MULTIZONE TEMPERATUR CONTROLLER

Z7520

OPERATING INSTRUCTION

STRACK®

NORMALIEN

Dear customer,

thank you for having chosen a STRACK temperature controller. This high quality device has been produced in our ISO 9001-certified factory and was shipped to you after a thourough quality test.

Unpack Check the device for eventual shipping damage.
Don‘t connect damaged equipment !
Claim the damage with your shipping agent.

Read Please read carefully this operating manual before bringing the device into service!

Connect Wiring the device should be done by your qualified electrician following the instructions given in this manual.

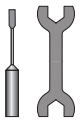
Warranty period is 2 years and includes all malfunctions clearly caused by material, production or design failures. Repair or replacement in this case are free of charge, you only pay the shipping cost to our factory. No further claims or requirements can be accepted, especially for consequential losses or damages.

Service We help you quickly and at resonable costs. Just send us the device with repair order and precise description of the malfunction: Carefull packaging is essential for a safe shipment ! Small repairs up to 80,- EUR are done immediately without formal offer. In any other case, we contact you as soon as possible to determine the next steps.

To facilitate your orientation in this manual, you find the following symbols :

Safety advice 

General information 

Wiring- and installing advice 

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1. Features

Microprocessor based compact temperature controller with the following features:

- Integrated power supply for 1 or 2 zones
- Usable for heating or cooling
- PID-caracteristic, 2-point-controller or manual constant powersetting
- Auto-adaptation to the caracteristic of every zone (autotuning) with 2 available PID-curves
- Available for thermocouples type J or K or Pt100– resistance sensor
- 2 programmable alarms per zone, wired to common alarm output
- Programmable softstart

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2. Safety advice

1. Please read this advice carefully.
2. Keep this operations manual for use near the machine.
3. This is an electral device driven with high voltage, please respect the usual VDE- and safety regulations.
   Mains voltage and every voltage greater than 42 volts is dangerous!
4. Connect to a power source following the identification plate on the device.
5. Avoid contamination of the interior with debris, liquids or sprays. Risk of short-circuit, fire or electric shock !
6. **Before dismantling the controller insert from the frontpanel, remove the blocking screw (upper side of the carter, red point), switch mains power off and prevent unintentional restart.**

   Put blocking screw in place after having restored the insert!

   Non-compliance with this advice can cause contact to dangerous high voltage inside the device!
7. Don‘t place the device on hot machine surfaces or near radiation sources of hot parts.
8. Keep the power connection cable clear of hot parts or sharp edges.
9. Disconnect the power cable immediately, if
   - it was damaged,
   - liquid or parts penetrated the device,
   - the device was damaged by falling down or other mechanical impacts,
   - you have the suspicion of any malfunction.

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10. The operator must be thoroughly instructed by a qualified person for the work to be carried out.

11. Intervention at the device must only be carried out by qualified staff members.

    For repair, the device should be send back to our factory. Attempted self-repair causes immediate termination of the warranty period !

    If spare parts are required, only parts recommended by the supplier must be used. The use of other parts may cause damage and/or hazard for operation personnel.

12. Please respect further recommandations and warnings described in this operations manual.

3. Specification

Mains voltage:
100...240V +/* 10%, 50/60Hz

Nominal rating / nominal current:
Regler 2.300W / 10A per zone max.16A bei 2 zonen

Fuses
Heater: 10A FF, 6,3x32mm per zone
Controller: 500mA MT, 5x20mm per zone

Alarm output:
Relay max. 250V/5A , common output

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3. Specification

Input:
- If ordered for thermocouple: type J oder K
- If ordered for resistive sensor: Pt100 2- or 3-wires

Accuracy: 0,5% FS

Power control:
0...100% proportional, zero-voltage switching
Solid state relay rated up to 50A

Display:
7-segment LED-display 8mm green (actual value) and red (set-point), signal-LEDs red for output and alarm.

Soft-start:
Softstart-time (min) and –powersetting (0M100%) programmable.

Heating- and TC-connection:
6pol. + PE (1 zone) or 10-pol. +PE (2 zones) industrial heavy duty connector.
16A/400V

Alarm connector:
7-pol. + PE for alarm output
Floating relay contacts, wired on 1 common output

Dimensions: 217 x 110 x 250mm (W x H x D)

Colour:
Powder coating RAL 7035 (Bottom incl. front and back)
RAL 3000 (Upper casing)

Environmental conditions:
Degree of pollution (VG) 2 following EN610101
Ambient temperature 0 - 55°C
Humidity 10 - 80% (without condensation)

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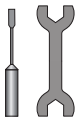
4. Installation and wiring:

4.1 Installation:

The installation site must provide easy access for the operator without hazard. Sufficient mechanical stability must be guaranteed, also secure the device from slipping on the installation surface.
Protect from heat, radiation and allow free air circulation.
Protect power cable from heat and mechanical stress.
Do not place the device on hot surfaces.

