

OPERATING INSTRUCTIONS

February 2006
(Subject to technical modifications)

TEMP-STAR[★]

DIALOG

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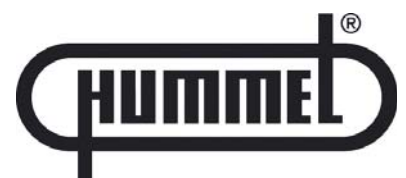


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Important operating instruction – do not ignore!

Safety Instructions

- ☞ Please read these operating instructions carefully prior to using the product.
- ☞ The unit may be serviced only by qualified personnel. Be sure to withdraw the mains plug before opening the housing!
- ☞ Never replace any fuses unless the unit has been disconnected from the power supply.
- ☞ Prior to inserting the hot-runner mold cables, be sure to verify that all connectors have been properly connected (see Connections).
- ☞ Check power cable and mold connecting cables for potential defects on a regular basis! Be sure to use a new cable whenever the cable sheath is found to be defective!

Warranty

For all **TEMP-STAR*** controllers, the manufacturer issues a 2-year warranty, with the period of warranty beginning on the day when the product is dispatched to the buyer. This warranty shall not cover any damage that has been caused by improper handling, wrong connection or improper use of the product (see next section). Return shipments must be addressed to **Hummel AG**, Geschäftsbereich EL Waldkirch (Germany), using the original packaging.

Intended Use

TEMP-STAR* units are industrial temperature controllers for controlling the melting temperature of hot-runner molds. The temperature is measured with thermocouples and then adjusted accordingly.

- ☞ To prevent overheating damage in case of malfunction, an external temperature fuse must be integrated into the heating circuits.
- ☞ The manufacturer will not accepting responsibility for damage caused by improper use of the unit.

General Instructions

A separate "control zone" is required for every load to be connected. A "control zone" consists of a slide-in controller, a temperature sensor input, and a load output including a load circuit fuse.

- ☞ When connecting the hot-runner mold cables, be sure to assign the cables to the correct connectors. In front view, the control zones are to be numbered from left to right, beginning with the bottom row.
- ☞ Unused controller zones must be switched off. Non-used controller slots must always be covered with a blanking plate!

For connecting the load circuits, a heat resistant flexible cable must be used. For the temperature sensors, a special compensating cable is required!

Installation

Place your **TEMP-STAR*** controllers on a stable, flat working surface. The displays should be at eye-level with the user.

Cooling fans prevent overheating of the output stage. Be sure that the air can circulate freely through the appropriate vents provided on the unit's rear and underside.

Maintenance and Cleaning

We recommend cleaning the ventilation slots on the rear and underside of the unit at regular intervals. If necessary, use compressed air to remove dust or other dirt.

Note that this work may only be carried out by qualified service personnel! The housing and the control panel may be cleaned with a soft cloth soaked with alcohol if necessary. However, do not use acid cleaners or scouring agents! No further servicing or maintenance is required. Should you experience any malfunction, please call your **TEMP-STAR[★]** Service or contact the manufacturer.

Start-Up

After carefully checking the cables for potential defects, connect the hot-runner mold to the controller. If needed, you can also make a connection to the molding machine using the alarm connector. The controller must be connected to a three-phase power supply source using a CEE connector (see Specifications). Connect the power cable, then switch on the controller with the main switch.

☞ Each controller can be switched on and off separately with the I/O key. Please note that unused control zones must be switched off!

