

winkler

Instructions for Installation and Operation



ATEX digital controller combination

WEXRBL25-230ZE000





To ensure correct operation, please read these Instructions for Installation and Operation carefully prior to installation! Observe the data on the type plate and any possible warnings. Before commissioning check that all cable entries are closed and sealed. WEXRBL25-230ZE000 is suitable for use in areas with potentially explosive gas or dust atmospheres of groups IIC / IIIC according to zones 1/21 and 2/22.

The WEXRBL25-230ZE000 unit is not suitable for use in zone 0/20!

Contents:

- | | |
|---|--|
| 1. General safety information | 12. Type plate |
| 2. General characteristics / installation notes | 13. Contact data |
| 3. Function | 14. Construction details |
| 4. Measuring circuit monitoring | 15. Connection types of PT100 sensors |
| 5. Tests / standards | 16. Switch states of the fault signal relay |
| 6. Technical data | 17. Dimensions / hole pattern |
| 7. Electrical connection / device connections | 18. EC Type Examination Certificate and EU Declaration of Conformity |
| 8. General installation instructions | 19. QM-Certificate Directive 2014/34/EU Annex VII and ISO 9001:2015 |
| 9. Initial operation | |
| 10. Front panel | |
| 11. Start-up of the energy controller | |

1. General safety information

The device may only be installed by qualified personnel in accordance with the valid safety regulations and these Instructions for Installation and Operation. The DIN VDE 0100 regulations are to be complied with. It must be ensured that personnel or third parties are not exposed to any danger.

For proper and intended use it must be ensured that the device is only employed where the technical operating parameters (e.g. nominal operating voltage, load current, ambient temperature) cannot be exceeded.

The manufacturer is not responsible for damage caused by external forces or other external impacts! Only use equipment that is in its original packaging and in a faultless condition.

Manipulations on the device are not permissible, otherwise the manufacturer's warranty becomes invalid.



Repairs on the WEXRBL25-230ZE000 unit may only be carried out at the manufacturer's facility.

2. General characteristics / installation notes

The ATEX digital controller combination WEXRBL25-230ZE000, which includes Pt100 temperature sensors, enables temperature control and limitation for heating equipment used in areas with potentially explosive atmospheres. The device also has an energy controller (power selector) in the form of a full-wave control.

The device is explosion-protected in accordance with Directive 2014/34/EU – Equipment and protective systems intended for use in potentially explosive atmospheres – and EN 60079-0 - Explosive atmospheres, Part 0: Equipment – General requirements (see also section 5 Tests / standards).

The device corresponds to EMC test NAMUR NE21.

Special characteristics and features:

- Approved for application in areas with potentially explosive gas (G) or dust (D) atmospheres
- Ex marking: Gas EX II 2G Ex e ib [ib Gb] mb IIC T4 Gb
Dust EX II 2D Ex tb IIIC IP6X T90°C Db
- Measuring range of controller and limiter 0...450 °C
- Intrinsically safe connection of the Pt100 temperature sensors in 3- or 2-wire circuit
- Setting of the switching point by using a screwdriver
- Indication of main contactor position by green LED
- Measured value display via 7-segment LED display for controller and limiter

- Signalling of sensor break and sensor short-circuit signal
- Reset of the limiter at the device
- After power failure no reset required
- Power supply 230V~ 50/60Hz
- No interference with the power supply because of full-wave control with SSR (solid-state-relay)
- Solid aluminium standard enclosure IP64 for mounting on base plate
- Device fuse for the control circuit is accessible internally via terminal block



The device is equipped with a reversible temperature switch that is actuated at approx. 90°C internal temperature.

3. Function

The **WEXRBL25-230ZE000** unit is a major element of an electric heating control which can be installed in areas with potentially explosive atmospheres and possesses intrinsically safe circuits for Pt100 temperature sensors. Measured-value processing takes place by means of a built-in microcontroller.



3.1 Temperature limiter

The indicated limit value is set via the “**Setpoint**” potentiometer. As soon as the sensor temperature exceeds the set limit value, the load circuit is opened and interlocked (red LED on). The interlock state can only be cancelled by pressing the internal reset button of the limiter next to the limiter’s red LED alarm indication. In the event of a sensor break or sensor short-circuit, the load circuit is opened and interlocked. In the event of a supply voltage failure, the power supply to the limiting electric circuit is also interrupted. When the supply voltage is restored, the device will switch back to the same mode that it had before the supply voltage failure occurred.



3.2 Temperature controller

Pressing button “**T1**” or “**T2**” will display the corresponding setpoint value. The potentiometers “**Maintain temperature T1**” and “**Alarm temperature T2**” allow the separate setting of the switching points.

Controller switching point: setpoint value **Maintain temperature T1**
Low-temperature alarm: setpoint value **Alarm temperature T2**
Terminals 3, 4, 5 (changeover contact)

In the event of a wire break or short-circuit of the Pt100 temperature sensor, the main circuit is opened and the fault is signalled.



3.3 Energy controller (power selector)

The energy controller consists of a main contactor and a non-wearing full-wave control which switches at the phase zero point. Using the energy controller’s 10-step switch, the operator can set the desired power in 10% steps from 10% to 100%. This enables easy adaptation to low-resistance heating lines.

Warning:



On the power supply side, the heating circuit is externally fuse-protected by means of a 25 A automatic circuit breaker. The cable connection must be routed permanently. Without a correctly dimensioned back-up fuse, the load output of the device will not be short circuit proof!

Note:



For safety reasons, the power selector is set to 10% power when it is delivered. Please set to the desired power (normally 100%) before commissioning.

4. Measuring circuit monitoring

With the **WEXRBL25-230ZE000** unit, the temperature sensor system of the controller and the limiter are both monitored in the same way:

Short-circuit of the sensor lead or $T < -100^{\circ}\text{C}$	Internal signal External signal	- LED display flashes slowly with „---“ value - opens the load circuit and interlocks limiter
Wire break of the sensor lead or $T > 532^{\circ}\text{C}$	Internal signal External signal	- LED display flashes slowly with value ”UUU” - opens the load circuit and interlocks limiter
Wire break of the sensor lead in the case of 3-wire connection	Internal signal External signal	- LED display flashes slowly with value ”UU” - opens the load circuit and interlocks limiter
Sensor lead $> 220\Omega$	Internal signal External signal	- LED display flashes slowly with measured value - opens the load circuit without interlocking of limiter

