LILYTECH ZL-7801D Humidity and Temperature Controller Owner's Manual

Contents

LILYTECH ZL-7801D Humidity and Temperature Controller

FAQs

- **Q: What is the working environment temperature range for the ZL-7801D controller?**
  - A: The working environment temperature range is -20°C to 45°C without dew.
- **Q: What is the default factory set humidity for the ZL-7801D controller?**
  - A: The default factory set humidity is 60.0%RH.
- **Q: How can I enter the parameter setting status on the ZL-7801D controller?**
  - A: Keep the P button depressed for 3 seconds. If the password is set to 000, no password is required.
- **Q: What is the sensor precision for temperature and humidity on the ZL-7801D controller?**
  - A: The sensor precision is 2%RH for temperature and 4.5%RH for humidity.

Feature

ZL-7801D is a universal temperature and humidity controller. IP65 level front panel protected, easy to operate and install. Suitable to control incubator, climate chamber, greenhouse, warehouse, and so on.

Specification

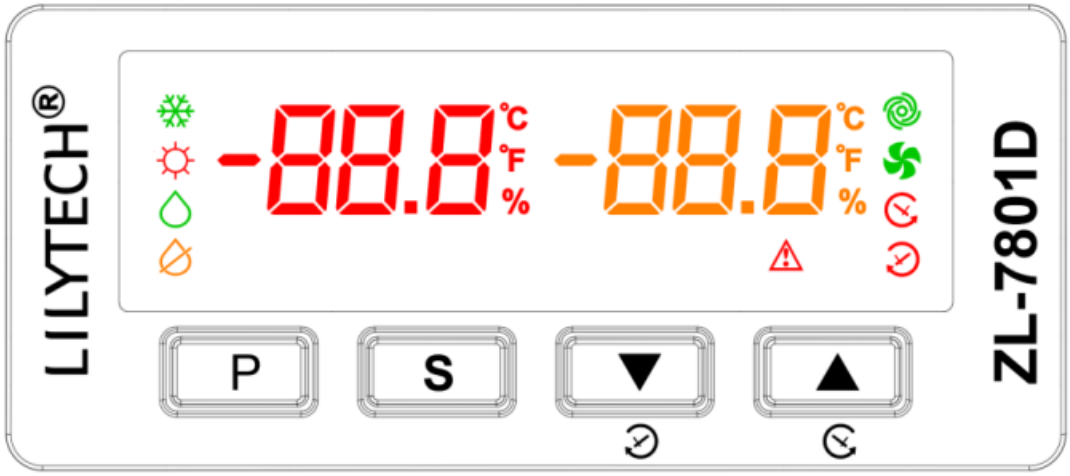
- Power supply: 100 ~ 240Vac, 50/60Hz
- Input: One humidity sensor with a cable length of 2 meters.
- One temperature sensor with a cable length of 1 meter.
- Output: Temperature and Humidity (R3 and R5), outputs: 10A, 250Vac.
- Others (R1/R2/R4/R6) outputs: 3A, 250Vac.
- The parameters are for resistance load, instead of capacitive and/or inductive!
- Setting range: Humidity 0.0 ~ 100.0%RH. Factory set is 60.0%RH.
- Temperature -20.0 ~ 100.0℃. The factory set is 37.8℃.
- Sensor precision: Temperature: 2%.

Humidity:

Sensor	Precision		Range
	Typical	Limit	
ZL-SHr05A	2%RH	4.5%RH	10 ~ 90%RH
	4%RH	7.5%RH	<10%RH >90%RH
ZL-SHr05B	2%RH	2.5%RH	0 ~ 90%RH
	2%RH	3.5%RH	>90%RH

- Working environment: -20 ~ 45℃. 10 ~ 90%RH without dew.
- Case dimension: L78 x W34.5 x D71 (mm)
- Drilling size: L 71 x W29 (mm)
- Case materials: PC + ABS, fireproof
- Protection level: IP65 (Front panel only)