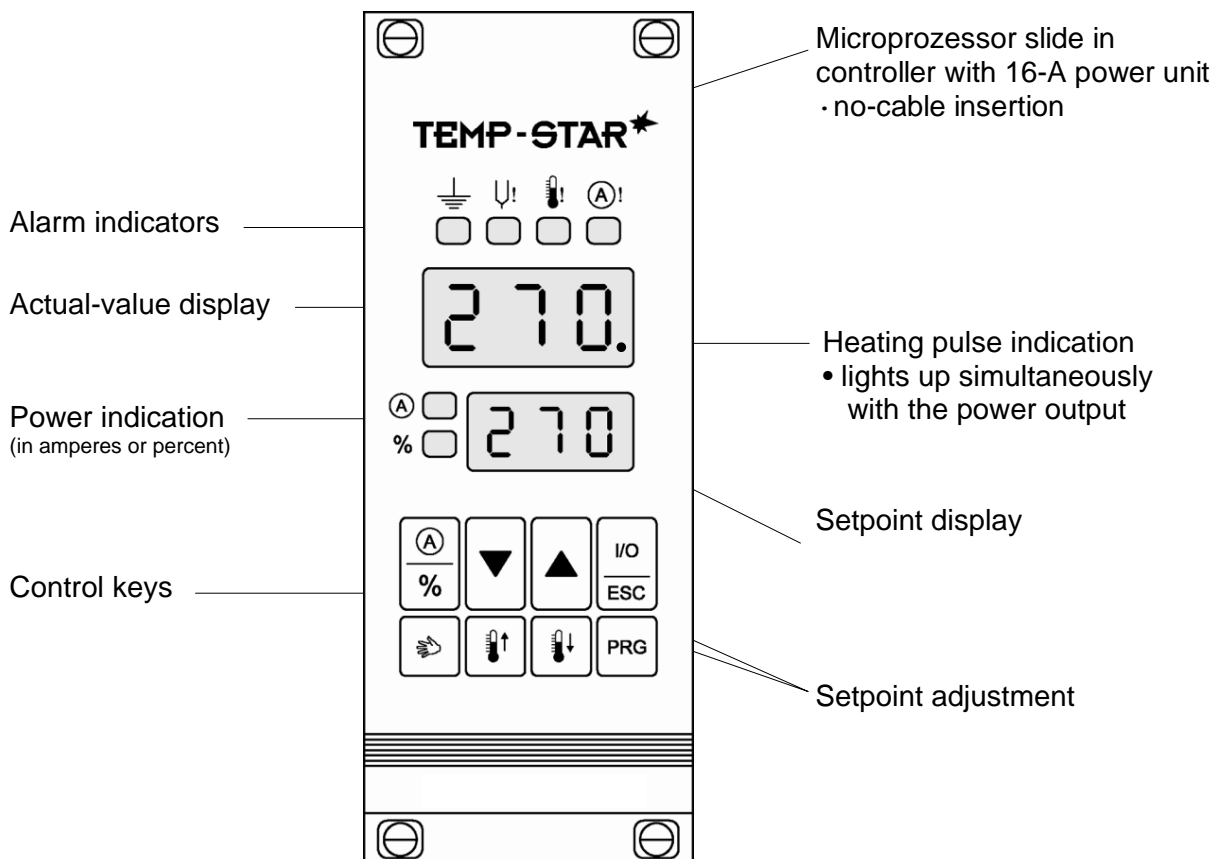
Select the desired setpoint on the controllers (see Displays & Indicators, Operation).

The controllers will now heat up the mold in a uniform manner, thereby drying up any moist heating elements. During this process, the temperature deviation alarm indicator will be flashing (soft-start ramp).

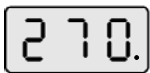
As soon as the setpoint has been reached, the production process can be started on the basis of the factory settings.

Should malfunction occur during the start-up process, the cause of the trouble will be indicated by the corresponding control panel indicator (see Displays & Indicators, Operation).

Slide-In controller



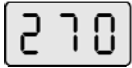
Displays & Indicators, Operation (* Optional functions)



Actual-value display

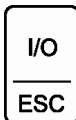
Indicates the measured temperature and the heating pulse (dot = power output).

- * Menu item indication in programming mode (see Programming).



Setpoint display (see Setpoint adjustment)

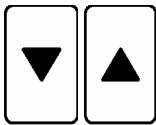
- * Output power indication in amperes or % (see Power indication switch).
- * Manual mode indication "Hnd" and % power (see Manual mode switch).
- * Boost indication "tUP" (see Boost switch ↑).
- * Standby indication "tdn" (see Standby switch ↓).
- * Automode indication "not" (see Programming).



On/Off switch

Pressing this button switches the respective slide-in controller (control zone) on or off. Be sure to switch off unused control zones!

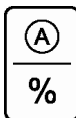
- * Cancel (escape) key, used in programming mode (see Programming).



Setpoint setting

Increase or decrease the setpoint value as required (see also setpoint limit).

