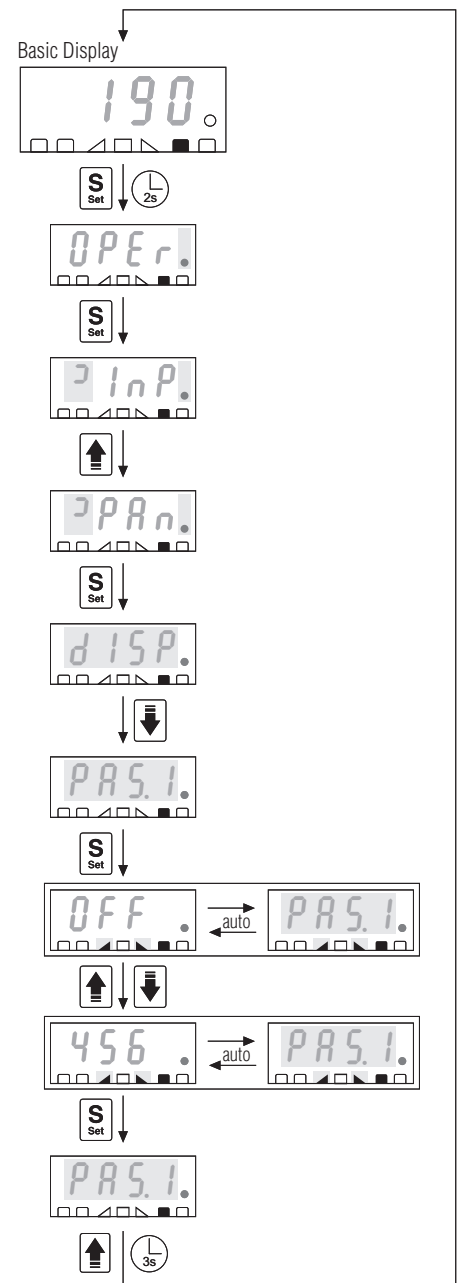
5.2. Setting the limit value (AL1)



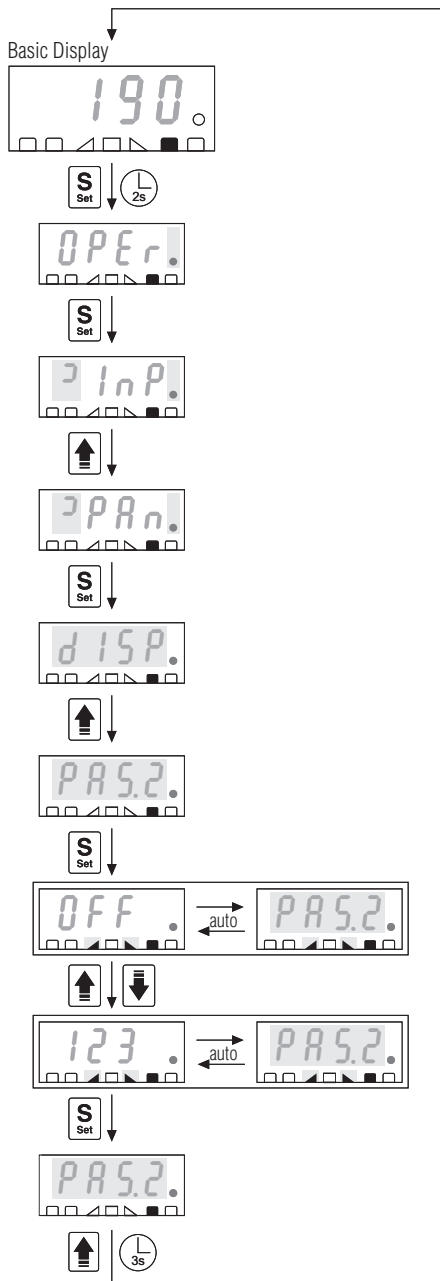
5.3. Setting the pre-alarm (AL2)



