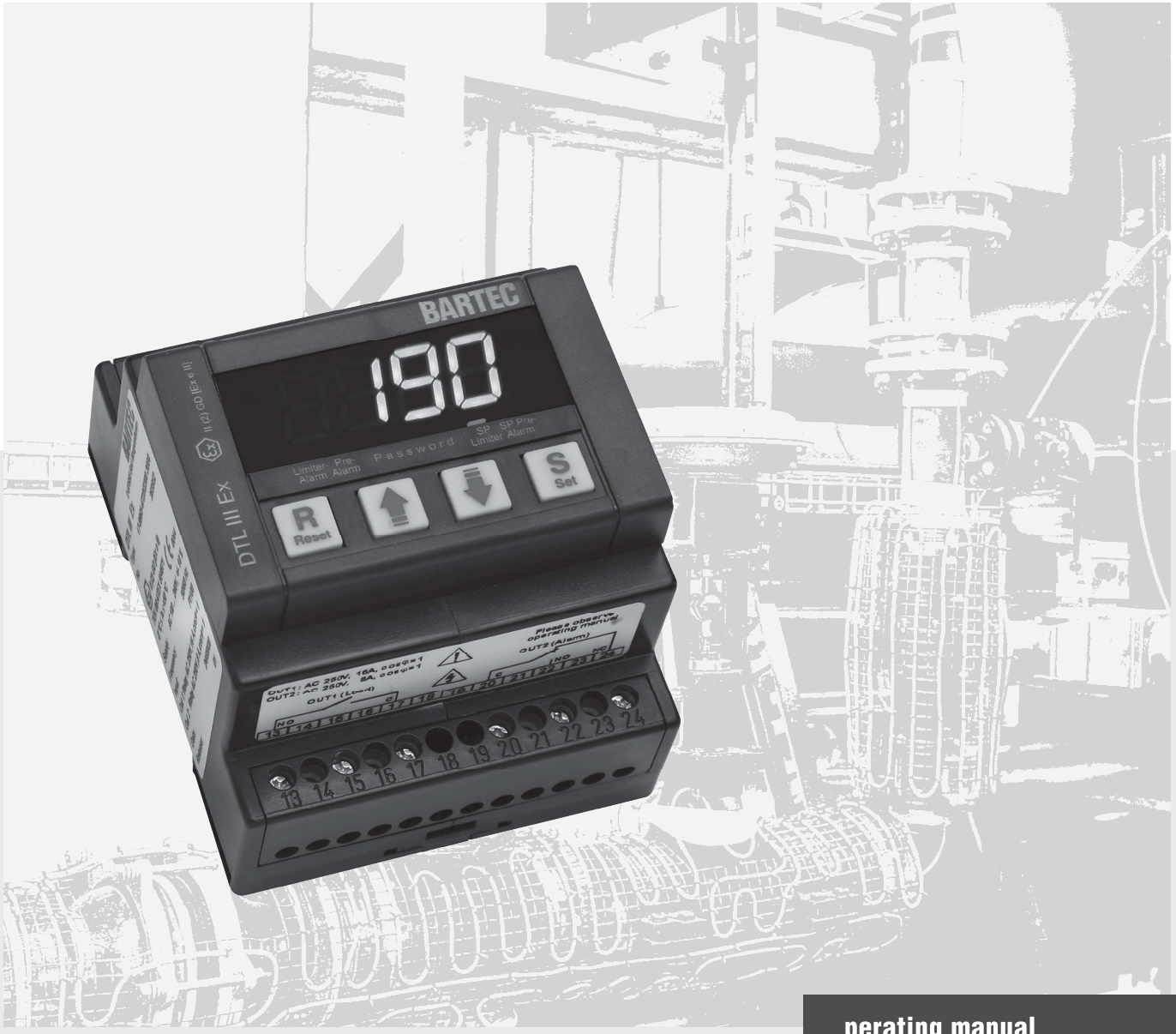
BARTEC



perating manual

Digital safety temperature limiter DTL III Ex

Type 17-8865-4.22/2200 30….

