

UNIVERSAL POWER AND TEMPERATURE CONTROLLER PRD2U / PRD2UF



USER MANUAL

VER 08.2026.2

<https://serwer.pamel.pl/>

1. OPERATING PRINCIPLE AND INTENDED USE

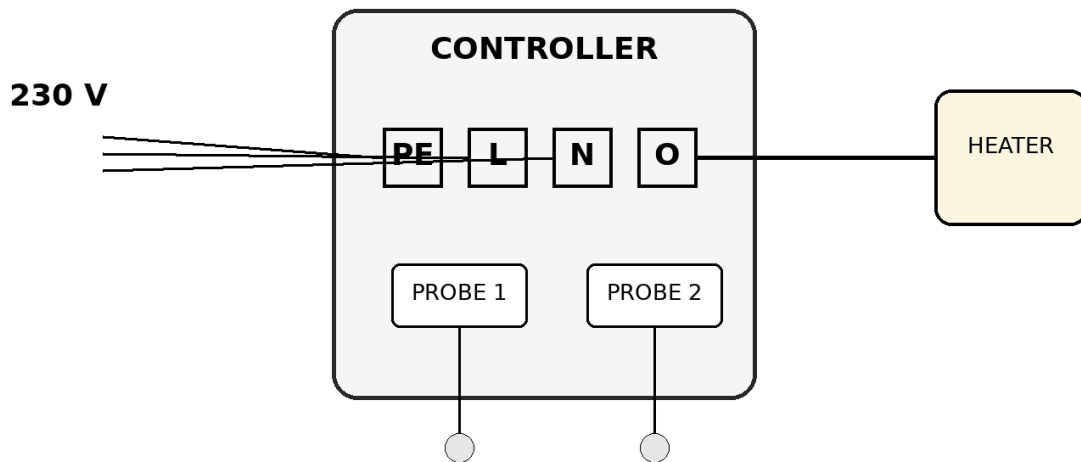
PRD2U controls heater power from 0 to 100% and can regulate temperature using up to two probes. The controller may also operate without a probe, but only in MANUAL mode.

- T is the temperature used for power control. Ta is the process end/alarm threshold.
- Power adjustment resolution is 0.25%.
- Hardware variants include PRD2U+ and PRD2UF+; always check the maximum load marked on your unit.
- Firmware covered by this manual: VER 08.2026.2.

Supply	230 V, 50 Hz
Maximum load	up to 5.5 kW PRD2U+; PRD2UF+ as marked
Power control	0...100%, 0.25% step
T/Ta range	1...130°C
Probes	0 / 1 / 2 × DS18B20
Menu languages	PL / CZ / SK / EN / DE

2. SAFETY AND CONNECTION

The unit operates from 230 V mains. Disconnect the supply before installation or checking wiring. The output is intended mainly for resistive heaters.

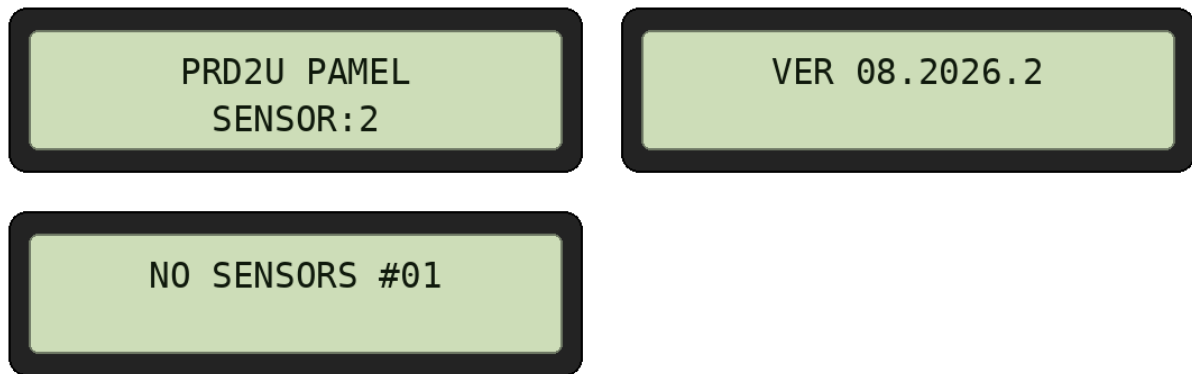


Simplified connection diagram using the terminal markings from PRD2U documentation.