5.4. Setting the password for RESET (PAS. 1)

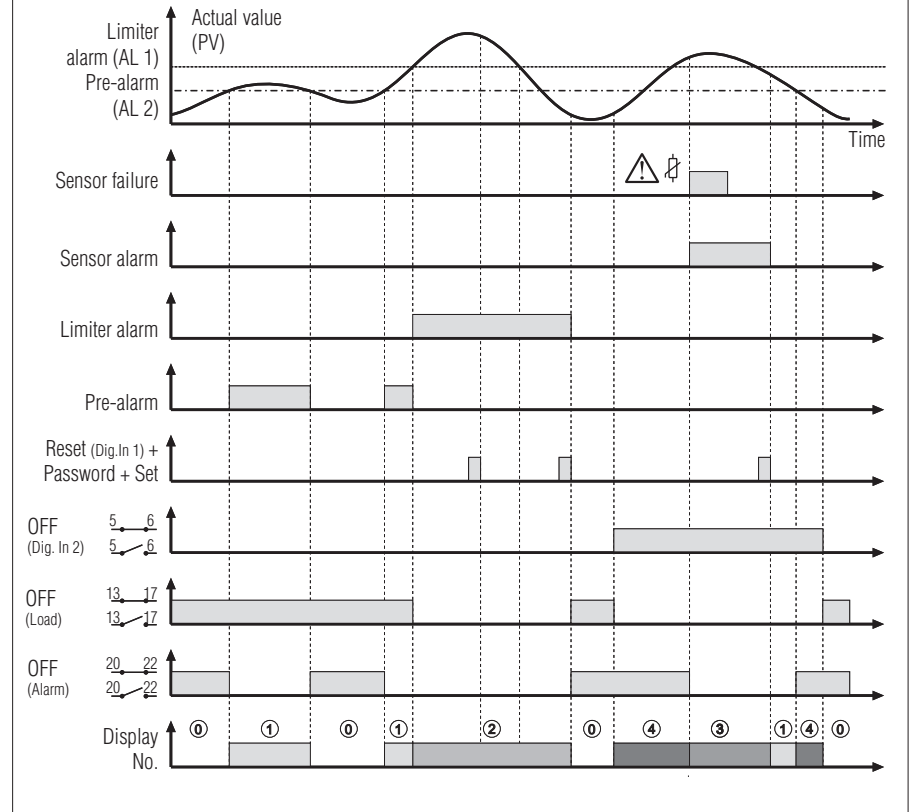


5.5. Setting the password for system parameters (incl. limit value) (PAS. 2)



6. Mode of operation of the device

6.1. Temperature limitation, pre-alarm, service entry



Displays

- ① Basic display
- ① Example: AL 2 = 100
- ② Example: sensor interruption at terminal 10 or 12
- ③ Example: AL 1 = 190
- ④ Example: Service entry activated, actual value 25 °C

6.2. Remote reset

External reset of the limiter. Acknowledgment is only possible if the temperature is at least 5K below the limit value.

Remote resetting (e.g. by using a key switch) must only be possible for authorised persons.

The electrical connection of the external reset device must be made in accordance with the wiring diagram.

6.3. Service contact

The DTL III Ex contact family has a service contact (DIG.IN 2), which is used to deactivate the load output and to block the temperature alarms, e.g. when the pipes are being cleaned with hot steam. For details on the mode of action - see Chapter 6.1.

7. Operation, maintenance

The operator of an electrical system for a potentially explosive environment must keep the equipment in proper condition, operate it as intended, monitor it and carry out maintenance and repair work.

Each electrical device must be selected depending on in accordance with its qualification for use in a potentially explosive atmosphere. Before restarting, the applicable laws and guidelines must be observed. Before maintenance and/or troubleshooting, the following safety instructions must be observed.

This instrument does not requires periodical recalibration and it have no consumable parts so that no particular maintenance is required.

Some times, a cleaning action is suggestable. **SWITCH THE EQUIPMENT OFF** (power supply, relay out, ...). Repairs may only be carried out by the manufacturer.

8. Measuring current circuit - monitoring

Temperature sensors are connected to the device and monitored for the following faults:

- _short circuit in the sensor
- _interruption in the sensor
- _interruption in the sensor's compensating cable
- _upper and lower deviation from the measuring range by the sensor

If one of these faults occurs, the load current circuit is opened and interlocked.
(See Chapter 6.1)

9. Explosion protection

Ex protection type

⊕ II (2) GD [Ex Gb] IIC/IIIC

Certification

EC Type Examination Certificate
TÜV 08 ATEX 554871

Ambient temperature range

0 °C to +50 °C

9.2. TC RU

Ex protection type

Ex e II U

Certification

EA3C-RU-C-DE.BH02.B.00684-21

10. Technical data

Basic function

Limitation function

Limiter hysteresis

min. 5 K (settable)