- * Power output setting (in % of max. power) in manual mode
- * Up/down keys in programming mode (see Programming).



Power indication switch

Pressing this button once indicates the average load current (in amperes) in the setpoint display. Pressing it again shows you the output power in % of the maximum. At the same time, the corresponding symbol to the left of the display will light up green. Pressing the button once more returns to the setpoint value.



Manual mode switch

This button activates the manual function. In this mode, the information indicated in the setpoint display continuously alternates between the output power in % of the maximum and "Hnd". The percentage output power can be changed with the ▼ ▲ buttons.



BOOST switch

This button increases the setpoint value temporarily. The setpoint display alternates between the increased value and "tUP" (see also Programming).



Standby switch

This button decreases the setpoint value for standby mode. The setpoint display alternates between the reduced value and "tdn" (see also Programming).



Programming key

Keeping this button pressed calls up the programming mode. The first menu item will appear in the actual-value window (see also Programming).



Ground fault alarm indicator

Lights up if the heating-element-to-ground resistance falls below 100 kΩ. In this event, the power supply will be interrupted two-pole.



Thermocouple alarm indicator

The actual value display shows "- - -" as a continuous signal for sensor breakage and a flashing signal for polarity reversal (this will take a few minutes following switch-on!).



Temperature deviation alarm indicator

Flashes during the heating-up phase of the soft-start ramp. Lights up continuously if the temperature exceeds or falls below set limits. In case of overtemperature, the power supply is interrupted two-pole.



Overcurrent alarm indicator

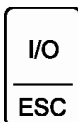
Lights up if the set maximum current is exceeded or the load circuit has been interrupted. In case of overcurrent, the power supply is interrupted two-pole. (see Programming).

Programming



Starting the programming cycle

Pressing the "PRG" key for more than 2 seconds activates the programming function. Now the first menu item "Ot" is shown in the actual-value display window while the set parameter value is flashing in the setpoint display. Pressing the "PRG" button again stops the flashing and the parameter value can be changed with the ▼ ▲ keys. Once the correct value has been set, acknowledge by pressing the "PRG" key. The new value is now stored and starts flashing again in the setpoint window. To navigate through the menu and select an item, use the the ▼ ▲ buttons (see Programming).



To exit the programming mode, press the "ESC" key.



Changed settings will be retained (and available for future use) only when the slide-in controller is kept in operation for a few minutes after the changes have been made!