Reservation

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

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ontent

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 recommendation VE 25 from VIK (Association of the Industrial Energy and Power Industry) (see Chapter 8.2.4), which provides information on the "artificial hot spot" version, must be read and heeded.

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- safe 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 entry, with which e.g. during the cleaning of pipes with hot steam, the associated heating cable is turned off through the load output, and temperature alarms are blocked.

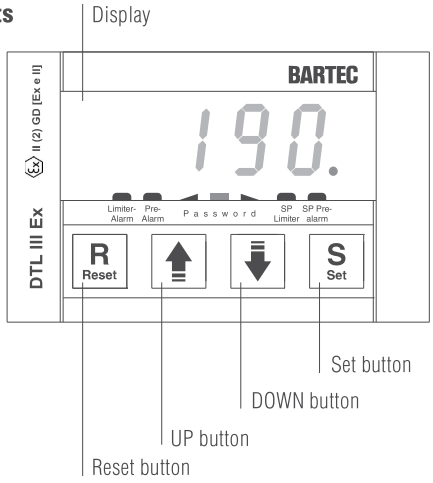
Signals of the alarms that are not blocked are shown in the display and given by a group alarm contact.

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

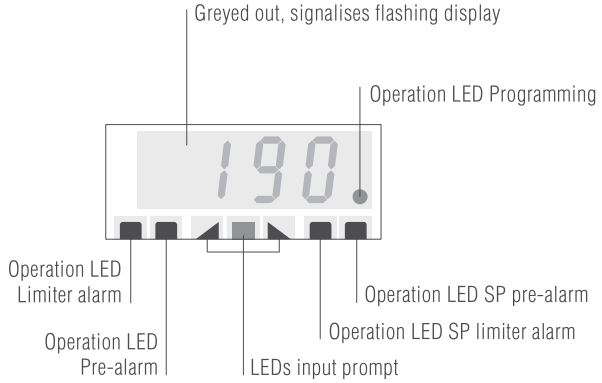
The DTL III Ex is microprocessor-controlled and stores the set data/alarm signals from interlocked alarms in the event of a power failure. Once supply voltage is applied, a self-test is run through and the factory-set limit appears in the display.

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

Display and control elements



Details Display



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 erection and operating specifications (e.g. the 1999/92/EC and 94/9 EC directives, the EN 60079-0, EN 60079-14, EN 60079-30-2, EN 61241-0 and EN 61241-14 standards and the DIN VDE 0100 series or 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-operated pushbutton) 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 proper functioning of the DTL III Ex must be checked in accordance with the testing intervals specified in the Ordinance on Industrial Health and Safety (BetrSichV).

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.

As a basic rule it must be ensured that the device is adequately ventilated so that the specified ambient temperature limits will be adhered to. Use in areas with additional sources of heat must be avoided to prevent exceeding the limiter's permissible ambient temperature.

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

When connecting multi-wire or fine-stranded conductors, please prepare the conductor ends accordingly first.

Assembly instructions for assigning the connection terminals

Conductor	Min. cross-section	Max. cross-section	Minimum length wire end ferrule
rigid	0.2 mm²	2.5 mm²	
with wire end ferrule	0.25 mm²	2.5 mm²	10 mm
2 conductors rigid	0.2 mm²	0.75 mm²	
2 conductors with non-insulated wire end ferrule	0.2 mm²	0.75 mm²	10 mm
2 conductors with TWIN wire end ferrule	0.5 mm²	1.5 mm²	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.
- As a basic rule, the resistance thermometer must be affixed with mechanical and temperature stability to the point to be measured to assure a reliable thermal coupling. This should be done with the aid of suitable temperature-resistant aluminium self-adhesive tape or similar materials.
- All output current circuits connected to the device must be protected by means of devices (e.g. fuses) appropriate for the existing current levels.

