

PAMEL

PRM

OPERATING MANUAL

Firmware 0.4.2 • 24.08.2026

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



OPERATING PRINCIPLE

PRM controls the power supplied to an electrical load and - when temperature probes are connected - can automatically control the process to the set temperature. **MANUAL** The user sets power in %. A probe is not required for power control itself. **AUTO P / AUTO PI / AUTO PID** The controller adjusts power from the temperature measurement. **AUTO P** and **AUTO PI** are the first choice for typical distillation; **AUTO PID** is an advanced mode. **DISTILLATION** Continuous operating mode with power/temperature control, alarms, timer and valve output. **BREWERY** Stage mode: up to 10 stages and 5 memory banks, with time, temperature and an optional auxiliary output. The power output mode (**PHASE** or **GROUP**) is selected independently of the control algorithm. The controller can operate without a probe, with one probe or with two probes - depending on the task and the installation. **VALVE**: operation of **HYSTER / WINDOW / WINDOW2** modes is shown in the attached diagram on page 56.

APPLICATION AND VARIANTS / SAFETY

PRM is a power and temperature controller for heating, distillation, smoking, scalding and multi-stage BREWERY-type processes. Functions shown on the display depend mainly on the firmware version and selected operating mode. PRM single-phase version, maximum controlled power up to 5.5 kW. PRM DUO variant with additional hardware options; screen operation is common to PRM firmware. PRM3F three-phase variant, maximum $3 \times 5.5 \text{ kW} = 16.5 \text{ kW}$. PRM3F DUO three-phase variant with optional equipment depending on the version. **IMPORTANT** Terminals, number of outputs and connection method may differ between variants. Always follow the markings on your device and the documentation for the specific version.

DANGER Mains voltage may be present in the device and installation. Make connections, repairs and work on terminals only after disconnecting the power supply. Where required by regulations, the work must be carried out by a suitably qualified person. **WARNING** Do not exceed the rated power of your PRM version. Do not use damaged cables, probes or loads. Provide proper electrical protection and a PE protective conductor. **NOTICE** The controller does not replace independent protection required by the installation or process. Alarms and automation are auxiliary functions. **TIP** Before the first heating cycle, test the system at low power. Check probe readings, output operation and the installation response to STOP/alarm. • Protect the device from flooding, steam condensation, conductive dust and high ambient temperature. • Install the probe so that it measures the temperature at the point controlled by the selected threshold or controller. • Avoid running probe cables parallel to high-power cables over long distances.

TECHNICAL DATA

Parameters confirmed for the current PRM family Parameter Value / information
Power control 0...100%; manual step 1.00% or 0.25%. Controllers MANUAL, AUTO P, AUTO PI, AUTO PID. Output method PHASE or GROUP. Probes operation without a probe or with 1-2 temperature probes; typical 1-Wire/DS18B20 input. LCD graphic 128 x 64, three buttons. PRM / PRM DUO maximum controlled power up to 5.5 kW.

PRM3F / PRM3F DUO up to 3 x 5.5 kW = 16.5 kW. Temperature setpoints typically 10...120 C; details are given with each screen. BREWERY up to 10 stages, 5 memory banks. Firmware version described in 0.4.2. this manual NOTICE Check supply voltage, terminals, protection and optional equipment on the markings of your specific unit. This manual does not guess pin assignments or enclosure dimensions.

CONNECTION

Illustrative diagram of one PRM version. Terminal markings and number of terminals may differ for PRM DUO / PRM3F / PRM3F DUO. **DANGER** Disconnect the power supply before touching terminals. First identify the markings on your controller, then make the connections. **PROBES** Connect probes to the designated input/socket. After start-up check the **NUMBER OF PROBES** screen and T1/T2.

FIRST START-UP AND BUTTONS

LEFT decreases the value or selects the previous option. CENTRE - OK confirms. During DISTILLATION operation, a short press moves to the next screen; holding for about 1.5 s opens the menu. RIGHT increases the value or selects the next option. ON NUMERIC SCREENS the bottom bar corresponds, from left to right: - / OK / +.

ON SELECTION SCREENS the bottom bar corresponds, from left to right: < / OK / >.

1. Switch on the controller and wait for PAMEL / VER 0.4.2. 2. Check the number of detected probes. If one or two probes are expected, the displayed number must match the installation. 3. Select DISTILLATION or BREWERY if the start-up setting opens the selection screen. 4. Before applying high power, check temperatures, power mode, Pmin/Pmax and alarms.

CONTROLLER SCREENS - 1/29

Welcome screen

Display: PAMEL / VER 0.4.2

Buttons: No operation - transitional screen.

Range / default: No settings.

Effect: Identifies the controller and firmware version.

Number of probes

Display: NUMBER OF PROBES / 2

Buttons: No operation - transitional screen.

Range / default: Value depends on detected probes.

Effect: Shows how many probes were detected at start-up.

Operating mode selection

Display: SELECT MODE / DISTILLATE / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: BREWERY / DISTILLATE.

Default: DISTILLATE.

Effect: Selects the main operating mode.

Start countdown

Display: START / 5 s

Buttons: No action required.

Range / default: 2...100 s depending on the start-up setting.

Effect: After the countdown the controller starts operation.