Programming Menu

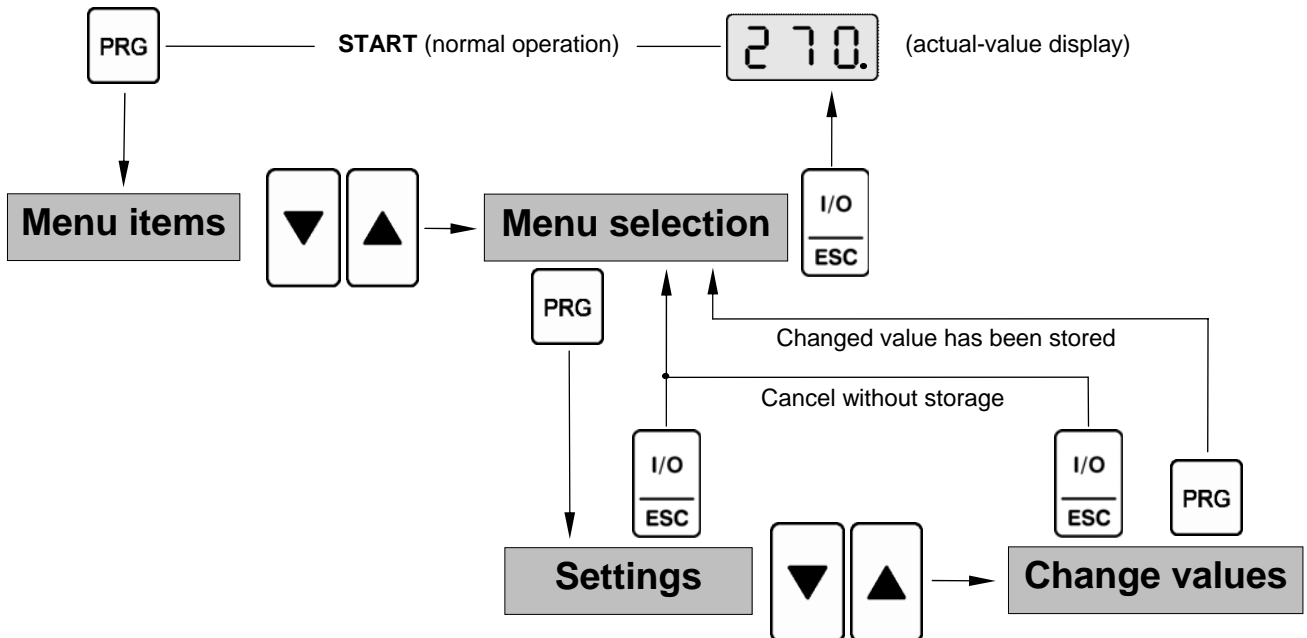
Menu Item	Name	Function	Range	Standard Factory-preset
Cod	Access code	Lock function	0 - 250	0 (inactive)
Ot	Overtemperature	Overtemperature limit value	0 – 50 °C	10 °C
Ut	Undertemperature	Undertemperature limit value	0 – 50 °C	10 °C
CUr	Overcurrent	Load output limit value	1 – 16 A	16 A
tdn	Standby	Temperature below setpoint	10 – 200 °C	50 °C
rE	Ramp end	Final temperature ramp 1	80 – 120 °C	120 °C
r1	Rise, ramp 1	Heating speed, ramp 1	2-10 s for 1°C	4 s
r2	Rise, ramp 2	Heating speed, ramp 2	2–10 s for 1°C	2 s
rt	Ramp pause	Pause between ramps 1 + 2	1 – 10 min	1 min
AOt	Overtemperature	Alarm: I = active / 0 = inactive	0 or I	I
AUt	Undertemperature	Alarm: I = active / 0 = inactive	0 or I	I
not	Automode *	I = active / 0 = inactive	0 or I	0
EI	External Standby	I = active / 0 = inactive	0 or I	I
Adr	Zone address	Slot no. following connection	0 - 99	99 **
Hnd	Manual mode	I = active / 0 = inactive	0 or I	0
toP	Setpoint limitation	Setting maximum setpoint	50 – 500 °C	450 °C
tUP	Boost function	Temperature above setpoint	5 – 60 °C	20 °C
F C	Temperature unit	°F or °C	°F or °C	°C
UPt	Boost time	Duration of boost process	0 -180 seconds	20 sec.
J L	Thermocouple	Type of Thermocouple	J / L	J
PrE	Preset	Set to factory preset values	-	-

CHAN only central unit!	Number of zones	Number of channels to be controlled	1 - 99	depends on model
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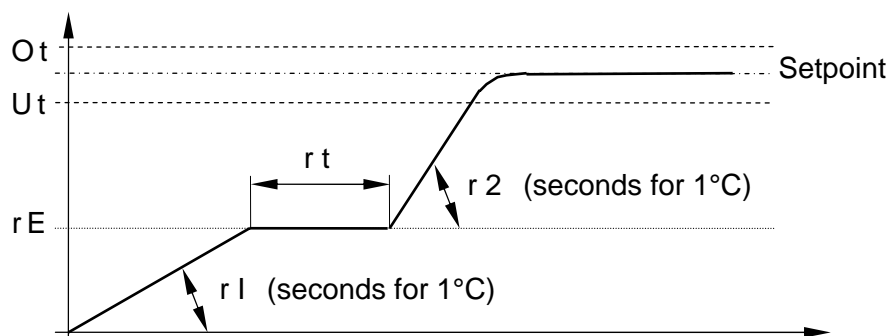
* Automode function is available only after **failure-free** operation for approx. 15 min!

