ZL-7801A Humidity and Temperature Controller
Manual V3.0

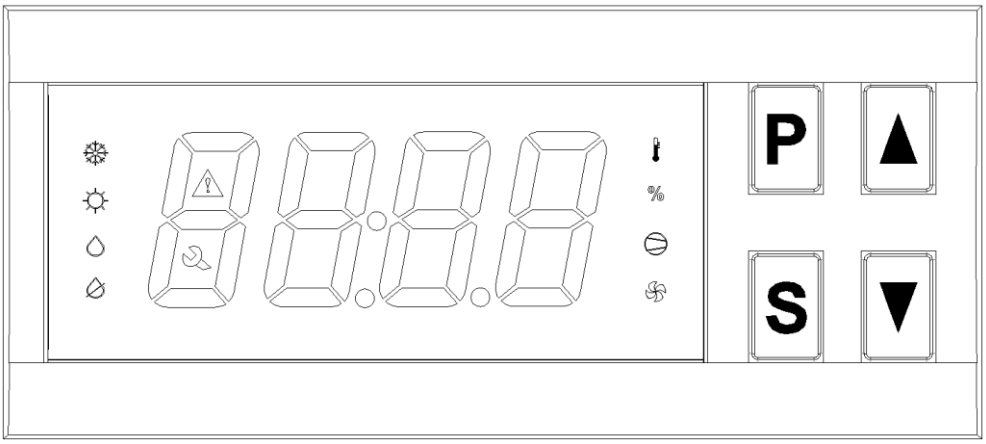
Introduction

ZL-7801A is a temperature and humidity controller. IP65 level front panel protection, convenient operation and easy installation. Suitable for control of incubator, climate chamber, greenhouse, warehouse, and so on.

Specification

- Power supply: 100 ~ 240Vac, 50/60Hz
- Input Signal:
  - One humidity and temperature sensor
  - Wire length 2.0 meter. It could be extended. The length limit is 5 meters.
- Output load: (Resistive parameter)
  - R1 load, 5A/250Vac
  - R4 and R5 load, 3A/250Vac
  - R2 and R3 load, 16A/250Vac
- Setting Range:
  - Humidity 5.0 ~ 95.0% RH
  - Temperature -20.0 ~ 60.0℃
- Sensor accuracy:
  - Humidity ±3%
  - Temperature ±2%
  - 0.1 absolute accuracy after calibrated.
- Working environment:
  - Humidity 10 ~ 90% RH without dew
  - Temperature -20 ~ 45℃
- Device dimension:
  - W78 * H34.5 * D71 mm
- Drilling size:
  - W71 * H29 mm
- Case materials: PC + ABS, fireproof
- Protection level: IP65 (front panel only)

Display



After power supplied, the controller will display model and version consecutively: “7801”, “A3.0”.

Eco mode: The brightness of display will reduce when no key operation for 30 seconds.

Icon	Function	On	Off	Blinking
	Temp. load (R3)	Load energized	Load de-energized	The load is delay protecting
	Cool mode	Cool mode		Setting temp. point
	Heat mode	Heat mode		
	Humidity load (R2)	Load energized	Load de-energized	The load is delay protecting
	Humidify mode	Humidify mode		Setting humidify point
	Dehumidify mode	Dehumidify mode		
	Repair		No fault	Faulty
	Warning		No Warning	Warning
	Temp. display	For temp.		Temp. setting / warning
	Humidity display	For humidity		Humidity setting / warning
E1	Fault			Sensor fault
E2	Fault			Dewing alarm
UnL	Hint	Restore to factory default settings		

Key Operation

Temperature and humidity setting

Keep〖S〗depressed for 3 sec. to enter into temperature and humidity setting. Digits show set temperature.

Press〖P〗to switch between humidity & temp. setting. Press〖▲〗or〖▼〗to set the value (Fast set by keeping pressed).

Keep〖S〗depressed for 3 sec. to exit and save. The set will also be saved if no key operation for 30 sec., then exit.

System parameters setting

Keep〖P〗depressed for 3 sec. to enter into parameter setting.

If the password is not 0000, digits shows “---0”:

Press〖▼〗to select the digit of the password, press〖▲〗to set value (0-9) of the digit.

Press〖S〗to confirm. If password is correct, show the parameter code.

else as if no password, the controller will show parameter code.

Press〖▲〗or〖▼〗to select the code (see the table below). Press〖S〗to enter the code setting.

Press〖▲〗or〖▼〗to set the value of this code. Press〖S〗to return.

Keep〖P〗depressed for 3 sec. to exit and save. The set will also be saved if no key operation for 30 sec., then exit.

