

User manual

Hot runner control systems / PM1 product family



PM1 · 24 zones
Two separate 12-zone devices stacked



PM1 · 1 zone



PM1 · 2 zones



PM1 · 4 zones



PM1 · 6 zones



PM1 · 8 zones



PM1 · 10 zones



PM1 · 12 zones

Read the safety section before energising the device.

Installation / Operation / Settings / Connections

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How to use this manual

Read the safety information and specifications first. For daily operation, see the keys and operating-mode cards. For wiring, consult the page for your device model.

Safe operation

Electrical connections

Have a qualified electrician connect the device and mould. Read this manual before making connections or energising the device.

Single and dual-zone devices

Single and dual-zone devices with single-phase plugs may have a live phase at the output even with the switch off. Switching off is not electrical isolation. Disconnect the mains before intervention; have a qualified electrician check the plug and phase orientation.

Plug and connector compatibility

If replacing the mains plug, use one with the same specifications and a suitable rating. Match connectors by model and pin number, not by appearance.

Operating conditions

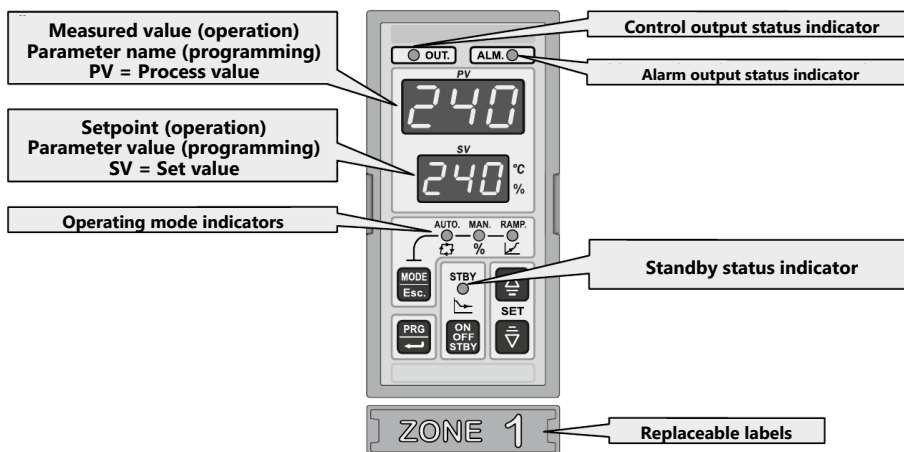
The user is responsible for damage and accidents caused by failure to follow the specified connection and operating conditions. Check the environmental limits in the specifications.

Technical specifications

Specification	Value
Supply: 1 / 2 zones	230 Vac, 50/60 Hz, $\pm 10\%$; 1 phase + neutral + earth
Supply: 4 zones	230 Vac, 50/60 Hz, $\pm 10\%$; 2 phases + neutral + earth
Supply: 6-12 zones	230 Vac, 50/60 Hz, $\pm 10\%$; 3 phases + neutral + earth
Maximum output power	3200 W
Control / range	PID and proportional / 0-537 °C
Control accuracy	± 1 °C
Sensor / line resistance	J (Fe-Const), K (NiCr-Ni); max. 100 ohms, with suitable compensation cable
Measurement accuracy	$\pm 0.5\%$ of full scale; at 25 °C ambient
Control output / protection	SSR 40 A / 16 A type B circuit breaker
Alarm relay - optional	1 relay, 250 Vac / 3 A, N.O.
PV / SV	3 digits, 13 mm / 3 digits, 8 mm; 7-segment LED
Environment	0 to +50 °C; 10-80% RH, non-condensing
Enclosure / cable	PM1: powder-coated sheet metal. Standard cables: 3 m; other lengths on request.

Front panel overview

Display and status symbols



PV / SV

PV shows the measured temperature during operation and the parameter name in programming.
SV shows the setpoint during operation and the selected parameter value in programming.

Status indicators

OUT.: control output. ALM.: alarm output. AUTO. / MAN. / RAMP.: operating mode.
STBY: standby.

Keys and setpoint

PRG / ENTER

Hold for 3 seconds to enter programming. In the menu, opens a setting and confirms the selected value.

Up / down

Increases / decreases the setpoint during operation. In programming, changes values, makes selections and navigates the menu.

MODE / Esc.

Selects the operating mode. In programming, returns to the operating display or exits to the parent menu without saving changes.

ON / OFF / STBY

Hold for 3 seconds: switches the output on / off. Press and release: enters standby.