** preset by controllers delivered with central control unit

Programming Diagram



Soft-Start Ramp, Temperature Limit Values



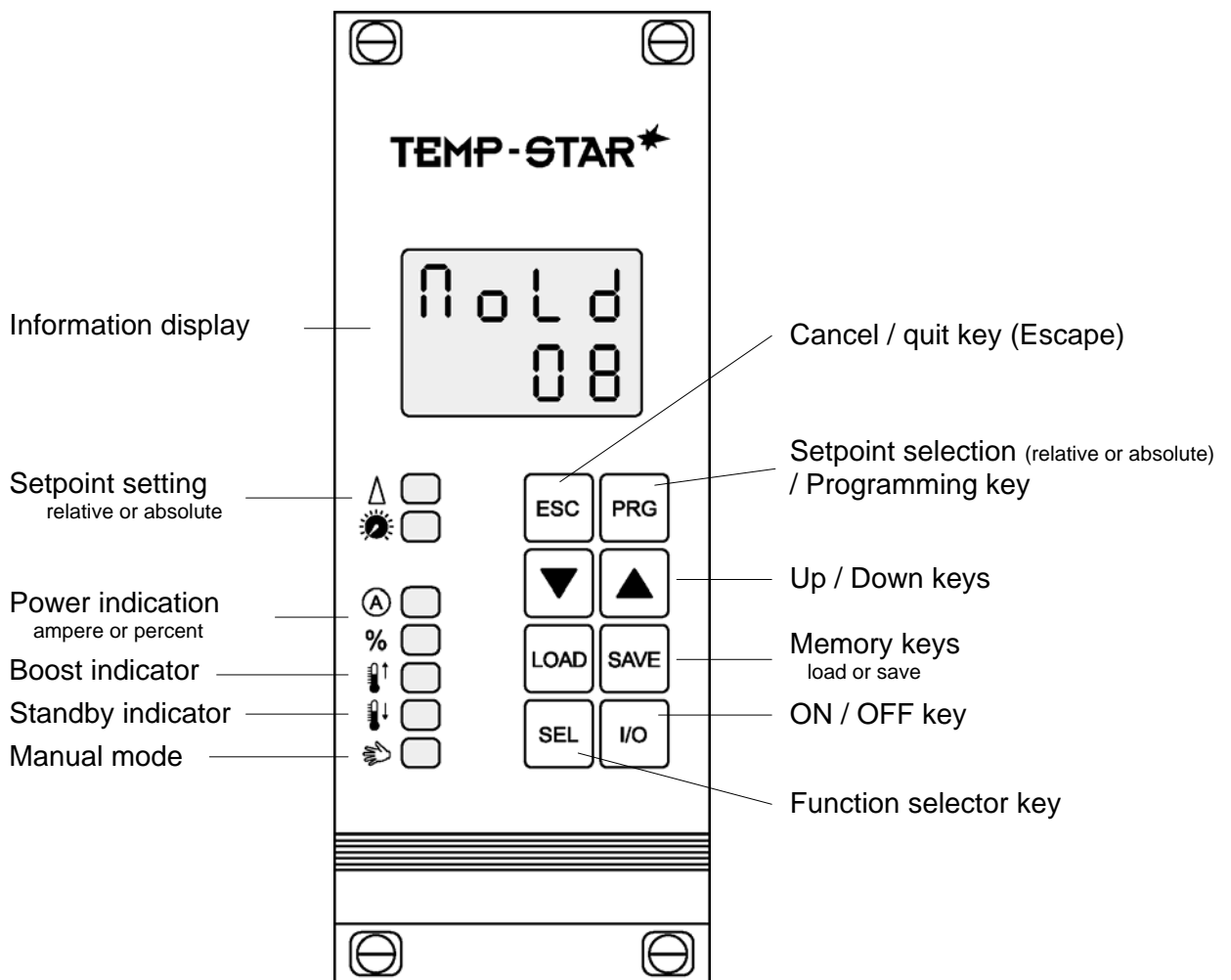
Central Operating Unit (optional)

The central unit enables you to control as many DIALOG slide-in controllers as you like through centralized operation. As individual hotrunner mold settings can be stored in the unit's mold memory and called up as required, this greatly facilitates the setting procedure, especially when you work with a large number of control zones.

Basically, the central operating unit can be inserted into any slot of the controller housing. However, we recommend using the last slot for this purpose, as this ensures clear and straightforward slot-to-pin assignments (see also General Instructions).

All functions afforded by a single slide-in controller are also available and controllable through the central control unit.