CONTROLLER SCREENS - 2/29

Reset settings

Display: RESET / SETTINGS? / NO OK YES

Buttons: Left/Right: change; OK: confirm.

Range / default: NO / YES. Default: NO.

Effect: YES restores factory settings.

Reset in progress

Display: RESET...

Buttons: No operation - wait.

Range / default: No settings.

Effect: The controller saves factory settings.

Reset completed

Display: RESET OK

Buttons: No operation - transitional screen.

Range / default: No settings.

Effect: Confirms that reset is complete.

DISTILLATION - main screen

Display: P=50% / T1=78.10 C / T2=65.00 C

Buttons: MANUAL: Left/Right changes power; OK changes screens; hold OK - menu.

Range / default: Power 0...100%; temperatures according to probes.

Effect: Main view of power and temperatures.

CONTROLLER SCREENS - 3/29

DISTILLATION set temperature

Display: SET TEMP / T1=78.00 C / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 10...120 C; step according to the temperature-step setting; default 78.00 C.

Effect: In AUTO this is the controller setpoint.

DISTILLATION process timer

Display: TIME: 15m / OF 60m

Buttons: Left/Right: change; OK: confirm.

Range / default: 0...600 min; step 1 min; default 0.

Effect: Visible when timed operation is enabled.

Manual valve control

Display: VALVE / AUTO / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: AUTO / ON / OFF. Default AUTO.

Effect: Selects automatic mode or forces the output state. Automatic logic: see the diagram on p. 56.

CONTROLLER SCREENS - 4/29

Z1 threshold - ON

Display: SWITCH VALVE / Z1=32.00 C / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 10...120 C; step according to the temperature-step setting; default 32 C.

Effect: Sets threshold Z1. Mode relationships are shown in the diagram on p. 56.

Z1 threshold - OFF

Display: VALVE OFF / Z1=35.00 C / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 10...120 C; step according to the temperature-step setting; default 35 C.

Effect: Sets the second Z1 threshold. Mode relationships are shown in the diagram on p. 56.

Time elapsed

Display: TIME / STOP

Buttons: OK: confirm and return to operation.

Range / default: No settings.

Effect: When the time expires, power remains off until confirmation.

CONTROLLER SCREENS - 5/29

AUTOSTOP

Display: AUTOSTOP

Buttons: OK: confirm after alarm activation.

Range / default: No settings.

Effect: Ends heating when the configured alarm condition occurs.

Alarm pause T1

Display: PAUSE / T1>TALARM

Buttons: The controller waits until the condition clears.

Range / default: No settings.

Effect: Power remains at 0 while the alarm pause is active.

Alarm pause T2

Display: PAUSE / T2>TALARM

Buttons: The controller waits until the condition clears.

Range / default: No settings.

Effect: Power remains at 0 while the alarm pause is active.

DISTILLATION menu

Display: POWER / ALARMS / VALVE / PROBES / GENERAL / STATS / EXIT

Buttons: Left/Right: item; OK: enter.

Range / default: 7 menu items.

Effect: Provides all DISTILLATION mode settings.

CONTROLLER SCREENS - 6/29

Power output mode

Display: POWER OUTPUT MODE / PHASE / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: PHASE / GROUP. Default: PHASE.

Effect: Selects the power-output control method.

Control algorithm

Display: POWER CONTROL / MANUAL / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: MANUAL / AUTO P / AUTO

PI / AUTO PID. Default: MANUAL.

Effect: Selects the process controller.

AUTO PID warning

Display: AUTO PID / NOT RECOMMENDED / FOR DISTILLATION / SMOKING / COOKING

Buttons: OK: continue.

Range / default: No settings.

Effect: Reminds the user that AUTO P or AUTO PI is recommended first for distillation.

Power restart required

Display: SWITCH POWER / OFF AND ON

Buttons: Switch the power supply off and on again.

Range / default: No settings.

Effect: Appears after changing the power-output mode in DISTILLATION.

CONTROLLER SCREENS - 7/29

AUTOTUNE confirmation

Display: AUTOTUNE? / AUTO P / TEST:

HEAT +3C / SELECTED: NO / NO OK YES

Buttons: Left/Right: change; OK: confirm.

Range / default: NO / YES. Default: NO.

Effect: Starts autotuning for the currently selected automatic mode.

AUTOTUNE - test

Display: AUTO P / T=70.0C dT=1.4C / P=30% t=52s / OK = CANCEL

Buttons: OK: stop the test.

Range / default: Test to approx. +3 C; time limit approx. 240 s; test power is limited.

Effect: The controller calculates the control coefficients.

AUTOTUNE - failed

Display: AUTOTUNE / FAILED / CANCELLED

Buttons: OK: return.

Range / default: No settings.

Effect: The test did not complete successfully or was cancelled.

CONTROLLER SCREENS - 8/29

AUTOTUNE AUTO P - result

Display: AUTO P OK / WSP=12.0

Buttons: OK: save/return.

Range / default: No settings.

Effect: Shows the calculated AUTO P setting.

AUTOTUNE AUTO PI - result

Display: AUTO PI OK / Kp=7.50 / Ki=0.0200

Buttons: OK: save/return.

Range / default: No settings.

Effect: Shows the calculated Kp and Ki.

