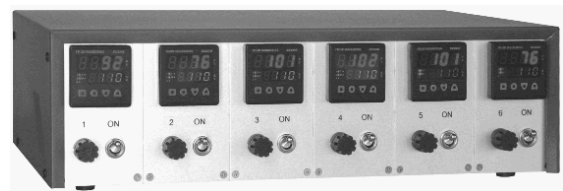


R110..R1216 Operator Manual

Multi-Zone Hotrunner-Controller



Parameters Overview

	LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 4	LEVEL 6
SET1	INPT	EUNE	node	HC	Id
SET2	RESL	EUNE	SET2	ZONE	LOCK
EUNE	LEnP	nA IN		nA IN	SET1
HAND	SPHL	P-LO		SSP	SET2
Pb-1	SPLL	P-H1		SOFT	EUNE
It-1		HYSL		HAND	HAND
dt-1		HYSb		nAnP	Pb H
PERC		EnP		nAtE	It-1
PC				SORV	dt-1
BLANC				OPEN	L- 0
				FR IL	L- 1
					L- 2
					L- 4
					NEV
					Id

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1 General

1.1 Safety hints

Die Regelgeräte R110 bis R310 werden am 230VAC Niederspannungsnetz betrieben. Die Regelgeräte R416 bis R1216 werden am 3-Phasen-Netz 3x230VAC mit N-Leiter betrieben. The controller runs with supply of the 230VAC supply net. The local and general standards have to be respected for the installation.

authorised people have to wire and commission the controller with the hotrunner system. Maker and seller are not responsible for direct and indirect damages in reason of wrong treatment.

**It is not sufficient to turn all outputs or single zones off
for protection against dangerous voltage!**

**Before maintenance disconnect all heaters by the referring plugs or
even the complete controller from the supply net!**

Disconnect the controller from the supply net before open the cover or change fuses!

**According to the local standards the
supply phase may change between the 2 poles of the outputs!**

1.2 Equipment and features

The temperature controller for 1 up to 12 zones is fit with the following functions:

- 1 to 12 separate controllers for nozzles and manifold
- type of sensor Fe-CuNi, others are available
- selection of the indication in the lower display
- softstart with increasing output rate during the first 5 minutes
- indication of broken sensors
- safety switch off when overheating the alarm-level

1.3 Connection

The hotrunner system has to be connected at the rear side by the referring cable set. The supply cable is fit with a single phase plug for 230VAC or 3-phase CEE plug with N and PE.

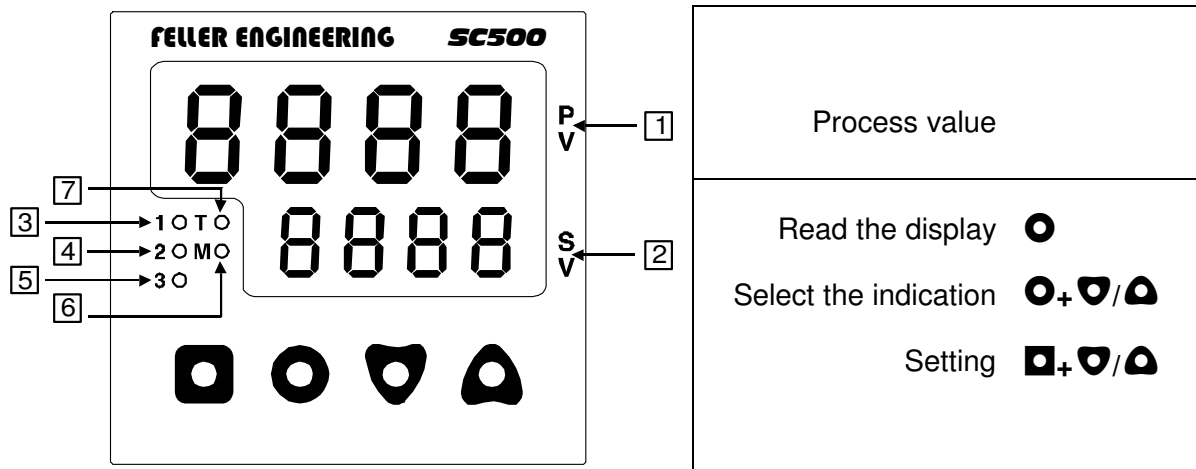
1.4 Function

All outputs are controlled digitally. The power will be controlled by a Triac per zone. The output rate is indicated in percentage at the lower display with the referring selection. Reaching the individually set high-level alarm the internal relay switches all outputs off.