4.3. Commissioning

The device may only be operated if it is clean and has no form of damage. If any signs of damage are visible, the device must be put out of operation and the appropriate repairs must be done.

Commissioning is done 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 monitoring Ex heating circuits, set the access password for the setpoint for the limit alarm and the password for resetting the limiter alarms because the DTL III Ex setting must be "secured" and „sealed" in the sense of the EN 60079-7 for the interaction with explosion-protected heating circuits.

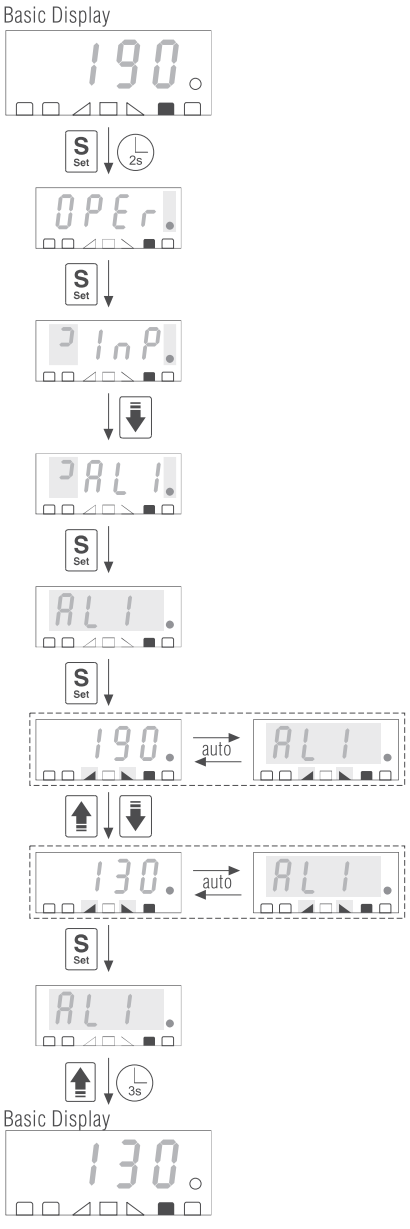
  This is done in the DTL III Ex by using separate passwords for:
  - resetting limiter alarms
  - setting the setpoint for the limiter alarm

5. Basic setting for the system parameters

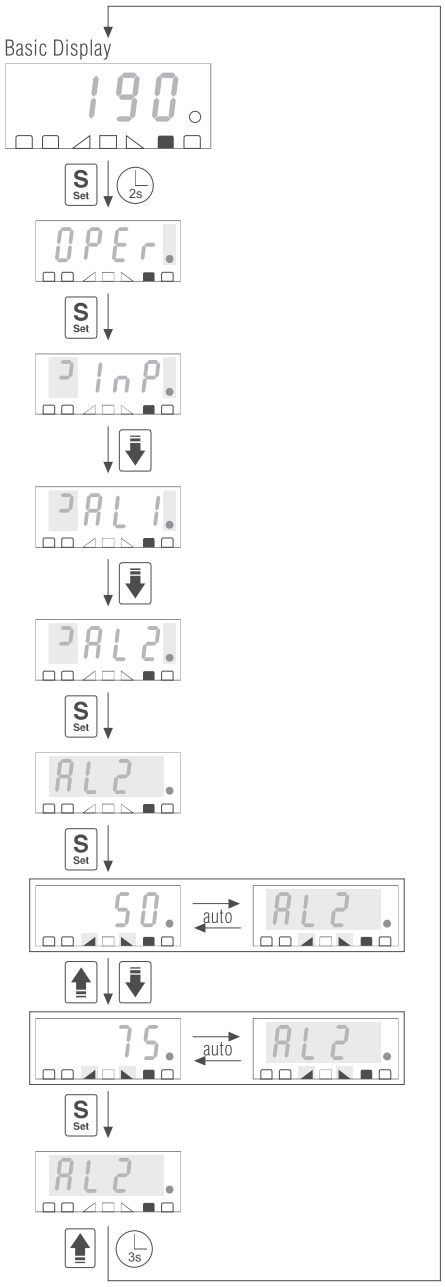
5.1. General points

If there is no keyed-in confirmation in the parameterisation level for approx. 15 seconds, the parameterisation level is automatically exited, and the basic display appears.