AUTOTUNE AUTO PID - result

Display: AUTO PID OK / Kp=7.50 Ki=.020 / Kd=1.50

Buttons: OK: save/return.

Range / default: No settings.

Effect: Shows the calculated Kp, Ki and Kd.

AUTO PI - Kp

Display: AUTO PI / Kp=7.50 / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 0.10...80.00; step 0.10; default 7.50.

Effect: Proportional gain for AUTO PI.

CONTROLLER SCREENS - 9/29

AUTO PI - Ki

Display: AUTO PI / Ki=0.0200 / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 0.0001...2.0000; step 0.0010; default 0.0200.

Effect: AUTO PI integral term.

AUTO PID - Kp

Display: AUTO PID / Kp=7.50 / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 0.10...80.00; step 0.10; default 7.50.

Effect: Proportional gain for AUTO PID.

AUTO PID - Ki

Display: AUTO PID / Ki=0.0200 / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 0.0001...2.0000; step 0.0010; default 0.0200.

Effect: AUTO PID integral term.

AUTO PID - Kd

Display: AUTO PID / Kd=1.50 / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 0.00...60.00; step 0.10; default 1.50.

Effect: AUTO PID derivative term.

CONTROLLER SCREENS - 10/29

Warm-up temperature

Display: WARM-UP TEMP / BELOW WHICH / POWER=100% / Tg=10.00 C

Buttons: Left/Right: change; OK: confirm.

Range / default: 10...120 C; step 0.02 C; default 10 C.

Effect: Below Tg the controller may force full power during warm-up.

Manual power resolution

Display: SET RESOLUTION / MANUAL POWER / 1.00%

Buttons: Left/Right: change; OK: confirm.

Range / default: 1.00% / 0.25%. Default 1.00%.

Effect: Sets the power adjustment step in MANUAL.

AUTO P - WSP / Kp

Display: AUTO P COEFFICIENT / POWER CONTROL / WSP=12.0

Buttons: Left/Right: change; OK: confirm.

Range / default: Approximately 0.2...90; step 0.2; default 12.

Effect: Global AUTO P setting; effective $K_p = 2.5 \times WSP$ [%/C].

CONTROLLER SCREENS - 11/29

Minimum power

Display: MIN POWER / Pmin=0% / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 0...99%; step 1%; default 0%.

Effect: Lower power limit of the automatic controller.

Maximum power

Display: MAX POWER / Pmax=100% / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 0...100%; step 1%; default 100%.

Effect: Upper power limit of the controller and AUTOTUNE.

Alarm - sound

Display: SOUND / YES / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: NO / YES. Default YES.

Effect: Enables or disables alarm sounds.

Acoustic warning temperature

Display: ACOUSTIC / WARNING TEMP / 100.00 C

Buttons: Left/Right: change; OK: confirm.

Range / default: 10...120 C; step according to the temperature-step setting; default 100 C.

Effect: Sets the acoustic warning threshold.

CONTROLLER SCREENS - 12/29

Response to Talarm

Display: WHAT TO DO / WHEN T>TALARM? / 0 DO NOTHING / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: 0 NONE / 1 END / 2 PAUSE. Default 0.

Effect: Defines heating response after Talarm is exceeded.

Talarm temperature

Display: TALARM TEMP / 99.00 C / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 10...120 C; step 0.02 C; default 99 C.

Effect: Sets the main alarm threshold.

Probe for Talarm

Display: WHICH PROBE / FOR TALARM / 1

Buttons: Left/Right: change; OK: confirm.

Range / default: 1 / 2. Default 1.

Effect: Selects the probe used by the main alarm.

Valve after start-up

Display: WHAT TO DO / WITH VALVE / AFTER START / POWER OFF

Buttons: Left/Right: change; OK: confirm.

Range / default: POWER ON / POWER OFF. Default OFF.

Effect: Sets the valve output state after start-up. Mode operation: see p. 56.

CONTROLLER SCREENS - 13/29

Valve type

Display: SELECT TYPE / VALVE / NORMALLY CLOSED

Buttons: Left/Right: change; OK: confirm.

Range / default: NORMALLY OPEN / NORMALLY CLOSED. Default: closed.

Effect: Matches the controller to the valve type. Operating modes are shown in the diagram on p. 56.

Valve mode

Display: SELECT MODE / VALVE / HYSTER

Buttons: Left/Right: change; OK: confirm.

Range / default: HYSTER / WINDOW / WINDOW2. Default: HYSTER.

Effect: Selects the mode. Its operation is shown only in the diagram on p. 56.

Valve control probe

Display: SELECT PROBE / TO CONTROL VALVE / 2

Buttons: Left/Right: change; OK: confirm.

Range / default: 1 / 2. Default 2.

Effect: Selects the temperature source for valve control; see p. 56.

CONTROLLER SCREENS - 14/29

Valve hysteresis

Display: SET HYSTERESIS / VALVE / H=0.2 C / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: Approx. 0.0...2.1 C; step 0.1 C; default 0.2 C.

Effect: HYSTER mode parameter. Use according to the diagram on p. 56.

Valve after alarm

Display: WHAT TO DO / WITH VALVE / AFTER ALARM / POWER OFF

Buttons: Left/Right: change; OK: confirm.