Automatic setpoint storage

Adjust the target temperature with up / down. The value is stored 2 seconds after the last press; SV flashes once to confirm storage.

Operating modes

AUTO — PID control

Uses PID control to maintain the set temperature. The thermocouple must be correctly connected to the device input for this mode.

MAN — Proportional operation

Select for a TC fault or operation without a TC. 0% fully disables the output; 100% is full power. Cycle time: 0.5 seconds. Intermediate values set the power ratio.

RAMP — Drying / Soft-Start

Prevents sudden thermal shock in damp heaters after prolonged disuse. After the manufacturer-defined period, the device switches to AUTO / PID operation.

Selection with MODE

Each press of MODE selects a different mode. The corresponding LED flashes to indicate the transition, which occurs after approximately 3 seconds.

STBY — Standby

Uses the standby setpoint during temporary production pauses. Press STBY to enter standby.

Programming

01 / Enter the menu

Hold PRG for 3 seconds; release when PAr appears on PV. Press PRG to open a setting.

02 / Change and save

While SV flashes, adjust with up / down. Confirm with PRG. Use down to move through the menu. Exit with MODE / Esc.

Code	Function
S.L.h	Upper limit of the maximum adjustable setpoint.
Stb	Standby temperature.
AL.L	Low deviation alarm. Disabled when set to 0.
AL.h	High deviation alarm. Disabled when set to 0.
iGn	Number of low-deviation alarms ignored at initial start-up. Maximum 5.

Sensor, OFFSET and Auto-Tune

Code	Function
inP	J (Fe-Const) / K (NiCr-Ni) thermocouple selection.
oFS	OFFSET added to the measured value. -50 to +50 °C; default 0 °C. Used for incorrect readings or distance between the sensor and heat source.

Starting Auto-Tune

Set SET first. The measured temperature must be at least 55 °C below SET. If needed, disable the output with ON/OFF before programming (SV: OFF). Select YES in tun and press PRG.

tn1 / tn2

tn2 starts when tn1 finishes. Normal operation resumes at SET. tn2 calculates proportional output power for a TC fault. Duration depends on system conditions. Cancel with MODE / Esc.

Alarms and warnings

oPE — Open

Appears on PV if the TC is open-circuit or the upper temperature measurement limit is exceeded.

rEV — Reverse

Appears on PV if the thermocouple polarity is reversed.

Disabling the alarm output

Disable the alarm output with ON/OFF. The alarm LED changes from steady to intermittent indication.

End of alarm indication

Alarm indication stops completely when the temperature returns to the programmed alarm band or the fault causing the alarm is corrected.

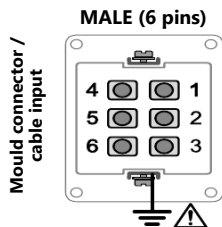
Check the deviation settings

ALL and AL.h are set independently. Deviation settings too close to the setpoint may trigger alarms during temperature fluctuations.

1 zone

TC: thermocouple / Rez. and R: heater / K: zone

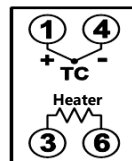
PM1 - 1 zone / 6-pin male



1 TC+

4 TC -

3 - 6 Heater



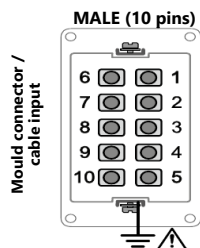
Connection check

Match connector orientation, pin numbers and TC polarity to the drawing for your model.

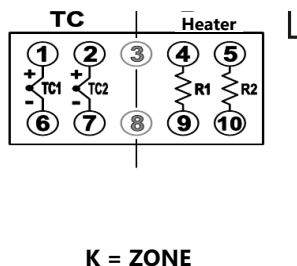
2 zones

TC: thermocouple / Rez. and R: heater / K: zone

PM1 - 2 zones / 10-pin male



- *K.1 [1 TC+
6 TC-
 - *K.2 [2 TC+
7 TC-
-
- *K.1 [4 - 9 Heater
 - *K.2 [5 - 10 Heater



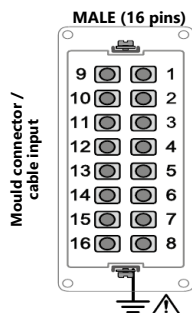
Connection check

Match connector orientation, pin numbers and TC polarity to the drawing for your model.