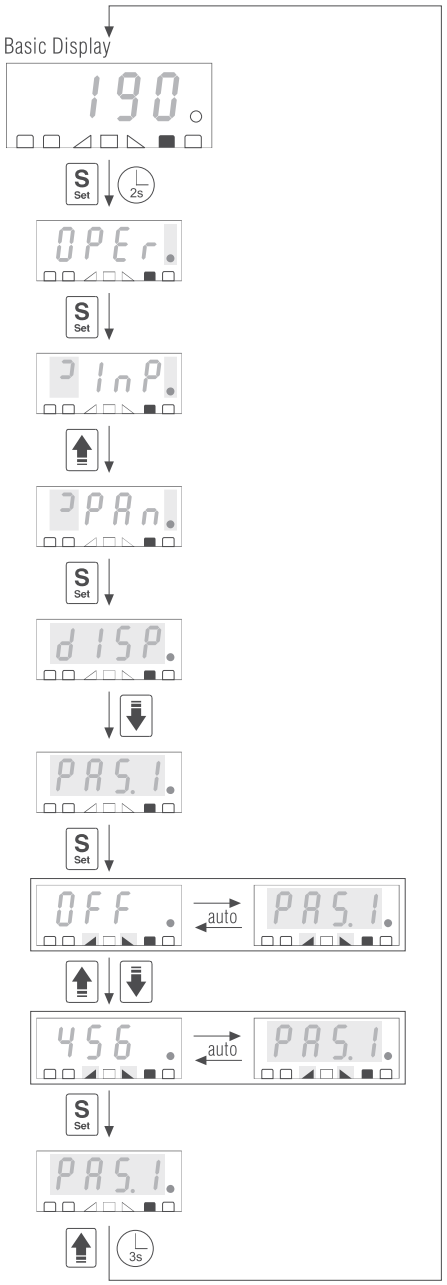
5.2. Setting the limit value (AL1)



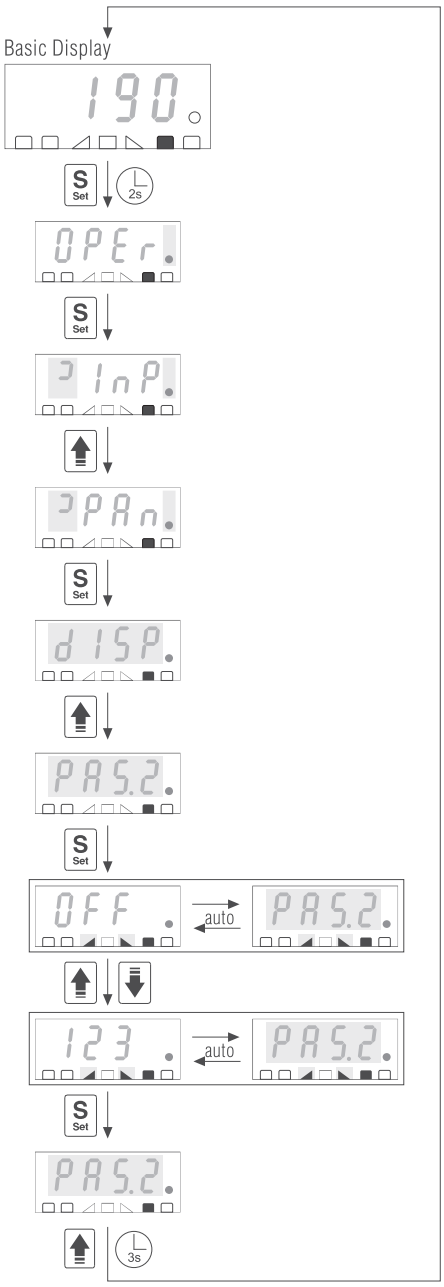
5.3. Setting the pre-alarm (AL2)



