ZL-6290A (ZL-1000) Temperature Controller
Instruction Manual Version 2.0b

Introduction

ZL-6290A (ZL-1000) has two outputs, one for cooling, one for heating, to regulate temperature to a set-point.

It will judge heating or cooling mode automatically.

Specification

Sensor: NTC

$R_{25℃}$ = 10K, $B_{25/85℃}$ = 3435K; $R_{25℃}$ = 5K, $B_{25/50℃}$ = 3470K

Setting range: -50.0 ~ 99.0℃, or -58.0 ~ 210.2℉

Display range: -50.0 ~ 99.9℃, or -58.0 ~ 211.8℉

Terminal: 2*1.5mm^2 or 1*2.5mm^2

Outputs: **10A** * 2, 250Vac (under pure resistance load)

Working: -10~45℃, 5~85%RH without dew

Case materials: PC + ABS fire proof
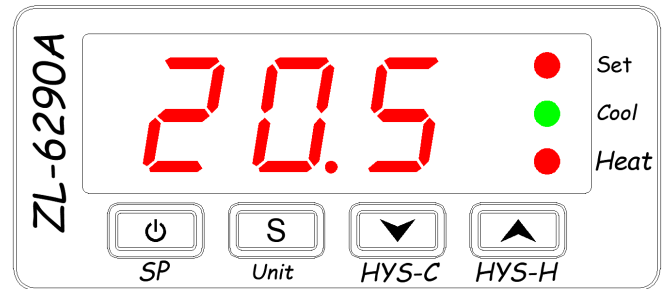
Protection level: IP65 (Front side only)

Dimension: W78 x H34.5 x D71 (mm)

Installation drilling: W71 x H29 (mm)

Keypad and Display

Key

Key		Function
⏻	On/off	Fast check Set-point (double keys)
S	Set	Fast check Temperature Unit
▼	Down	Fast check Cool-hysteresis (*HYS-C*)
▲	Up	Fast check Heat-hysteresis (*HYS-H*)

LED lamp

| LED	Function	On	Off	Blinking
Set	Set parameter	Setting status		Display fast check result (*SP, Unit, Hysteresis*)
Cool	Cooling	R1 is energized	R1 is de-energized	Delay protection for R1 (keep de-energized)
Heat	Heating	R2 is energized	R2 is de-energized	

LED digit

Display the information, 2Hz blinking.

Warning	Remark
E1	Sensor failure (Short or open)
HH	Temperature over the sensing up limit (99.9℃ or 211.8℉)

Power up (reset) display

Display the following information consecutively: all LED units, model name (6290A), software version (2.0b)
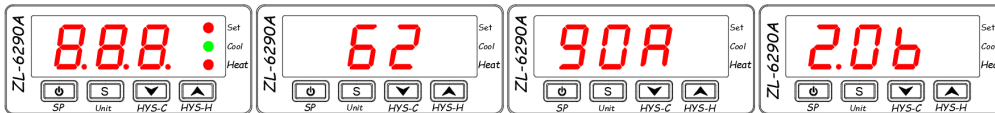
Operation

On/off line

Keep ⏻ key depressed for 5 seconds to switch online/offline.

Fast check parameters

When not in parameter setting status:

Short press ▲ to display heat-hysteresis (*HYS-H*) for *2 seconds*, and the *Set* LED blinks in 2 Hz.

Short press ▼ to display cool-hysteresis (*HYS-C*) for *2 seconds*, and the *Set* LED blinks in 2 Hz.

Short press "**S**" key to display temperature *Unit* (Fahrenheit or Celsius) for *2 seconds*, and the *Set* LED blinks in 2 Hz.

Short press ⏻ + ▲ to display heat-set-point (*SP-H*) for *2 seconds*, the *Set* LED blinks in 2 Hz.

Short press ⏻ + ▼ to display cool-set-point (*SP-C*) for *2 seconds*, the *Set* LED blinks in 2 Hz.

Set parameters

Keep "**S**" key depressed for 5 seconds to enter into set status: *Set* LED is on, and the 1st parameter code displayed.

Press ▲ or ▼ to select parameter. Press "**S**" key to show the value of the parameter.

Press ▲ or ▼ to set the value of the parameter. Keeping up/down key depressed can fast set *.

After all are set, keep "**S**" depressed for 3 seconds to save the settings, and exit the set status.

The set status will exit, and the settings will not be saved, if no key operation for 30 seconds.

Celsius parameter table

Code	Function	Range	Default	Remark
F1	Heat set point *(SP-H)*	-50.0 ~ 99.0℃	37.4℃	* Resolution is 0.1℃
F2	Heat hysteresis *(HYS-H)*	0.1 ~ 15.0℃	0.2℃	
F3	Cool set point *(SP-C)*	-50.0 ~ 99.0℃	37.6℃	* Resolution is 0.1℃
F4	Cool hysteresis *(HYS-C)*	0.1 ~ 15.0℃	0.1℃	
F5	*Protection time for cooling*	0 ~ 10 min	0 min	After power supplied, there is protection time
F6	Sensor calibration	-9.0 ~ 9.9℃	0.0℃	* Resolution is 0.1℃
CF	Celsius / Fahrenheit *(Unit)*	C/F	C	C: Celsius, F: Fahrenheit
SE	Sensor Selection	10/5	10	"10": $R_{25℃}$ = 10K ohm, $B_{25/85℃}$ = 3435K " 5": $R_{25℃}$ = 5K ohm, $B_{25/50℃}$ = 3470K