Display



Display Icon

Icon	Function	On	Blink	Off
	Cooling	R3 energized	During delay protection. At this period, the output is off. The delay time, see settings.	R3 off
	Heating	R3 energized		R3 off
	Humidifying	R5 energized		R5 off
	Dehumidifying	R5 energized		R5 off
	Fan	Timer on, R4 energized	Over limit, R4 energized	R4 off
	Over limit, Or alarming output	----	Over limit, R6 energized (U45 = 2)	R6 off (when U45 = 2)
	Left turning	R1 energized	Start left turning, R1 on, icon blinks for 30 sec.	R1 off
	Right turning	R2 energized	Start right turning, R2 on, icon blinks for 30 sec.	R2 off
	Alarming	----	Failure, or over temp./humi.. R6 energized (when U45 = 1)	R6 off (when U45 = 1)
Et	Failure	----	Temperature sensor fails	
Eh	Failure	----	Humidity sensor fails	
EtH	Over temp.	----	Over high temperature limit	
EtL	Low temp.	----	Over low temperature limit	
EhH	Over wet	----	Over high humidity limit	
EhL	Too dry	----	Over low humidity limit	
UnL	Restore to factory settings		----	

Both and blink: egg turn times have reached tot times Egg turn times U34

Operation

Set setpoints

- Keep S depressed for 3 seconds to enter setting status. The temperature setpoint displays.
- Press P to switch between temperature setting status and humidity setting status.
- Press ▲ or ▼ to set the value (keeping depressed makes a fast set).
- Keep S depressed for 3 seconds to save the settings, and exit.
- The setting status will exit if there is no key operation for 30 seconds, and the settings will be saved.

Set Parameters

- Keep P depressed for 3 seconds:
- If the password is “000”, no password is needed to enter parameter setting status.
- If the password is not “000”, display “–0”, The “0” blinks. Press ▲ to set this digit of the password.
- Press ▼ to switch to the 2nd digit of the password, and press ▲ to set.
- Press ▼ to switch to the 3rd digit of the password, and press ▲ to set.
- Press ▼ to confirm. If the password is correct, enter the parameter setting status, else exit.

In parameter setting status:

- press S or P to select the parameter code (see code table below).
- Press ▲ or ▼ to set the value of the parameter.
- Keep P depressed for 3 seconds to save the settings, and exit.
- The setting status will exit if there is no key operation for 30 sec., and the settings will be saved.

Parameter code table

Code	Function	Range	Remark	Factory set
U10	Cool/heating mode	C/H	C: cooling, H: heating	H
U11	Temperature hysteresis	0.1 ~ 20℃		0.1
U12	R3 delay protection time	2 ~ 600 sec.		3
U13	Temperature calibration	-9.9 ~ 9.9℃		0.0
U14	High temp. Protection start point	0.1 ~ 10.0℃	relative value	0.3
U15	High temp. Protection stop point	-10.0 ~ 10.0℃	relative value	0.2
U16	High-temperature alarm point	0.0 ~ 99.9℃	0.0: disable alarm, relative value	0.0
U17	Low-temperature alarm point	0.0 ~ 99.9℃	0.0: disable alarm, relative value	0.0
U20	Humidifying/dehumidifying mode	H/P	H: humidifying, P: dehumidifying	H
U21	Humidity hysteresis	0.1 ~ 20.0%RH		2.0
U22	R5 delay protection time	2 ~ 600 sec.		5
U23	Humidity calibration	-9.9 ~ 9.9%RH		0.0
U24	High humid. Protection start point	1.0 ~ 20.0%RH	relative value	5.0
U25	High humid. Protection stop point	-20.0 ~ 20.0%RH	relative value	2.0
U26	High humidity alarm point	0 ~ 99.9%RH	0.0: disable alarm, relative value	0.0
U27	Low humidity alarm point	0 ~ 99.9%RH	0.0: disable alarm, relative value	0.0
U30	Left turn R1 time unit	0 ~ 2	0: sec., 1: min., 2: hour	1
U31	Left turn R1 time	1 ~ 999		90
U32	Right turn R2 time unit	0 ~ 2	0: sec., 1: min., 2: hour	1
U33	Right turn R2 time	1 ~ 999		90