Range / default: ON / OFF. Default OFF.

Effect: Sets output state after an alarm; see diagram on p. 56.

Output off delay

Display: OUTPUT OFF / DELAY TIME / 0 s / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 0...999 s; step 2 s; default 0 s.

Effect: Applies the set output switch-off delay.

CONTROLLER SCREENS - 15/29

Probe 1 calibration - A

Display: CALIBRATION / PROBE 1 / A=1.25 / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 0.20...2.00; step 0.01; default 1.25.

Effect: Probe measurement scale factor 1.

Probe 1 calibration - B

Display: CALIBRATION / PROBE 1 / B=0.00 C / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: -10.00...+10.00 C; step 0.01 C; default 0.

Effect: Correction of constant probe measurement offset 1.

Probe 2 calibration - A

Display: CALIBRATION / PROBE 2 / A=1.25 / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 0.20...2.00; step 0.01; default 1.25.

Effect: Probe measurement scale factor 2.

CONTROLLER SCREENS - 16/29

Probe 2 calibration - B

Display: CALIBRATION / PROBE 2 / B=0.00 C / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: -10.00...+10.00 C; step 0.01 C; default 0.

Effect: Correction of constant probe measurement offset 2.

Probe order

Display: PROBE ORDER / 1 2 / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: 1 2 / 2 1. Default 1 2.

Effect: Assigns detected probes to T1 and T2.

Language

Display: LANGUAGE / ENGLISH / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: POLISH / CZECH / SLOVAK / ENGLISH / GERMAN. Default POLISH.

Effect: Changes the message language.

Restart

Display: RESTART / NO / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: NO / YES. Default NO.

Effect: YES restarts the controller.

CONTROLLER SCREENS - 17/29

Stabilization - enable

Display: STABILIZATION / NO / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: NO / YES. Default NO.

Effect: Enables a stabilization stage before further operation.

Stabilization temperature

Display: STABILIZATION TEMP / Ts=100.00 C / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 10...120 C; step 0.02 C; default 100 C.

Effect: Sets the temperature required during stabilization.

Stabilization time

Display: STABILIZATION TIME / ts=60 min / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 10...120 min; step 5 min; default 60 min.

Effect: Sets the stabilization hold time.

CONTROLLER SCREENS - 18/29

Stabilization - operating screen

Display: STABILIZATION / T=99.8/100.0 C / t=12/60 min

Buttons: Centre: settings; side button: end stage.

Range / default: Values follow the stabilization settings.

Effect: Shows stabilization temperature and time.

Temperature adjustment step

Display: TEMPERATURE / ADJUSTMENT STEP / 0.02 C / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: 0.02 / 0.05 / 0.10 / 1.00 C. Default 0.02 C.

Effect: Sets the temperature adjustment step on setting screens.

Action after power-on

Display: WHAT TO DO / AFTER POWER ON? / COUNTDOWN 5 s / AND START

Buttons: Left/Right: change; OK: confirm.

Range / default: 0: MODE WINDOW; 1: SETTINGS AND WAIT; 2...100 s: countdown. Default 5 s.

Effect: Defines behavior after each power- on.

CONTROLLER SCREENS - 19/29

Contrast

Display: CONTRAST / 10 / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 5...30; step 1; default 10.

Effect: Adjusts LCD readability.

Switch off after time

Display: SWITCH OFF / AFTER SET TIME? / NO

Buttons: Left/Right: change; OK: confirm.

Range / default: NO / YES. Default NO.

Effect: YES enables the timer screen in DISTILLATION mode.

Statistics

Display: STATISTICS / RUN: 12h 34m /

HEATER: 6h 20m / OK = BACK

Buttons: OK: return.

Range / default: Accumulating counters.

Effect: RUN = active process; HEATER = equivalent full-power time in version 0.4.2.

BREWERY menu

Display: POWER / STAGES / OUTPUTS / PROBES / GENERAL / STATS / EXIT

Buttons: Left/Right: item; OK: enter.

Range / default: 7 menu items.

Effect: Opens BREWERY mode settings.

CONTROLLER SCREENS - 20/29

Memory bank selection

Display: MEMORY BANK NO. / PROGRAM STORED IN / 1

Buttons: Left/Right: change; OK: confirm.

Range / default: 1...5; step 1; default 1.

Effect: Selects the stored set of program stages.

BREWERY - main screen

Display: P=50% / T1=65.0 C / t1=12:30 / T=68.0 C t=60m

Buttons: OK: next settings screens for the current stage.

Range / default: Stage 1...10; values depend on the program.

Effect: Shows power, temperature and time of the current stage.

Stage temperature - during operation

Display: SET TEMP / T1=68.00 C / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 10...120 C; step according to the temperature-step setting.

Effect: Changes the current stage set temperature.

CONTROLLER SCREENS - 21/29

Stage time - during operation

Display: SET TIME / t1=60 min / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 1...200 min; step 1 min.

Effect: Changes the current stage time.

BREWERY pause

Display: PAUSE / NO / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: NO / YES.

Effect: Pauses or resumes stage timing according to the selected option.

Heat exchanger temperature - during

operation

Display: EXCHANGER / Tw=100.00 C / T1=65.0 T2=45.0

Buttons: Left/Right: change; OK: confirm.

