

EWIKON

Valid for
item numbers:

HPS-C-ONE:
69000.001 (1-zone)

HPS-C-SLOT
69000.002 (2-zone)
69000.004 (4-zone)
69000.006 (6-zone)



HPS-C-ONE **HPS-C-SLOT** Hotrunner Controllers

Operating manual

EWIKON

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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!



Intended Use

HPS-C-ONE and **HPS-C-SLOT** controllers are industrial temperature controllers for controlling the melting temperature of hot-runner moulds. 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.

EWIKON shall not be liable for damage caused by improper use of the device.

General Instructions

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

When connecting the hotrunner mold cables, be sure to assign the cables to the correct connectors.

Unused controller zones must be switched off. Unused 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 **HPS-C-ONE** and **HPS-C-SLOT** 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 rear and underside of the unit.

Cleaning

The external surfaces of the device and the operating panel may be cleaned with a soft cloth saturated with alcohol. Please do not use acid cleaners or scouring agents.



Maintenance

The device must be regularly subjected to a safety check complying with BGV A3 requirements (protection against accidents).

It is recommended to clean the ventilation slots on the rear and underside of the unit at regular intervals. Depending on the operating period and working condition, the filters should be replaced in the cassette.

In addition, the ventilation slots should be checked for obstruction and cleaned if necessary. However, this task must be carried out by qualified service personnel and not by the user.

No other maintenance work is required for the device beyond the tasks specified above. Should malfunction occur, please contact EWIKON.

Disposal

Once the device has reached the end of its service life, please feel free to return it to the manufacturer for proper disposal.



This device satisfies the essential protection requirements specified in pertinent EU Directives (as of 2010)

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 moulding machine using the alarm connector. The controller must be connected to a one (1+2 zone) or three-phase (4-zone and higher) power supply source using a corresponding connector (see *Technical Data*). Connect the power cable, then switch on the controller with the main switch.

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

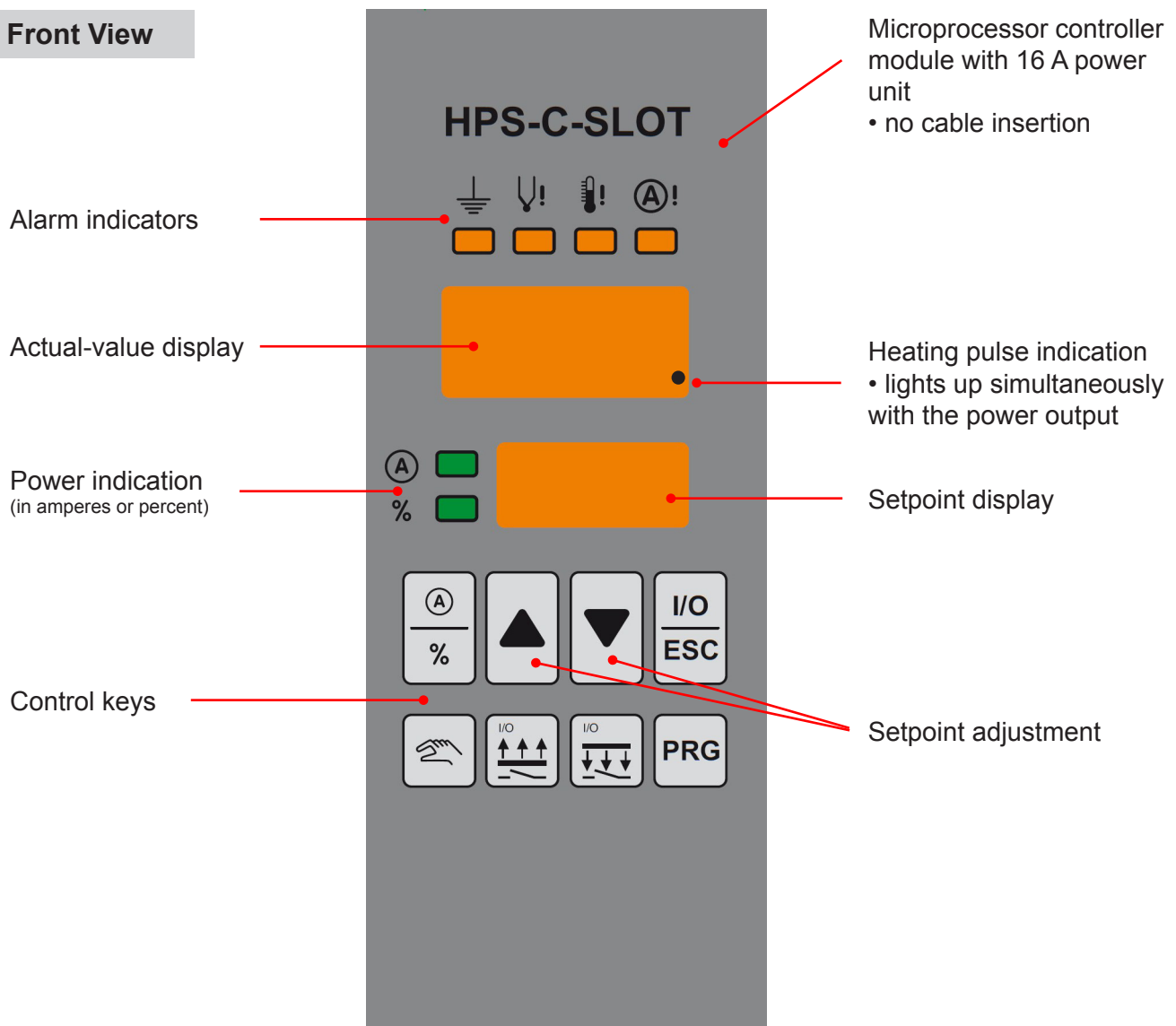
Select the desired setpoint on the controllers (see *Displays & Indicators, Operation*).