5. Tests / standards

- Explosion protection
 - EC type examination certificate TÜV 10 ATEX 556065 notified body 0123
 - Ex-protected according to DIN EN 60079-0 – General requirements
 - Protection standard for areas with explosive gas or dust atmospheres:
 - DIN EN 60079-7 Equipment protection - e - increased safety
 - DIN EN 60079-11 Equipment protection - i - intrinsic safety
 - DIN EN 60079-18 Equipment protection - m -encapsulation
 - DIN EN 60079-31 Equipment protection - t - protection by enclosures
- Electromagnetic compatibility
 - EMC-tested
 - Namur NE 21 test criterion A
- Additional test
 - Routine test after thermal ageing

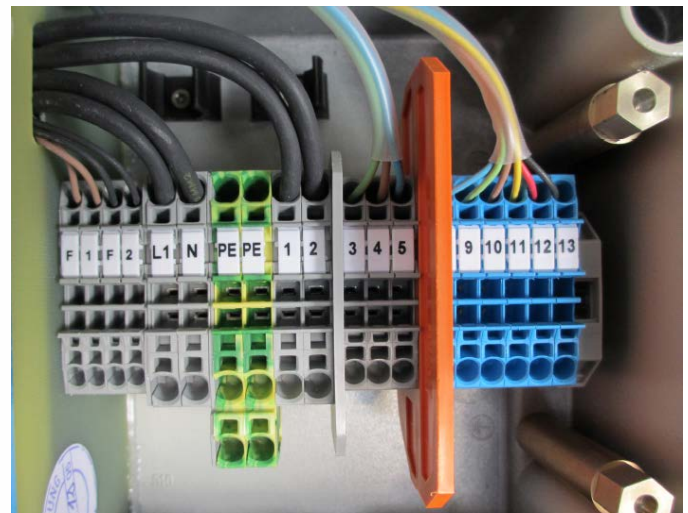
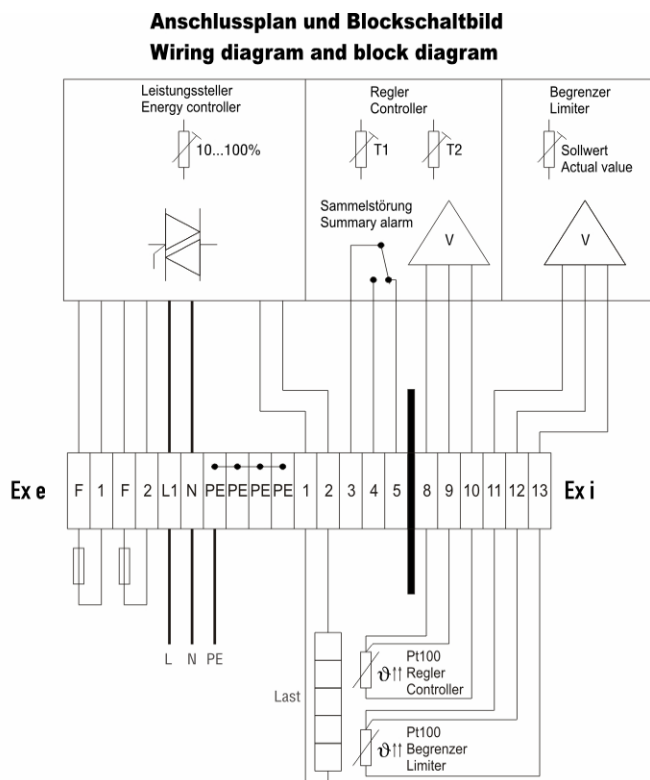
6. Technical data

- Supply voltage 230VAC (-15% to +10%); 50-60Hz
- External protection 25A circuit-breaker type A, B, C (Siemens), or Z, B, C (ABB)
- Load output Electronic solid-state relay with 25 A nominal current
- Power consumption $\leq 11\text{VA}$ (without load)
- Mounting position Wall-mounting
- Intrinsically safe measuring circuit explosion-protection type - Ex-i -
 - [Ex ib] IIC $U_o = 6.3\text{V}$, $I_o = 22\text{mA}$** , max. external capacity **1.5 μF**
max. external inductance **10mH**
 - [Ex ib] IIB $U_o = 6.3\text{V}$, $I_o = 22\text{mA}$** , max. external capacity **8.2 μF**
max. external inductance **10mH**
- Temperature sensor Pt100 DIN Resistance thermometer, customary industrial version;
See copy of the EC Type Examination Certificate in the Annex
- Common fault output 1 CO contact 5A, 250V AC, 100VA or 5A, 24V DC, 100W
(see section 16 Overview of switching conditions of the fault indicator relay)
- Limitation switching point: threshold value 2°C (displacement) below the set target value
- Switching point accuracy $< 1\text{K}$
- Controller hysteresis 2K
- Ambient temperature $-20\dots+40^{\circ}\text{C}$
- Overtemperature protection Device-integrated temperature switch (switch-off temperature approx. 90°C)
- Enclosure Aluminium, mounting on base plate
- Protection standard IP64 according to DIN EN 60529 – Degrees of protection provided by enclosures (IP code)
- Terminals
 - Wire cross-section: infeed 0.5...6mm² (up to 4mm² with ferrule)
 - Load output 0.5...6mm² (to 4mm² with ferrule)
 - Reset/Rel. output 0.2...4mm² (up to 2.5mm² with ferrule)
 - Sensors 0.2...4mm² (up to 2.5mm² with ferrule)
- Dimensions 260 x 160 x 135mm
- Weight Approx. 6.0kg

7. Electrical connection / device connections

Terminals F1, F2	For back-up device fuses GS5, F1=100mA; F2= 50mA
Terminals L1, N, PE	Power supply 230VAC, 50-60Hz
Terminals 1, 2	Load output
Terminals 3, 4, 5:	Relay output group fault (summary alarm)
Terminals (blue) 8, 9, 10:	Pt100 temperature sensor - controller, 3-wire connection, intrinsically safe
Terminals (blue) 11, 12, 13:	Pt100 temperature sensor - limiter, 3-wire connection, intrinsically safe

Wiring diagram and block diagram for **WEXRBL25-230ZE000**:



Connection terminals

Do not open the terminal cover of the unit while device is energised
Please observe operating instructions!

8. General installation instructions

- The device corresponds to protection class I (protective conductor).
- Connect the PE terminal to the enclosure cover.
- The general installation standard EN 60079-14:2014 "Explosive atmospheres – Electrical installations design, selection and erection" must be observed.
- Adhere to DIN VDE 0100, mount the device at all 4 fixing points to the supporting frame.
- Device manipulation of whatever kind is inadmissible.
- The terminal cover is also a protection against contact and must be in place during operation.
- The cable gland connections must match the cable/lines and guarantee sufficient strain relief.
- Cables and lines must be routed permanently.