- PE is protective earth, L/N are the mains input and O is the controlled heater output.
- Never exceed the load rating marked on the unit and do not use damaged cables or sockets.
- For high heater power use adequate conductor size and suitable circuit protection.
- Temperature probes connect to the dedicated sockets. The unit can work with 0, 1 or 2 probes.

3. FIRST START

At power-up the controller searches for probes, displays how many were found, then shows the firmware version. In VER 08.2026.2 a missing probe does not block MANUAL mode.

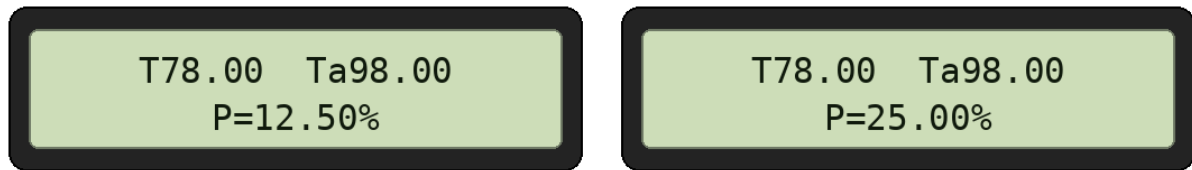


- Without probes, MANUAL can control power; AUTO_P, AUTO_PID and the special mode keep power at zero until a valid T reading is available.
- A probe may be connected again while the unit is running; the controller periodically retries detection.
- After a valid reading is recovered the controller returns to normal operation.
- Before the first real process, test at low power and identify which probe is T and which is Ta.

Example LCD layout. Text depends on the selected device menu language.

4. MAIN SCREEN AND POWER ADJUSTMENT

The main screen shows T, Ta and current power P. PLUS raises the power setting, MINUS lowers it and the centre key switches to the next screen.

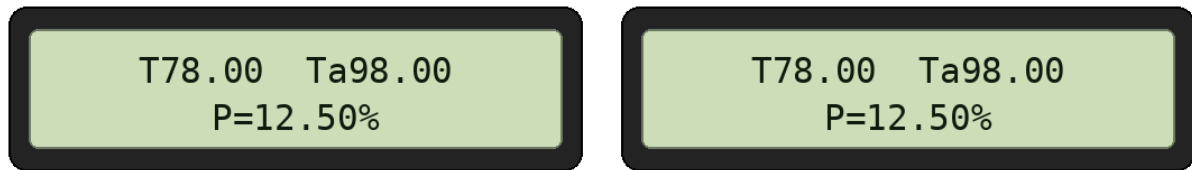


- The power setting is limited by Pmin and Pmax.
- Power step is 0.25%.
- Factory stored power setting: 12.5%.
- If RESET POWER is selected, the power setting starts from 0% after the next power-up.

Example LCD layout. Text depends on the selected device menu language.

5. T SETPOINT AND Ta LIMIT

A short press of the centre key switches from the main screen to the T setpoint and then to Ta. PLUS/MINUS changes the selected value.



- T and Ta range: 1.00...130.00°C.
- With 0.01 display precision the setting changes by 0.02°C per step; with 0.1 precision by 0.1°C. Holding the key accelerates changes.
- Defaults: T=78°C, Ta=98°C.
- Ta above the setpoint continuously for about 20 s ends the process and disables heating until the centre key is pressed.
- With one probe, T and Ta use the same measurement; set Ta high if you do not want the end alarm.