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

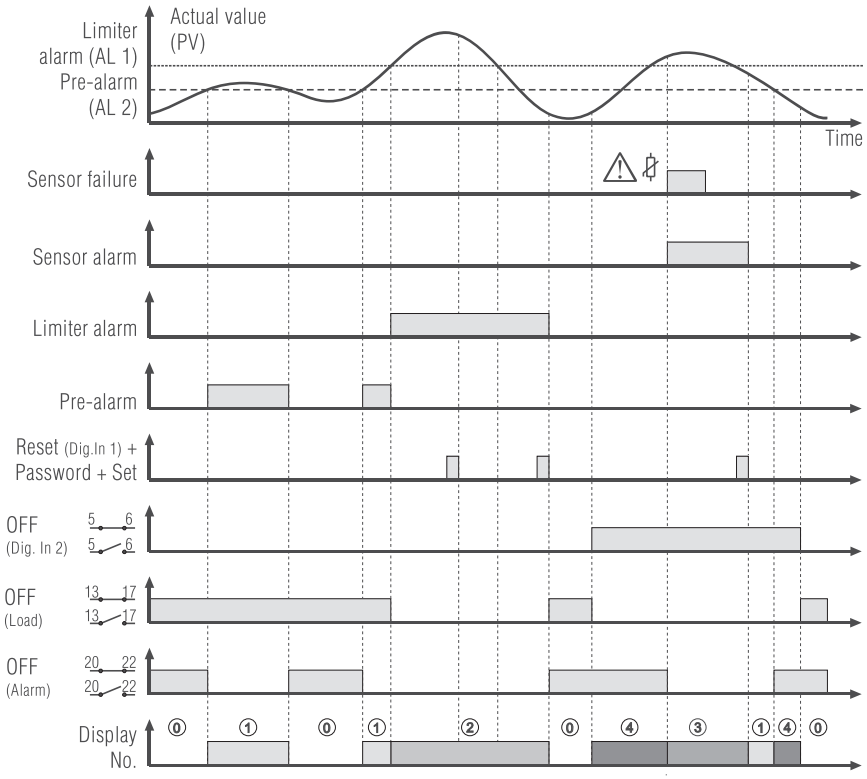


5.5. Setting the password for system parameters (incl. limit value) (PAS. 2)



6. Mode of operation of the device

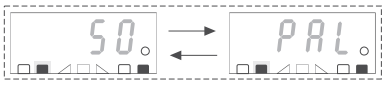
6.1. Temperature limitation, pre-alarm, service entry



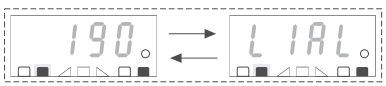
Displays

⓪ 

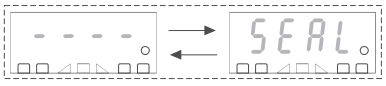
Basic display

① 

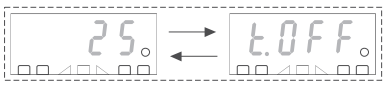
Example: AL 2 = 100

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

For an external acknowledgement of the status limitation. The acknowledgement is only possible if the temperature is inside the operating range. The operating range is 5 K below the set limit.

The utilisation of remote reset (e.g. by using a key-operated pushbutton) may only be made possible for authorised people.

The electrical connection of the external reset equipment must be established in accordance with the wiring diagram.