1.5 Outfit

The available housings for 3, 6 or 12 controller slots must not even be fit completely. Unused slots have to be covered by the referring frontplate and the termination plug. Otherwise there is no function.

2 Operation of the controller



2.1 Indicators

1. Process value (PV)	Indication of the actual value in the upper display
2. Setpoint value (SV)	The indication of the lower display is selectable
3. (1)	Indication of the actual heater status, SSR
4. (2)	Enable by the alarm relay (closed)
5. (3)	Not used
6. M	Indication of manual mode
7. T	Indication of tune mode

2.2 Keys

	To indicate or select the lower display
	To select the level or change settings
	Decrease the selection
	Increase the selection

Key combinations	Function
	Selection of the lower display
	Increase or decrease the value for a certain function: Setpoint Level Parameter
	Enter or leave the parameter mode
	Change the level
	Selection of the function within a level

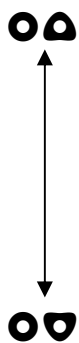
Hint:

After 60 seconds without operation the controller will leave the parameter mode.

2.3 Indication of the upper main-display

Display	Function	Range	Default	Zone 1	Zone 2
123	Actual value [°C]	Actual indication			
!	Broken sensor				

2.4 Indication and operation by the lower display



Display	Function	Range	Default	Zone 1	Zone 2
SET1	setpoint [°C]				
SET2	Temperature alarm [°C]		350		
TUNE	Tuning		OFF		
MANd	Manual mode	OFF, 0..100	OFF		
Pb-1	P-rate		10		
Ib-1	I-rate		120		
Db-1	D-rate		30		
PERC	Output rate [%]	Actual indication			
°C	Unit		°C		
BLANC	Blanc				

2.4.1 Setpoint

Enter the setpoint within the fixed limits.

2.4.2 Temperature-Alarm

Enter the upper alarm limit.

Reaching this value the internal relay switches off both poles off the power outputs. This function works only with connected sensors.

2.4.3 Tuning

Starts the tuning to find optimised P-, I- and D-rates. The LED „T“ flashes.

This may be started with the beginning of heating or in the range of the setpoint temperature.

2.4.4 Manual mode

Changes to manual mode and sets the output rate in [%].

The manual mode may be used with broken sensor. The setting has to be changed from OFF to the desired output rate.

No temperature indication and alarm function is possible without sensor!!!

2.4.5 P-, I- and D-rate

Indicates the actual values.

2.4.6 Output rate

Indicates the actual values.

The output rate and the altering temperature enable a logic conclusion about the function of the heater.

100% output rate without temperature increase > no heater function!!!
0% output rate with temperature increase > defective SSR!!!

3 Commissioning

The items 1..8.and 14 are only required with the first commissioning or after change of the hotrunner system.

Hint to item 6 and 14:

Tuning may be started even after heating up. Deviations of temperature may occur during this time in reason of not matching parameters.

