

ZL-7928A Humidity and Temperature Controller

For Incubator

Version A3.0b

Feature

ZL-7928A is an intelligent temperature and humidity controller, safe and stable, convenient to operate, applicable for control of incubator, climate chamber, warehouse, and so on.

ZL-7928A support 12/24VDC system, or 220/110Vac + 12/24VDC system, and multi-output voltage outputs.

Specification

- ◇ Power supply: 100~240Vac, 50/60Hz, and/or 11~26Vdc.
When 110/220Vac present, the 12/24Vdc is backup. When 110/220Vac disappears, 12/24Vdc supplies power.
- ◇ One temperature sensor (L = 2 meter), one humidity sensor (L = 2 meter).
- ◇ Display range: Humidity 0 ~ 99% RH. **Temperature -9.9 ~ 99 °C.**
- ◇ Measuring accuracy: Humidity $\pm 3\%$ @25°C. Temperature $\pm 1\%$ @25°C.
- ◇ Output control: main-heater<heat1>, aux-heater<heat2>, lamp, humidity<wet>, egg-right-turning, egg-left-turning, fan.
- ◇ Output load (rated value): main-heater and aux-heater: 10A; Lamp, Humidity, egg-turning and fan: 5A.
Special loads, such as tungsten lamp, switching power supply module, etc., please contact provider.
- ◇ Hatched day counter: the maximum value is 99 days.
- ◇ Egg turn control: Turn period: 1 ~ 999 minutes. Turn driving time: 0 ~ 999 seconds. Turn times counter: 0 ~ 999 times.
- ◇ Air exhaustion control: Period: 1 ~ 999 minutes. Exhausting time: 0 ~ 999 seconds.
- ◇ Lamp control: Period: 1 ~ 999 minutes. Illuminating time: 0 ~ 999 seconds.
- ◇ Operation environment: -10 ~ 45°C, less than 90% RH without dew .
- ◇ Device dimension: 160 * 80 * 95 mm.
- ◇ Installation drilling size: 151.5 * 76.5 mm.

Version Information

When power supplied, the display shows the model "792 8A", and version "A3.0".

Setting and Query

Set **temperature and humidity set-point**

When **temperature set-point (P3)** or **humidity set-point (P9)** has been set, the **temperature and humidity control parameters** will be generated **automatically and accordingly**.

Keeping **【Set】** depressed for 2 seconds to enter into **temperature and humidity set-point setting status**.

Press **【Enter】** to switch between **temperature setting status** and **humidity setting status**:

SV window displays "****" + "tt": **temperature setting status**.

SV window displays "****" + "HH": **humidity setting status**.

Press **【▲】** or **【▼】** to set the set-point "****" (Keeping the key depressed can fast set).

Keeping **【Enter】** depressed for 2 seconds will exit setting status, the settings will be saved, and **temperature and humidity control parameters** will be generated **automatically and accordingly**.

The setting status will exit without saving if there is no key operation for 15 seconds.

Temperature set-point : factory default setting for is 38°C, set range is 1 ~ 65°C.

Humidity set-point: factory default setting is 60%RH, set range is 10 ~ 80%RH.

Set **temperature and humidity control parameters**

Note: Setting these parameters will change the **automatically generated** values!

Press **【Set】** and **【▲】** simultaneously to enter into **temperature and humidity control parameter** setting status.

Press **【Enter】** to select parameter:

SV window displays the selection from "****" + "P0" to "****" + "PP".

Press **【▲】** or **【▼】** to set the value of the parameter (Keeping the key depressed can fast set).

Keeping **【Enter】** depressed for 2 seconds will exit setting status, the settings will be saved.

The setting status will exit without saving if there is no key operation for 15 seconds.



Temperature and humidity control parameter code table:

Code	Function	Range	Note	Factory Default
P0	High temperature warning point	0 ~ 75°C		38.7
P1	Exhaustion temperature up limit	0 ~ 75°C	Start exhausting for cooling	38.2
P2	Exhaustion temperature low limit	0 ~ 75°C	Stop cooling exhausting	38.0
P3	Main temperature up limit	0 ~ 75°C	Main heater stops heating	38.0
P4	Main temperature low limit	0 ~ 75°C	Main heater starts heating	37.9
P5	Aux temperature up limit	0 ~ 75°C	Aux heater stops heating	37.7
P6	Aux temperature low limit	0 ~ 75°C	Aux heater starts heating	37.5
P7	Low temperature warning point	0 ~ 75°C		37.2
P8	High humidity warning point	0 ~ 99%		70
P9	Humidity up limit	0 ~ 99%	Humidify load stops humidifying	60
Pb	Humidity low limit	0 ~ 99%	Humidify load starts humidifying	55
Pc	Exhaustion humidity up limit	0 ~ 99%	Start ventilation for de-humidifying	65
Pd	Exhaustion humidity low limit	0 ~ 99%	Stop de-humidifying ventilation	60
PE	Over wet exhaustion protection	0/1	0: disable; 1: enable	0
PP	Low humidity warning point	0 ~ 99%		50

Set *function control parameter*

Press **【Set】** and **【▼】** simultaneously to enter into *function control parameter* setting status.

