Operation Manual
Series W-200

W-234

Table of content

1 Safety information

Before putting the unit into operation, the safety information, the instructions for installation and the operating manual that is supplied with the unit must be read and observed.

Please read the safety information carefully and comply with the items stated. This is a matter of safety for personnel and equipment. The unit is predominantly designed as a temperature controller for electrical heating systems. Improper application, installation, configuration or operation of a system or that which goes against the machine's intended purpose may cause severe personal injuries and extensive property damage!

***Important:* This unit is not a safety temperature limiter according to DIN EN 60730-1**

The unit must not be installed in potentially explosive atmospheres. If a process function originating from an explosion-risk area is to be processed by the unit installed outside the explosion-risk area, all supply lines of the unit leading into the explosion-risk area must be guided via safety barriers!

The prerequisite for error-free and safe operation of the unit is its careful transport and storage, as well as correct assembly and installation. This device may only be installed, configured, parameterized and commissioned by qualified persons who are familiar with installation, commissioning and maintenance of comparable devices and with the system in which the device will be applied and who have appropriate knowledge in the field of instrumentation and control. Operating staff of the system in which the device is to be used must be instructed on operation and control of the unit by qualified persons.

Please observe and comply with:

- The contents of the present manual for installation and operation of the unit, in particular the information on installation, taking into operation, any notes in bold print and adjustment of the device to suit the overall system.
- Any and all safety information attached to the unit
- Any and all relevant safety regulations for installation and operation of electrical systems
- The keeping of this manual in a safe place for future use.

The regulations stated in the present manual are applicable and valid in all EU countries. For use of the device outside of an EU country, the relevant national rules and regulations must be considered.

This device has been produced and tested in accordance with DIN EN 61010 Part 1, “Safety requirements for electrical equipment for measurement”, and has left our company in an error-free condition in terms of its safety and functionality.

1.1 Place of application of the unit

The unit is designed as a temperature controller for flexible application in electrical heating systems. The place of operation or installation of the temperature controller must not be close to motors, transformers, circuit breakers or other inductive loads, it must be shock-free and vibration-free and positioned on solid ground. The ambient temperature at the place of installation must be between

−20 °C and 50 °C, with a relative humidity of < 90 % (noncondensing). Aggressive and corrosive gases and vapors may damage the unit.

1.2 Instructions for installation

Please read the installation instructions carefully and comply with all conditions mentioned here during installation of the unit. In case of non-compliance with the Instructions for installation, faults or malfunctions may occur, or the unit may fail to comply with the required EMC guidelines and the conditions for CE-conformity will not be fulfilled.

Before connection of the unit and before putting it into operation, please ensure that the operating voltage and the conditions for the operating voltage required by the unit correspond to the conditions on site (cf. name plate and technical specifications). If required, take any appropriate measures.

Please make sure that the control and load voltage on site are switched off and secured against accidental reactivation during installation of the device. The electrical connections must be made on the basis of the connection diagram and the relevant national rules and regulations. The supply lines for the device must be laid such that they are free from any tensile loads and are not exposed to risks of shearing or crushing under any circumstances.

The mains connection must be provided by suitable cabels with a cross-section minimum of 6 mm². The connections for the loads must each be provided by suitable cables with a cross-section of a minimum of 1.5 mm².

For sensor lines and signal lines, it is highly recommended to use shielded cables (especially if lines are long and/or running along potential sources of interference); for thermocouples, shielded compensation lines should be used likewise. Sensor lines and signal lines must be installed such that they are spatially separated from the load and control lines (high-voltage lines). If signs of incorrect switching behavior are detected the circuit must be put out of service until remedial action.

For intermediate clamping of compensation lines for thermocouples, no regular terminals may be used, since this would result in generation of additional thermocouples that may falsify the measuring results.

Connect the shield of the sensor lines and the signal lines with the functional ground as close to the unit as possible and lay a line with a diameter of minimum 1.5 mm² from this point to the PE bus bar along the shortest possible route.

Any inductive loads activated by the unit, such as contactors, valves, motors, transformers, etc. must be wired separately and interferences must be prevented using device-specific suppression devices.

The present manual does not contain all notes for regulations, standards, etc. that must be observed and complied with during working with the unit in connection with systems and plants. Any such regulations, standards, etc. shall be complied with and observed by the operator of the unit with regard to specific requirements of the respective system or plant.

