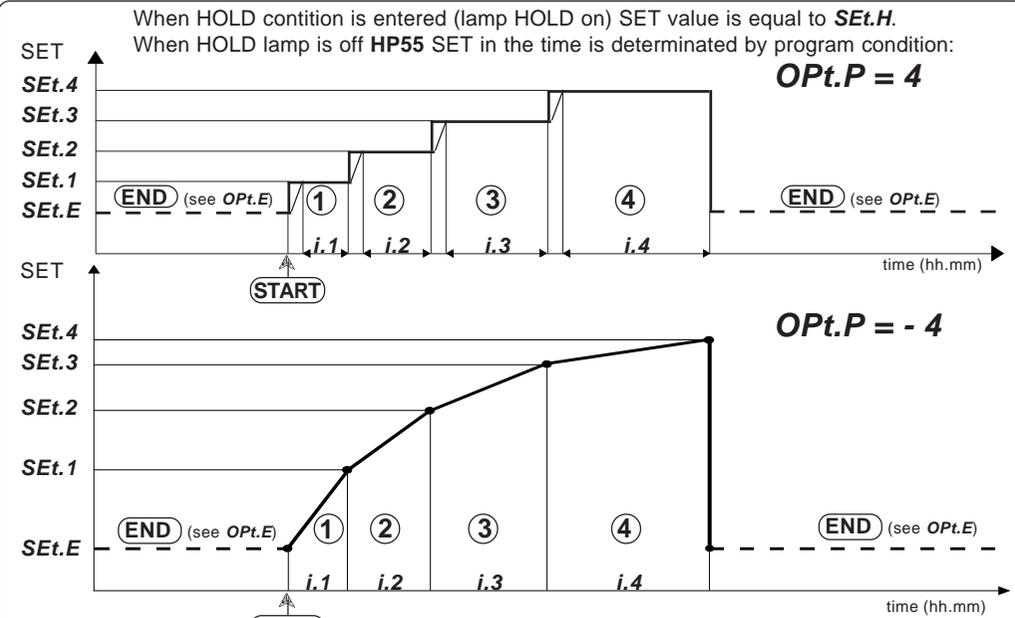


PROGRAM



i.1, i.2, i.3, i.4 are settable in hours and minutes from **0.00** to **96.00** (4 days). During **HOLD** status program timer stay in progress. After black-out program timer return in progress from where was halted.

Number of segments is limited to | **Opt.P** | .

INSTALLATION

How to connect the contacts

Connect terminals on the terminal block (contacts up to 4AMP.AC1) to the loads as shown in the diagram.

How to connect the line

Connect 230V line on terminals **L-N** Protect supply with adequate fuse.

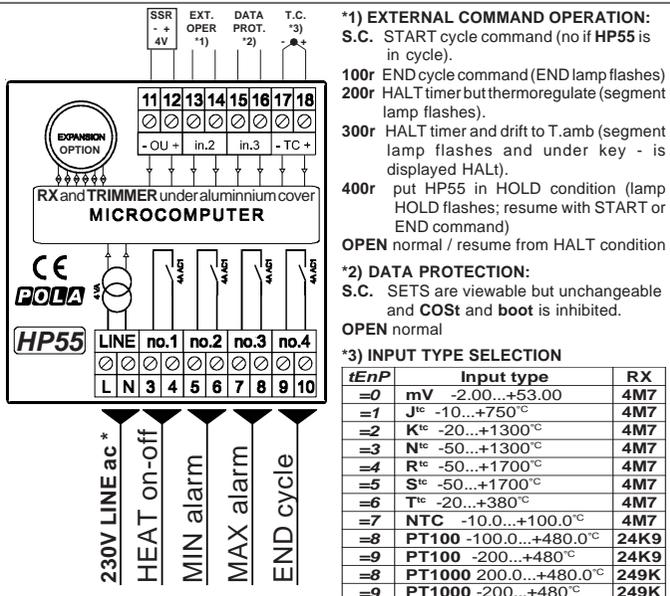
Recalibration:

HP55 is delivered calibrated for **thermocouple** input (typ. precision at full scale 0.2%).

Small adjust can be obtained by **Ad.tE** COSt change.

For a **NTC** input accurate recalibration apply 10 Kohm resistor and trimmer to obtain on display 25.0°C.