Range / default: 10...120 C; step according to the temperature-step setting; default 100 C.

Effect: Visible when the heat exchanger is enabled.

CONTROLLER SCREENS - 22/29

Stage acoustic alarm

Display: ACOUSTIC ALARM / YES / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: NO / YES.

Effect: Enables or disables the sound for the current stage.

End of BREWERY program

Display: END

Buttons: No further stage; settings are available from the menu.

Range / default: No settings.

Effect: Program completed; heating power is 0%.

Current stage

Display: CURRENT / STAGE / 1 / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: 1...10; step 1; default 1.

Effect: Selects the stage being edited.

Exit stage menu

Display: EXIT MENU? / NO / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: NO / YES. Default NO.

Effect: YES ends stage editing.

CONTROLLER SCREENS - 23/29

Number of stages

Display: NUMBER OF / HEATING STAGES / 6

Buttons: Left/Right: change; OK: confirm.

Range / default: 1...10; step 1; default 6.

Effect: Sets the number of active program stages.

Skip auxiliary output settings

Display: SKIP SETTINGS / AGITATOR / AUX OUTPUT / YES

Buttons: Left/Right: change; OK: confirm.

Range / default: YES / NO. Default YES.

Effect: YES hides auxiliary output times in stages.

AUTO P coefficient in stage

Display: AUTO P COEFFICIENT / IN STAGE 1 / WSP=12.0

Buttons: Left/Right: change; OK: confirm.

Range / default: Practically 0.2...90; step 0.2.

Effect: In version 0.4.2 AUTO P uses the global WSP from the POWER menu; changing this screen does not change current control.

CONTROLLER SCREENS - 24/29

Manual power in stage

Display: HEATING POWER / IN STAGE 1 / P=50% / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 0...100%; step 1.00% or 0.25%; default depends on bank/stage.

Effect: Sets stage power in MANUAL mode.

Stage duration

Display: DURATION / STAGE 1 / 60 min / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: 1...200 min; step 1 min; default value depends on the bank.

Effect: Sets stage time.

Transition to next stage

Display: HOW TO MOVE / TO NEXT STAGE? / AUTOMATICALLY

Buttons: Left/Right: change; OK: confirm.

Range / default: WAIT FOR CONFIRMATION / ADVANCE AUTOMATICALLY.

Effect: Defines whether confirmation is required after the stage time.

CONTROLLER SCREENS - 25/29

Tank temperature in stage

Display: SET TEMPERATURE / TANK / IN STAGE 1 / 68.00 C

Buttons: Left/Right: change; OK: confirm.

Range / default: 5...100 C; step according to the temperature-step setting.

Effect: Sets the stage temperature setpoint.

Auxiliary output ON time

Display: ON TIME / AUX OUTPUT / IN STAGE 1 / 30 s

Buttons: Left/Right: change; OK: confirm.

Range / default: 1...9999 s; step 1 s; default value depends on the program.

Effect: Sets auxiliary output ON time in the stage.

CONTROLLER SCREENS - 26/29

Auxiliary output OFF time

Display: OFF TIME / AUX OUTPUT / IN STAGE 1 / 30 s

Buttons: Left/Right: change; OK: confirm.

Range / default: 1...9999 s; step 1 s; default value depends on the program.

Effect: Sets auxiliary output OFF time in the stage.

Tank temperature drop

Display: WHAT TO DO WHEN / TANK TEMP DROPS? / KEEP COUNTING

Buttons: Left/Right: change; OK: confirm.

Range / default: IGNORE, KEEP

COUNTING / STOP COUNTING. Default: IGNORE.

Effect: Defines stage timer behavior after a temperature drop.

CONTROLLER SCREENS - 27/29

Temperature tolerance

Display: TEMPERATURE / TOLERANCE / 1.00 C / - OK +

Buttons: Left/Right: change; OK: confirm.

Range / default: Approx. 0.20 C to 99.99 C; step 0.01 C; default 1.00 C.

Effect: Sets the allowed difference for the timer-stop function.

Auxiliary output after start

Display: WHAT TO DO / WITH AUX OUTPUT / AFTER START / POWER OFF

Buttons: Left/Right: change; OK: confirm.

Range / default: ON / OFF. Default OFF.

Effect: Sets the auxiliary output state after start-up.

CONTROLLER SCREENS - 28/29

Additional vessel

Display: ADDITIONAL VESSEL / CONTROL? / YES

Buttons: Left/Right: change; OK: confirm.

Range / default: NO / YES. Default YES.

Effect: Enables control of the additional vessel.

Additional vessel temperature

Display: ADDITIONAL VESSEL / TEMP / 60.00 C

Buttons: Left/Right: change; OK: confirm.

Range / default: 10...120 C; step 0.02 C; default 60 C.

Effect: Sets the temperature of the additional vessel.

Heat exchanger

Display: HEAT EXCHANGER? / NO / < OK >

Buttons: Left/Right: change; OK: confirm.

Range / default: NO / YES. Default NO.

Effect: Enables the heat-exchanger screen and temperature limit.