2 Start-up and adjustment of controller

The unit is delivered with a default setpoint temperature. This setpoint mostly will not fit to the application. The controller has to be set to the application-specific setpoint temperature via our handheld (Series ZF-300). If the device had a customized fix-temperature you can´t change the setpoint temperature.

Power on

Carefully inspect the wiring and connections once again.

Incorrect wiring or connection of the unit may cause severe damage of the unit and the plant. Please make sure that during initial switch-on of the unit the load voltage of the plant is switched off since the unit will not yet have been adjusted to the plant and may possibly trigger faults or malfunctions.

Now, switch on the operating voltage of the unit.

3 General information

The W-200 is a compact 4 channel intuitive FAT DC-temperature controller for wall-mounting. FAT stands for Fast-Adaptive-Tuning. A novel algorithm permanently adjusts the control parameters to the control process. The common adjustment of PID controllers or the execution of an auto tuning procedure is obsolete.
The self-optimizing controller logic leads to an efficient adaption to any closed-loop controlled pass and quickly reaching adjustment between set-point temperature and actual (temperature) value.
A multi-colored LED is signaling the different operating modes, easy viewable in the distance.
Electronics are protected against overcurrent and high thermal load.

3.1 Status LED

Starting procedure:

After connecting to power supply, the controller starts with a self-test: white LED is on.
After Self-test successfully completed, the LED is shortly green and then controller starts heating.
If a failure is detected an error signal will show up. chapter 3.2 fault detection see on page 6.

Heat-up phase:

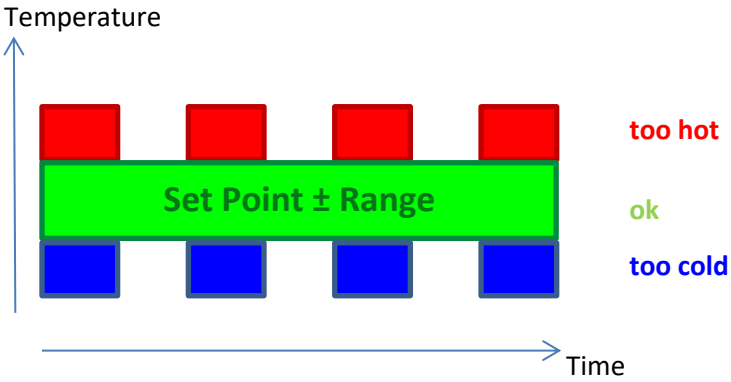
Usually, after startup, the temperature is below the setpoint and the signal LED flashes slowly (1 Hz) blue. This means setpoint is not reached yet.

Set-point temperature reached:

The Controller works at setpoint temperature inside the range: green LED permanent on

Temperature monitor:

The LED remains green at setpoint temperature is in-between the range. Above and below this temperature range the LED starts to blink with a frequency of 1 Hz. Blue signals too low and red too high temperatures.



3.2 Fault detection

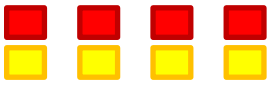
From start and during operation the controller is permanently checking the following failure:

1. PCB temperature
2. Power supply
3. Sensor break

Signal LED on failure

If any failure occurs the controller stops heating (stand-by) and the Signal LED starts fast blinking with a frequency of 4 Hz.