Example LCD layout. Text depends on the selected device menu language.

6. ENTERING THE SETTINGS MENU

Hold the centre key for about 3 seconds. First choose the settings scope, then use the centre key to move through the individual screens.



- MORE SETTINGS – main operating parameters.
- ALL SETTINGS – all parameters including language, display precision, control type and sound.
- RESTORE SETTINGS – resets user settings. After reset verify language, Pmax and operating mode.
- PLUS/MINUS selects an option; the centre key confirms and moves on.

Example LCD layout. Text depends on the selected device menu language.

7. Pmin, Pmax AND CONTROL MODES

Pmin and Pmax limit the available power range. The PAMEL variant allows Pmax up to 100%. Keep Pmin at or below Pmax.

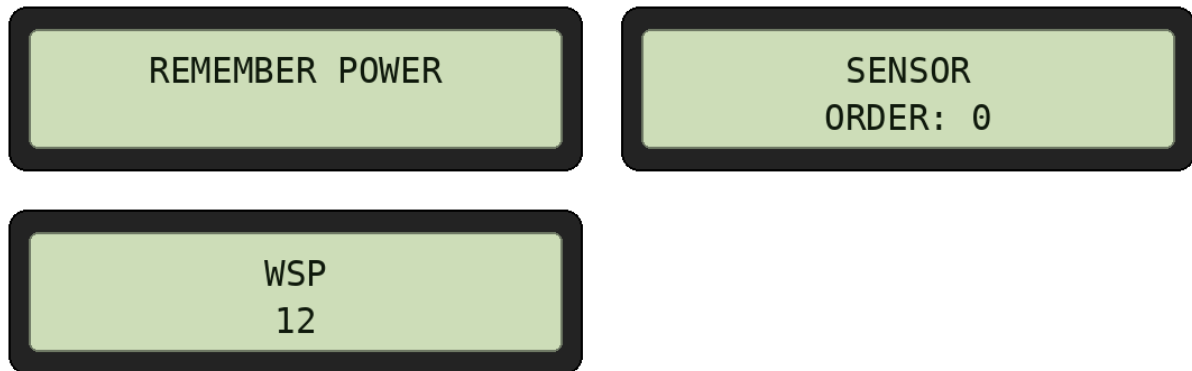


- Pmin: 0...99.75%, 0.25% step, default 0%.
- Pmax: 25...100%, 0.25% step; PAMEL default 100%.
- MANUAL – direct power control and the only mode allowed without probes.
- AUTO_P – recommended proportional mode. Power depends on temperature error and WSP.
- AUTO_PID – advanced PID mode. For a typical distillation column it is not recommended as the first choice.
- SPECIAL MODE1 – when available: MANUAL-like control up to T, then the process ends after T remains exceeded briefly.

Example LCD layout. Text depends on the selected device menu language.

8. POWER MEMORY, PROBE ORDER AND WSP

These three settings have the greatest effect on everyday operation after the control mode has been selected.



- REMEMBER POWER restores the last power setting after a supply interruption; RESET POWER starts from 0%.
- SENSOR ORDER 0/1 swaps the roles of two detected probes. With one probe use value 0.
- With one probe and order 1, CONFIGURATION ERROR #10 is shown and the controller opens settings.
- WSP range 1...19, default 12. It is the proportional gain used by AUTO_P (the equivalent of K_p in this model). Higher WSP produces a stronger power response.

Example LCD layout. Text depends on the selected device menu language.

9. PROBE CALIBRATION

Calibration is independent for probe 1 and probe 2. Do not change it without a reliable reference. In the current firmware screen B adjusts gain and screen A adjusts offset.



- B: 0.50...2.00, step 0.01, default 1.28.
- A: -10.00...+10.00°C, step 0.05°C, default 0.00°C.
- Relationship: displayed $T \approx B \times \text{measured } T + A$.
- Adjust B when the error changes with temperature; adjust A when the error is approximately constant.
- Write down the original values for both probes before changing them.