4 zones

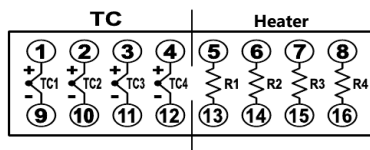
TC: thermocouple / Rez. and R: heater / K: zone

PM1 - 4 zones / 16-pin male



K.1	[	1	TC+
		9	TC-
K.2	[	2	TC+
		10	TC-
K.3	[	3	TC+
		11	TC-
K.4	[	4	TC+
		12	TC-

K.1	[	5 - 13	Heater
K.2	[	6 - 14	Heater
K.3	[	7 - 15	Heater
K.4	[	8 - 16	Heater



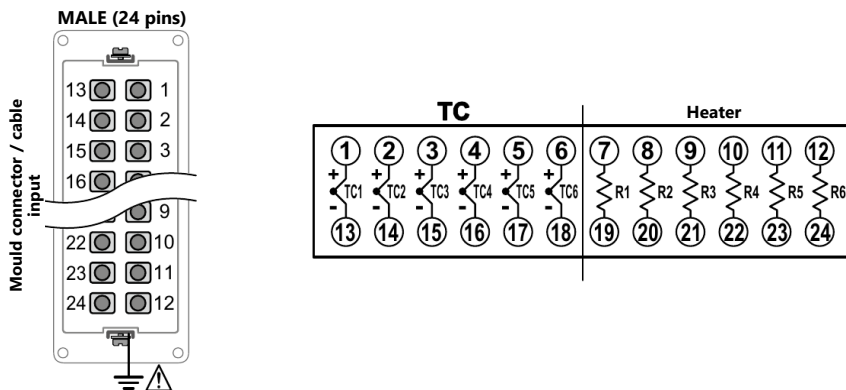
Connection check

Match connector orientation, pin numbers and TC polarity to the drawing for your model.

6 zones

TC: thermocouple / Rez. and R: heater / K: zone

PM1 - 6 zones / 24-pin male



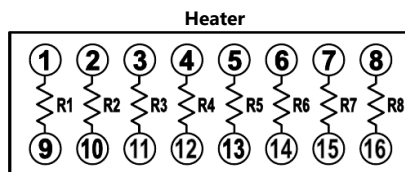
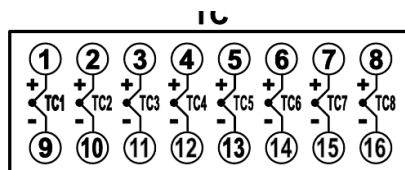
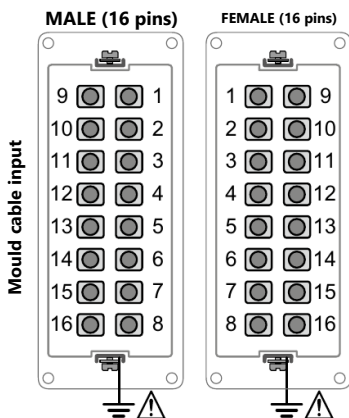
Connection check

Match connector orientation, pin numbers and TC polarity to the drawing for your model.

8 zones

TC: thermocouple / Rez. and R: heater / K: zone

PM1 - 8 zones / 16-pin male / female



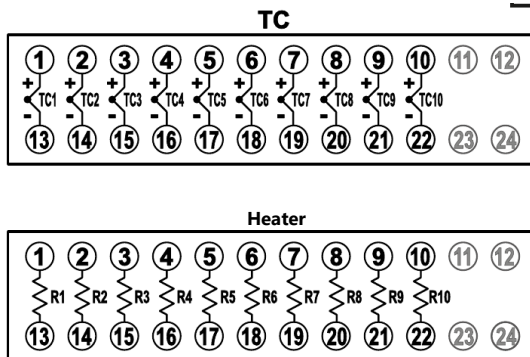
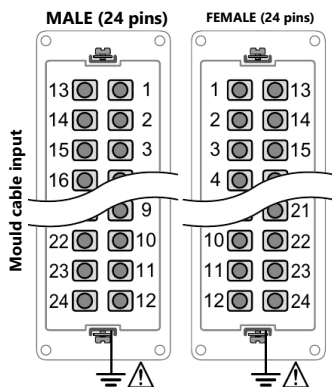
Connection check

Match connector orientation, pin numbers and TC polarity to the drawing for your model.