4.2 Connection of the power supply:



This device must only be operated at the voltage indicated on the name plate. Please check for a sufficient fuse protection of the power outlet foreseen for the device.
Protective earth conductor must be provided

4.3 Connection of heater and thermocouples:

Please compare the connecting diagram on the temperature controller (backside, near the outlet) with the diagram of the mould. Inappropriate connection can destroy controller, heater and TC!
Available mould connecting cables contain heater–and FeCu-Ni compensation wires for TC. Never use compensation wires to connect a heater.

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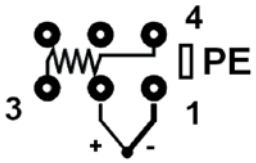
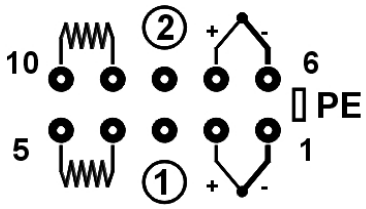
Heater- and TC-wiring



for 1 zone (Z 7520-1)
following NR-Norm NR6

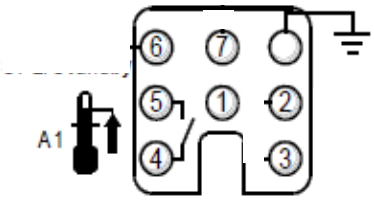


for 2 zones (Z 7520-2)
following NR-Norm NR10

Other pin assignment schemes on request
(see Annex page 24 of this operations manual)

4.4 Alarm output

For every zone, two alarm functions can be programmed individually. These alarms operate 2 common floating contacts as cumulative exits for both zones together, they are wired on a 7-pin connector on the back side.



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Front side Z 7520-2

Back side Z 7520-2

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5. Operation

5.1 Main switch

Before wiring the device, make sure that the main switch is in position OFF „0“. Herewith, all poles are disconnected from the mains voltage.

The main switch can be locked following EN81-80. Before working on the device itself or on a tool connected to it, the switch must be locked to prevent the device against unintentional restart.
This can be done by retracting the power cable and securing it against re-connecting or by locking the main switch with a personal lock.

After having finished the wiring completely, switch the device on with main switch in position ON „1“.

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5.2 Display and keys

PV : Normal operation ACTUAL temperature

SV : Normal operation SETPOINT temperature

Both available 4-digits or 3-digits with one digit after the decimal point (see page 26)

OUT1 : LED Heat– or Cooling output 1 active

AL1 : LED Alarm 1 active

Failure : Thermocouple break

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UP-key : Increases the value of the selected parameter

DOWN-key : Decreases the value of the selected parameter

Press „Down“-key for 2 sec. = Controller OFF / ON

Press „UP“ and „DOWN“-key simultaneously for 2 sec. = Start / Stop Autotuning

ENTER-key : Selects the parameters to be modified, acknowledges the input.

The selected digit flashes and can be modified with the „UP“ and „DOWN“ keys. Press the „ENTER“ key again to jump to the next digit.

No input for 15 sec. = back to normal operation

No acknowledgment of the input in 15 sec. = automatically enters the change !

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LEVEL-key : Selects the menu level *PLE1* up to *PLE4*

No input for 15 sec. = back to normal operation

Press „LEVEL“-key once within the selected menu level = Top of Page in this level

Press „LEVEL“-key 2 sec. within the selected menu level = back to normal operation

5.3 Adjustment of the SETPOINT temperature

Adjusting the SETPOINT temperature can be done without entering any specific menu level.

- Press the „ENTER“-key until the selected digit in the SV-display flashes.

- Adjust the value with the „UP“ or „DOWN“-keys as needed.

- Press the „ENTER“-key to acknowledge and to go to the next digit.

