Pulzon

**Temperature controller**

User manual

# PULZON 2,0 kW230V 5 PIN sensor type J / K

## Contents:

**Safety instructions**

Read the operating instructions carefully before use.

Install on a flat, stable surface in a well-ventilated area. Avoid humid, dusty, or hot environments to prevent malfunctions or fire risk.

Operating on the device may only be carried out by qualified personnel
Ensure the device is disconnected from the power supply, before opening the housing.

Before turning on the main power switch, make sure that the system ground (FG) is properly connected. Improper grounding may lead to electrocution of personnel or damage to equipment.

The manufacturer is not liable for damage caused by use of the equipment.

**Service instructions**

Ensure the device is disconnected from the power supply before replacing the fuse. ( Switch off the power and disconnect the plug from the wall outlet.)
Use only a fuse of the same type and rating.

Check that the controller and Mold cable connection type are compatible with each other before connecting. Incompatible connection type poses an electrocution hazard and will damage equipment.

Check the mains cable and the tool cable regularly for damage, if it is damaged,use new connecting cable.

**Terms of use**

Pay attention to connect all wires according to the Drawing
( See page 5 )
Use a stranded cable for connecting line for heaters.
A special compensation cable is required for thermocouple! Cables and hybrid cables (Load + probe combined) are available as original accessories.

## Description

The temperature controller is designed for 230V power supply and comes with a SCHUKO plug.

The temperature controller allows for sensor selection between Type J / K input, offering flexibility for different application requirements.

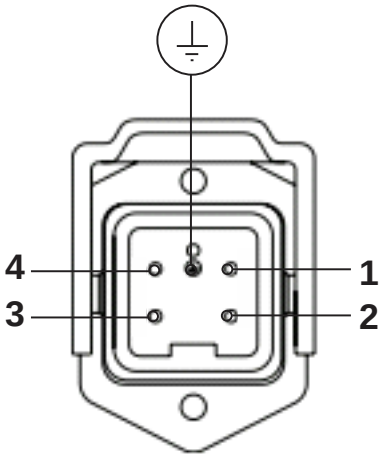
The main power switch is located on the front panel, ensuring complete disconnection from the power supply when turned off. A 5-pin connector is located on the rear side of the controller.

The controller is preconfigured with an autotuning function, which automatically calculates the optimal PID parameters to ensure precise temperature control.

In the event of a sensor failure during automatic operation, the controller automatically switches to Manual mode while maintaining the most recent PID-generated output percentage, ensuring continued process stability.

## Power and Thermocuple connector

5 pin ILME Connector CKF 04 / CK 03 I
Thermocouple type J / K




| Heater | | Thermocouple type J / K | | |
|---|---|---|---|---|
| | Pin nr. | Sensor type | Pin nr. | |
| | | | + | - |
| L1 | 3 | J / K | 1 | 2 |
| N1 | 4 | | | |
| Pe | Pe | | | |

## Display and key function


| | Display | Description |
|---|---|---|
| **1** | **Display1** | Actual value display in WHITE digits. During configuration, it shows the active parameter |
| **2** | **Display2** | Setpoint display in RED digits. During setup, the controller shows the value being entered |
| **3** | **C** | ON when the output is switched. |
| **4** | **A1** | ON when Alarm 1 is switched on. |
| **5** | **A2** | ON when Alarm 2 is switched on. |
| **6** | **T** | ON when the controller is running in the "autotuning" cycle. |
| **7** | **M** | ON when the "Manual" function is active |
| **8** | **R** | ON when the controller communicates via interface. |


| | Keys | Description |
|---|---|---|
| **9** | | Adjustment (decrease) of setpoint. During configuration, pressing the button will advance to the next parameter. |
| **10** | | Adjustment (increase) of the setpoint. During configuration, pressing the button advances to the next parameter. |
| **11** | SET | Allows to display the alarm setpoint and runs the autotuning function |
| **12** | FNC | Allows to run the Autotuning and to select Manual / Automatic mode |

## Thermocouple Settings

The temperature sensor can be adjusted using the buttons as follows:

| | Keys | Display | Function |
|---|---|---|---|
| **1** | FNC for 3 sec | Display 1: PASS<br>Display 2: 0000 | Enter the password |
| **2** |  | Enter password: 1234 | With  enter number, with SET jump one digit further.<br>Finally with FNC confirm |
| **3** | 1 time SET | Display: Sen_<br>Display 2: tc.K | |
| **4** | Press SET and  or  | Display 1: Sen1<br>Display 2:<br>"e.g." tc. K flashes | Select the temperature sensor using the arrow keys. |
| | Press SET | | To confirm selection of thermocouple |
| **5** | Press FNC 2x | | Exit the menu |

| Sensor type: | | Range: |
|---|---|---|
| tc. K | Type K / NiChNi | -260 to 1360 °C |
| tcJ | Type J / FeCuNi | -200 to 1200 °C |
| Pt100 | Type PT100 | -200 to 600 °C |

## Modifying Main Setpoint

The setpoint value can be changed from the keyboard as follows:

| | Press: | Display | Do: |
|---|---|---|---|
| **1** |  or  | Change the value on Display 2 | Increases or decreases the main setpoint |

## Autotuning

The controller is equipped with an automatic tuning feature that enables precise regulation without requiring in-depth knowledge of PID control algorithms.

It analyzes process oscillations and automatically optimizes the PID parameters for improved performance.

*Led T flashes when Autotuning function is active*

## Automatic/manual settings for the % output

The procedure can be activated by keyboard

This function allows to select Automatic functioning or Manual command of the output percentage.

Pressing the FNC key, Display 1 shows *P.*----, while display 2 shows »AutoM«

Press the button SET to set “MAN” mode; now it's possible to change the output power percentage value using the keys  or  .

*M LED goes on and the function switches to Manual mode*

To return to automatic mode, use the same procedure, press FNC key then press SET to select »AutoM« on Display 2.

*M LED goes out and the function switches to Automatic mode.*

If the sensor breaks during Automatic functioning, controller moves to Manual mode while maintaining the output percentage command unchanged as generated by the PID immediately before breakage. If there is a temporary power failure or after switch-off ,manual functioning as well as the previous output percentage value will be maintained at restarting

## Error messages

In case of malfunctioning of the system, the controller switches off the regulation output and displays the type of problem

| # | Cause | What to do |
|---|---|---|
| E – 01 | Error in EEPROM cell programming | Call Assistance |
| E – 02 | Cold junction sensor fault or room temperature outside of allowed limits | Check your thermocouple or Call Assistance. |
| E – 04 | Incorrect configuration data. Possible loss of calibration values. | Check if the configuration parameters are correct |
| E – 05 | Thermocouple open or temperature outside of limits | Check the connection with the sensors and their integrity |

## Technical data

**Housing:** Metal enclosure, powder-coated Dimensions (W x H x D) in mm: 205x85x190,Weight: 2,4 kg

**Temperature Controller:** ATR144 Microprocessor-controlled controller in 71x29mm, modular design, with fully automatic system, individual setpoint and actual value with two 4-digit LED display, status alarm LEDs, and FNC key for switch-over to manual mode

**Thermocouple Input:** J / K

**Power Outputs:** 230V, max. 2000W per zone, with built in 50A solid state relay

**Fuse:** fast FF 10A, 6.3 x 32 mm

**Connection:** 5 PIN connector plug ILME/HARTING

**Mains Supply:** 230 VAC, 50Hz, 1P / N / PE

**Mains Connection:** Mains cable with 3 m shock-proof connector

**Ambient Temperature:** Operation: 0...+55°C

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