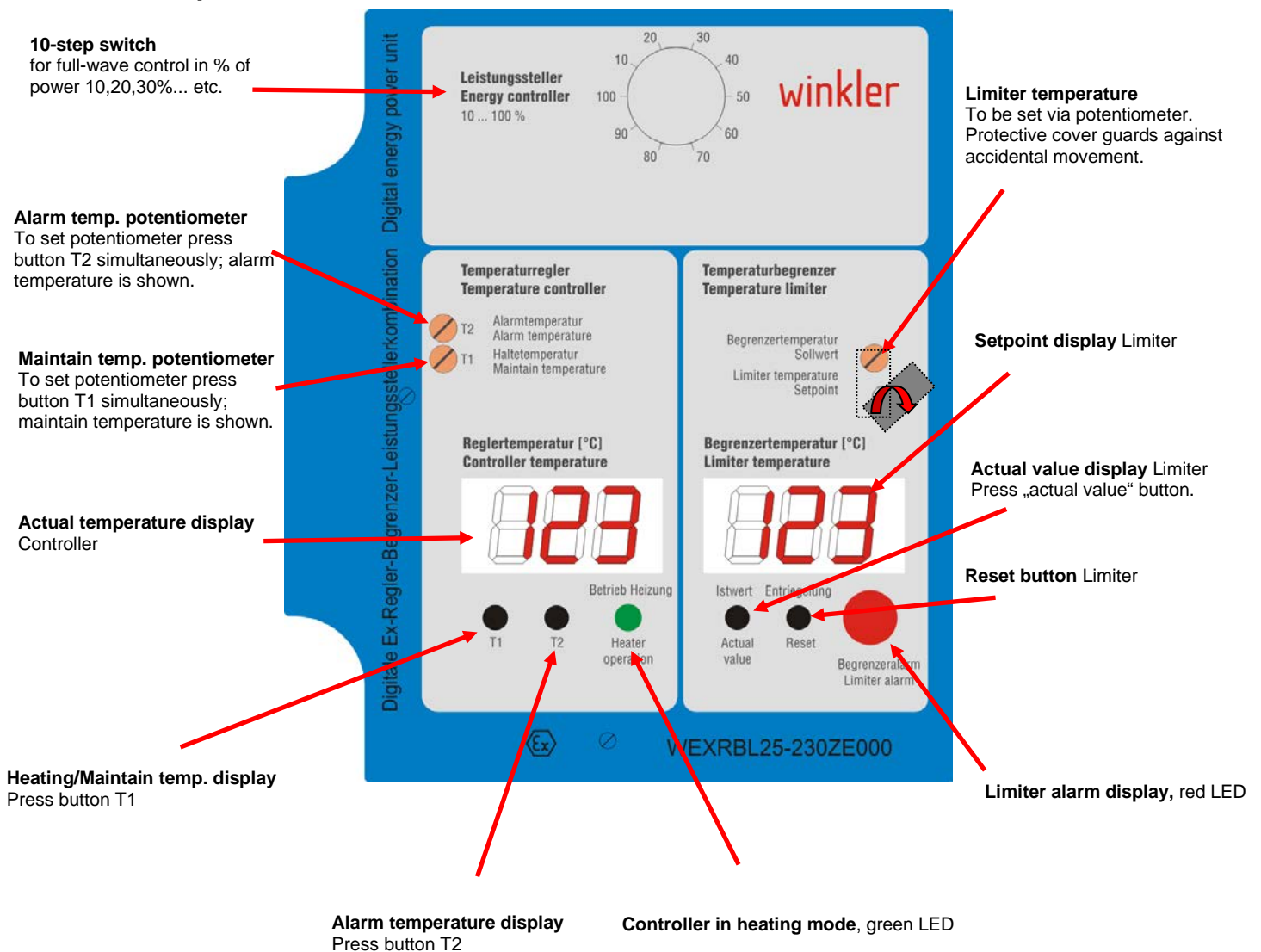


Using Pt100 temperature sensors with a two-wire system requires line compensation and additional links. For further information see section 15.

9. Initial operation

1. Connect the two Pt100 temperature sensors to terminals 8 to 13 (see picture).
2. Connect the power supply and the heating lead.
3. Temperature limiter:
 - Use a screwdriver to set the limiter temperature (limit value) at the **“Setpoint”** potentiometer.
 - Press the reset button, the large red LED goes out, the limiter is now ready for operation.
4. Temperature controller:
 - Set switching point **“Maintain temperature T1”**:
Press button **“T1”** on the device and simultaneously use a screwdriver to set the switching point at the **“Maintain temperature T1”** potentiometer.
 - Set switching point **“Alarm temperature T2”**:
Press button **“T2”** on the device and simultaneously use a screwdriver to set the switching point at the **“Alarm temperature T2”** potentiometer.
5. Energy controller
 - The energy controller (power selector) should be adjusted as described in chapter 11.
 - Note: For safety reasons when delivered, the power controller is set to a power of 10%!

10. Front panel



11. Start-up of the energy controller (power selector) of the **WEXRBL25-230ZE000**

11.1. General information

Full-wave control has the advantage that low-resistance loads can easily be used with a 230V alternating voltage supply. Since switching takes place at the phase zero point with the aid of an SSR (solid-state relay), the supply network is not exposed to disturbance. The full-wave control operates with a fixed cycle of 200ms. The ratio of the switch-on time to switch-off time can be set in steps from 10% to 100%. Thus, a 10% setting results in a switch-on duration of 20ms (one full wave) and an off period of 180ms (9 full waves).

11.2. Setting instructions

Always observe the maximum value of the nominal current $I_{eff}=25A$ for the digital controller combination **WEXRBL25-230ZE000**. To avoid overloading the device, the energy controller must not be set across the full setting range in the case of heating circuits with heating circuit resistances below 9.2Ohm (see Table, part A + B). The appropriate setting of the energy controller for this type of heating circuit is shown in Table 1 or can be calculated according to section 11.3 to ensure that the max. effective current of 25A is not exceeded. With a 10% setting, the max. effective current (I_{eff}) amounts to maximum 21A which corresponds to a heating circuit resistance of approx. 3.5Ohm. This maximum current load at the 10% setting is due to the max. surge current load of the SSR.

Example for setting the energy controller:

Here, the largest possible setting is to be determined for a heating circuit with a resistance of 6Ohm.