6.3. Service entry

The DTL III Ex device family has a service entry (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. peration, maintenance

The operator of an electrical system in a hazardous environment must keep it in good condition, operate and monitor it properly and do the required maintenance and repairs. Each piece of electrical equipment must be selected for its suitability for use in the hazardous area.

Before recommissioning, check conformance to the applicable laws and directives. The safety instructions must be heeded before starting maintenance work or fault clearance.

8. Measuring current circuit - monitoring

The temperature sensor system connected to the device is 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
Ⓔx II(2)GD [Ex e II]

Certification
EC Type Examination Certificate
TÜV 08 ATEX 554871

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);
some with red and green status LEDs

Measuring and display accuracy
0.5 %

Ambient temperature range
0 °C to +50 °C

Storage temperature
-10 °C to +60 °C

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
4 DIN spacing units (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)

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 entry (OFF)
Voltage-free contacts,
(e.g. key-operated) buttons required
Contact loadability at least 5 V, 5 mA)

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

Alarm output (utput 2)
Relay (changeover contact) AC 250 V,
8 A, cos φ = 1

Power consumption
max. 4 VA

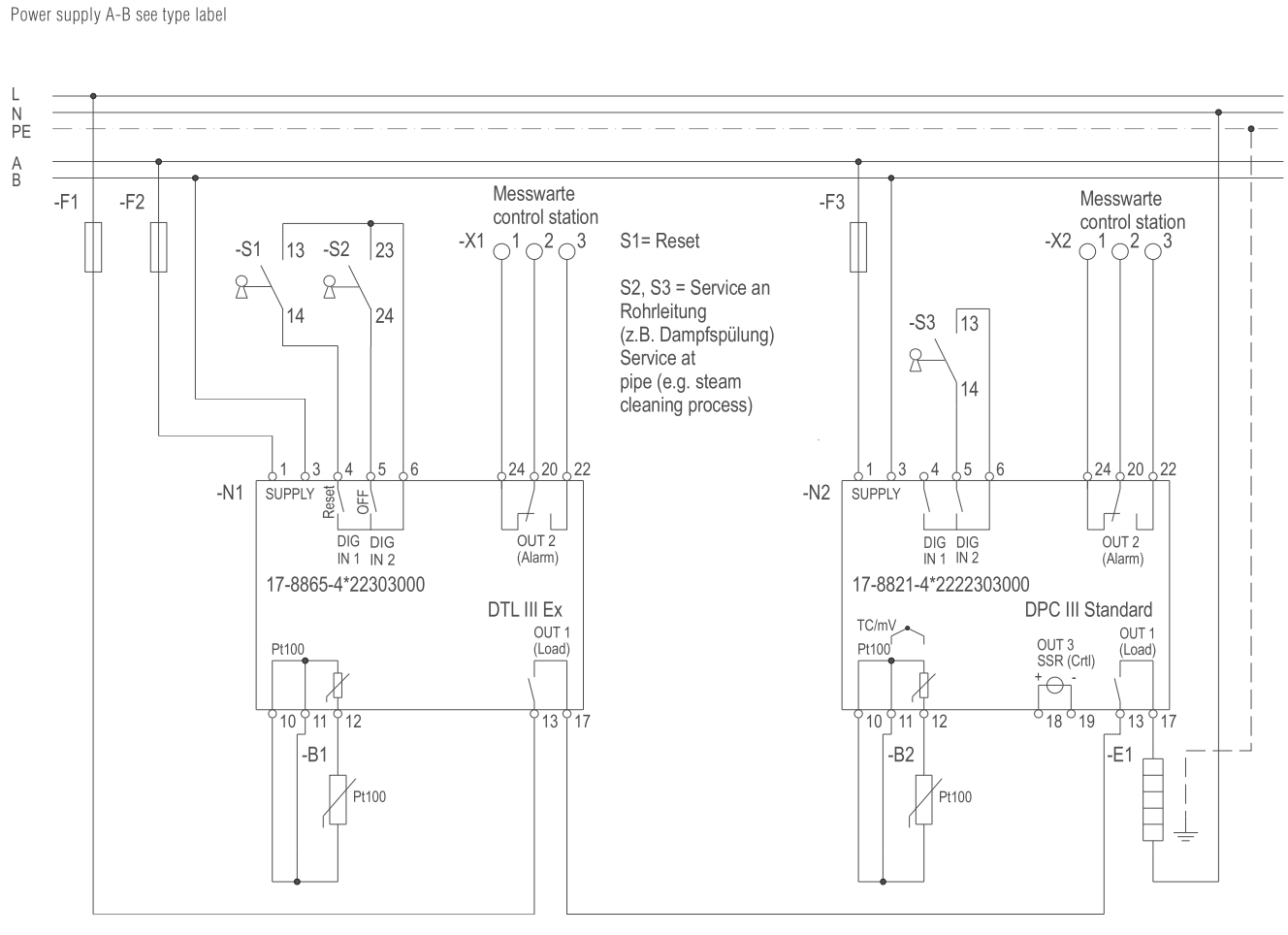
Measuring current circuit
U_{max} = 5 V, I_{max} = 0.15 mA