Example LCD layout. Text depends on the selected device menu language.

10. ALL SETTINGS

Selecting ALL SETTINGS adds interface and power-control options to the basic settings sequence.

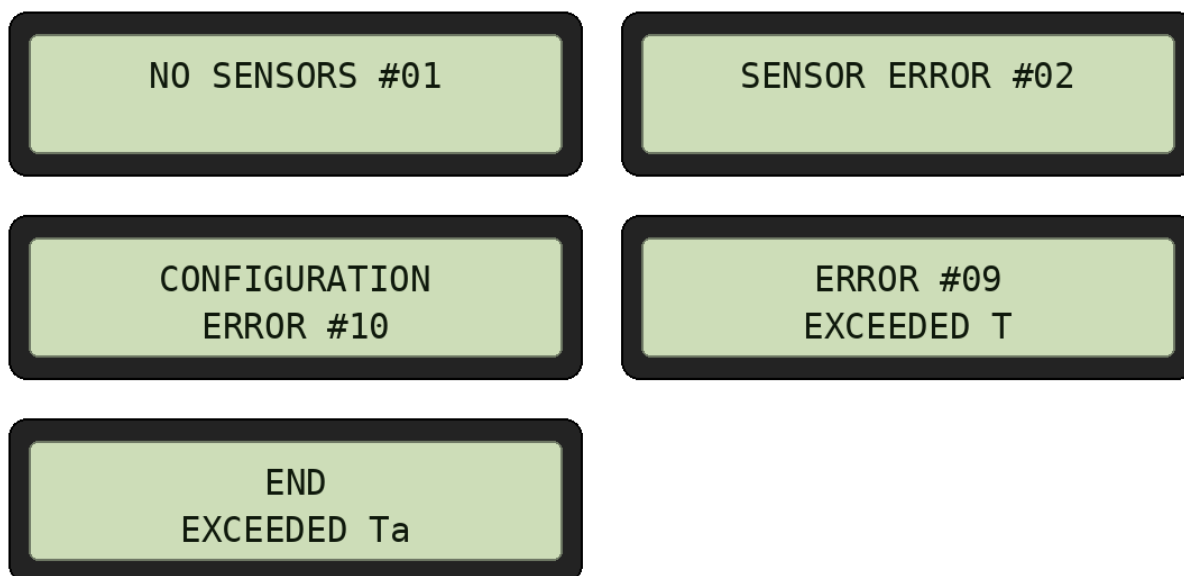


- Device menu languages: Polish, Czech, Slovak, English or German.
- Temperature display precision: 0.1 or 0.01.
- PHASE CONTROL gives smooth phase-angle control; GROUP CONTROL switches groups of complete mains cycles.
- SOUND ON/OFF controls key and alarm beeps; factory setting is ON.
- Settings are stored in non-volatile memory.

Example LCD layout. Text depends on the selected device menu language.

11. MESSAGES, ALARMS AND PROBE PROTECTION

VER 08.2026.2 cuts heater power immediately after an invalid probe reading while keeping the user interface alive so that the sensor can be detected again automatically.



- NO SENSORS / #01 – status with no probes; MANUAL remains available.
- SENSOR ERROR #02 – after consecutive read failures. Heater power and relay are disabled until a valid reading returns.
- CONFIGURATION ERROR #10 – one probe is present but SENSOR ORDER=1; set order to 0.
- ERROR #09 / EXCEEDED T – T exceeds 118°C. Heating remains latched off until the unit is restarted after the cause is checked.
- END / EXCEEDED Ta or T – process end condition; acknowledge with the centre key.

Example LCD layout. Text depends on the selected device menu language.

12. BEFORE CALLING SERVICE

Most common problems can be narrowed down from the display and a few safe checks.