Procedure:

A) Find the heating circuit resistance in the table

heating circuit resist / current I_{eff} [A] at energy controller setting

Heizkreiswiderst. RH [Ω]	Strom I_{eff} [A] bei Leistungssteller Einstellung										
	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	
3,0	24,24	34,29	41,99	48,49	54,21	59,39	64,14	68,57	72,73	76,67	
3,5	20,78	29,39	35,99	41,56	46,47	50,90	54,98	58,78	62,34	65,71	
4,0	18,18	25,71	31,49	36,37	40,66	44,54	48,11	51,43	54,55	57,50	
4,5	16,16	22,86	27,99	32,33	36,14	39,52	42,76	45,72	48,49	51,11	
5,0	14,55	20,57	25,20	29,09	32,53	35,53	38,49	41,14	43,64	46,00	
5,5	13,22	18,70	22,90	26,45	29,57	32,27	34,99	37,40	39,67	41,82	
6,0	12,12	17,14	21,00	24,24	27,11	29,69	32,07	34,29	36,37	38,33	
6,5	11,19	15,82	19,38	22,38	25,02	27,41	29,60	31,65	33,57	35,38	
7,0	10,39	14,69	18,00	20,78	23,23	25,45	27,49	29,39	31,17	32,86	
7,5	9,70	13,71	16,80	19,40	21,75	23,75	25,66	27,43	29,09	30,67	
8,0	9,09	12,86	15,75	18,18	20,27	22,27	24,05	25,71	27,27	28,75	
8,5	8,56	12,10	14,82	17,11	19,06	20,96	22,64	24,20	25,67	27,06	
9,0	8,08	11,43	14,00	16,16	18,07	19,80	21,38	22,86	24,24	25,56	
9,5	7,66	10,83	13,26	15,31	17,12	18,75	20,26	21,65	22,97	24,21	
10,0	7,27	10,29	12,60	14,55	16,26	17,82	19,24	20,57	21,82	23,00	
10,5	6,93	9,80	12,00	13,85	15,49	16,97	18,33	19,59	20,78	21,90	
11,0	6,61	9,35	11,40	13,22	14,78	16,20	17,49	18,70	19,84	20,91	
11,5	6,32	8,94	10,95	12,65	14,14	15,49	16,73	17,89	18,97	20,00	
12,0	6,06	8,57	10,50	12,12	13,55	14,85	16,04	17,14	18,18	19,17	
12,5	5,82	8,23	10,08	11,64	13,01	14,25	15,39	16,46	17,46	18,40	
13,0	5,59	7,91	9,69	11,19	12,51	13,70	14,80	15,82	16,78	17,69	
13,5	5,39	7,62	9,33	10,78	12,05	13,20	14,25	15,24	16,16	17,04	
14,0	5,20	7,35	9,00	10,39	11,62	12,73	13,75	14,69	15,59	16,43	
14,5	5,02	7,09	8,69	10,03	11,22	12,29	13,27	14,19	15,05	15,86	
15,0	4,85	6,86	8,40	9,70	10,84	11,88	12,83	13,71	14,55	15,33	
15,5	4,69	6,64	8,13	9,38	10,49	11,49	12,41	13,27	14,08	14,84	
16,0	4,55	6,43	7,87	9,09	10,16	11,13	12,03	12,86	13,64	14,38	
16,5	4,41	6,23	7,63	8,82	9,86	10,80	11,66	12,47	13,22	13,94	
17,0	4,28	6,05	7,41	8,56	9,57	10,48	11,32	12,10	12,84	13,53	
17,5	4,16	5,88	7,20	8,31	9,29	10,18	11,00	11,76	12,47	13,14	
18,0	4,04	5,71	7,00	8,08	9,04	9,90	10,69	11,43	12,12	12,78	
18,5	3,93	5,56	6,81	7,86	8,79	9,63	10,40	11,12	11,79	12,43	
19,0	3,83	5,41	6,63	7,66	8,56	9,38	10,13	10,83	11,48	12,11	
19,5	3,73	5,27	6,46	7,46	8,34	9,14	9,87	10,55	11,19	11,79	
20,0	3,64	5,14	6,30	7,27	8,13	8,91	9,62	10,29	10,91	11,50	

A

C

B

III

II

I



- B) Determine the maximum possible current in field I or II (< 24.24A)
- C) Determine the maximum setting (< 40% = In this case, a setting between 10% and 40% may be selected).

- Field I (green)** > unrestricted power setting possible (10% ... 100%)
- Field II (yellow)** > restricted power setting possible within the indicated setting range
- Field III (red)** > Prohibited field, device would be overloaded!

Table 1 – Energy controller setting for heating circuit resistances below < 9.2Ohm

heating circuit resist / current leff [A] at energy controller setting

Heizkreiswiderst. R _H [Ω]	Strom leff [A] bei Leistungssteller Einstellung									
	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
3,0	24,24	34,29	41,99	48,49	54,21	59,39	64,14	68,57	72,73	76,67
3,5	20,78	29,39	35,99	41,56	46,47	50,90	54,98	58,78	62,34	65,71
4,0	18,18	25,71	31,49	36,37	40,66	44,54	48,11	51,43	54,55	57,50
4,5	16,16	22,86	27,99	32,33	36,14	39,59	42,76	45,72	48,49	51,11
5,0	14,55	20,57	25,20	29,09	32,53	35,63	38,49	41,14	43,64	46,00
5,5	13,22	18,70	22,90	26,45	29,57	32,39	34,99	37,40	39,67	41,82
6,0	12,12	17,14	21,00	24,24	27,11	29,69	32,07	34,29	36,37	38,33
6,5	11,19	15,82	19,38	22,38	25,02	27,41	29,60	31,65	33,57	35,38
7,0	10,39	14,69	18,00	20,78	23,23	25,45	27,49	29,39	31,17	32,86
7,5	9,70	13,71	16,80	19,40	21,68	23,75	25,66	27,43	29,09	30,67
8,0	9,09	12,86	15,75	18,18	20,33	22,27	24,05	25,71	27,27	28,75
8,5	8,56	12,10	14,82	17,11	19,13	20,96	22,64	24,20	25,67	27,06
9,0	8,08	11,43	14,00	16,16	18,07	19,80	21,38	22,86	24,24	25,56
9,5	7,66	10,83	13,26	15,31	17,12	18,75	20,26	21,65	22,97	24,21
10,0	7,27	10,29	12,60	14,55	16,26	17,82	19,24	20,57	21,82	23,00
10,5	6,93	9,80	12,00	13,85	15,49	16,97	18,33	19,59	20,78	21,90
11,0	6,61	9,35	11,45	13,22	14,78	16,20	17,49	18,70	19,84	20,91
11,5	6,32	8,94	10,95	12,65	14,14	15,49	16,73	17,89	18,97	20,00
12,0	6,06	8,57	10,50	12,12	13,55	14,85	16,04	17,14	18,18	19,17
12,5	5,82	8,23	10,08	11,64	13,01	14,25	15,39	16,46	17,46	18,40
13,0	5,59	7,91	9,69	11,19	12,51	13,70	14,80	15,82	16,78	17,69
13,5	5,39	7,62	9,33	10,78	12,05	13,20	14,25	15,24	16,16	17,04
14,0	5,20	7,35	9,00	10,39	11,62	12,73	13,75	14,69	15,59	16,43
14,5	5,02	7,09	8,69	10,03	11,22	12,29	13,27	14,19	15,05	15,86
15,0	4,85	6,86	8,40	9,70	10,84	11,88	12,83	13,71	14,55	15,33
15,5	4,69	6,64	8,13	9,38	10,49	11,49	12,41	13,27	14,08	14,84
16,0	4,55	6,43	7,87	9,09	10,16	11,13	12,03	12,86	13,64	14,38
16,5	4,41	6,23	7,63	8,82	9,86	10,80	11,66	12,47	13,22	13,94
17,0	4,28	6,05	7,41	8,56	9,57	10,48	11,32	12,10	12,84	13,53
17,5	4,16	5,88	7,20	8,31	9,29	10,18	11,00	11,76	12,47	13,14
18,0	4,04	5,71	7,00	8,08	9,04	9,90	10,69	11,43	12,12	12,78
18,5	3,93	5,56	6,81	7,86	8,79	9,63	10,40	11,12	11,79	12,43
19,0	3,83	5,41	6,63	7,66	8,56	9,38	10,13	10,83	11,48	12,11
19,5	3,73	5,27	6,46	7,46	8,34	9,14	9,87	10,55	11,19	11,79
20,0	3,64	5,14	6,30	7,27	8,13	8,91	9,62	10,29	10,91	11,50