Press **【Enter】** to select parameter.

SV window displays the selection from “***” + “F1” to “***” + “FF”.

Press **【▲】** or **【▼】** to set the value of the parameter (Keeping the key depressed can fast set).

Keeping **【Enter】** depressed for 2 seconds will exit setting status, the settings will be saved.

The setting status will exit without saving, if there is no key operation for 15 seconds.

Function control parameter code table:

Code	Function	Range	Note	Factory Default
F1	Egg turn period	1 ~ 999 min		90
F2	Egg turn time	0 ~ 999 sec	0: no egg turning function	180
F3	Egg turn times	0 ~ 999 times	0: turn for ever	0
F4	Air exhausting period	1 ~ 999 min		120
F5	Air exhausting time	0 ~ 999 sec	0: no air exhausting	30
F6	Temperature calibration	-9.9 ~ 9.9°C		0.0
F7	Humidity calibration	-20 ~ 20%		0
F8	Illumination period	1 ~ 999 min		90
F9	Illumination time	0 ~ 999 min	0: no illuminating function	0
FF	Incubated days	0 ~ 99 day	Only clear operation	0

Check *Incubated Days* and *Egg Turned Counter*

Press **【Enter】** and **【▲】** simultaneously, SV window displays \llbracket incubated days, FF \rrbracket “days” + “t1” for 2 seconds.

Press **【Enter】** and **【▼】** simultaneously, SV window displays egg-turned-counter “times” + “t2” for 2 seconds.

Control and Operation

On/off operation

Keep **【Lamp - I/O】** depressed for 2 seconds, controller turns on or off.

Illumination operation

Manual on/off: Press **【Lamp - I/O】**, lamp turns on or off.

Timer on/off: For every \llbracket Illumination period, F8 \rrbracket , lamp will be on for \llbracket Illumination time, F9 \rrbracket .

Temperature control

Main heater: When *room temperature* \leq \llbracket Main temperature low limit, P4 \rrbracket , the main heater will be on.

When *room temperature* \geq \llbracket Main temperature up limit, P3 \rrbracket , the main heater will be off.

Aux. heater: When *room temperature* \leq \llbracket Aux temperature low limit, P6 \rrbracket , the aux. heater will be on.

When *room temperature* \geq \llbracket Aux temperature up limit, P5 \rrbracket , the aux. heater will be off.

Fan: When *room temperature* \geq [Exhaustion temperature up limit, P1] , the fan will be on.
When *room temperature* \leq [Exhaustion temperature low limit, P2] , the fan will be off.

Humidity control

Humidifier: When *room humidity* \leq [Humidity low limit, Pb] , humidity output will be on.
When *room humidity* \geq [Humidity up limit, P9] , humidity output will be off.
Fan: When PE = 1, when *room humidity* \geq [Exhaustion humidity up limit, Pc] , the fan will be on.
When *room humidity* \leq [Exhaustion humidity low limit, Pd] , the fan will be off.
When PE = 0, no protecting exhaustion when over wet.

Egg Turn control

For every [Egg turn period, F1] , egg turn output will be on for [Egg turn time, F2] .

Egg turn left output and right output will be on alternatively.
1 left turn + 1 right turn = 1 egg-turn. Every egg-turn, egg-turned-counter increases 1.

When **egg-turned-counter** reaches [Egg turn times, F3] , there will be no egg turn, and LED "UP" and "DOWN" will be blinking.

Fast check the egg-turned-counter: see paragraph at page 2: Check **Incubated Days** and **Egg Turned Counter**

Keeping [▲] depressed for 2 seconds can start to force left turning.
Keeping [▼] depressed for 2 seconds can start to force right turning.

Attention: When power supplied, or when controller offline, the **egg-turned-counter** will be reset to zero.

Exhaustion Timer control

For every [Air exhausting period, F4] , the fan will be on for [Air exhausting time, F5] .

Alarm control

When *room temperature* \geq [High temperature warning point, P0] , buzzer alarms, room temperature display blinks.
When *room temperature* \leq [Low temperature warning point, P7] , buzzer alarms, room temperature display blinks.
When *room humidity* \geq [High humidity warning point, P8] , buzzer alarms, room humidity display blinks.
When *room humidity* \leq [Low humidity warning point, PP] , buzzer alarms, room humidity display blinks.
The buzzer alarming can be stopped and restored by pressing [Enter] key.

Temperature and humidity calibration

The sensors have tolerance. They can reach to absolute 0.1°C and 1% RH accuracy by calibration.
Room temperature can be calibrated by setting [Temperature calibration, F6] .
Room humidity can be calibrated by setting [Humidity calibration, F7] .