U34	Egg turn times	0 ~ 999	0: Egg turn never stops	0
U35	Reset the egg turn counter aft er the power supplied	0/1	0: reset, 1: not reset	0
U40	Timer R4 on time unit	0 ~ 2	0: sec., 1: min., 2: hour	0
U41	Timer R4 on time	1 ~ 999		30
U42	Timer R4 off time unit	0 ~ 2	0: sec., 1: min., 2: hour	1
U43	Timer R4 off time	1 ~ 999		120
U44	Output R4 working mode	0 ~ 3	0: disable	3
			1: timer output	
			2: high temp./humid. protection	
			3: timer output + high temp./humi. protection	
U45	Output R6 working mode	0 ~ 2	0: disable	1
			1: temp./humid. alarm, failure alarm	
			2: high temp./humid. protection	
U60	Beeping alarm	0/1	0: disable, 1: enable	1
U99	Password	000 ~ 999	000: disable password	000

Control

Temperature control

- Cool mode (U10 = C)
- If Room temperature ≥ Temperature setpoint + Temperature hysteresis U11 , and R3 has stopped for R3 delay protection time U12 , R3 energized.
- If Room temperature ≤ Temperature setpoint, R3 de-energized.

Heat mode (U10 = H)

- If Room temperature ≤ Temperature setpoint – Temperature hysteresis U11 , and R3 has stopped for R3 delay protection time U12 , R3 energized.
- If Room temperature ≥ Temperature setpoint, R3 de-energized.

High-temperature protection

- If Room temperature ≥ Temperature setpoint + High temp. Protection start point U14 ,

    - R4 energized (when Output R4 working mode U44 =2 or 3),
    - R6 energized (when Output R6 working mode U45 =2).
- If Room temperature ≤ Temperature setpoint + High temp. Protection stop point U15 ,
    - R4 deenergized (when Output R4 working mode U44 =2 or 3),
    - R6 deenergized (when Output R6 working mode U45 =2).
- **Note**: after R4 and R5 de-energized, they could be energized again after 3 seconds.

High/low-temperature alarm

- If Room temperature ≥ Temperature setpoint + High temperature alarm point U16 ,
    - alarm, alternatively display Room temperature and “tHi”.
- If Room temperature ≤ Temperature setpoint + Low temperature alarm point U17 ,
    - alarm, alternatively display Room temperature and “tLo”.
- If Beep warning U60 = 1, there will be a beeping when alarming.
- If Output R6 working mode U45 =1, R6 energized when alarming.

Humidity control

Dehumidify mode (U20 = P)

- If Room humidity ≥ Humidity setpoint + Humidity hysteresis U21 , and R5 has stopped for R5 delay protection time U22 , R5 energized.
- If Room humidity ≤ Humidity setpoint, R5 de-energized.

Humidify mode (U20 = H)

- If Room humidity ≤ Humidity setpoint - Humidity hysteresis U21 , and R5 has stopped for R5 delay protection time U22 , R5 energized.
- If Room humidity ≥ Humidity setpoint, R5 de-energized.

High humidity protection

- If Room humidity ≥ Humidity setpoint + High humid. Protection start point U24 ,
    - R4 energized (when Output R4 working mode U44 =2 or 3),
    - R6 energized (when Output R6 working mode U45 =2).
- If Room humidity ≤ Humidity setpoint isn’t + High humid. Protection stop point U25 ,
    - R4 deenergized (when Output R4 working mode U44 =2 or 3),
    - R6 deenergized (when Output R6 working mode U45 =2).
- **Note**: after R4 and R5 de-energized, they could be energized again after 3 seconds.