1. Device failure:
2. Sensor failure:



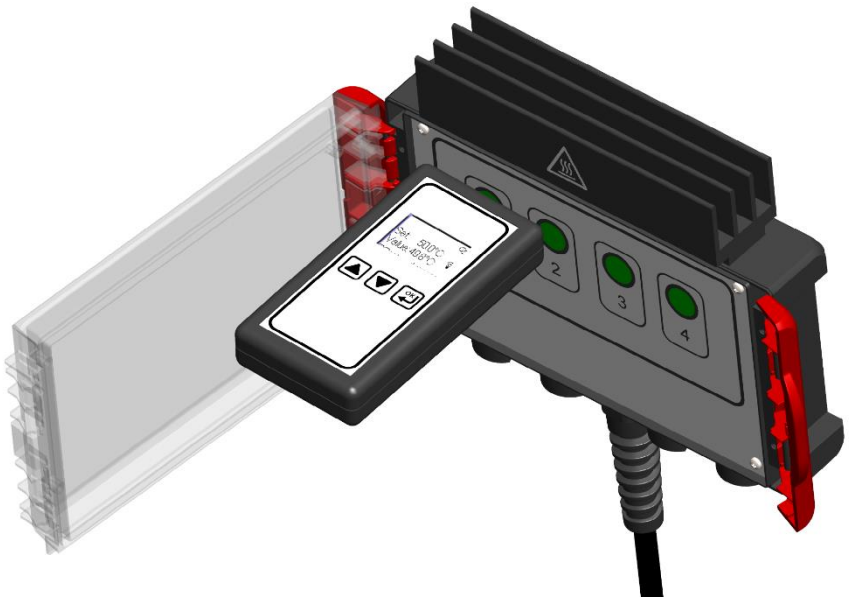
4 Hz
4 Hz

If the failure is repaired the controller starts automatically. When the failure notes still occur reconnect the controller after a power cycle.
Please also see chapter 6 Troubleshooting on page 8

4 Set-up

4.1 Adjustment of setpoint

The setpoint could be changed by our handheld (Series ZF-300). To change the setpoint you had to open the cover and place the handheld directly on the front plate at each channel (see image below). Every channel has a separate setpoint. When the handheld communicates with one channel the signal LED will blinking temporarily white. Now adjust the setpoint temperature between the lower- and upper limit. The lower and upper limit are preset and not changeable by the handheld.



4.2 Range

Current actual temperatures inside the range are considered balanced to the setpoint value, signaled by the green LED-light. Range settings between ±0,5 °C and ±20 °C. Step width is 0.1 °C. The larger the value, the lesser switching cycles are needed. (Factory default: ±3 °C)

4.2.1 Sensor type

The following sensors are available:

- Pt100 2-wires
- Pt100 ¾-wires
- Pt1000 2-wires
- Pt1000 ¾-wires
- Type K 2-wires

5 Controller On / Off

The controller switches automatically on with the power supply connected.
Switch the mains connection off to stop the controller.

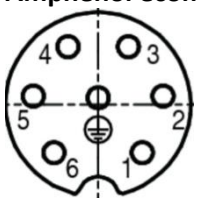
6 Troubleshooting

Error:	Actions:
Display stays off	• Check power supply. • Check polarity (power wiring). • Disconnect and reconnect controller from mains supply. • Contact service.
LED blinking fast yellow	• Check wiring for short circuit or wire breaks, check connection in terminal / plug. • Check resistance value of sensor. • Replace Sensor.
LED blinking fast red	• Disconnect controller from mains supply and let cool down. Then reconnect. • Check correct connection in terminals for power supply and heater connection. • Provide better air circulation. • Check current in heater circuit.

Service mail: service@winkler.eu

7 Connector pin assignment

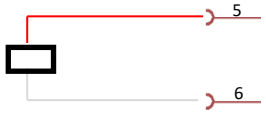
Amphenol ecomate C016 7 pin



Heater (max. 20 A) protected with internal fuse

Pin	Function
1	L Heater
2	N Heater
3	(w)* Sensor RTD (4 wire only)
4	(r)* Sensor RTD (3/4 wire only)
5	(r)* Sensor RTD; Sensor TC +
6	(w)* Sensor RTD; Sensor TC -
7	Functional earth

*(IEC 60751)



8 Repair and maintenance

If the controller is damaged, please return the controller to us with an error description.

Maintenance intervals and Maintenance directives according to DGVU Rule 3 apply.

If the device is dirty, turn power off, and clean it with a damp cloth. Heavy dirt may be cleaned with a non-abrasive, solvent-free cleaning agent.

9 Disassembly and disposal

The device may only be disassembled when it is switched off, disconnected from the mains and secured!