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).

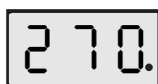
As soon as the setpoint has been reached, the production process can be started on the basis of the factory settings.

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*).

Front View



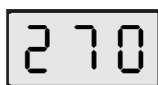
Displays & Indicators, Operation



Actual value display

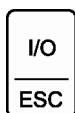
indicates the measured temperature and the heating pulse (dot = power output)

- 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)
- Increase *tUP* (see *Increase* switch)
- Decrease *tdn* (see *Decrease* switch)
- Automode indication *not* (see *Programming*)

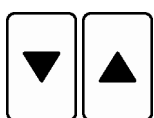


On/Off switch

Pressing this button switches the respective slide-in controller (control zone) on or off.

Be sure to switch off unused control zones!

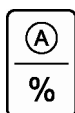
- Cancel (escape) key, used in programming mode (see *Programming*)



Setpoint setting

Increase or decrease the setpoint value as required (50 up to max 500 °C); also see *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 in %.



Increase switch

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



Decrease switch

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



Programming key

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

(• optional functions)

Programming

PRG

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* key 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*).

I/O

ESC

Press the *ESC* key to exit the programming mode.

- ▶ **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!**

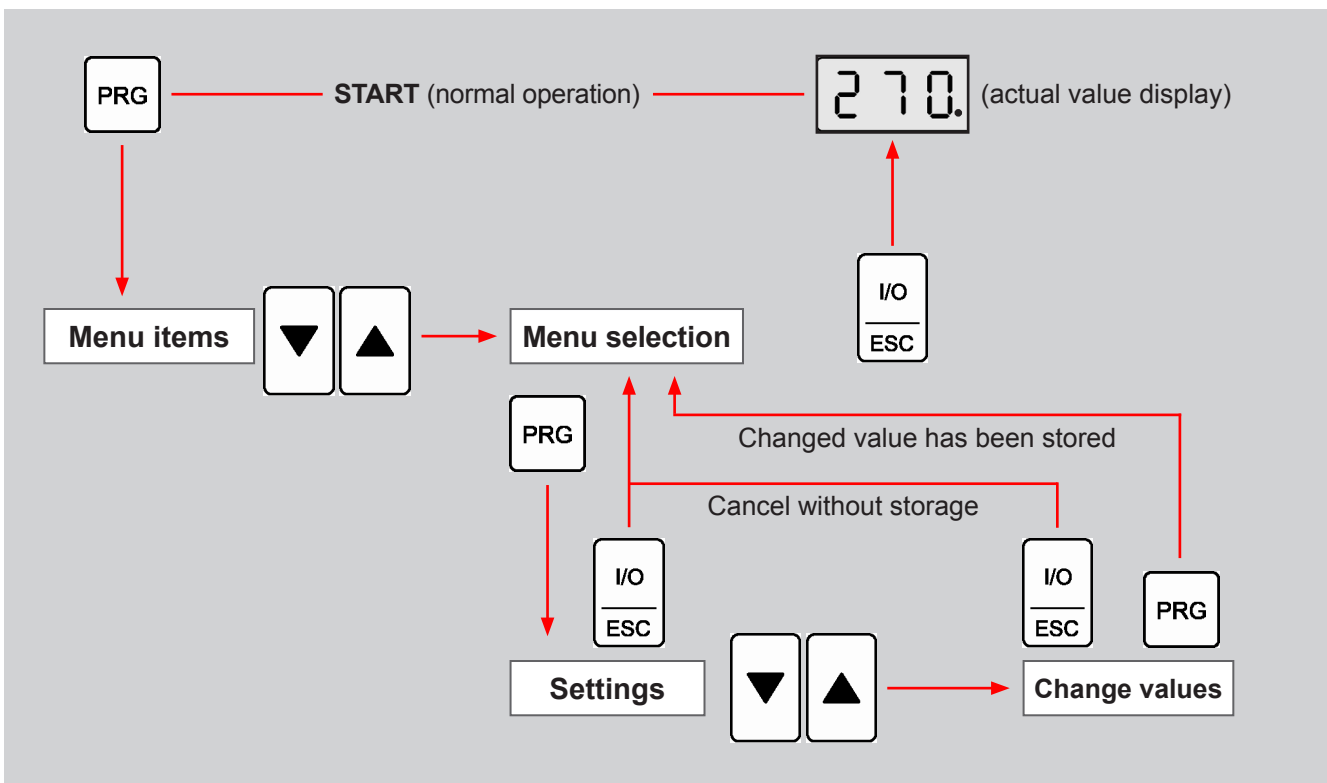
Programming Menu

Men item	Name	Function	Range	Standard (factory setting)
Cod	Access code	Lock function	0-250	0 (deactivated)
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	Decrease	Temperature below setpoint	10-200 °C	50 °C
rE	Ramp end	Final temperature ramp 1	80-100 °C	120 °C
r1	Rise, ramp 1	Heating speed, ramp 1	2-10 sec. for 1 °C	4 sec.
r2	Rise, ramp 2	Heating speed, ramp 2	2-10 sec. for 1 °C	2 sec.
rt	Ramp pause	Pause between ramps 1 + 2	1-10 minutes	1 minute
AOt	Overtemperature	Alarm: I = active / 0 = inactive	0 or I	I
AUt	Undertemperature	Alarm: I = active / 0 = inactive	0 or I	I
not	Automode ¹⁾	I = active / 0 = inactive	0 or I	0
Adr	Zone address	Slot no. following connection	0-99	99 ²⁾
Hnd	Manual mode	I = active / 0 = inactive	0 or I	0
ToP	Setpoint limitation	Setting maximum setpoint	50-500 °C	450 °C
tUP	Increase	Temperature above setpoint	5-60 °C	20 °C
F C	Temperature unit	°F or °C	F or C	°C
UPt	Increase time	Duration of increase	0-180 sec.	20 sec.
JH	Thermocouple	Type of thermocouple	J / H = K	J
tCt	Thermocouple test time	Measurement period of temperature increase at TC	0 - 10 minutes	2 minutes
PrE	Preset	Set to factory preset values	-	-
CHAN only central unit!	Number of zones	Number of channels to be controlled	1-99	depending on model

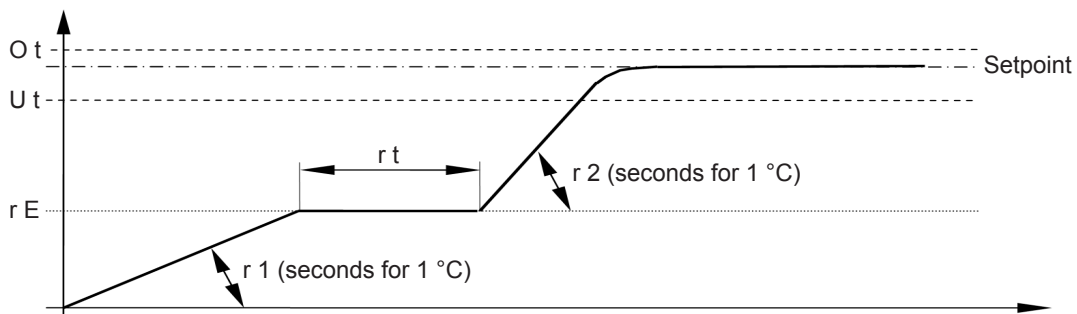
¹⁾ Automode function is available only after **failure-free** operation for approx. 15 min!