10 zones

TC: thermocouple / Rez. and R: heater / K: zone

PM1 - 10 zones / 24-pin male / female

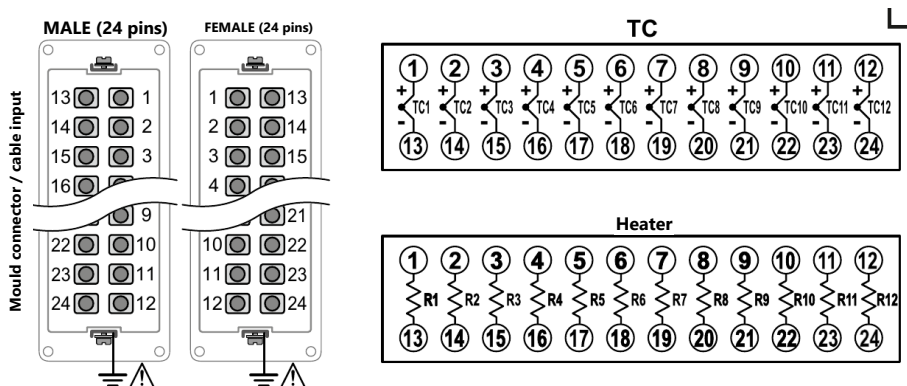


Connection check

Match connector orientation, pin numbers and TC polarity to the drawing for your model.

12 zones

PM1 - 12 zones / 24-pin male / female



TC1-TC12 / R1-R12

TC identifies each zone's thermocouple; R identifies its heater. Male and female sides look different; use pin numbers as the reference.

Earth and neutral

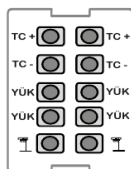
Observe the earth symbols on connectors. In star distribution, neutral conductor continuity is essential.

PM2 connection appendix

This section is separate from the PM1 wiring diagrams.

PM2 - 1 zone / 5-pin terminal block

TERMINAL (5 pins)



BEFORE CONNECTING, PULL THE TERMINAL COVER TOWARDS YOU AND REMOVE IT.

TC + = THERMOCOUPLE POSITIVE
TC - = THERMOCOUPLE NEGATIVE
YÜK = HEATER



= EARTH

Terminal cover

Before connecting, pull the terminal cover towards you and remove it. Qualified personnel must make electrical connections with the power disconnected.

Terminal markings

TC +: thermocouple positive.

TC -: thermocouple negative.

YÜK: heater.

Earth symbol: protective earth connection.

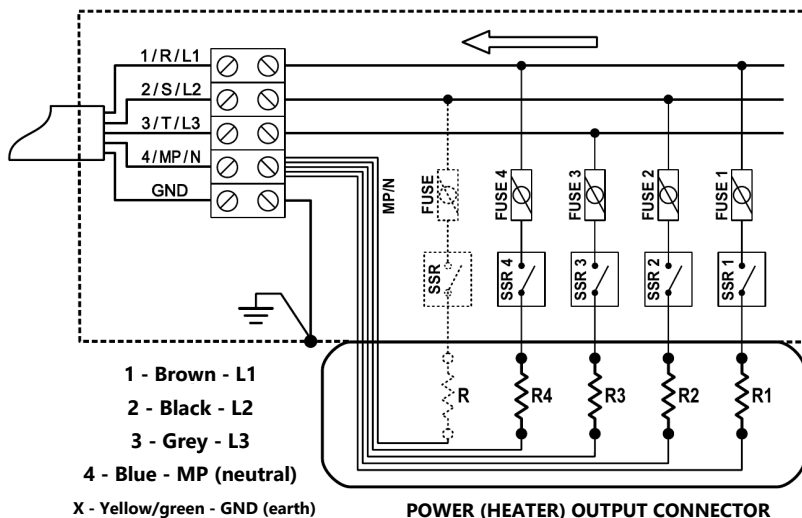
PM2 enclosure

The current source specifies a 3D-printed PLA Plus (polylactic acid plastic) enclosure for PM2. PM1 sheet-metal enclosure information does not apply to PM2.

Mains connection

Example: 230 Vac, 3 phases, 5 wires, star (Y) power distribution.

Power distribution example



Neutral must be connected

A broken neutral, intermittent contact or poor connection may cause faults due to unbalanced loads.

Wire colours

Brown: L1 / Black: L2 / Grey: L3

Blue: MP/N (neutral)

Yellow-green: GND (earth)

Technical support

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Record your device details

Model:

Serial number:

Installation date:

Service request

Prepare the model, serial number and fault description. If available, share photos of the device label, connections and error display with our team.

We reserve the right to change device design and specifications as part of product development.