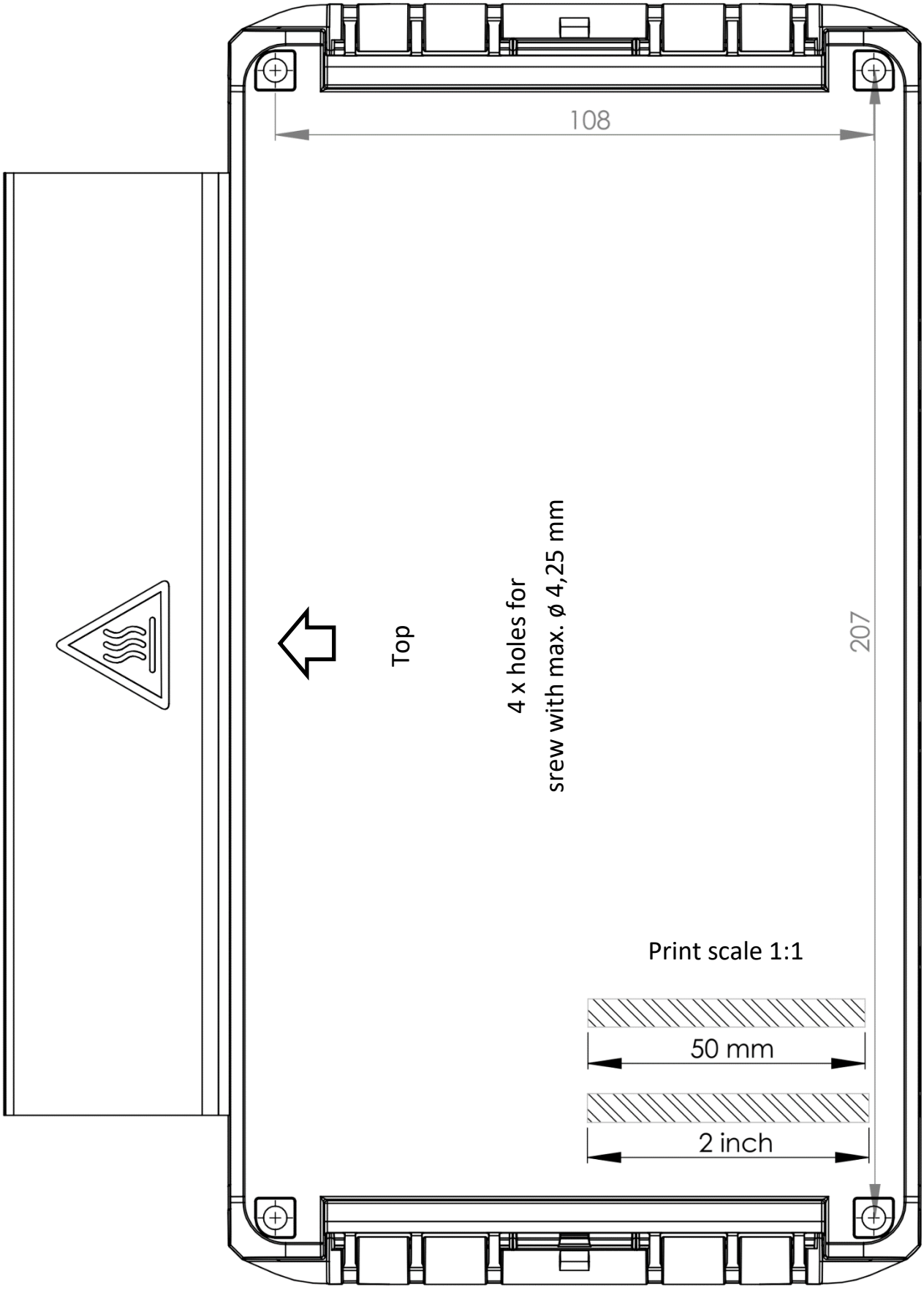
Electronic devices are recyclables and do not belong in the household waste! Dispose of the product at the end of its service life in accordance with applicable legislation.

10 Hints: drilling template

Important: Leave at least 50 mm / 2 in of free space around the controller for easy cover opening. Also leave 300 mm / 12 in space to the top of the controller or rather the heat sink.

Check the scale after printing for correct size, for correct drilling positions.

11 Drilling template



12 EU-Declaration of conformity

EU-DECLARATION OF CONFORMITY

winkler.eu

CE RoHS

Manufacturer:	Winkler AG Englerstr. 24 69126 Heidelberg
Contact:	Tel.:+49 6221 3646-0 Fax.: +49 6221 3646-40 sales@winkler.eu www.winkler.eu
Product group:	Temperature controllers
Series / item:	**Series W-200 / WRW2...**

Directives:		
	Directive 2014/35/EU	Low Voltage Directive
	Directive 2014/30/EU	Electromagnetic Compatibility
	Directive 2011/65/EU	restriction of the use of certain hazardous substances in electrical and electronic equipment
	Directive 2017/2102/EU	amending Directive 2011/65/EU

We hereby declare that in planning and manufacturing of this product the basic safety and health requirements of the EU Directives mentioned above have been observed.

Further rules and technical specifications applied:

EMC requirements:	EN 61326-1:2013
Emission:	EN 61000-6-4:2011
Immunity:	EN 61000-6-2:2006
Safety requirements:	EN 61010-1:2011

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

Heidelberg, July 20th, 2021

Winkler AG

CEO A. Zenner