Fault indicating hysteresis

1 K (settable)

Display

1-line, blue display
(h = 12 mm, 4 digit);
red and green status LEDs

Measuring and display accuracy

0.5 %

Operation temperature range

0 °C to +50 °C

Storage temperature

-10 °C to +60 °C

Relative humidity

20 to 85 %

Enclosure

Plastic

Connection terminals

Terminal screws; max. 2.5 mm²
(see also Assembly Chapter)

Dimensions (width x height x depth)

70 mm x 84 mm x 60 mm

Installation dimensions

DIN rail 4HP (45 x 70 mm)

Mounting position

any position, on a TS35 bearing rail
(TH35 in accordance with DIN EN 60715)

Protection type

IP 40 (Front plate)
IP 20 (Terminals)

Weight

230 g

11. Electrical data

Power supply

Type 17-8865-4722/220030..
AC 100 to 240 V +/-10 %

Type 17-8865-4C22/220030..
AC/DC 24 V +/-10 %

Frequency

50/60 Hz

Digital inputs

- Remote reset (RESET)
 - Service contact (OFF)
- Floating contacts, key switches required
Contact loadability at least 5 V, 5 mA)

Load output (Output 1)

Relay (normally open contact) AC 250 V,
16 A, cos φ = 1

Alarm output (Output 2)

Relay (changeover contact) AC 250 V,
8 A, cos φ = 1

Power consumption

max. 4 VA

Measuring current circuit

$U_{\max} = 5 \text{ V}$, $I_{\max} = 0.15 \text{ mA}$

12. Standards

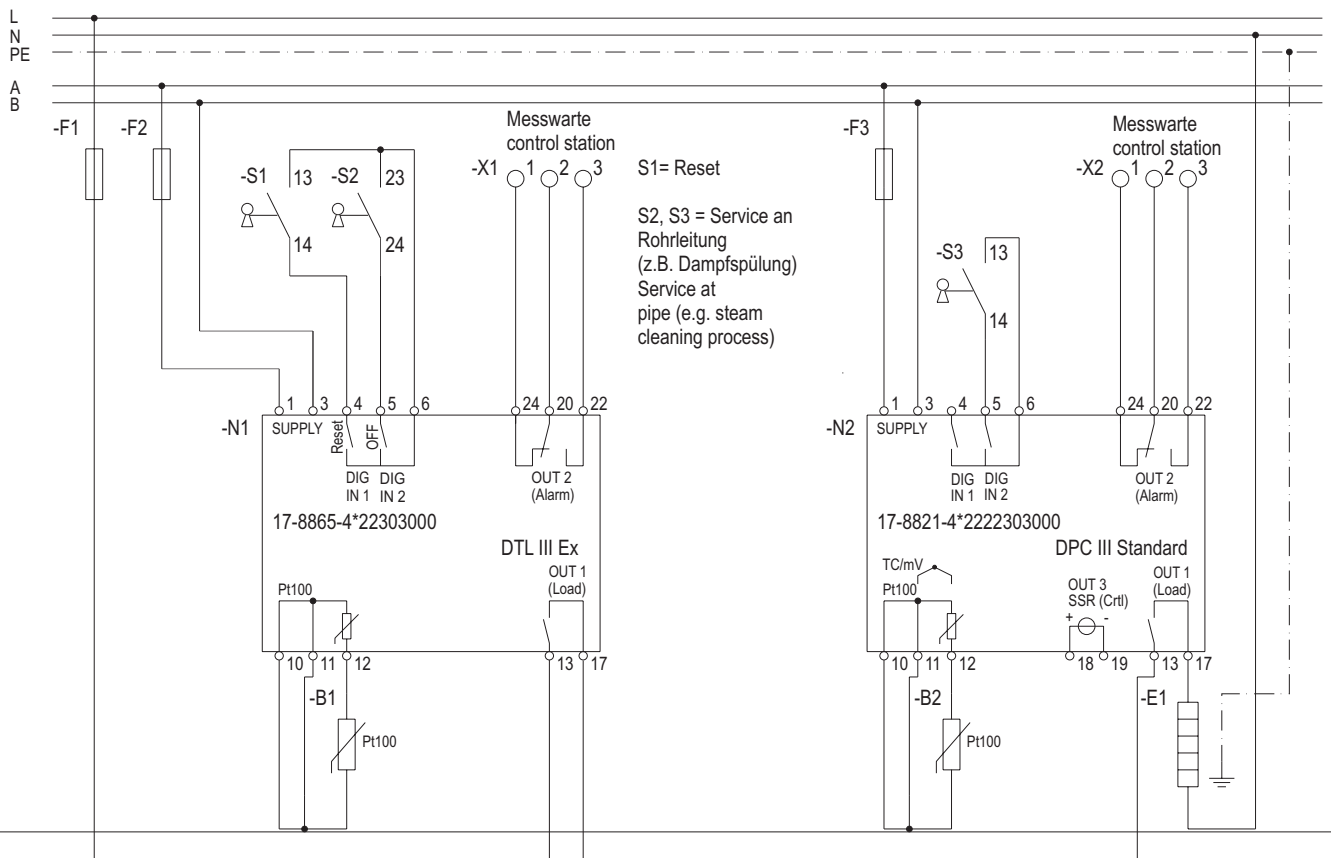
EN 60079-0:2012/A11:2013
EN 60079-7:2015
EN 60079-30-1:2017
EN 60730-1:2011
EN 61326-1:2013
EN 50581:2012
EN 60730-2-9:2010