11.3. Calculation of the effective current

For the dimensioning of the heating circuit, the effective current is calculated on the basis of the following general equation:

$$I_{\text{eff}} = \sqrt{I_1^2 \times t_1 + I_2^2 \times t_2 + I_n^2 \times t_n} \quad \text{or simplified:} \quad I_{\text{eff}} = I_{100\%} \times \sqrt{\frac{ED}{100}}$$

the following applies: $I_{100\%}$ corresponds to the current at 100% and ED to the switch-on duration in %.

11.4. Measurement of the effective current

Only high-quality measuring devices capable of processing signals with a frequency 5Hz are suitable for measuring these currents. On the basis of internal examinations, we can recommend the following measuring devices for the current measurement of the full-wave control.

- FLUKE SCOPMETER series with AC/DC current clamp FLUKE type 80i-110s
- METRIX MX 26 with CHAUVIN ARNOUX AC/DC current clamp type E6N CVH 1-100/1
- METRIX MX 56 with CHAUVIN ARNOUX AC/DC current clamp type E6N CVH 1/100/1

12. Type plate

Ex-marking

EC Type Examination Certificate
Year of manufacture
Production No./series No.
Nominal voltage
Nominal current
Breaking capacity
Temperature range
Protection standard

Measuring circuit intrinsically safe

winkler.eu Englerstraße 24 D-69126 Heidelberg		
Digitale Ex-Regler-Begrenzer-Leistungssteller-Kombination WEXRBL25-230ZE000		
Ex-Kennzeichnung	II 2 G Ex e ib [ib Gb] mb IIC T4 Gb II 2 D Ex tb IIIC IP 6X T90 °C Db	
EG-Baumusterprüfbescheinigung	TÜV 10 ATEX 556065	
Baujahr	2010	
Fertigungs-Nr./ Serien-Nr.	#####	
Nennspannung	230V AC(-15%/+10%); 50..60Hz	
Nennstrom	25A (25A externe Absicherung Si-Automat, s. Bedienungsanleitung)	
Abschaltvermögen	6kA, cosφ > 0,7	
Temperaturbereich	0...+450°C	
Schutzgrad	IP64	
Meßkreis eigensicher: U ₀ = 6,3V, I ₀ = 22mA, P ₀ = 35mW		
für Ex ib IIC gilt: max. Co= 1,5µF max. Lo= 10mH		
für Ex ib IIB gilt: max. Co= 8,2µF max. Lo= 10mH		
 0123		
Nicht in explosionsfähiger Staubatmosphäre öffnen!		

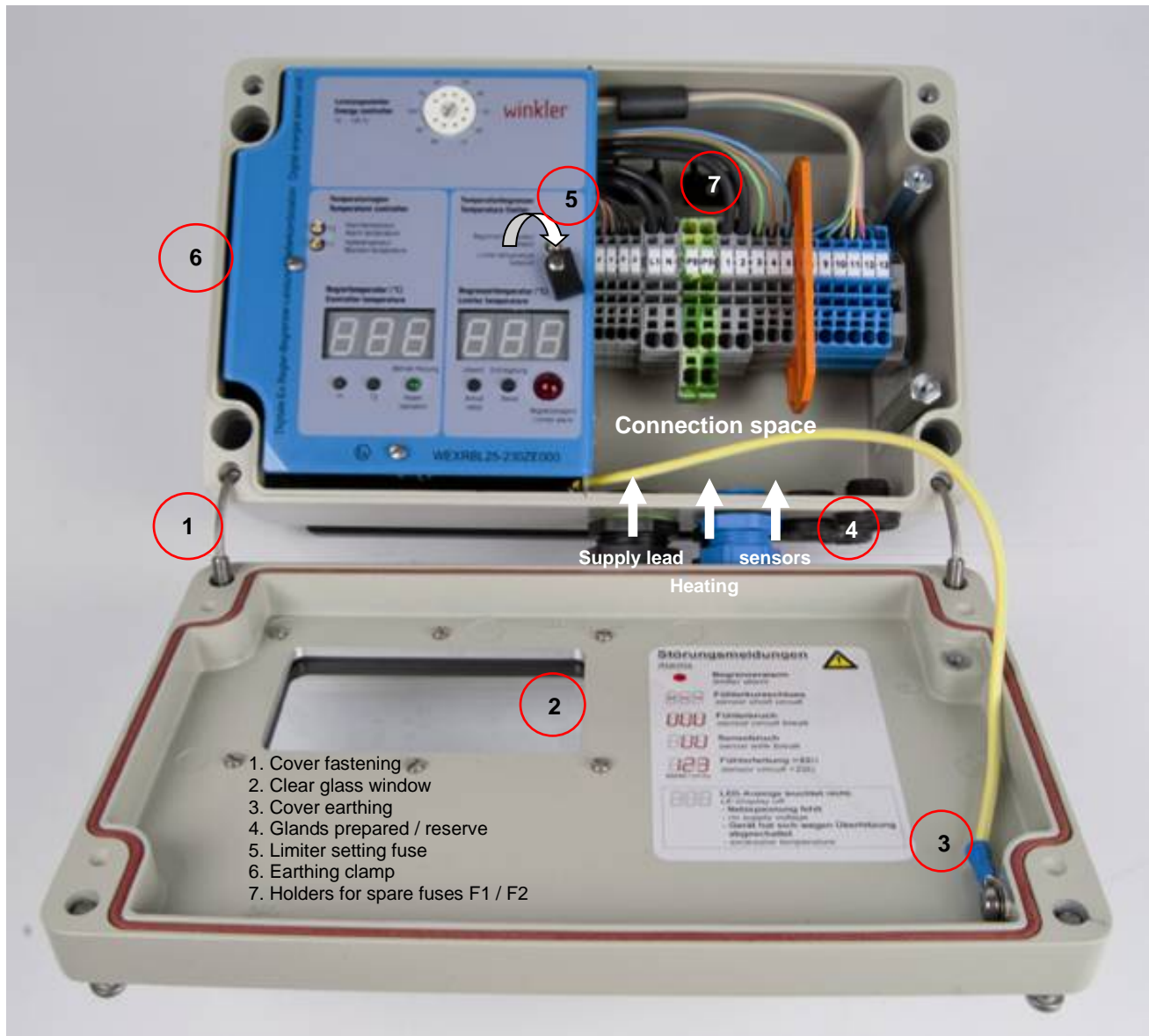
Do not open in potentially explosive dust atmosphere!