For a **PT100** input accurate recalibration apply 100 ohm resistor and trimmer to obtain on display 0.0°C.



As it company policy to continually improve the products the Manufacturers reserve the right to make any modifications thereto without prior notice. They cannot be held liable for any damage due to malfunction.

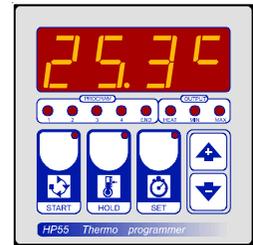


HP55

SL 6.7

thermocouple programmable PID

Handbook



MAIN SETTINGS (Run Mode).

START TIME-TEMPERATURE CYCLE.



Press **START** to switch-on time-temperature cycle: key lamp lights.
Pressing **START** during the cycle will be displayed time (hours and minutes) passed from beginning phase: press **+** to go on next phase.
Phase in progress is indicated from its **PROGRAM** lamp.

SET TEMPERATURE HOLDING.



Press **HOLD** key to obtain thermoregulation temperature of value **Set.H** programmed under **SET** key: **HOLD** lamp lights (**END** disabled).
To return on thermoregulation program decided from cycle press again **HOLD** key or **START** cycle: lamp off.

THERMOREGULATION PARAMETERS SETTING.



Press **SET** (key lamp flashes):
This message will be displayed instead of the ° **Set arrival temperature of 1° segment**.
Press **+** or **-** to modify, press **SET** to confirm.

At this point this message will be displayed instead of the ° **Set arrival temperature of 2° segment**.
Press **+** or **-** to modify, press **SET** to confirm.

At this point this message will be displayed instead of the ° **Set arrival temperature of 3° segment**.
Press **+** or **-** to modify, press **SET** to confirm.

At this point this message will be displayed instead of the ° **Set arrival temperature of 4° segment**.
Press **+** or **-** to modify, press **SET** to confirm.

At this point this message will be displayed instead of the ° **Set end cycle**.
Press **+** or **-** to modify, press **SET** to confirm.

At this point this message will be displayed instead of the °C **Set hold temperature**.
Press **+** or **-** to modify, press **SET** to confirm.

At this point this message will be displayed instead of the °C **/minute rising rate limitation (0.0° : no-limitation)**.
Press **+** or **-** to modify, press **SET** to confirm.

SET.1

SET.2

SET.3

SET.4

SEt.E

SEt.H

rAtE

At this point this message will be displayed instead of the *hh.mm 1° segment duration*.

Press + or - to modify, press **SET** to confirm.

At this point this message will be displayed instead of the *hh.mm 2° segment duration*.

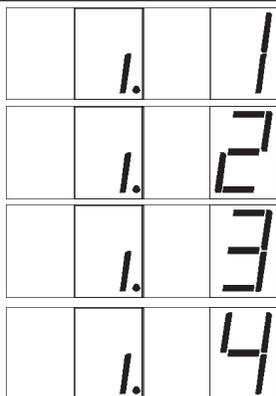
Press + or - to modify, press **SET** to confirm.

At this point this message will be displayed instead of the *hh.mm 3° segment duration*.

Press + or - to modify, press **SET** to confirm.

At this point this message will be displayed instead of the *hh.mm 4° segment duration*.

Press + or - to modify, press **SET** to exit.



COST PROGRAMMING (System constants)



These settings refer to the operation mode of the system and must be made on initial startup. Press - / + at the same time for at least one second: the message **C.O.S.t.** will be displayed. Press then repeatedly **SET** until the message regarding the chosen variable is displayed (see table below): variable's value and message will be displayed.

Press + or - to set a new value and then press **SET** to confirm. The next system constant will then appear. You can press **SET** for at least 2 seconds to exit and return to the *Run Mode*.