- After having finished, press the „LEVEL“-key once (or no entry for 15 sec. = automatic acknowledgment)

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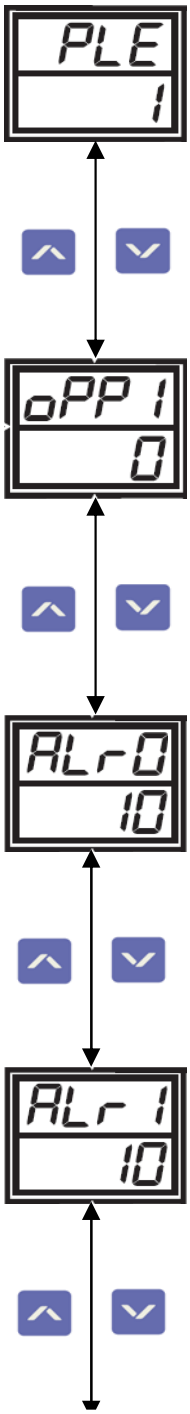
5.4 Configuration level 1 = Working level



Select the menu level with the „Level“-key
-> Display „*PLE I* “

Select the parameter with the „UP“ or „DOWN“-keys

Display actual power setting 0….100%
(outPut Percentage 1)

Alarm 1 signal contact
(ALarm low value)

Process Low temperature 0….99°C
Depends on Alarm configuration PLE3
Adjustment following 5.2 SETPOINT-temperature

Alarm 1 signal contact
(ALarm high value)

Process High temperature 0….99°C
Depends on Alarm configuration PLE3
Adjustment following 5.2 SETPOINT-temperature

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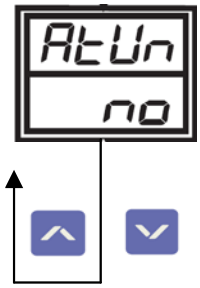


Autotuning :

YES	Start Autotuning
no	No / Stop Autotuning

Back to Top of Page / 1. parameter

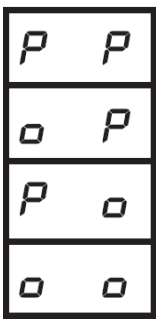
5.5 Configuration level 2 = Program level

Select the menu level with the „Level“-key
-> Display „*PLE 2 “*

Select the parameter with the „UP“ or „DOWN“-keys

Control mode
(Control) for **Output 1** and 2 (option)

o = on/off (2-point-controller) P= PID-control



Output 1	Output 2 (Opt.)
PID	PID
on/off	PID
PID	on/off
on/off	on/off

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Type of PID-caracteristic (Control Mode) for output 1

SELF = Selftuning

At = Autotuning

Selftuning : Slow, no overshoot, less precise
Autotuning : Quick, overshoot accepted, more precision

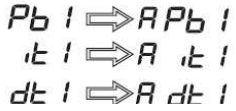
Heat / Cool
(type Heat Cool) for **Output 1** and 2 (option)

Output 1	Output 2 (Opt.)
Heat	Cool
Cool	Heat

Cycle time output 1
(Cycle time 1)
0 … 60 sec.

Proportional band output 1
(Prop.-band 1 or Autotuning P.-band 1)

Depending on type of PID-caracteristic (see above)
For Selftuning 0 … 100 °C



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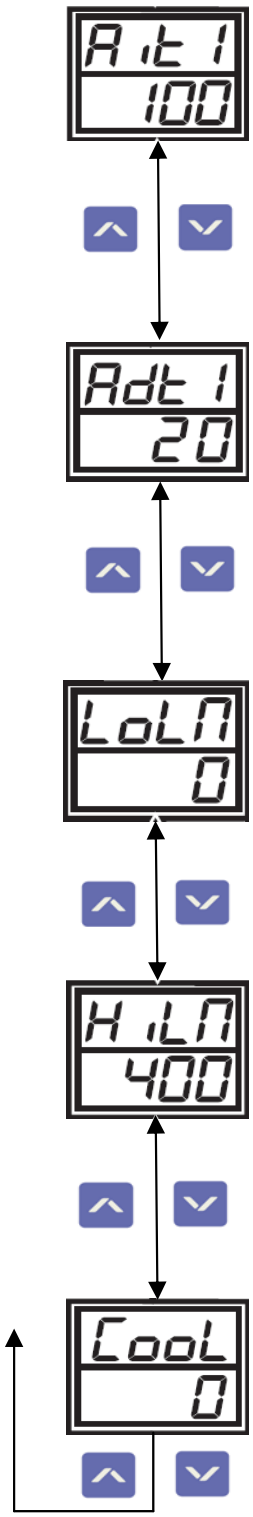

Integral time output 1
(int.-time 1 or Autotuning i.-time 1)

Depends on type of PID-caracteristic (see above)
0 … 250 / 0.1 sec.