CONTROLLER SCREENS - 29/29

Maximum heat exchanger temperature

Display: MAXIMUM / EXCHANGER TEMP / 100.00 C

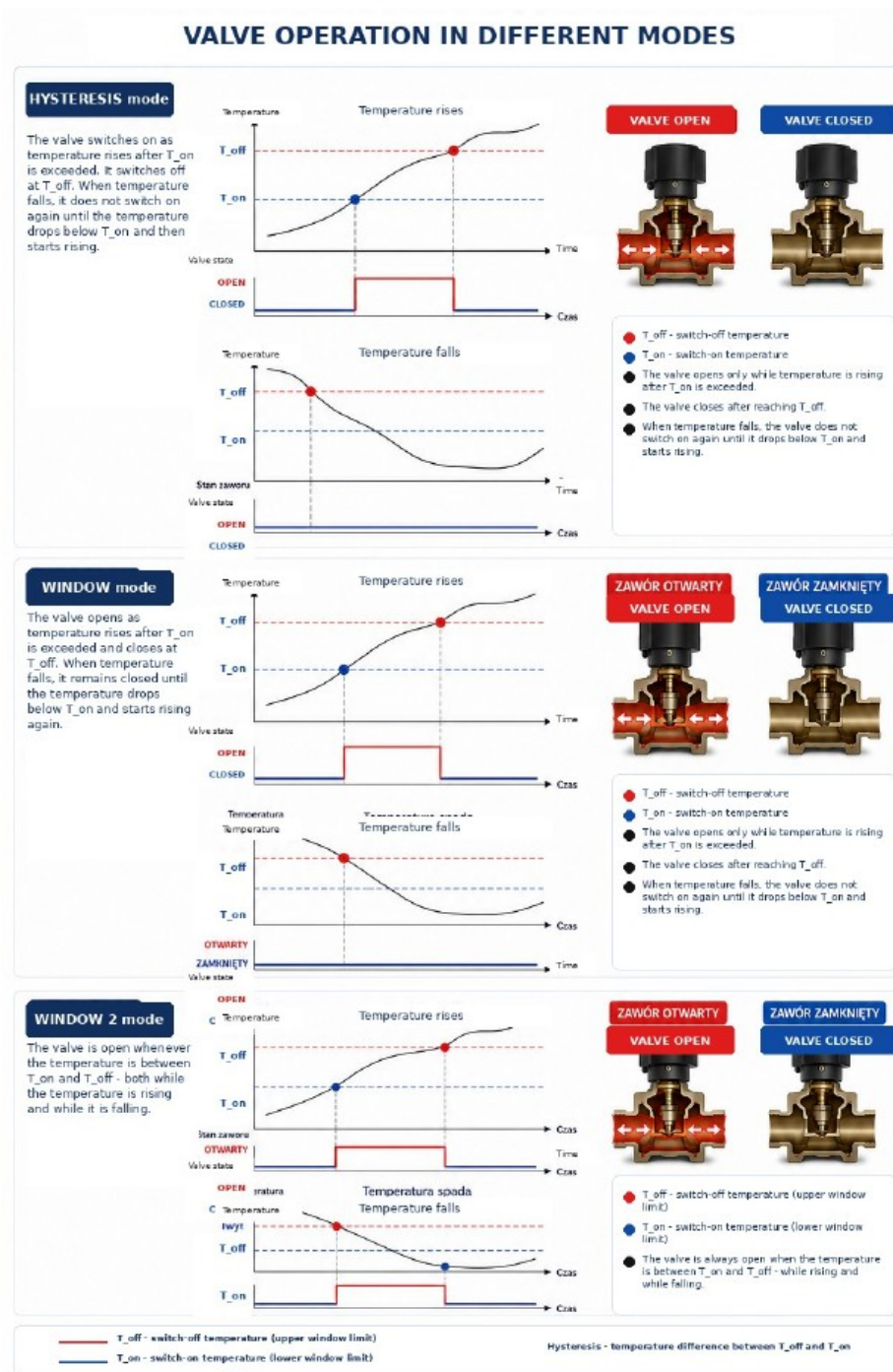
Buttons: Left/Right: change; OK: confirm.

Range / default: 10...120 C; step 0.02 C; default 100 C.

Effect: Sets the maximum heat-exchanger temperature.

VALVE OPERATION IN DIFFERENT MODES

The operation of HYSTER / WINDOW / WINDOW2 modes is shown in the diagram below.



PROBE CALIBRATION

PRM provides two calibration parameters for each probe: A and B. Do not change them unless necessary. First check probe installation and compare the reading with a reliable thermometer after the temperature has stabilized. A - scale factor. Default 1,25; range 0,20...2,00. Change A only if the measurement error clearly increases with temperature.

B - offset. Default 0,00 C; range -10,00...+10,00 C. If the probe reads, for example, 0.7 C too high throughout the range, start with a B correction. 1. Place the probe and reference thermometer in the same stable environment. 2. Wait until the readings stabilize. 3. If the difference is nearly constant, correct B. 4. If the difference changes with temperature, only then consider

correcting A using several measurement points. NOTICE After calibration, check at least two temperature points. Use small corrections; an excessive change of A can worsen measurement accuracy.