²⁾ Preset for controllers delivered with central control unit

Programming Diagram



Soft Start Ramp, Temperature Limit Values



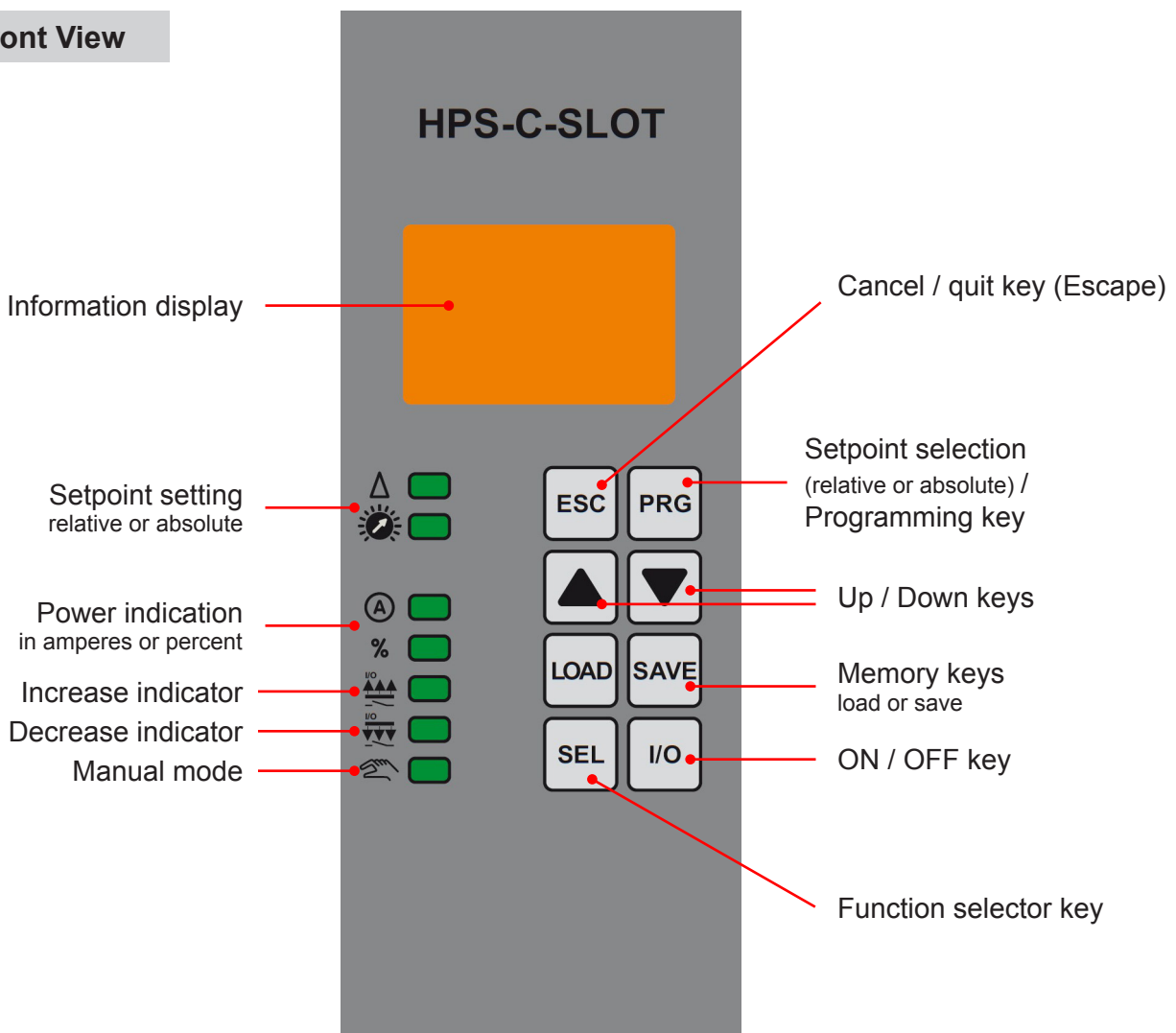
Central Operating Unit 60040.064 (optional)

The central unit enables you to control as many HPS-C-SLOT controller modules as you like through centralized operation. As individual hotrunner mold settings can be stored in the mold memory of the unit 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 (also see *General Instructions*).