- | | | |
|-----|---|----------------|
| 1. | Connect net supply. | |
| 2. | Switch ON at the rear side. | |
| 3. | Broken sensor will be indicated after start. | <i>I _ _ _</i> |
| 4. | Check setpoints and change, if necessary. | <i>SEt 1</i> |
| 5. | Check alarms and change, if necessary. | <i>SEt 2</i> |
| 6. | Start tuning. | <i>TUNE ON</i> |
| 7. | Switch OFF at the rear side. | |
| 8. | Disconnect net supply. | |
| 9. | Connect sensor- and heater-cable of the hotrunner-system. | |
| 10. | Connect net supply. | |
| 11. | Switch ON at the rear side. | |
| 12. | Actual temperatures are indicated in the upper display. | |
| 13. | The lower display enables a selection to observe to output rate. The LED „1“ flashes corresponding. | <i>PERC</i> |
| 14. | The tuning has finished, when the LED „T“ Stops flashing.
The controller heats towards the setpoint. | |

3.1 Operation with broken sensor



A broken sensor or missing sensor will disable the controller. For operation without sensor the other SC500 has to be set to manual mode (see 2.4.4).





3.2 Operation with reduced number of zones

The switch below the SC500 turns this zone off. There is no further supervision of this zone(s).

4 Settings



4.1 Change the level

The keys   pressed simultaneous for 3 seconds enable the entry to the parameter mode. 5 levels for specific parameter settings are available. Changes may lead to malfunction. That is why the entry is locked by a code. Some parameter are completely locked.

	Display	Funktion	Bereich
  	LEUL 0	Level 0	Input parameters
	LEUL 1	Level 1	Output parameters
	LEUL 2	Level 2	Alarm parameters
	LEUL 4	Level 4	Special functions
 	LEUL 6	Level 6	Lock settings



4.1.1 Level 0

Input parameters

	Display	Function	Range	Default	Zone 1	Zone 2
 	LEUL 0	Level 0				
	INPE	Type of sensor	J / K ...	J		
	RESL	Resolution	1 / 0,1	1		
	LEUP	Unit	[°C / °F]	°C		
	SPHL	Max. setpoint		500		
	SPLL	Min. setpoint		20		

4.1.2 Level 1

Output parameters

	Display	Function	Range	Default	Zone 1	Zone 2
 	LEUL 1	Level 1				
	EUNE	Tuning	OFF / ON	OFF		
	RA IN	Relay function	rE/ Fd	RE		
	P-LO	Lower output limit	0% to upper limit	0		
	P-HI	Upper output limit	Lower limit to 100%	100		
	CYCL	Cycle time		USEr		
	CYCU	Cycle time-preset	0,1 to 100,0 sec	1,0		

4.1.3 Level 2

Alarm parameters

Display	Function	Range	Default	Zone 1	Zone 2
LEVL 2	Level 2				
node	Function setpoint 2	AlrM / none / Fd / rEV	rEV		
SEt2	Type setpoint 2	AbS/dEV	AbS		
SEt2	High-Alarm		350		

4.1.4 Alarm

The value set 2 for high-alarm will be set in the main-display. The max. value is limited at 350°C.

4.1.5 Level 4

Special functions

Display	Function	Range	Default	Zone 1	Zone 2
LEVL 4	Level 4				
HL	Heating + Cooling	NO / YES	NO		
ZONE		NO / YES	NO		
RA IN		RLY1 / RLY2	RLY1		
SSP		NO / YES	YES		
SOFT		OFF / 000 to 999 min	5		
HAND	Manual output rate, → main-display	OFF or within the limits	OFF		
PROP		OFF / HOLD / ON	OFF		
OPEN	Behaviour with broken sensor	AUTO / MANL	AUTO		
RSET	Complete reset		NO		

4.1.6 LEVEL 6

Lock settings

Display	Function	Range	Default	Zone 1	Zone 2
LEVL 6	Level 6				
ld	Unlock code		22		
LOCP OnL	Only to OnL	ONL / LEVL	ONL		
SEt 1	Setpoint	Unlock / Read / Lock	Unlock		
SEt 2	Alarm level	Unlock / Read / Lock	Unlock		
TUNE	Tuning	Unlock / Read / Lock	Unlock		
HAND	Manual mode	Unlock / Read / Lock	Unlock		
Pb H	P-rate	Unlock / Read / Lock	Read		
Ie-1	I-rate	Unlock / Read / Lock	Read		
de-1	D-rate	Unlock / Read / Lock	Read		
nNL		Unlock / Read / Lock	Read		
Pd-L		Unlock / Read / Lock	Lock		
LOCP LEVL	Only to LEVL	ONL / LEVL	LEVL		
L- 0	Level 0	Unlock / Read / Lock	Read		
L- 1	Level 1	Unlock / Read / Lock	Read		
L- 2	Level 2	Unlock / Read / Lock	Read		
L- 4	Level 4	Unlock / Read / Lock	Read		
NEV	Code-setting	Unlock / Read / Lock			
ld	Enter new code				