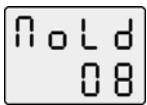
Front View



Settings

When you want to work with a central control unit, you must program an address for each slide-in controller and enter the number of control zones to be controlled through the central operating unit (see also Programming menu).

Central Control Indicators, Displays and Functions



Information display

Indicates the active mold memory.

- * Mold memory function indication:
- LoAd = load data set; SAvE = save / store data set.
- * Menu- and parameter indication in programming mode.



Setpoint setting, relative

The setpoint value can be incrementally changed using the ▼ ▲ keys (all zones).



Setpoint setting, absolute

Copies the setpoint value stored last from the controller with the highest zone number into all zones. Uniform incremental changes for all zones with the ▼ ▲ buttons.



Power indication in amperes

The average output power is indicated in amperes (all zones).



Power indication in percent

The average output power is indicated in percent of maximum load (all zones).



BOOST mode

Temporary temperature increase (all zones).



Standby

Setpoint reduction (for standby mode) (all zones).



Manual mode

Manual Control for all zones in which this function is active (all zones).



Cancel / escape key

Cancel data entry; exit programming mode.



Setpoint selection key (relative or absolute)

Operating this button sets the activated setpoint (relative or absolute) flashing.

You can now change the setpoint value with the ▼ ▲ keys; pressing the button again acknowledges the setting and terminates the selection process.

- * Keeping the button pressed activates the central programming mode. In this case a menu item will appear in the information display. To navigate through the menu and change parameters, use the ▼ ▲ keys (see also Programming).



Store mold settings

To store the settings for a hotrunner mold, shortly press this key and select a memory location with the ▼ ▲ keys, then press the button again to store the values away in the mold memory.



Load mold settings

To recall the settings for a hotrunner mold, shortly press this key, select the appropriate memory location with the ▼ ▲ keys, then press the button again.



Select type of indication or function

Shortly press this key and select the appropriate function using the ▼ ▲ keys; the green LED of the selected item will now start flashing. Pressing the button once again activates or deactivates the selected item.

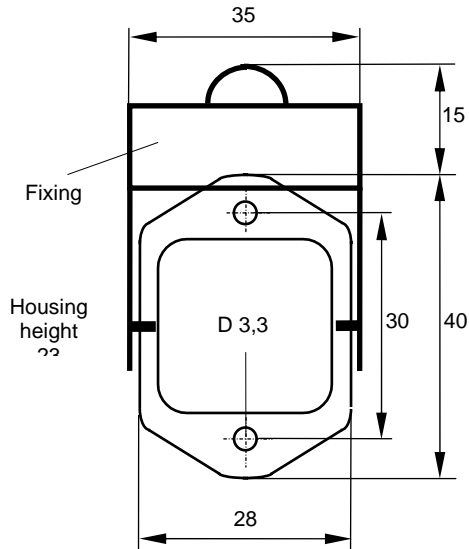


ON / OFF

The central operating unit can be switched on and off with this key.

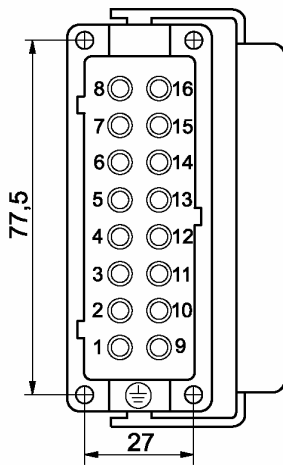
Connections (following DIN 16765-A)

4-Pole



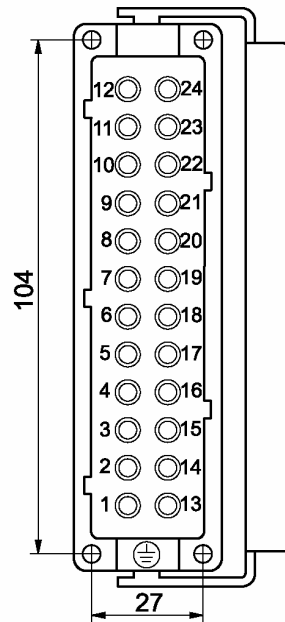
Zone	Load PIN	T / C PIN
1	1 / 4	1(+) / 4(-)
2	2 / 3	2(+) / 3(-)
Ground connect to housing		