High/low humidity alarm

- If Room humidity ≥ Humidity setpoint + High humidity alarm point U26 ,
    - alarm, alternatively display Room humidity and “HHi”.
- If Room humidity ≤ Humidity setpoint + Low humidity alarm point U27 ,
    - alarm, alternatively display Room humidity and “HLo”.
- If Beep warning U60 = 1, there will be a beeping when alarming.
- If Output R6 working mode U45 =1, R6 energized when alarming.

Delay protection

- After power is supplied, R3 and R5 could be energized after delay protection time U12, U22 .
- After R3 and R5 are de-energized, they could be energized after delay protection time U12, U22 .

Egg turn control R1, R2

- Output R1/R2 is universal timer output, although the function is designed for incubator egg turning.

Timer function for egg turn

- During Left turn R1 time U31 , display  , R1 energized, R2 deenergized.
- During Right turn R2 time U33 , display  , R1 deenergized, R2 energized.
- One full egg turn = one left turn + one right turn. The egg turn counter counts the times of full egg turn.
- If Egg turn times U34 = 0, the egg turn timer will never stop.
- If Egg turn times U34 > 0, the egg turn timer will stop (stop egg turning) after the counter value reaches U34,  and  , blink.

Check egg turn counter value.

- Simultaneously press S and ▼ , display “Cnt” + “***” for 2 seconds. “***” is the counter value.

Stop and restart egg turn timer, egg turn counter reset

- Keeping ▲ and ▼ depressed simultaneously for 2 seconds stops or starts the egg turn timer.
- When the egg turns timer stops  and  blinks.
- When starts from stop status, the egg turn counter resets to zero.

The egg turn counter reset after the power supplied

- If Reset egg turn counter after power supplied U35 = 0, the counter will reset to zero after power supplied.
- If Reset egg turn counter after power supplied U35 = 1, the counter will keep after power supplied.

Manual egg turning

- Keeping ▲ depressed for 3 sec. Starts left turning, display  , R1 energized, R2 de-energized.
- Keeping ▼ depressed for 3 sec. Starts right turning, display  , R1 de-energized, R2 energized.

Output R4

- Output R4 is universally multifunctional, although it is designed for an incubator air exhaustion fan.

Timer function

- During Timer R4 on time U41 , R4 energized. During Timer R4 off time U43 , R4 deenergized.
- **High temperature or humidity protection function**
  - See: Control -> Temperature control -> High temperature protection,
    - Control -> Humidity control -> High humidity protection.

Output R6

- Output R6 is multifunctional. It is an alarming output, or to drive an incubator air exhaustion fan.

Alarm function

- See: Control -> Temperature control -> Temperature alarm,
    - Control -> Humidity control -> Humidity alarm.
- High temperature or humidity protection function
    - See: Control -> Temperature control -> High temperature protection,
        - Control -> Humidity control -> High humidity protection.

Sensor

Temperature sensor

When the temperature sensor fails, display blinking “Et”. The controller will use the temperature data from the humidity sensor. It is better to replace the temperature as soon as possible. When both the temperature sensor and humidity sensor fail, the temperature control stops, and R3 keeps de-energized. The timer’s control keeps running.

Humidity sensor

When the humidity sensor fails, the display blinks “Eh”. The humidity control stops, and R5 keeps de-energized. The timer’s control keeps running.

Restore to factory set.