- AUTO shows 0%: check that T is valid, T is below the setpoint and Pmax/WSP are not set too low.
- #01: check the probe plug and cable. A restart is not required; the controller retries detection while running.
- #02: disconnect and inspect the probe/cable. Power stays off until a valid reading is recovered.
- Heater remains on at 0%: disconnect mains immediately and check L/N/O wiring and the output stage.
- Dimming lights or a hot plug/socket indicates wiring overload or poor contact – stop operation and inspect the circuit.

13. PRODUCT CENTER AND DOCUMENT VERSION

Current manuals, FAQ, PAMEL EDU, documents and PRD2U support materials are available through the PAMEL Product Center.



<https://serwer.pamel.pl/>

- Main address: <https://serwer.pamel.pl/>
- Firmware covered: VER 08.2026.2.
- Manual version: 24.08.2026.
- Main updates versus older manuals: MANUAL operation without probes, automatic probe re-detection, safe power cut-off on sensor failure and corrected one-step mode selection.

WARRANTY TERMS

PAMEL, 42-300 Myszków, ul. Urodzajna 5E

1. PAMEL provides a warranty for the controller (excluding optional equipment) in the Republic of Poland: 24 months basic warranty, 6 months manufacturer extended warranty, and an option to purchase an extension to 40 or 50 months. The total warranty period may not exceed 80 months from the device production date. A purchased extension is confirmed by a holographic sticker on the warranty card.
2. Optional equipment and consumable items, including probes, heaters, antennas, sensors, holders, cables and batteries, are not covered by the device extended warranty; statutory rules and the applicable sales terms apply to them.
3. During the warranty period the manufacturer undertakes to remove physical defects free of charge. If at least four repairs have been carried out under the basic warranty and the device remains defective, the Buyer may request replacement with a unit of equivalent parameters or reimbursement. The warranty period is extended by the repair time.
4. Claims should be reported by e-mail to pamel@pamel.pl or by telephone. The manufacturer first attempts to solve the problem remotely and indicates further claim steps. At the manufacturer's request, the Buyer shall complete a claim report.
5. The warranty covers only defects caused by reasons inherent in the device. It does not cover damage caused by, among other things, incorrect installation, use or maintenance, improper storage, incorrect consumables, unauthorised repairs or modifications, mechanical damage, flooding, condensation, contamination, atmospheric events, accidental events or exceeding rated parameters.
6. The warranty does not cover claims concerning technical parameters when those parameters comply with the manufacturer's data.
7. To retain warranty rights, the device must be delivered complete, in protective packaging, with documentation, cables and additional components, with seals and identification markings intact, and with the original warranty card signed by both parties and bearing the production-date sticker.
8. The warranty does not cover services and materials connected with normal operation, such as installation, programming, cleaning, maintenance, replacement of fuses, lamps or wear parts. Such services are chargeable.

WARRANTY TERMS

9. The service centre may refuse a warranty repair if documentation data do not match the actual device, if documents contain unauthorised corrections, or if identification marks have been removed.

10. Warranty repairs are carried out within up to 21 days from delivery of the device to the service centre. If parts must be sourced from abroad, this period may be extended and the Buyer will be informed by e-mail.

11. The device must be installed in accordance with standards and the operating instructions; where required by law, installation must be carried out by a person with the appropriate qualifications.

12. This document defines the rights and obligations of the parties. Equipment not collected from the service centre within 3 months after completion of repair becomes the property of the service centre. Parts replaced during repair remain the property of the manufacturer.

13. The manufacturer is not responsible for loss of user data stored in the device. After repair, the device may be returned with factory settings.

14. A signature on the warranty card confirms that the warranty terms have been read and accepted. A card without a signature and without the original production-date sticker is invalid.

15. Maintenance, cleaning, replacement of lamps, fuses, consumables and repairs resulting from normal wear are not counted as warranty repairs.

DATA / DATE	SPRZEDAWCA / SELLER	KLIENT / CUSTOMER