16-Pole Load



Zone	PIN
1	1 / 9
2	2 / 10
3	3 / 11
4	4 / 12
5	5 / 13
6	6 / 14
Ground connect to housing	

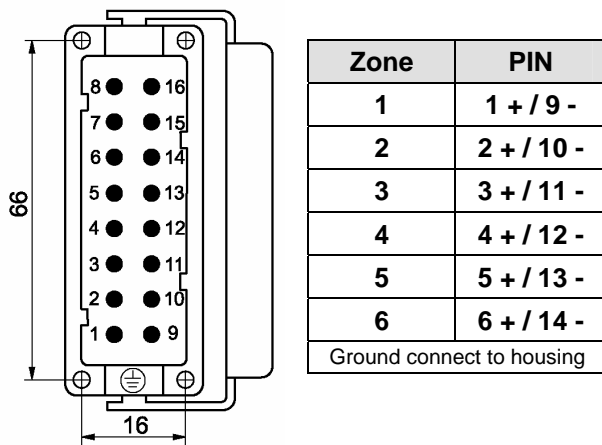
24-Pole Load



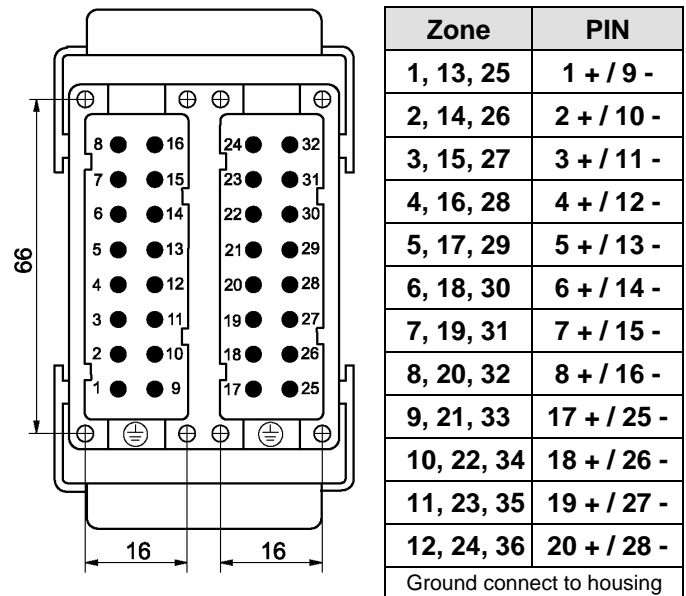
Zone	PIN
1, 13, 25	1 / 13
2, 14, 26	2 / 14
3, 15, 27	3 / 15
4, 16, 28	4 / 16
5, 17, 29	5 / 17
6, 18, 30	6 / 18
7, 19, 31	7 / 19
8, 20, 32	8 / 20
9, 21, 33	9 / 21
10, 22, 34	10 / 22
11, 23, 35	11 / 23
12, 24, 36	12 / 24
Ground connect to housing	

Connections (following DIN 16765-A)