13. Contact data

Winkler AG
Englerstrasse 24
D-69126 Heidelberg
Germany

Tel. +49-6221-3646-0
Fax +49-6221-3646-40
E-Mail: sales@winkler.eu atex@winkler.eu
www.winkler.eu

14. Construction details



1. Cover fastening
2. Clear glass window
3. Cover earthing
4. Glands prepared / reserve
5. Limiter setting fuse
6. Earthing clamp
7. Holders for spare fuses F1 / F2



- Mounting accessories (4 threaded screws)
- Additional glands (1xM20; 2xM16)
- 2 links for two-wire PT100



Earthing clamp exterior

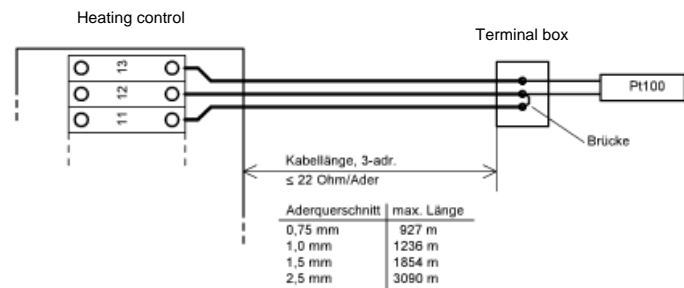


Option plug in version
WEXRBL25-230ZES00

15. Connection types of PT100 temperature sensors

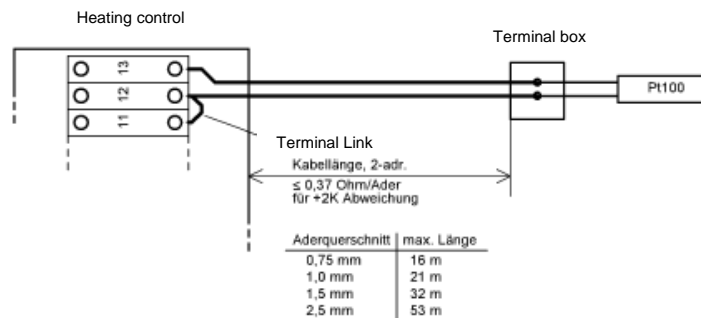
3-wire connection (standard)

In the case of a 3-wire connection, the cable length up to the terminal box is automatically compensated by the heating control. The illustration shows the corresponding conditions:



2-wire connection (optional)

In the case of a 2-wire connection, it is possible – depending on the wire cross-section – to use a max. cable length that tolerates a 2K increase of the indicated temperature:



2-wire connection with compensation

If, with a 2-wire connection, the above cable lengths are exceeded or if no measurement drift is permissible, manual compensation at the heating control may be implemented as follows:

Preconditions

- The device must be connected on the power supply and load side.
- A terminal link is installed at sensor input terminals 8-9 and 11-12 (see picture below).
- The two sensor connection wires are connected to terminal 9 and 10 as well as 12 and 13.
- Connected to each wire at the other end there must be a calibration resistance of 100ohm with a resistance tolerance of 0.1% instead of the Pt100 temperature sensor.
- In order to access the balancing elements, the front panel of the device has to be removed by undoing the three fastening screws.



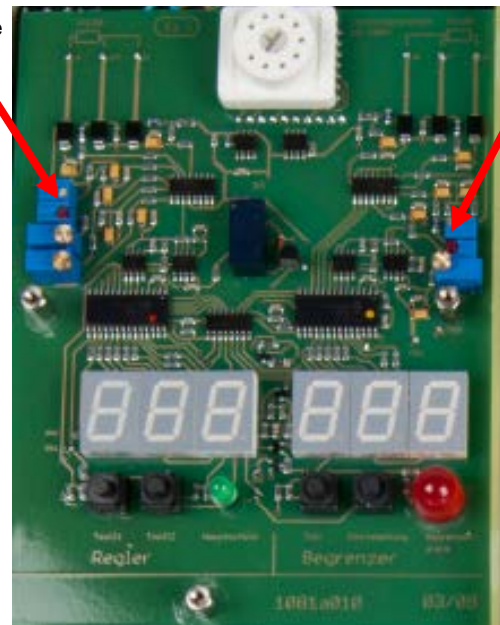
Terminal link 2x

Balancing

- When the operating voltage is switched on, the controller and the limiter will display a temperature value of a few degrees; this value depends on the wire cross-section and length.
- To adjust the display value to zero, use a suitable screwdriver and turn it to the left at the adjustment potentiometer “zero balance controller” and “zero balance limiter”.
- Subsequently, screw the front panel back on.
- After replacing the calibration resistances by the Pt100 temperature sensors, the balancing task is completed.