All functions provided by a single controller module are also available and controllable through the central operating unit.

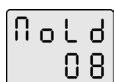
Front View



Settings

When you want to work with a central control unit, you must program an address for each controller module and enter the number of control zones to be controlled through the central operating unit (also see *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 ▼▲ keys.



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).



Increase mode

Temporary temperature increase (all zones)



Decrease mode

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 (also see *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

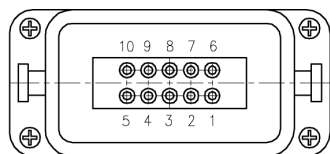
The central operating unit can be switched on and off with this key.

(• *Optional functions*)

Connections (according to DIN 16765-A)

for **69000.001** and **69000.002**

10-pole Load / Thermo

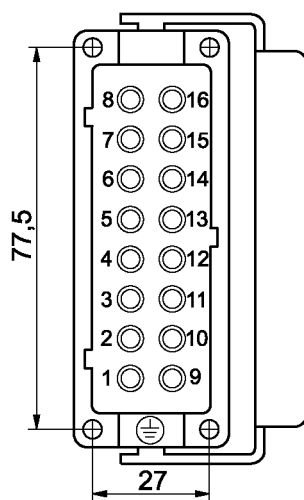


Zone	Load PIN	Thermo PIN
1	1 / 6	5(+) / 10(-)
2	3 / 8	4(+) / 9(-)

Earth conductor wired to housing!

for **69000.004** and **69000.006**

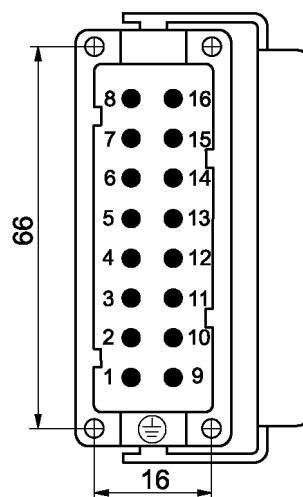
16-pole Load



Zone	PIN
1	1 / 9
2	2 / 10
3	3 / 11
4	4 / 12
5	5 / 13
6	6 / 14

Earth conductor wired to housing!

16-pole Thermo

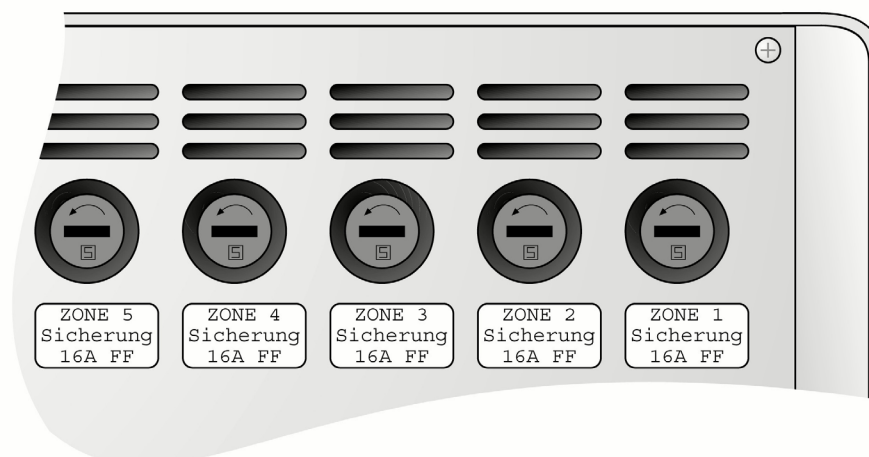


Zone	PIN
1	1 + / 9 -
2	2 + / 10 -
3	3 + / 11 -
4	4 + / 12 -
5	5 + / 13 -
6	6 + / 14 -

Earth conductor wired to housing!