13. Electrical connection/device connections

Terminals 1, 3	Mains connection
Terminals 4, 6	RESET digital input (remote reset)
Terminals 5, 6	OFF digital input (service entry)
Terminals 10, 11 12	Sensor connection for Pt100 Resistance thermometer (in TWO- or THREE-wire versions): <ul style="list-style-type: none"> ■ To monitor explosion-proof heating circuits with the BARTEC Pt100 Ex (Type 27-71...-3... ..) resistance thermometer ■ To monitor non-explosion-proof heating circuits with the BARTEC Pt100 M resistance thermometer (art. no. 03-9040/00..). Note: if the Pt100 two-wire version is used, terminals 2 and 3 must be jumped. (The sensor will fail otherwise) no cable length compensation for two-wire applications
Terminals 13, 17	Floating contacts normally open contact Out1 (load output)
Terminals 20, 22, 24	Floating contacts changeover contact Out2 (group fault alarm)

The wiring diagram shows the connection of the DTL III Ex in conjunction with the DPC III temperature controller to monitor a heating circuit

Power supply A-B see type label



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14. List of parameters

Display Parameter name	Display Parameter group	Description	Values-/ setting range	Factory setting	Setting
AL1	AL1	Limit temperature (Load output)	-1999 up to +9999 °C	190 °C	
AL2	AL2	Setpoint Pre-alarm (alarm output)	-1999 up to +9999 °C	50 °C	
PA\1	PAn	Password for reset	OFF/1 up to 9999	OFF	
PA\2	PAn	Password for system parameters	OFF/1 up to 9999	OFF	

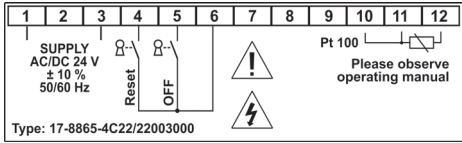
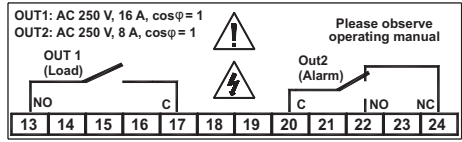

15. Fault alarms/fault clearance

Fault indication in the display	Description	Procedure for fault clearance
	LIAl = Limiter ALarm Limiter temperature AL1 exceeded (load relay OUT 1 opens and interlocks, group alarm relay OUT 2 activated).	Check heating circuit, eliminate the cause of the malfunctioning, reset fault signal. Once the sensor temperature drops by at least 5 K under the limit value, unlocking can be initiated by the "reset" button.
	PAL = Pre-ALarm Pre-alarm AL2 exceeded (Load relay OUT 1 remains closed, group alarm relay OUT 2 activated).	Check the heating circuit and remove the cause of the malfunctioning. The fault signal is automatically reset after the elimination of the cause.
	SEAl = SEnsor ALarm Sensor interruption (at terminal 10 or 12)	Check and if necessary replace the sensor. Reset the fault signal by pressing the "reset" button.
	SEAl = SEnsor ALarm Sensor Interruption (at terminal 11) or measurement reading below sensor limit	Check and if necessary replace the sensor. Check the measurement reading. Reset the fault signal by pressing the "reset" button.
	SEAl = SEnsor ALarm Measurement reading above sensor limit	Check and if necessary replace the sensor. Check the measurement reading. Reset the fault signal by pressing the "reset" button.