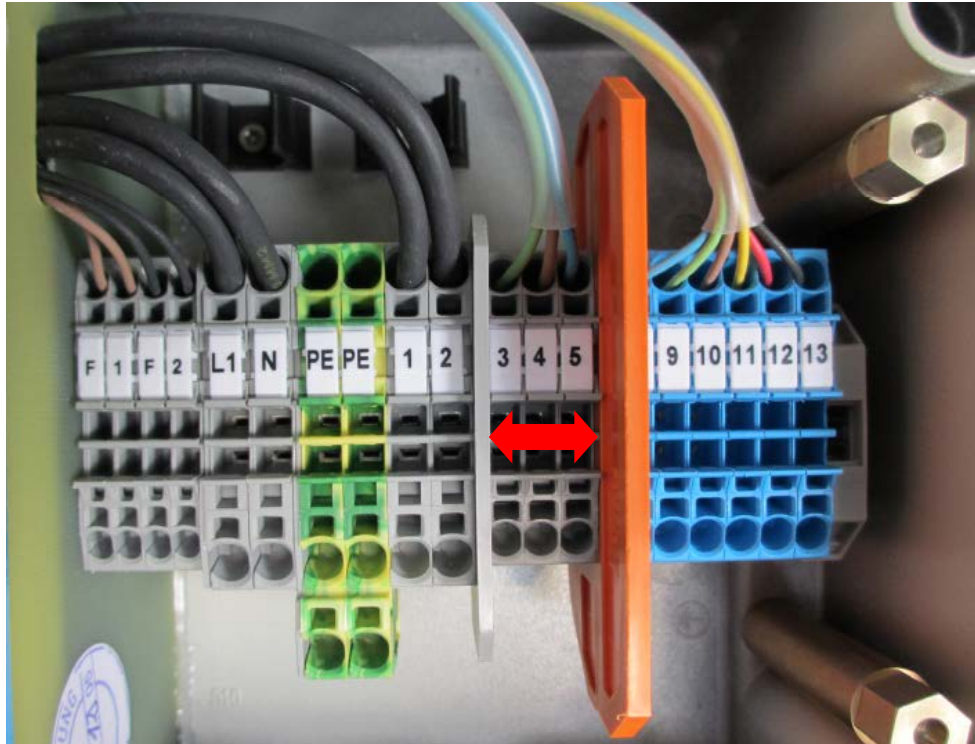
Zero balance Controller

Zero balance Limiter



Please note: When changing again to 3-wire Pt100 temperature sensors, the device needs to be readjusted. For this purpose, link again terminals 8+9 and 11+12, and then connect the 100ohm resistance on the device to terminals 9+10 and 12+13. When this is completed, adjust the zero balance at the two potentiometers (s. picture).

16. Switch states of the fault signal relay in short (clamp 3,4,5)



Contact condition > clamp 3 and 4 opened (3 and 5 closed):

- device is powerless or/and
- limiter switched off and locked due to exceedance of limiter target temperature (red limiter alarm indicator illuminated); the limiter must be unlocked by hand
- the temperature fell below the set low value alarm temperature T2

Contact condition > clamp 3 and 4 closed (3 and 5 opened):

- normal operating condition

Table:

all operating/fault conditions	controller 7 seg indication	LED green	limiter 7 seg indication	LED red	relay clamp 3-4-common fault	relay clamp 3-5 common fault	limiter locking
controller is heating controller is not heating (is in holding temperature range)	temperature value temperature value	on off	temperature value temperature value	off off	closed closed	open open	no no
controller T2 low value alarm controller Pt100 interruption controller Pt100 Sense interruption controller Pt100 short circuit controller Pt100 connection too long	temperature value "UUU" flashing "UU" flashing "--" flashing temp. flashing	on off off off off	temperature value temperature value temperature value temperature value	off off off off	open open open open	closed closed closed closed	no no no no no
limiter temperature exceedance limiter Pt100 interruption limiter Pt100 Sense interruption limiter Pt100 short circuit limiter Pt100 connection too long	temperature value temperature value temperature value temperature value temperature value	on or off on or off on or off on or off on or off	temperature value "UUU" flashing "UU" flashing "--" flashing temp. flashing	on on on on on	open open open open open	closed closed closed closed closed	yes yes yes yes no
overheating of device breakdown of supply voltage	off off	off off	off off	off off	open open	closed closed	no no

18. EC Type Examination Certificate and EU Declaration of Conformity

Translation

(1) **EC-Type Examination Certificate**

(2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 94/9/EC**

(3) **Certificate Number** **TÜV 10 ATEX 556065**

(4) for the equipment: Digital Ex-controller-limiter-power actuator-combination type WEXRBL25-230ZE000

(5) of the manufacturer: Winkler GmbH

(6) Address: Englerstraße 24
69126 Heidelberg
Germany

Order number: 8000556065

Date of issue: 2010-09-21

(7) This equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH, notified body No. 0044 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive. The examination and test results are recorded in the confidential report No. 10 203 556065.


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


EN 60079-0:2009	EN 60079-7:2003	EN 60079-11:2007
EN 60079-18:2004	EN 60079-31:2009	


(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type examination certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment or protective system must include the following:

 II 2 G Ex e ib [ib Gb] mb IIC T4 Gb
 II 2 D Ex tb IIIC IP 6X T90 °C Db





TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, accredited by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the certification body

[Signature]

Schwedt

Hanover office, Am TÜV 1, 30519 Hanover, Fon +49 (0)511 986 1455, Fax +49 (0)511 986 1590

This certificate may only be reproduced without any change, schedule included.
Excerpts or changes shall be allowed by the TÜV NORD CERT GmbH

P17-F-011 08-06
page 1/3



(13) **SCHEDULE**

(14) **EC-Type Examination Certificate No. TÜV 10 ATEX 556065**

(15) Description of equipment

In conjunction with PT100 resistance thermometers, the digital Ex-controller-limiter-power acuator-combination type WEXRBL25-230ZE000 serves for temperature control and temperature limitation of heating equipment used in explosion hazardous areas. The apparatus also includes a power section in terms of a full wave control.

The safe function as monitoring device for thermal processes is not object of this EC-Type Examination Certificate.

Permissible explosion hazardous area:

Zone	Goup	Marking of the apparatus
1	IIC	II 2 G Ex e ib [ib Gb] mb IIC T4 Gb
21	IIIC with conductive dust	II 2 D Ex tb IIIC IP6X T90 °C Db

An operation in explosion hazardous areas caused by coincidental presence of explosive dust and gases (hybrid mixtures) is not allowed.

The permissible ambient temperature range is -20 °C ... +40 °C.