5 Technical Data

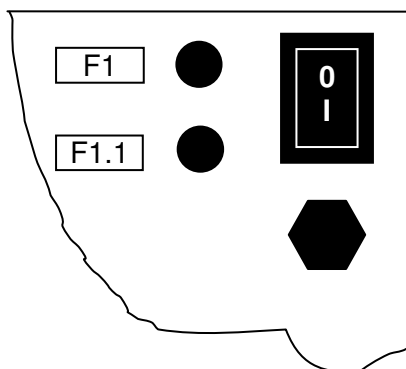
Supply voltage	230VAC 3x 230VAC + N + PE	with Schokostecker with CEE-Stecker
Voltage tolerance	+/- 10%	
Frequency	50/60Hz/cps	
Power consumption	max. 3,6KW or 11KW, depending on the power connector	
Thermocouple inputs	Fe-CuNi Typ J	
Outputs	230VAC / 10A total max. 16A	
Fuses	10Aff or 16Aff, depending on the type of connector	
Refresh	250ms	
Resolution	1 °C	
Accuracy	+0.25% of final value resp. 1°C (after 20min operation)	
Controller	PID, Autotune, manual %-output rate	
Cycle time	0,1 s	
Alarm	Individual high-alarm	
Operation temperature	0 50°C	
Storage temperature	-20 75°C.	
Humidity	85% max. not condensing	
Isolation breakdown rate	2000Volt	
Compliance	CE	
LVD	As per EN 61010.	
EMC	As per EN 61326.	
Protection	IP 20	
Weight	3kg to 15kg	
Dimensions WxHxD	220 x 135 x 260 mm 425 x 135 x 260 mm 425 x 255 x 260 mm	R310 R616 R1216

5.1 Fuses

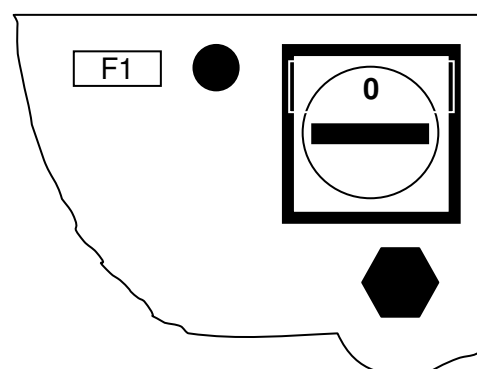
Front	Output Zone 1-12 Depending on the type of connector	je 10A ff (6,3 x 32) or je 16A ff (6,3 x 32)
Rear side F1	Control voltage	4 A mT (6,3 x 32)
Rear side F1.1 (only R110...R310)	Output common	16A mT (6,3 x 32)

5.2 Rear view

R110..310



R416...R1216



5.3 Connectors assignment

Standard mixed:

1 Zone

X 1	Sensor	Zone 1	+ / -	1 / 2
	Heater	Zone 1	L / N	3 / 4

Standard separated:

Sensors >1 Zone

X 1			10-pin	24-pin
	Zone 1	+ / -	1 / 6	1 / 13
	Zone 2	+ / -	2 / 7	2 / 14
	:	:	:	:
	Zone 5 / 12	+ / -	5 / 10	12 / 24

Heaters >1 Zone

X 2			10-pin	24-pin
	Zone 1	L / N	1 / 6	1 / 13
	Zone 2	L / N	2 / 7	2 / 14
	:	:	:	:
	Zone 5 / 12	L / N	5 / 10	12 / 24

Other fittings may differ from this example.