Mess.	Value	Meaning	Note
ProP	4°	PID proportional band	*1)
cycl	4.0"	PID cycle (=0" for 0-10V HISO output option)	
intE	4.0"	PID integration time	
dEri	4.0"	PID derivation time	
SELF	=1	PID mode (=0 normal; =1 self-tune)	*2)
rEL.H	0°	On-off relative shift from SET	*3)
dIF.H	4°	On-off differential (if dIF.H=0° relay no.1 acts as PID)	
t.on.H	1"	On-off delay time to relay on	
Opt.P	=4	Number and type of program segments (see <i>PROGRAM</i>)	
StAb	4°	Stabilization range value. If 0° no stabilization works.	*4)
Opt.E	=1	=-1 drift to T.amb, no alarms ; =0 drift to T.amb ; =1 regulation Set.E	
AL._	-10°	Minimum alarm set (see OPA_)	*5)
AL.^	10°	Maximum alarm set (see OPA^)	*6)
t.on._	1"	Delay time to minimum alarm output	
t.on.^	1"	Delay time to maximum alarm output	
OPA_	=1	=0 AL._ absolute setting ; =1 relative to SET	
OPA^	=1	=0 AL.^ absolute setting ; =1 relative to SET	
tEnP	=1	J, K, N, R, S, T, NTC, PT100 input selection	*7)
Ad.tE	0°	Input temperature sensor correction (+ or -)	
Set.^	350°	Set.1/.2/.3/.4/.E/.H maximum setting value limitation	*8)

*1) PID regulation outputs to terminals **io.1** and it's suitable for a solid state relay (4V DC input minimum). Output % is viewable (1 second window) pressing - key.
See *PROGRAM* for determine actual SET.

*2) Self-tuning function works into -/+ **ProP** range from SET (out of this interval is zeroed). Self-tuning value is re-computed every 16 x **intE**.

*3) On-off heating function outputs to **no.1** relay. Output status is indicated by HEAT lamp.
See *PROGRAM* for determine actual SET.

*4) During programmed regulation if temperature is out of stabilization range segment lamp flashes and program timer is halted.

*5) Minimum alarm outputs to **no.2** and it's indicated by **MIN** lamp. Differential is fixed to 1/2°C.

*6) Maximum alarm outputs to **no.3** and it's indicated by **MAX** lamp. Differential is fixed to 1/2°C.

*7) Thermocouple selection:

=1 J (°C); =2 K (°C); =3 N (°C); =4 R (°C); =5 S (°C); =6 T (°C); =7 ntc SX POLA (°C);
changing RX resistor (see at the end): =8 PT100 2 wires (°C) res. 0.2°; =9 (°C) res. 1°.
°F range are obtainable setting negative number selection [example = -1 J (°F)].

*8) Absolute locking of setting operations can be obtained closing **in.3** terminals.

PRESET PROGRAMS

This processor is ready programmed with the following (variable) settings.

To return to these settings at any time (not if **in.3** is closed):

Power off the processor, press **SET** key and keep it pressed giving power on:

boot message will be displayed (release now **SET** key).

Set.1=100° i.1=0.10 Set.2=200° i.2=0.10 Set.3=250° i.3=0.10 Set.4=300° i.4=0.10

Set.E=40° Set.H=250° rAtE=10.0° The **COST** values are shown in **COST** paragraphs.

VIEWING TEMPERATURE RECORDING



Press + : will be displayed followed by °Maximum Temperature Recording.

Press - : : after 1 second (% out or **End.o** or **HALt**) will be displayed followed by °Minimum Temperature Recording.

Values recorder are memory permanent stored: for memory clear keep pushed + keys for more than 3 seconds: **CLEA** message will be composed on display before clearing operation.

MANUAL MODE



In some start-up conditions may be useful to work in "hand" mode (not if **in.3** is closed).

Power off the processor, press + key and keep it pressed giving power on:

HAnd message will be displayed (release now + key).

Push + until is displayed number required to be handed (see table relays "**N° Relay**") and push **SET** for activating relay.

Pushing again + for increase relay number previous relay is deactivated.

You can press **SET** for a least two seconds to escape and return to the *Run Mode*.

STATE INDICATION LAMPS

The lights situated at the bottom of the display show the state of the program.

Lamp.	State	N° Relay	Contacts
PROG. 1	Interval 1 in progress		
PROG. 2	Interval 2 in progress		
PROG. 3	Interval 3 in progress		
PROG. 4	Interval 4 in progress		
END	End cycle (disabled if module is in HOLD mode)	4	9-10
HEAT *	Heat output ON	1	3-4
MIN *	Minimum alarm temperature ON	2	5-6
MAX *	Maximum alarm temperature ON	3	7-8

* Flashing lamps indicates delay in actioning (see **COST t.on.H, t.on._, t.on.^**)