Pb 1 ⇨ A Pb 1
it 1 ⇨ A it 1
dt 1 ⇨ A dt 1

Differential time output 1
(diff.-time 1 or Autotuning d.-time 1)

Depends on type of PID-caracteristic (see above)
0 … 250 / 0.1 sec.

Pb 1 ⇨ A Pb 1
it 1 ⇨ A it 1
dt 1 ⇨ A dt 1

Setpoint lower limit
(Low Limit)
in °C / F

Setpoint upper limit
(High Limit)
in °C / F

Cycle time delay for cooling
in °C / F

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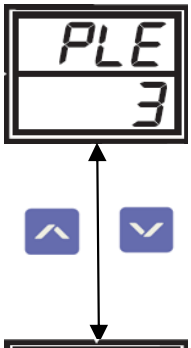
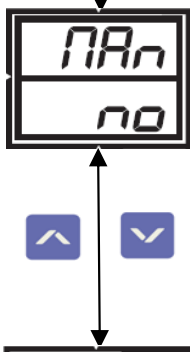
5.6 Configuration level 3 = Program level



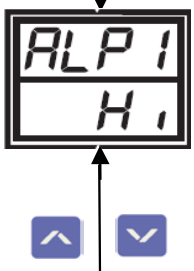
Select the menu level with the „Level“-key
-> Display „*PLE 3 “*

Select the parameter with the „UP“ or „DOWN“-keys



Manual powersetting (dimmer)
(MAnual)

no : deactivated
yes: activated



Setting Alarm 1
(ALarm Program 1)

nUL	No alarm
Lo	Lower limit contact
H i	Upper limit contact
LH	Lower + upper limit contact
S Lo	Standby lower limit contact
S LH	Standby lower + hi. limit contact
r Lo	Inverted lower limit contact
r H i	Inverted upper limit contact
r LH	Inverted lower + hi. limit contact
AbS	Absolute value
rAbS	Inverted absolute value

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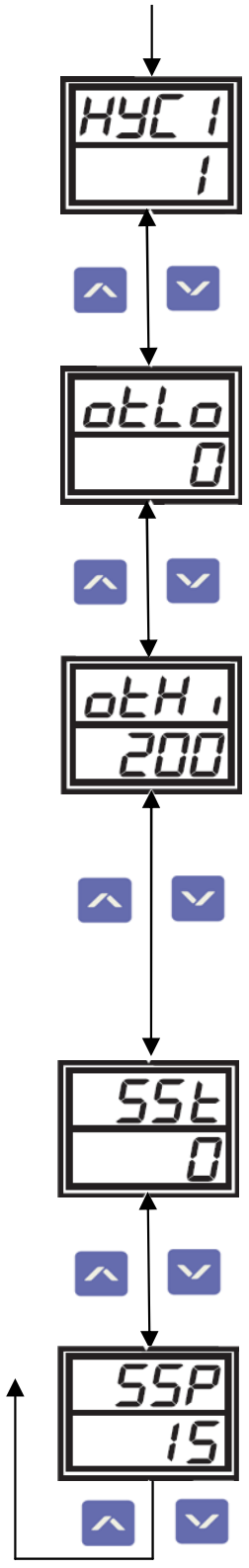

Hysteresis Alarm 1
0 … 10 °C / F

Analogue output (Option)
Lower limit
in 0,1 mA

Analogue output (Option)
Upper limit
in 0,1 mA

Softstart duration
(SoftStart time)
0 … 60 min

Softstart powersetting
(SoftStart Percentage)
0 … 100%

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5.7 Configuration level 4 = Program level

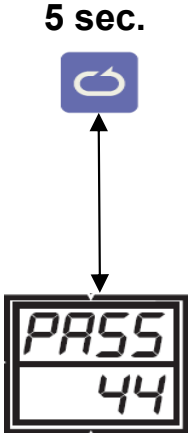
Select the menu level with the „Level“-key
-> Display „*PLE 4 “*

Select the parameter with the „UP“ or „DOWN“-keys

Key lock
0000 … 0044
Last digit : *Reading* levels up to PLE … permitted
Tens digit : *Writing* levels up to PLE … permitted

Type thermocouple
(see next page)

Ad 5.7 Configuration level 4 = Program level



To RESET key lock, press „ENTER“-key for 5 sec., releases all menu levels (PASS 0044).