Incubated days

[Incubated days, FF] records the incubated days.
Fast check [Incubated days, FF] : see paragraph at page 2: Check **Incubated Days** and **Egg Turned Counter**
[Incubated days, FF] is saved even after power supply loses, and it is not cleared after system On/Off.
To make use of the data, it is necessary to clear the record before starting a new batch incubation.
When it reaches to 99, it will not increase any more, and will stay at 99.

Restore to factory setting

Keep [▲] and [▼] depressed simultaneously for 2 seconds, SV window displays "000" + "00", buzzer beeps, then release the keys' pressing, the controller will restore to factory default settings.

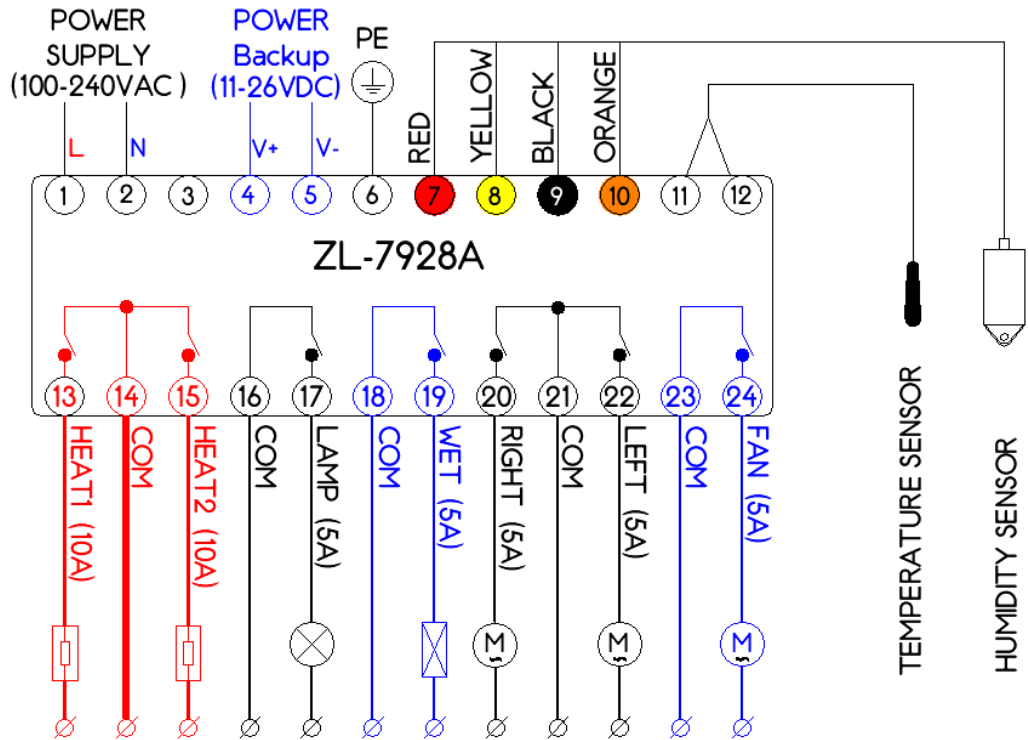
LED indication

LED	On	Blinking	Off
FAN	Fan on during [Air exhausting time, F5]	Fan on, because of temperature and humidity protection exhaustion.	Fan off
HEAT1	Main heater on		Main heater off
HEAT2	Aux. heater on		Aux. heater off
UP	Egg left turning now	Egg-turned-counter has reached [Egg turn times, F3]	No left turning
DOWN	Egg right turning now	Egg-turned-counter has reached [Egg turn times, F3]	No right turning
WET	Humidifying output on		Humidifying output off
ALARM		Room temperature or humidity is over warning points, or sensor fails	

Warning code

Code	Indication
E1	Temperature sensor failure
E2	Humidity sensor failure
E3	Room temperature is higher than [High temperature warning point, P0]
E4	Room temperature is lower than [Low temperature warning point, P7]
E5	Room humidity is higher than [High humidity warning point, P8]
E6	Room humidity is lower than [Low humidity warning point, PP]

Wiring Diagram



Attention

The device is shipped with factory default setting. It suits for normal hatching requirements. It is even able to use directly without any setting for other parameters. About factory default setting, see the tables above.

If need to set new temperature and humidity, please operate according to paragraph “Set **temperature and humidity set-point**”. The *Temperature and humidity control parameters* will be generated automatically and accordingly. If you try to set the *Temperature and humidity control parameters*, please set them based on understanding to avoid hatching failure.

Humidity sensor will not work correctly when covered with dust, water or dew. Please keep it clean and dry. The sensor is suitable to working within 20% to 80%RH. Before clean sensor, be sure there is no static electricity in hands!

Manufacturer is responsible for the device itself, is not responsible to losses resulted by the failure of this device.