Load Fuses 18061

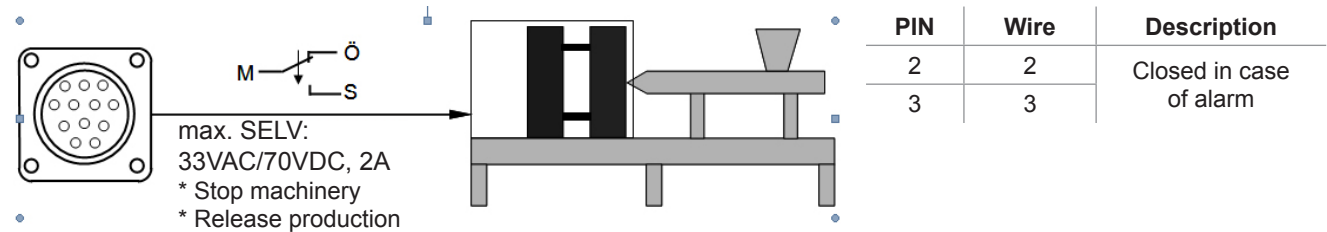
The load fuses are located at the rear of the housing. Before changing withdraw the mains plug. Please replace only with similar fuses.



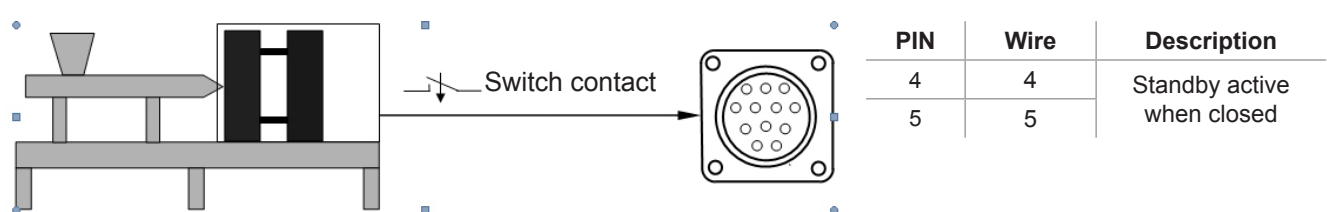
Connections

Alarm connector 12-pole (mating connector and/or alarm circuit 60070.051)

Output



Input (external standby)



Technical Data

Working conditions: To be operated only in closed rooms. Altitude max. 2000 m. Relative humidity up to 80 % at 30 °C (86 °F). Avoid moisture condensation! Pollution severity level 2
 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

	Dimensions [mm] (BxHxT)
2-slot	approx. 175 x 200 x 390
4-slot	approx. 350 x 200 x 390
6-slot	approx. 350 x 200 x 390

Connection: Common load and thermocouple 10-pole (1 and 2 control zones; for pinning see *Connections*)
 Load and Thermocouple separate, 16-pole (4 and 6 control zones; for pinning see *Connections*)

Power supply: 4-conductor three-phase system 230 / 400 VAC +/- 10 %, 50 / 60 Hz, Overvoltage class II, CEE connector (other supplies on request)

Connected load: 2-slot: max 16 A per phase
 6-slot 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 K (IEC 584)

Power output: Contactless semiconductor output stage, max. 16 A, zero switching

Control range: 50-500 °C

Control accuracy: Better 1 °C (if hotrunner permits)

Spare Parts / Accessories

Item no.	Description
18061	Fuse F 16 A 6.3 x 32 mm
13686	Fuse F 10 A 6.3 x 32 mm
12067	Fuse T 100 mA 5 x 20 mm
60040.063	Operating unit
60040.064	Central unit
60040.076	Fan
60040.082	Blind plate

We hereby confirm that the products described below conform to the essential protection requirements of the following European Directives

2006/95/EC "Low Voltage Directive"

and

2004/108/EC "EMC Directive"

with respect to their design type. This requires that the products are used for their intended purpose and that the assembly and operating instructions are observed.

Alterations made to the product will void the declaration of conformity.

Producer: EWIKON Heißkanalsysteme GmbH
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phone: +49 (0) 6451 / 501-0

Produkt: **HPS-C-ONE / HPS-C-SLOT hotrunner controllers
for the operation of 230 V hotrunner systems**

Typenbezeichnung: **HPS-C-ONE**
69000.001 ; 1-zone controller
HPS-C-SLOT
69000.002 ; 2-zone controller
69000.004 ; 4-zone controller
69000.006 ; 6-zone controller

Applied standards: DIN EN 61010-1: 2011-07 "Safety requirements for electrical equipment for measurement, control, and laboratory use - part 1"
DIN EN 61000-6-2: 2006-03 "Immunity for industrial environments"
DIN EN 61000-6-4: 2007-09 "Emission for industrial environments"

Note: It is necessary to use genuine connecting cables outside the device to meet the requirements according to DIN EN 61000-6-2 and DIN EN 61000-6-4.

Frankenberg, 02 April 2012



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