Electrical data

Supply voltage 230 V, -15%/+10%, 50 ... 60 Hz
(Connections L1, N, PE)

Internal fuses only for connection to fuses according to
(Connections F1 and F2) EC-Type Examination Certificate TÜV 07 ATEX 553973 U

Load output for connection to heating devices
(Connections 1 and 2)

External release connected with the supply voltage;
(Connections 6 and 7) only for connection to a pushbutton (250 V a. c.; 0.1 A)

Output temperature alarm 1 change-over contact; permissible values:
(Connections 3, 4, 5) 250V a. c., 5A, 100VA resp. 24V d. c., 5A, 100W



Schedule EC-Type Examination Certificate No. TÜV 10 ATEX 556065

Measuring circuits in type of protection Intrinsic Safety Ex ib IIC/IIB
(Connections
8, 9, 10 [closed loop control] and
11, 12, 13 [limiter])

Maximum values per circuit:
 $U_o = 6.3 \text{ V}$
 $I_o = 22 \text{ mA}$
 $P_o = 35 \text{ mW}$
 Characteristic line: linear

Only for connection to Pt100 resistance thermometers

	Ex ib	IIC	IIB
max. permissible external inductance		10 mH	10 mH
max. permissible external capacitance		1.5 μF	8.2 μF

The values for IIB and for IIC are also permissible for explosive dust atmospheres.

Hints for erection and operation:

1. At dangers by explosive dust atmospheres, the housing must not be opened.
2. The circuit „Load input“ has to be fused externally with max. 25 A.
3. The apparatus has to be erected in such a way, that only a low risk of mechanical danger exists for the cable entries.
4. All connection cables have to be installed fixed.
5. The Pt 100 sensors connected to the intrinsically safe circuits are simple electrical apparatus and have to be assessed according to section 5.7 of EN 60079-11.
6. The maximum values of the tables are also allowed to be used up to the permissible values by concentrated capacitances and inductances.
7. The intrinsically safe measuring circuits are safely galvanically separated from the non-intrinsically safe circuits up to a peak crest value of the voltage of 375 V.
The intrinsically safe measuring circuits are safely separated from the earth potential.

These hints are content of the manufacturer's manual.

(16) The test documents are listed in the test report No. 10 203 556065.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones



EU-DECLARATION OF CONFORMITY

winkler

Manufacturer : WINKLER AG
Englerstraße 24
69126 Heidelberg



Contact : Tel.: ++ 49 (0) 6221-3646-0 Fax.: ++ 49 (0) 6221-3646-40
sales@winkler.eu www.winkler.eu



Product group : ATEX digital controller-limiter-power actuator-combination

Product : **WEXRBL25-230ZE...**

Directives : DIRECTIVES 2014/34/EU (ATEX)
*of the European Parliaments and Council of 26 February 2014 on the harmonisation of laws of Members States relating to equipment and protective systems intended for use in potentially explosive atmospheres" Annex III EU-Type-Examination

We hereby declare that in planning and manufacturing of this product the basic safety and health requirements of the EU Directives mentioned above and the up-to-date EMC- / RoHS Directives have been observed.

Winkler AG maintains a quality assurance system according to Annex VII of Directives 2014/34/EU (ATEX), which is subject to a yearly audit by the notified body TÜV Süd Product Service GmbH. Certificate number **TPS 21 ATEX Q 029587 021**

Identification CE0123  II 2G Ex e ib [ib Gb] mb IIC T4 Gb
CE0123  II 2D Ex tb IIIC IP6X T90°C Db

EC-Type Examination Certificate: **TÜV 10 ATEX 556065**

Further rules and technical specifications applied:

EN 1127-1:2019 EN 60079-7: 2015/A1:2018 EN 60079-18: 2015/A1:2017
EN 60079-0:2018 EN 60079-11: 2012 EN 60079-31: 2014

Any modification to the product without our consent will make this declaration invalid.

Heidelberg, March 1st 2022

Winkler AG

Andreas Zenner
CEO



19. QM-Certificate Directive 2014/34/EU Annex VII and ISO 9001:2015

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證書 ◆ CERTIFICADO ◆ CERTIFICAT

(1) **Certificate**

(2) **about the acceptance of the product quality assurance**

TRANSLATION

(3) Equipment and components intended for use in potentially explosive atmospheres – Directive 2014/34/EU

(4) Number of Certificate:

TPS 21 ATEX Q 029587 0021 Issue 00

(5) Product Category: Heating hoses, Heating jackets,
Controller-limiter-power-actuator-combination
Equipment Group II, category 2 G/D
Equipment protection "e", "r", "m", "t"

(6) Manufacturer: Winkler AG

(7) Address: Englerstraße 24; D-69126 Heidelberg (main factory)
Kleinfeldweg 38; D-69190 Walldorf (second production site)

(8) TÜV SÜD Product Service GmbH notified body No. 0123 in accordance with Article 18 of the Council Directive 2014/34/EU of February 26th 2016, certifies that the manufacturer maintains a quality assurance for the product, which conforms with Annex VII of the Directive.

(9) This certificate is based upon the Audit Report No. 713215236/1, issued at 18.05.2021, and is valid until 23.05.2024.
The certificate can be withdrawn if the manufacturer does not longer satisfy the requirements of appendix VII.
The result of the quality assurance re-assessment is part of the certificate.

(10) According to article 16 (3) of the Directive 2014/34/EU, the CE-marking shall be followed by the identification number 0123 identifying the notified body, involved in the production control stage. See also notes overleaf.

Certification Body Explosion Protection
Ridlerstrasse 65, 80339 München


Norbert Thimm (Jun 28, 2021 08:08 GMT+2)




 Product Service



Page 1 / 1

Quality Assurance Certificates without signature are not valid. The certificate may be circulated only without alteration. Extracts or alterations are subject to approval by TÜV SÜD Product Service GmbH. In case of dispute, the German text shall prevail. The document is internally administrated under the following number: EX3A 029587 0021 Rev. 00

TÜV SÜD Product Service GmbH • Certification Body • Ridlerstrasse 65 • 80339 Munich • Germany



ZERTIFIKAT ◆ CERTIFICATE ◆ CERTIFICADO ◆ CERTIFICAT ◆ 認 證 證 書 ◆ CERTIFIKAT ◆ CERTIFICATE ◆ CERTIFICADO ◆ CERTIFICAT ◆ 認 證 證 書 ◆



Management Service

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

winkler.eu
Winkler AG

Englerstr. 24 • 69126 Heidelberg • Germany
for the scope of application

Development, manufacture and sales
of heat engineering products with
control and monitoring systems

Kleinfeldweg 38 • 69190 Walldorf • Germany
for the scope of application

Manufacture of heat engineering products
with control and monitoring systems

has established and applies
a Quality Management System.

An audit was performed, Order No. 70002379.

Proof has been furnished that the requirements
according to

ISO 9001:2015

are fulfilled.

The certificate is valid from 2021-04-20 until 2024-04-19.

Certificate Registration No.: 12 100 28096 TMS.



Head of Certification Body
Munich, 2021-04-12



MS01-01/2019

TÜV SÜD Management Service GmbH • Zertifizierungsstelle • Ridlerstrasse 57 • 80339 München • Germany
www.tuev-sued.de/certificate-validity-check

TUV®