Fahrenheit parameter table

Code	Function	Range	Default	Remark
SH	Heat set point *(SP-H)*	-58.0 ~ 210.2℉	99.3℉	* Resolution is 0.1℉
dH	Heat hysteresis *(HYS-H)*	0.2 ~ 27℉	0.4℉	
SC	Cool set point *(SP-C)*	-58.0 ~ 210.2℉	99.7℉	* Resolution is 0.1℉
dC	Cool hysteresis *(HYS-C)*	0.2 ~ 27℉	0.2℉	
Pt	*Protection time for cooling*	0 ~ 10 min	0 min	After power supplied, there is protection time
CA	Sensor calibration	-17.8 ~ 17.8℉	0.0℉	* Resolution is 0.1℉
CF	Celsius / Fahrenheit *(Unit)*	C/F	C	C: Celsius, F: Fahrenheit
SE	Sensor Selection	10/5	10	"10": $R_{25℃}$ = 10K ohm, $B_{25/85℃}$ = 3435K " 5": $R_{25℃}$ = 5K ohm, $B_{25/50℃}$ = 3470K

*: During parameter setting, or *fast checking* temperature *Unit*(C/F), If the value is bigger than 99.9, or less than -9.9, the 1/10th digit and temperature *Unit*(C/F) will be displayed.

Examples:

-49.2℉, display as "9.2F". Keep display for 2 seconds, then display "-49." if the key released;

-10.1℉, display as "0.1F". Keep display for 2 seconds, then display "-10." if the key released;

-10.0℉, display as "0.0F". Keep display for 2 seconds, then display "-10." if the key released;

-9.9℉, display as "-9.9";

99.9℉, display as "99.9";

100.0℉, display as "0.0F". Keep display for 2 seconds, then display "100." if the key released;

100.1℉, display as "0.1F". Keep display for 2 seconds, then display "100." if the key released;

123.9℉, display as "3.9F". Keep display for 2 seconds, then display "123." if the key released;

124.0℉, display as "4.0F". Keep display for 2 seconds, then display "124." if the key released.

Control

The controller will judge heating and cooling automatically.

If Troom ≤ {Heat-set-point (*SP-H*) – Heat-hysteresis (*HYS-H*)}, R2 energized, and *Heat* LED on.
If Troom ≥ Heat-set-point (*SP-H*), R2 is de-energized, and the *Heat* LED is off.

If Troom ≥ {Cool-set-point (*SP-C*) + Cool-hysteresis (*HYS-C*)}, and R1 has been de-energized for *protection time for cooling*,
　　R1 energized, and *Cool* LED on.
　During *protection time for cooling*, R1 keeps de-energized, and the *Cool* LED is blinking.
If If Troom ≤ Cool-set-point (*SP-C*), R1 is de-energized, and the *Cool* LED is off.

Sensor Failure

When the sensor fails, the display will show "E1" in 2Hz, and the outputs will be de-energized.

Over Temperature

When Troom ≥ 100℃ or 211.9℉, the display will show "HH" in 2Hz.
When the Troom falls below the 100℃ or 211.9℉, restore to normal display.

Restore to Default Settings

Keep the "S" and ▲ depressed simultaneously for 5 seconds. Display "UnL".
Press ▼ 2 times.

Installation

Attention

●Wiring work should be manipulated by certified technicians.
●Wrong connection could damage the controller, and the loads. Power supply to terminal 7 and 8 to check the controller. If there is a multimeter, check the outputs, as well as input, by the help of settings.
●Sensor and input signal wires should not be laid together with power supply wire, and even in same pipe.
●Sensor wire is better as short as possible. Not wind the redundant length wire to electrical noise equipment.
●The loads should be within the specification of the controller output driving ability. If using ac/dc module as load, or tungsten lamp, or motor, following the below requirements to avoid surging current damaging or shorten the life time of the controller outputs:
　　For ac/dc module as load, the rated current should be no more 1/10th of output specification **under pure resistance**.
　　For tungsten lamp as load, the rated current should be no more 1/15th of output specification **under pure resistance**.
　　For motor, the rate current should be no more 1/5th of output specification **under pure resistance**.
For example: if drive a 1500W tungsten lamp with 7A (**pure resistance** spec.) relay, the **relay contactor will be burnt immediately**.
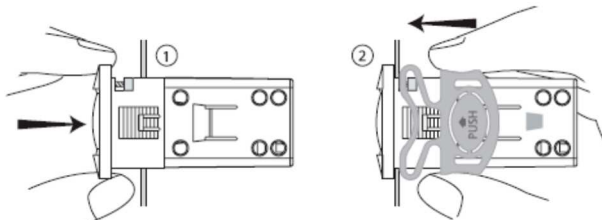●Don't touch inside components;
●Avoid installing controller in the following environment:
More wet than 90%RH, or easily dew; Vibrating, or will be shocked; Possible sprayed; Under erosive air; Under explosive air.

Step

1st: Insert into drilling hole　　　　2nd: Clamp

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Electrical Wiring

R1: Cooling Output 10A/250V~
R2: Heating Output 10A/250V~

ZL-6290A

R1: Cooling Output 15A/110V~
R2: Heating Output 15A/110V~

ZL-6290A

R1: Cooling Output 10A/250V~
R2: Heating Output 10A/250V~

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