

3200 Control of Heat - Cool Applications

Explanatory Notes

This method uses the factory PID settings to control the initial warm up to normal machine operating temperature, then uses Autotune At.SP to calculate and automatically implement new values into HEAT (SP1) channel.

The values for proportional band and cycle time can then be read from the programme and used for setting the COOL (SP2) channel.

This initial configuration of SP2 will cause further temperature fluctuations which should be left to settle out.

On multizone applications, eg. extruders, errors due to thermal interaction between zones can be avoided by initiating Autotune on all zones simultaneously.

Consult 3200 Operating Manual for steps : 1,2 and 3 listed below.

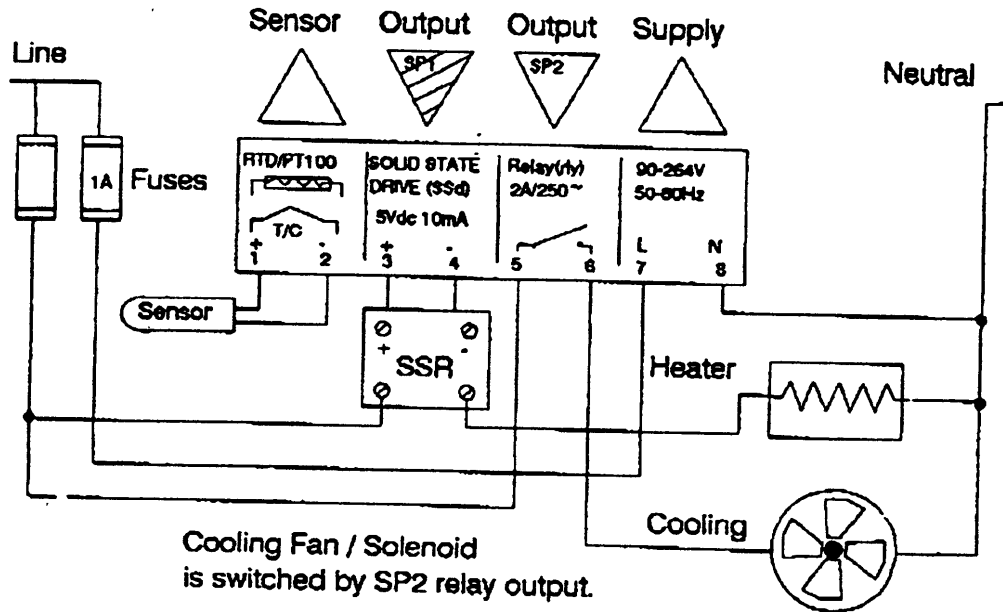
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|---|------------------------------|
| 1 Initial configuration | (Section 6.2.1 to 6.2.7) |
| 2 Autotune at setpoint (tunE At.SP) then:
When complete (tune At.SP stops flashing) | (Section 7.1.2 then 7.2.3) |
| 3 Select Autotune calculated cycle time
(Check that control in Heat Only is acceptable.) | (Section 9.4.1 to 9:4.5) |

Then consult these notes to:

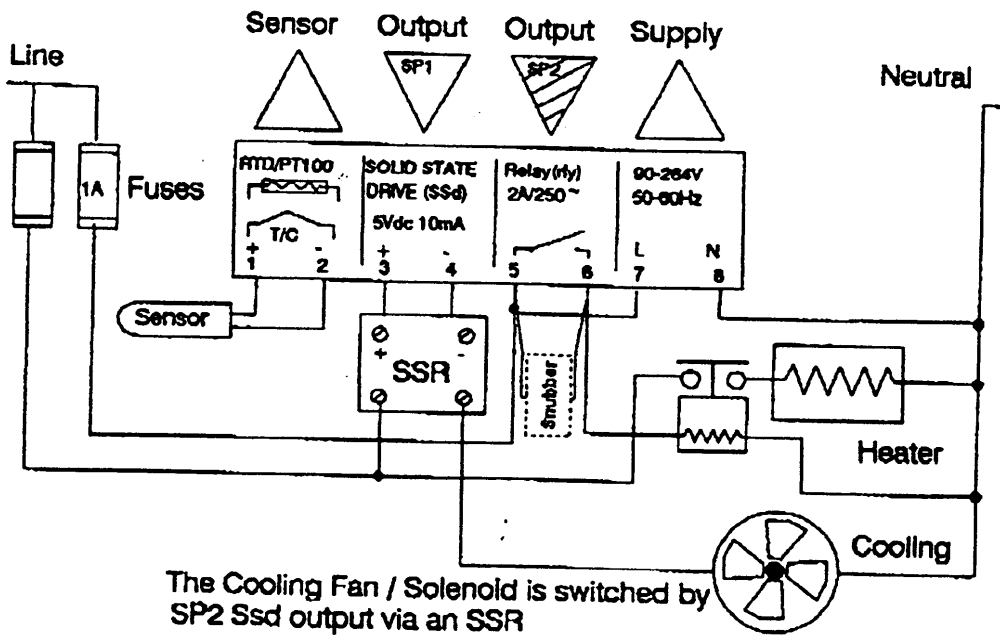
- | | |
|--|--------------------------------|
| 4 Read and note Autotune Values for :
Heat prop - band and cycle time | (Page 3 of these notes.) |
| 5 Configure Cool Channel | (Page 3 and 4 of these notes.) |
| 6 Fine tuning or Water Cooling | (Page 4 of these notes.) |

2. Typical Connections.

Example A. The SSd output is allocated to SP1 and wired to switch the load (heater) using an SSR.



Example B The relay output is allocated to SP1 and wired to switch the load (heater) using a contactor



4 Read and note Autotune Values for : Heat prop band and cycle time.

4.1 To enter programme mode from normal operating mode.

Press and hold ▲ ▼ for 3 seconds



Enter programme mode at **tunE** Function on level 1.

Release both ▲ ▼ together.

4.2 To check value of bAnd - Press ▲ once.

Autotune calculated value indicator.



e.g. bAnd value 5.2

Actual bAnd value C / F

4.3 To check value of cycle time.

Press ▲ 4 times.



e.g. CYC.t value 16 sec.

Actual CYC.t value secs

Please turn to Page 4

5 Configure Cool Channel

5.1 Index to bnd2

Press ▲ 4 times.



5.2 Set bnd2 same as bAnd e.g 5.2

Press * and hold

Press ▲ and hold to increase to 5,2

Release * ▲



5.3 Index to CYC.2

Press ▲ once



5.4 Set CYC.2 same as CYC.t e.g. 16sec

Press * and hold

Press ▲ and hold to increase to 16 sec.

Release * ▲



5.5 To select cool mode (Level 2)

Press ▼ and hold until 'LEVL' appears.

Release to display current Level.



5 Configure Cool Channel (continued)

5.6 Press and hold*

Press ▲ to increase LEVEL (2)
(or press ▼ to decrease Level.)



Release * to display
the new Level (2)



5.7 Index to SP2.A

Press ▲ 5 times.



Select (Cool)

Press * and hold.

Press ▲ 6 times



5.8 Exit programme mode.

Press ▼ ▲ for 3 sec.

Controller now operational
with PID output for both
Heat and Cool channels.

Note! The configuration of
SP2.A/Cool may cause
a temporary disturbance.

Allow temperature to
stabilise before running
the process.

6 Water Cooling

For Water Cool applications
above 100 C where flash to
steam occurs.

Select non linear cool
proportional band
in Level (2) SP2.b



Further Adjustments

If oscillation occurs during
cooling -

Double Cool proportional band:
LEVEL (1) : bnd.2

Halve Cool cycle time:
LEVEL (1) : CYC.2

Introduce Cool overlap / deadband.
LEVEL (1) : SET.2

Settings are in C / F

Overlap (-)ve values

Deadband (+)ve values

If oscillation still occurs
double values simultaneously for:

Cool prop. band
LEVEL (1) : bnd.2

Heat prop. band:
LEVEL (1) : bAnd

Integral time:
LEVEL (1) : int.t

**If this fails to give good control:
Call CAL.**