Electrical Safety
EN 60730-1, -A1, -A12, -A13, -A14
EN 60730-2-9, -A1, -A2, -A11, -A12

Electromagnetic Compatibility
EN 61326-1

12. 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-conductor versions): ■ 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-conductor version is used, terminals 2 and 3 must be bridged. (The sensor will fail otherwise)
Terminals 13, 17	Voltage-free normally open contact Out1 (load output)
Terminals 20, 22, 24	Voltage-free changeover contact Out2 (group fault alarm)

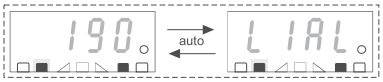
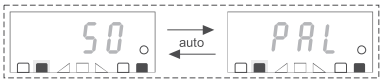
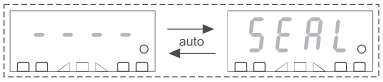
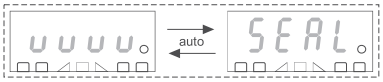
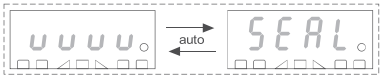
The wiring diagram shows the connection of the DTL III Ex in con unction with the DPC III temperature controller to monitor a heating circuit



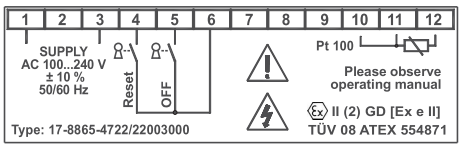
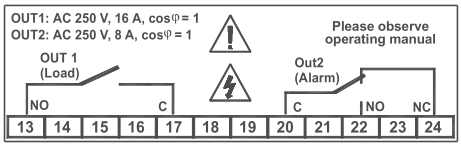
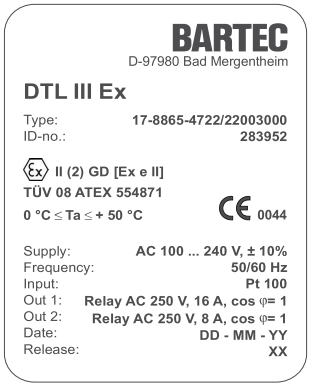
13. List of parameters

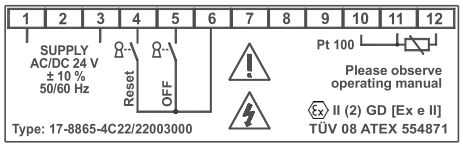
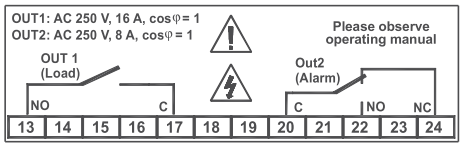
Display Parameter name	Display Parameter group	Description	Values-/ setting range	Factory setting	Setting
AL 1	AL 1	Limit temperature (Load output)	-1999 up to +9999 °C	190 °C	
AL2	AL2	Setpoint Pre-alarm (alarm output)	-1999 up to +9999 °C	50 °C	
PAS.1	PAn	Password for reset	OFF/1 up to 9999	OFF	
PAS.2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