Code	Function	Range	Remark	Factory Set
U10	Temp. control mode	H/C	H: Heat mode, C: Cool mode	C
U11	Temp. hysteresis	0.1 ~ 20.0℃		5.0
U12	Time delay protection for temp. load	0 ~ 30 min		3
U13	Temp. calibration	-9.9 ~ +9.9℃		0.0
U14	Sensor selection	0 ~ 1	0: SHr03A, 1: SHr05A/SHr05B	1
U20	Humidity control mode	H/P	H: Humidify mode, P: Dehumidify mode	P
U21	Humidity hysteresis	0.1 ~ 20.0%RH		5.0
U22	Time delay protection for humidity load	0 ~ 30 min		3
U23	Humidity calibration	-9.9 ~ +9.9%		0.0

Continue:

Code	Function	Range	Remark	Factory Set
U30	Dewing warning mode	C / U	C: Dewing warning, U: No dewing warning	U
U31	Dewing warning delay	0 ~ 30 sec		6
U40	Timer 1, period 1, time unit	0 ~ 2	0: sec, 1: min, 2: hour	1
U41	Timer 1, period 1, time	1 ~ 9999	R5 on, R4 off	120
U42	Timer 1, period 2, time unit	0 ~ 2	0: sec, 1: min, 2: hour	1
U43	Timer 1, period 2, time	1 ~ 9999	R4 on, R5 off	120
U50	Temp. and humidity value display alternating time	1 ~ 30 sec	Only when no warning	2
U99	Password	0000 ~ 9999	0000: skip password	0000

Control Function

Temperature control

Heat mode (U10 = H)

When【room_temp.】≤【set_temp.】-【temp. hysteresis, U11】, and temp. load (R3) has stopped for【Time delay protection for temp. load, U12】, temp. load (R3) will be on.

When【room_temp.】≥【set_temp.】, temp. load (R3) will be off.

Cool mode (U10 = C)

When【room_temp.】≥【set_temp.】+【temp. hysteresis, U11】, and temp load (R3) has stopped for【Time delay protection for temp. load, U12】, temp. load (R3) will be on.

When【room_temp.】≤【set_temp.】, temp. load (R3) will be off.

Load delay protection

After powered supplied, temp. load (R3) needs the time of【Time delay protection for temp. load, U12】to start.

Humidity control

Humidify control

When【room_humidity】≤【set_humidity】-【humidity hysteresis, U21】, and humidity load (R2) has stopped for【Time delay protection for humidity load, U22】, humidity load (R2) will be on.

When【room_humidity】≥【set_humidity】, humidity load (R2) will be off.

Dehumidify control

When【room_humidity】≥【set_humidity】+【humidity hysteresis, U21】, and humidity load (R2) has stopped for【Time delay protection for humidity load, U22】, humidity load (R2) will be on.

When【room_humidity】≤【set_humidity】, humidity load (R2) will be off.

Load delay protection

After powered supplied, humidity load (R2) needs the time of【Time delay protection for humidity load, U22】to start.

Dewing warning

When humidity reaches dew point for【Dewing warning delay, U31】, controller enter into dewing warning state.

If【Dewing warning mode, U30】is C, digits show "E2", loads (R2, R3) will be off, alarm output (R1) will be on.

If【Dewing warning mode, U30】is U, digits show "99.9%", humidity control continues, no alarm output.

Timer 1 control (R4, R5)

During period 1, R5 on, R4 off.

During period 2, R4 on, R5 off.

If the repeat times (U70) is set to 0, it will repeat infinitely. Or the timer will stop after the times of full period = U70.

Sensor

When the sensor is broken, controller shows “E1”, loads (R2, R3) will be off, and alarm output R1 will be on.

By setting【Temp. calibration, U13】【Humidity. calibration, U23】, the test result is able to reach 0.1 absolute accuracy.

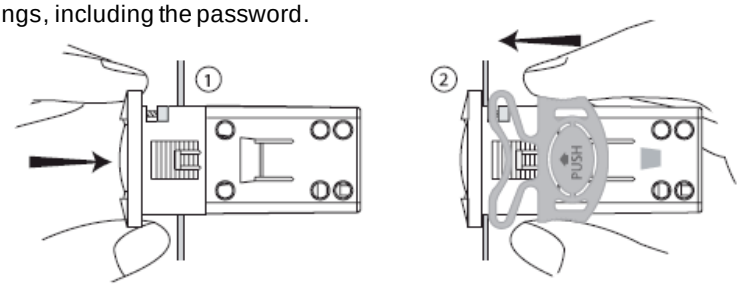
Do not plug in, or out the sensor when the power is supplied.

Factory setting:

Keep〖P〗and〖▲〗depressed simultaneously for 5 sec., the device displays “UnL”, press 【▼】 twice, the controller will reset all parameters to factory default settings, including the password.

Installation

1. Insert the controller into hole (step one)
2. Slide the bracket to fix the device (step two)



Warning

- Electrical wiring must be manipulated by certified electrician.
- Wrong power supply may damage the device and system seriously.
- Try with effort to layout the sensors and switches line apart from inductive load lines and power supply lines. The sensors and switches lines are not allowed go with the power supply lines and inductive load lines in a same pipeline, and are not allowed to pass near the contactor, breaker and the similar.
- Reduce the length of sensors’ wiring if possible. Avoid forming a spiral shape near the power devices.
- Avoid direct contact with the internal electronic components.
- After finishing and checking the electrical wiring, before connecting them to the device, please follow this instruction: Pay attention the “electrical wiring diagram” below, wrong connection possibly damages the device and the system, and may be dangerous to the user. All security and protecting device for the equipment are necessary. They are very important to protect the equipment, and the user’s safety.

Electrical Wiring Diagram