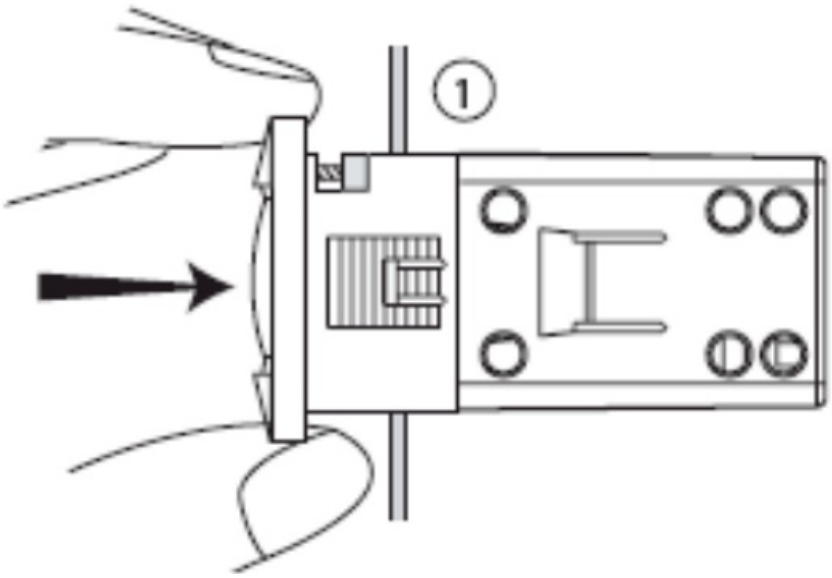
Keep P and ▲ depressed simultaneously for 3 seconds, “UnL” displays. Then press ▼ twice, and all parameters will restore to the factory set, including the password (see the Parameter code table column “Factory set”).

Warning

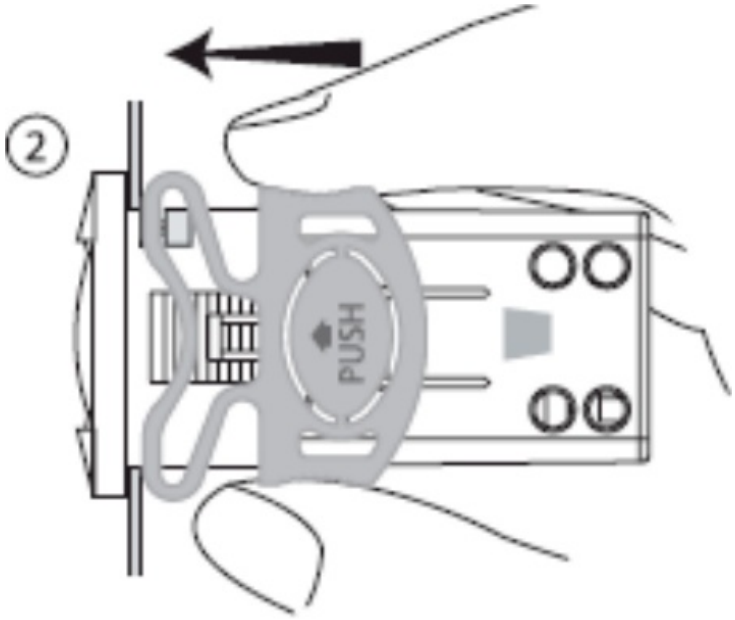
1. Do not wire when power is supplied.
2. The specification for loads is for pure resistance loads.
    - When driving capacitive or inductive loads, such as 100 watts ac-dc, incandescent bulb, we advise using an intermediate relay, 220Vac input SSR, or magnetic contactor.
3. Overload damage is not within warranty.