DISTILLATION MODE - STEP BY STEP

1. Select DISTILLATION and check T1/T2. If you use AUTO, the control probe must provide a valid reading.
2. In the POWER menu select PHASE/GROUP and MANUAL, AUTO P, AUTO PI or AUTO PID. For typical distillation start with AUTO P or AUTO PI.
3. Set Pmin/Pmax. In MANUAL set the power; in AUTO set the temperature setpoint and controller coefficients or use AUTOTUNE.
4. Set alarms: sound, warning threshold, Talarm and response NONE / END / PAUSE.
5. If you use the valve, set its type, selected probe and thresholds. Refer only to the diagram on page 56 for operation of HYSTER/WINDOW/WINDOW2.
6. If a timer is needed, enable timed operation in GENERAL and then set the time on the process screen.
7. Start at low power and observe the temperature. On first start-up, check output response before leaving the process unattended. AUTO PID is available, but it is not recommended as the starting mode for distillation. High thermal inertia and delays can give worse results than AUTO P / AUTO PI.

BREWERY MODE - STEP BY STEP

1. Select BREWERY, then program bank 1...5.
2. In the STAGES menu select the number of stages 1...10 and the stage to edit.
3. For each stage set temperature, time and transition to the next stage. In MANUAL also set stage power.
4. If you use the auxiliary output, set "SKIP SETTINGS..." to NO and enter ON/OFF times for the stages.
5. In OUTPUTS configure the additional vessel if used. In POWER you can enable the heat exchanger and set its maximum temperature.
6. Start the program. On the main screen monitor power, temperature and time. OK opens the current stage parameters.
7. If a stage is set to wait for confirmation, the program will not advance automatically when its time expires. If timer stopping on temperature drop is enabled, the time may stop increasing.
8. After the last stage END is displayed and heating power is switched off. WSP IN A STAGE: This screen remains available in firmware 0.4.2, but current AUTO P control uses the global WSP from the POWER menu. Changing the stage WSP does not change the active AUTO P controller.

BEFORE YOU CALL SERVICE

SYMPTOM No heating **POSSIBLE CAUSE** Power 0%; Pmax=0; AUTO without a valid probe; active pause/alarm. **WHAT TO DO** Check the main screen, Pmax, T1/T2 probes and alarms.

SYMPTOM T1/T2 = ---

POSSIBLE CAUSE Missing/damaged probe, connection problem or incorrect probe order. **WHAT TO DO** Check the cable, number of probes and PROBE ORDER. **SYMPTOM** AUTO gives 0% **POSSIBLE CAUSE** Temperature is at/above the setpoint or the controller is limiting power. **WHAT TO DO** Check the temperature setpoint, Pmin/Pmax and the selected mode. **SYMPTOM** AUTO PI/PID oscillates

POSSIBLE CAUSE The settings are too aggressive or the process has high inertia. **WHAT TO DO** Return to AUTO P/PI, reduce the settings or run AUTOTUNE on a stable process.

SYMPTOM „OFF I ON ZASILANO”

POSSIBLE CAUSE PHASE/GROUP changed in DISTILLATION mode. **WHAT TO DO** Switch the power supply off and on again. **SYMPTOM** No timer **POSSIBLE CAUSE** Timed operation is disabled in GENERAL. **WHAT TO DO** Enable “SWITCH OFF AFTER SET TIME”.

SYMPTOM Valve operates differently than expected **POSSIBLE CAUSE** ON/OFF forced, different probe, valve type or threshold. **WHAT TO DO** Set AUTO, check the probe and parameters; compare modes with the diagram on p. 56. **SYMPTOM** BREWERY does not advance **POSSIBLE CAUSE** Waiting for confirmation or stopping the timer has been configured. **WHAT TO DO** Check the stage transition method and response to a temperature drop.

SYMPTOM Stage WSP changes nothing **POSSIBLE CAUSE** In version 0.4.2 AUTO P uses the global WSP. **WHAT TO DO** Set the global WSP in the POWER menu. **SYMPTOM** HEATER statistics increase more slowly **POSSIBLE CAUSE** This is equivalent full-power time weighted by the current power level. **WHAT TO DO** Example: 50% for 2 h is approximately 1 h of HEATER time. **SYMPTOM** AUTOTUNE failed

POSSIBLE CAUSE No probe, Pmax too low, no temperature rise, or a time/safety limit. **WHAT TO DO** Check the probe, Pmax and test conditions; run the test again.

MAINTENANCE AND UPDATES / HELP, DOCUMENTATION AND SUPPORT

CLEANING Disconnect the power supply. Clean the enclosure with a dry or slightly damp soft cloth. Do not use solvents and do not allow liquid to enter the device.

PROBES AND CABLES Periodically check cables, connectors and probe mounting points. Replace a damaged probe; do not compensate for a faulty reading with a large calibration correction. **TERMINALS AND INSTALLATION** Inspect terminals and the electrical

installation only after disconnecting the power supply, according to the requirements of the specific version and installation. **UPDATES** Firmware 0.4.2 does not provide a user update function in the menu. If the manufacturer publishes an update procedure for a specific version, use only the official PAMEL instructions. **BEFORE A LONG BREAK** Disconnect the device from the power supply,

protect probes and cables from damage and store the controller in a dry place.

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Knowledge base First check the symptom in “Before you call service”. When contacting support, provide the PRM model, firmware version from the start screen and describe exactly what appears on the LCD. Current manual Published file name: PRM_MAN_EN.pdf. Download the current version only from official PAMEL resources.