14. Fault alarms/fault clearance

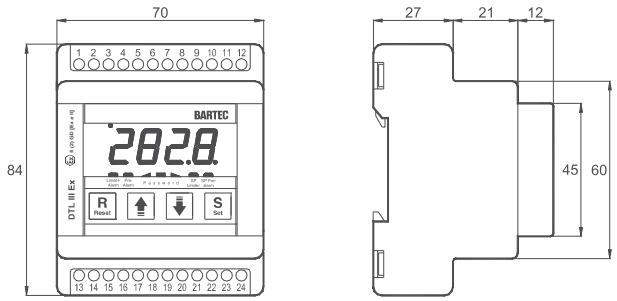
Fault indication in the display	Description	Procedure for fault clearance
	**LIAL** = **LI**miter **AL**arm Limiter temperature AL1 exceeded (load relay OUT 1 opens and interlocks, group alarm relay OUT 2 activated).	Check heating circuit, eliminate the cause of the malfunctioning, reset fault signal. Once the sensor temperature drops by at least 5 K under the limit value, unlocking can be initiated by the “reset“ button.
	**PAL** = **P**re-**AL**arm 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** = **SE**nsor **AL**arm Sensor interruption (at terminal 10 or 12)	Check and if necessary replace the sensor. Reset the fault signal by pressing the “reset“ button.
	**SEAL** = **SE**nsor **AL**arm 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** = **SE**nsor **AL**arm 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.

15. Type explanation/device labelling

Type 17-8865-4722/22003000	**Description** DTL III Ex; AC 100 to 240 V
Terminal plate top  Terminal plate bottom 	Type label 

Typ 17-8865-4C22/22003000	**Description** DTL III Ex 24; AC/DC 24 V
Terminal plate top  Terminal plate bottom  	Type label 

16. Dimensions



17. Service address

BARTEC GmbH
Max-Eyth-Straße 16
D-97980 Bad Mergentheim
Tel.: +49 7931 597-0
Fax: +49 7931 597-119
info@bartec.de
www.bartec-group.com

Erklärung der EG-Konformität
Declaration of EC-Conformity
Attestation de conformité CE
No. : 11-8865-7C0001

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

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 .. Sicherheitstemperaturbegrenzer	**DTL III Ex .. Safety Temperature limiter**	**DTL III Ex .. Limiteur de température de sécurité**

17-8865-4*22/2200 30**

auf das sich diese Erklärung bezieht den Bestimmungen der folgenden Richtlinien entspricht	to which this declaration relates is in accordance with the provision of the following directives	se référant à cette attestation correspond aux dispositions des directives sulvantes
94/9/EG **2004/108/EG** **2002/95/EG**	**94/9/EC** **2004/108/EC** **2002/95/EC**	**94/9/CE** **2004/108/CE** **2002/95/CE**
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: 2006
EN 60079-7: 2007
EN 61241-0: 2006
EN 60730-1: 2002-01
EN 60730-1/A1/A12/A13/A14: 2005-10
EN 60730-2-9: 2003-01
EN 60730-2-9/A1/A11: 2005-01
EN 60730-2-9/A2/A12: 2005-04
EN 61326-1: 2006-05

Kennzeichnung	Marking	Marquage

CE 0044

Ex II (2) GD [Ex e II]

TÜV 08 ATEX 554871

Bad Mergentheim, den 07.11.2008

ppa. Ewald Warmuth
Geschäftsleitung / General Manager

11-8865-7D0001-11/08-BARTECWerbeAgentur-288307