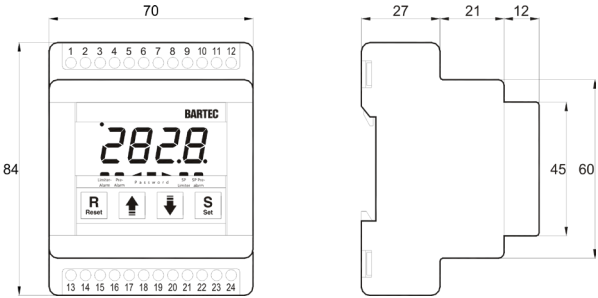
16. Type explanation/device labelling

Type 17-8865-4722/22003000	Description DTL III Ex; AC 100 to 240 V
<p>Terminal plate top</p> <p>Terminal plate bottom</p>	<p>Type label (example)</p>

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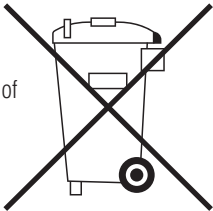
<p>Typ 17-8865-4C22/22003000</p> <p>Terminal plate top</p>  <p>Terminal plate bottom</p> 	<p>Description DTL III Ex 24; AC/DC 24 V</p> <p>Type label (example)</p> 
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17. Dimensions



18. Disposal

The appliance (or the product) must be disposed of separately in compliance with the local standards in force on waste disposal.



19. Service address

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 Max-Eyth-Straße 16
 97980 Bad Mergentheim
 Germany
 Tel.: +49 7931 597-0
 Fax: +49 7931 597-119
 info@bartec.com
 bartec.com

11-8865-7D0001_B-04/2024-288307

EU Konformitätserklärung
EU Declaration of Conformity
Déclaration UE de conformité

BARTEC

BARTEC GmbH
Max-Eyth-Straße 16
97980 Bad Mergentheim
Germany

Nº 11-8865-7C0001_A

Wir	We	Nous
BARTEC GmbH,		
erklären in alleiniger Verantwortung, dass das Produkt	declare under our sole responsibility that the product	attestons sous notre seule responsabilité que le produit
DTL III Ex Sicherheitstemperatur- begrenzer	DTL III Ex Safety Temperature limiter	DTL III Ex Limiteur de température de sécurité
Typ 17-8865-4*22/2200 30**		
auf das sich diese Erklärung bezieht den Anforderungen der folgenden Richtlinien (RL) entspricht	to which this declaration relates is in accordance with the provision of the following directives (D)	se référant à cette attestation correspond aux dispositions des directives (D) suivantes
ATEX-Richtlinie 2014/34/EU	ATEX-Directive 2014/34/EU	Directive ATEX 2014/34/UE
EMV-Richtlinie 2014/30/EU	EMC-Directive 2014/30/EU	Directive CEM 2014/30/UE
RoHS-Richtlinie 2011/65/EU	RoHS-Directive 2011/65/EU	Directive RoHS 2011/65/UE
und mit folgenden Normen oder normativen Dokumenten übereinstimmt	and is in conformity with the following standards or other normative documents	et est conforme aux normes ou documents normatifs ci-dessous
EN 60079-0:2012/A11 :2013	EN 61326-1:2013	
EN 60079-7:2015	EN 50581 :2012	
EN 60079-30-1:2017	EN 60730-2-9 :2010	
EN 60730-1:2011		
Verfahren der EU-Baumusterprüfung / Benannte Stelle	Procedure of EU-Type Examination / Notified Body	Procédure d'examen UE de type / Organisme Notifié
TÜV 08 ATEX 554871		
0044, TÜV NORD CERT, Am TÜV 1, 30519 Hannover, D		
CE 0044		
Bad Mergentheim, den 13.03.2019		
 i.V. Tobias Dold		
Leiter Produktmanagement Wärmetechnik	i.V. Cristian Olarsanu Team Leader Certification Center	