PAMEL PRODUCT CENTRE
<https://serwer.pamel.pl/>



MANUAL VERSION AND CHANGE HISTORY

Model PRM (including PRM DUO / PRM3F / PRM3F DUO variants where functionally common). Firmware 0.4.2. Manual version 21.08.2026. Firmware version Date Changes relevant to the user 0.4.2 21.08.2026 Clearer screens and button labels; improved AUTOTUNE presentation. 0.4.0 21.08.2026 PHASE/GROUP was separated from

MANUAL/AUTO P/AUTO

PI/AUTO PID; AUTOTUNE

was added for automatic modes. 0.3.x 19-20.08.2026 Statistics were added; probe handling and manual valve override were improved. SCREEN COMPLETENESS The catalogue on pages 9-55 contains 93 unique active screens/screen templates for firmware 0.4.2. Stage screens are shown once with stage number 1; the same template is used for subsequent stages. CONNECTIVITY The current firmware described in this manual does not

SUMMARY

NO / PROBE ERROR In automatic modes the controller must not continue heating based on an invalid measurement. “---” may appear on the temperature screen. In MANUAL, power control remains available without a probe. AUTOSTOP If END is selected in alarms and Talarm is exceeded, power is switched off and AUTOSTOP appears. PAUSE If PAUSE is selected, PAUSE T1>Talarm or PAUSE T2>Talarm

☐ I know the exact device variant and its rated power. ☐ Electrical connections have been made according to the markings on the specific unit. ☐ The number of detected probes matches the installation; T1/T2 show credible values. ☐ The correct PHASE/GROUP and MANUAL/AUTO P/AUTO PI/AUTO PID modes are selected. ☐ Pmin and Pmax do not prevent the required power. ☐ Alarms and Talarm are set for the process, and the

24.08.2026 - manual verified against PRM firmware 0.4.2; language editions unified; product-centre QR updated.

WARRANTY TERMS

Dear User, 7. The warranty covers only defects resulting from causes First of all, thank you for choosing inherent in the device. a PAMEL product. We are confident that you will be satisfied 8. The warranty does not cover with your choice. We design our damage caused by:

devices to meet your requirements • incorrect installation, operation or and provide trouble-free use in the maintenance, future. • storage under unsuitable 1. PAMEL provides a warranty for conditions, the controller (excluding optional

equipment) within the Republic of • use of incorrect consumables,

Poland for a maximum period of 60 • unauthorized repairs or

months:

modifications, • 24 months of basic warranty, • mechanical damage, flooding, • 6 months of extended water-vapour condensation, manufacturer warranty, contamination, atmospheric phenomena or accidental events, • additionally, a warranty extension

up to 40 or 50 months may be • exceeding rated parameters.

purchased. 9. The warranty does not cover The total warranty period may not claims concerning the technical exceed 80 months from the device parameters of the device if they production date. comply with the manufacturer's specifications. Optional equipment (e.g. probes, heaters) is covered by the standard warranty resulting from the Polish Civil Code. A purchased warranty extension is

confirmed by a holographic sticker on the warranty card. 2. The warranty does not cover consumable parts and accessories intended for self-installation (e.g. antennas, sensors, brackets,

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 is still defective, the Buyer is entitled to replacement with a new unit of equivalent parameters or a refund. 4. The warranty period is extended by the duration of the repair. 5. Claims should be reported by e-

WARRANTY TERMS - continued • version dated 16 May 2026

mail (pamel@pamel.pl) or by telephone. The manufacturer will first attempt to resolve the problem remotely and will indicate the next steps in the claim procedure. 6. At the manufacturer's request, the Buyer is required to complete a claim report.

10. Warranty rights are retained 19. By signing the warranty card, provided that the device is the Buyer confirms that they have delivered: read and accept the warranty terms. • complete, A card without a signature and • in packaging protecting it against without the original production- damage, date label is invalid. • together with documentation, Note: Maintenance, cleaning, cables and additional components,

replacement of bulbs, fuses, • with seals and labels intact and consumable parts or repairs not removed, resulting from normal wear (e.g. potentiometers) are not counted as • with the original warranty card warranty repairs. signed by both parties and the

11. The warranty does not cover _____ services and materials related to

SELLER'S STAMP:

normal operating maintenance (e.g. installation, programming, cleaning, _____ maintenance, replacement of fuses

CUSTOMER'S SIGNATURE:

and bulbs). These services are chargeable. _____ 12. The service centre may refuse

• discrepancies between documentation data and the actual condition of the device, • unauthorized corrections in documents, • removal of device identification marks (e.g. a label). 13. Warranty repairs are performed within 21 days from delivery of the device to the service centre. If

abroad, this period may be extended - the Buyer will be informed by e-mail. 14. The device must be installed in accordance with applicable standards and this operating manual. Where required by law, installation must be carried out by a suitably authorized person. 15. The scope of rights and obligations of the parties is governed exclusively by this document. 16. Equipment not collected from

the service centre within 3 months after repair completion becomes the property of the service centre. 17. Parts replaced during repair remain the property of the manufacturer. 18. The manufacturer is not responsible for loss of user data stored in the device. After repair, the device is returned with factory settings restored.