16-Pole Thermocouple

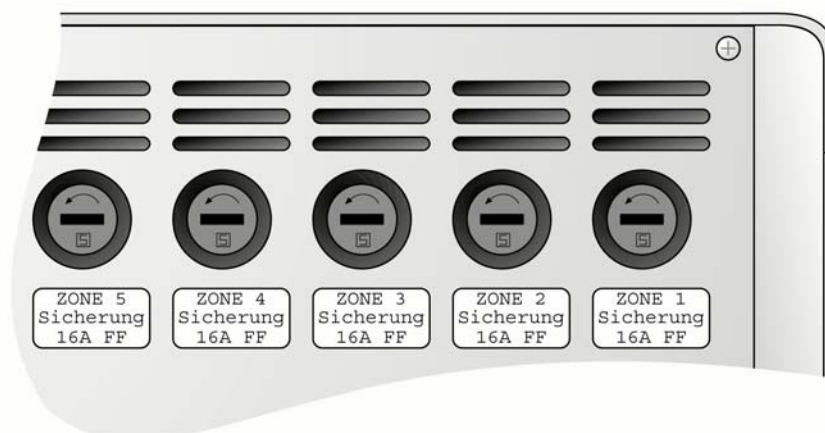


32-Pole Thermocouple



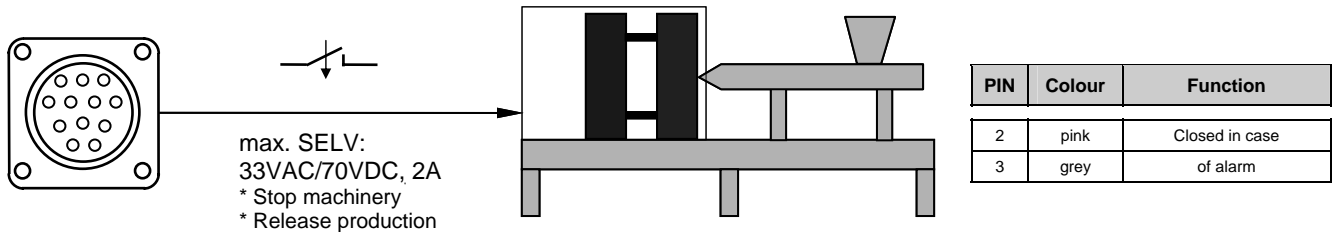
Load Fuses

The load fuses are located at the rear of the housing. Before changing withdraw the mains plug. Please replace only with similar fuses!

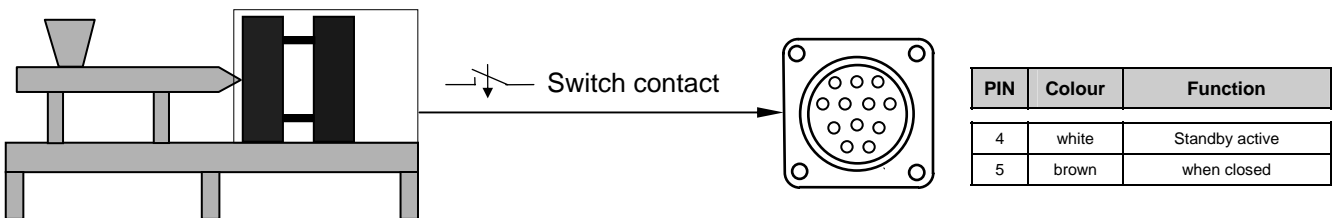


Alarm connector 12-pole

Output



Input (external standby)



Specifications

Working conditions:	To be operated only in closed rooms. Altitude max. 2000m. Relative humidity up to 80% at 30°C (86°F). Avoid moisture condensation! Pollution severity level 2.	
Temperature range:	Operation: 10...40°C (50...104°F)	storage: 0...50°C (32...122°F)
Housing:	Half-shell metal housing; protection IP20, class of protection I	
	2-slot: approx. 180 x 200 x 390 mm (WxHxD)	Weight approx. 8 kg
	6-slot: approx. 350 x 200 x 390 mm (WxHxD)	Weight approx. 14 kg
	10-slot: approx. 550 x 200 x 390 mm (WxHxD)	Weight approx. 20 kg
	16-slot: approx. 460 x 330 x 390 mm (WxHxD)	Weight approx. 32 kg
	24-slot: approx. 460 x 460 x 390 mm (WxHxD)	Weight approx. 40 kg
	32-slot: approx. 570 x 730 x 450 mm (WxHxD)	Weight approx. 48 kg
Connection:	Load and Thermocouple separate, 4-, 16-, 24-, 32-pole (depending on number of control zones; pinning see "Connections")	
Power supply:	4-conductor three-phase system 230 / 400VAC +/- 10%, 50 / 60 Hz, Overvoltage class II, CEE connector (other Supplies on request)	
Connected load:	2-slot: max. 16 A per phase 6-slots or more: max. 32 A per phase	
Slide-in controller:	European standard size p.c.b. 160x100 mm, with 16 A power output	
Thermocouple:	Fe-CuNi, type J or L (DIN 43714)	
Power output:	Contactless semiconductor output stage, max. 16 A, zero switching	
Control range:	50 ... 500°C (122...932°F)	
Control accuracy:	Better 1°C (if hotrunner permits)	