Installation

1. Insert the controller into hole.



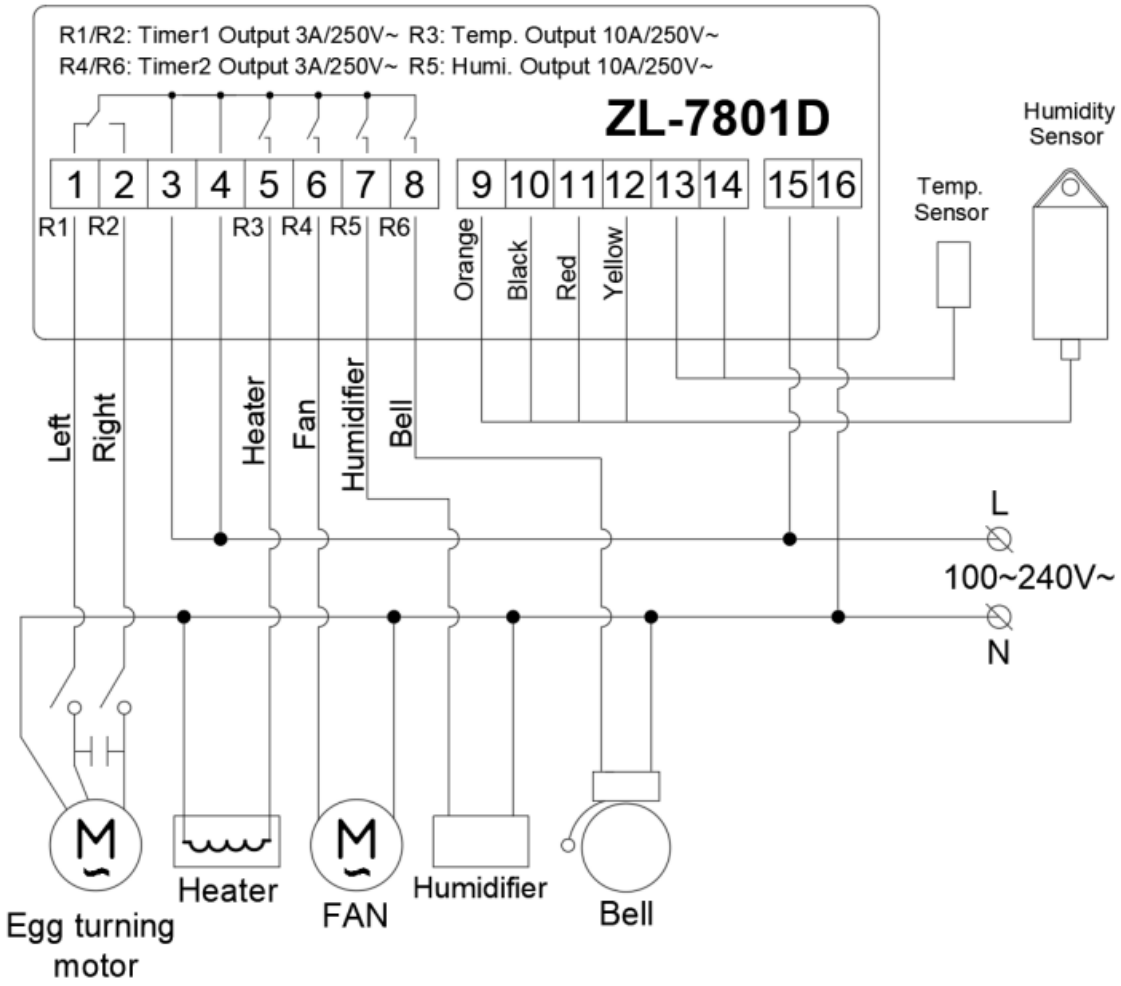
2. Slide the bracket to fix the device (step two)



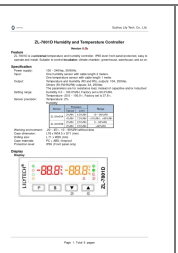
Attention

1. Electrical wiring must be manipulated by a certified electrician.
2. Connect according to the electrical wiring diagram. The wrong connection will damage the device.
3. Do layout the the sensor bundle together with the power supply bundle.
4. Avoid working in an erosive, wet, and strong electrical-magnetic field environment.
5. This device has been checked fully before shipment. The warranty time is one year, dadamagey wrong usage, such as wrong connection, is not warranted.

Wiring Diagram



Documents / Resources

	LILYTECH ZL-7801D Humidity and Temperature Controller [pdf] Owner's Manual ZL-7801D Humidity and Temperature Controller, ZL-7801D, Humidity and Temperature Controller, Temperature Controller, Controller

References

- User Manual