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J0 TYPE
J1 TYPE
K0 TYPE
K1 TYPE
PT0 TYPE
PT1 TYPE

Thermocouple Type J w/o digit after dec. point
Range 0 … 900°C / 32 … 1200 °F

TC (J) with 1 digit after the decimal point
Range 0 … 900,0°C / 32,0 … 999,9 °F

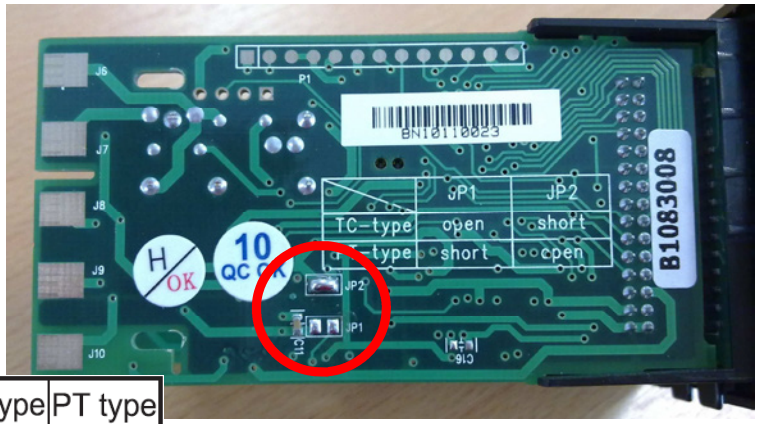
TC Type K w/o digit after dec. point
Range 0 … 1200°C / 32 … 1500 °F

TC (K) with 1 digit after the decimal point
Range 0 … 999,9 °C / 32,0 … 999,9 °F

Resistance sensor Pt100 w/o digit after dec.p.
Range 200 … 500 °C / 328 … 900 °F

Resistance sensor Pt100 w. digit after dec.p. .
Range 199,9 … 500,0 °C / 199,9 … 900 °F

Attention :
TC and Pt100 Type differ by the position of one solder bridge on the main circuit board, this adjustment is done at the factory. To change this setting after delivery, the solder bridge needs to be modified by a qualified technician.



	TC type	PT type
JP1	Open	Short
JP2	Short	Open

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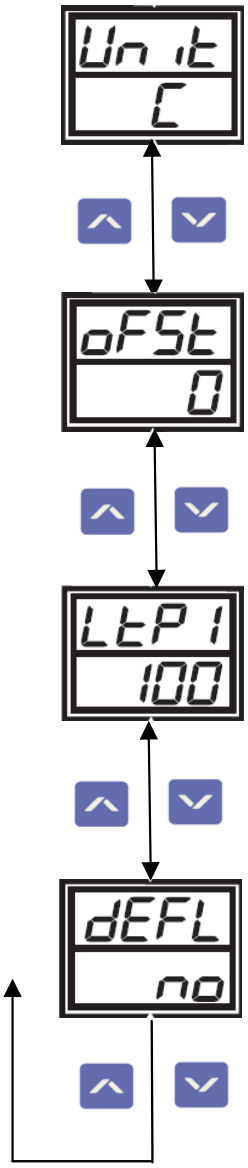

Temperature unit
°C or °F

Offset thermocouple input
-99 … +99 °C / °F

Limit powersetting output 1
(Limit Percentage 1)
0 … 100%

Reset to factory default settings
(dEFauLt)

no : no reset
yes : reset

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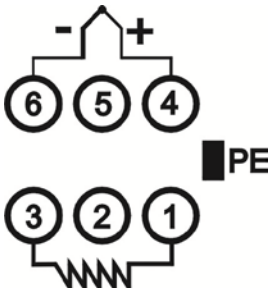
6. Annex

Customized connector pin assignment
(actual version is marked)

SN 10-06
(1 zone)



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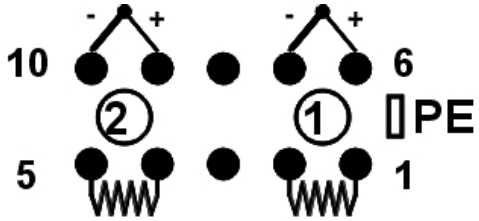
SN10-10
(2 zones)



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STRACK NORMA GmbH & Co. KG
Königsberger Str. 11
D-58511 Lüdenscheid
Postfach 16 29
D-58466 Lüdenscheid

Tel +49 2351 8701-0
Fax +49 2351 8701-100
Mail info@strack.de
Web www.strack.de

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