ZL-7850A Humidity and Temperature Controller

Version 2.0

Feature

ZL-7850A is a temperature and humidity controller with rich display. IP65 level front panel protection, convenient operation and easy installation. Suitable for control of incubator, climate chamber, greenhouse, warehouse, and so on.

New feature for version 2.0:

 Sensor cable could be extended to 50 meters.

 Faster sensing speed.

 More stable after working for long time.

Specification

Power supply:	100 ～ 240Vac, 50/60Hz
Input:	One humidity and temperature sensor, provided wire length 2 meters
Sensor precision:	Humidity±3% @25℃ (sensor ZL-SHr05J)
	±2% @25℃ (sensor ZL-SHr05P)
	Temperature ±1% @ 25℃
Setting range:	Humidity 0 ～ 80%RH; Temperature 0 ～ 65℃ (with sensor ZL-SHr05J)
	Humidity 0 ～ 99%RH; Temperature 0 ～ 65℃ (with sensor ZL-SHr05P)
Display range:	Humidity 0 ～ 99%RH; Temperature -20 ～ 80℃
Output:	Temp. Output ≤ 5A,
	Humi. Output and Fan Output ≤ 3A,
	2 Egg turns ≤ 1A
Working environment:	-10 ～ 45℃; ≤ 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)

Function

- Heat/cool control
- Humidify/dehumidify control
- Timer air exhaustion
- Timer and manual egg turning
- Temperature and humidity calibration

- Temperature and humidity high limit protection
- Temperature and humidity limits alarm
- Alarm and protection when sensor fails
- Restore control when power supply returns

Display
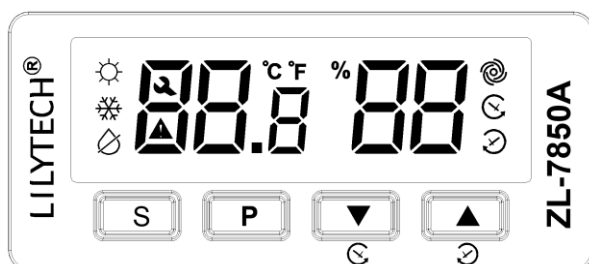
Icon	Function	On	Blink	Off
☼	Heat output (R3)	Energized	Deenergized because of delay protecting (ref. 【t2】, 【h2】)	Deenergized
❅	Cool output (R3)	Energized		Deenergized
◯	Humidify output (R2)	Energized		Deenergized
⊘	Dehumidify output (R2)	Energized		Deenergized
◎	Multifunction fan output (R1)	Energized periodically	Energized because of high limit protection	Deenergized
◔	Egg left turn output (R4)	Energized	Turn counter's value ≥	Deenergized
◕	Egg right turn output (R5)	Energized	Turn times' set value	Deenergized
℃	Celsius temperature value	Celsius value	Setting Celsius value	
%	Relative humidity value	RH value	Setting RH value	
⚠	Alarm		Alarming	No alarming
🔧	Maintenance		Has fault	No fault
E01	Sensor failure		Sensor failure warn	
tHi	Temperature high warn point		High temperature warn	
tLo	Temperature low warn point		Low temperature warn	
hH	Humidity high warn point		High humidity warn	
hL	Humidity low warn point		Low humidity warn	
Lo	Keypad locked	Keypad locked		
Un	Keypad unlocked	Keypad unlocked		
UnL	Restore to factory default settings	Restoring to default settings		

Version

After power on reset, display the model name (7850A) and firmware version (A2.0):

Setting

Temperature and humidity setting

Keep〖S〗depressed for 2 seconds to enter into, or exit (save the settings 1st) temperature and humidity setting status.

Press 〖P〗to switch between temperature setting (**TP**) and humidity setting (**HP**) status.

Press 〖▲〗or 〖▼〗 to set the value (keeping depressed makes fast set).

Note: The status will exit if no key operation for 15 seconds, and the setting *will not be saved*.

　　　The temperature setting range 0 ～ 65℃

　　　The humidity setting range 0 ～ 80%RH (for ZL-SHr05J)

　　　The humidity setting range 0 ～ 99%RH (for ZL-SHr05P)

Note: Factory default setting is 37.8℃ and 60%RH

Parameter setting

Keep〖P〗depressed for 2 seconds to enter into, or exit (save the settings 1st) parameter setting status.

Press 〖S〗or 〖P〗to select the code.

Press 〖▲〗or 〖▼〗to set the value of the code (keeping depressed makes fast set).

Note: The status will exit if no key operation for 15 seconds, and the setting *will not be saved*.

Parameter code

Code	Function	Range	Remark	Factory Default
t0	Temp. control mode	H/C	H: heat; C: cool	H
t1	Temp. hysteresis	0.1 ～ 20.0℃		0.1
t2	Time delay protection for Temp. load	0 ～ 30 min		0
t3	Temp. calibration	-9.9 ～ +9.9℃		0.0
t4	Temp. high limit (relative value, R1)	0.0 ～ 20.0	If 0, no high temp. limit	0.2
t5	Temp. high limit hysteresis	0.0 ～ 20.0	If 0, no low temp. limit	0.1
t6	Temp. high warning point (relative value)	0.0 ～ 65.0	If 0, no high temp. alarming	0.0
t7	Temp. low warning point (relative value)	0.0 ～ 65.0	If 0, no low temp. alarming	0.0
h0	Humidity control mode	H/P	H: humidify; P: dehumidify	H
h1	Humidity hysteresis	1 ～ 20%RH		2
h2	Time delay protection for Humi. Output	0 ～ 30 min		0
h3	Humidity calibration	-20 ～ +20%RH		0
h4	Humidity high limit (relative value, R1)	0 ～ 20%RH	If 0, no high humidity limit	5
h5	Humidity high limit hysteresis	0 ～ 20%RH	If 0, no low humidity limit	2
h6	Humidity high warning point (relative value)	0 ～ 80%RH	If 0, no high humidity alarming	0
h7	Humidity low warning point (relative value)	0 ～ 80%RH	If 0, no low humidity alarming	0
u0	Egg turn (R4, R5) deenergized time	0 ～ 999 min	If 0, no turn function	60
u1	Egg turn (R4, R5) energized time	0 ～ 999 sec	If 0, no turn function	30
u2	Egg turn times	0 ～ 999	If 0, turn without stop	0
u3	Exhaustion fan (R1) deenergized time	0 ～ 999 min	If 0, no exhaustion	120
u4	Exhaustion fan (R1) energized time	0 ～ 999 sec	If 0, no exhaustion	30
u9	Sensor selection	0/1	0: ZL-SHr05J 1: ZL-SHr05P	0

Control

Temperature control

Heat mode【t0 = H】

When *Room temp.* ≤ *Set temp.* (**TP**) – 【t1】, and *Temp. Output* (R3) has stopped for 【t2】, *Temp. Output* (R3) will be energized.

When *Room temp.* ≥ *Set temp.* (**TP**), *Temp. Output* (R3) will be deenergized.

Cool mode【t0 = C】

When *Room temp.* ≥ *Set temp.* (**TP**) + 【t1】, and *Temp. Output* (R3) has stopped for 【t2】, *Temp. Output* (R3) will be energized.

When *Room temp.* ≤ *Set temp.* (**TP**), *Temp. Output* (R3) will be deenergized.

Over high temperature limit protection (only for heat mode)

When *Room temp.* ≥ *Set temp.* (**TP**) + 【t4】, *Fan Output* (R1) will be energized.

When *Room temp.* ≤ *Set temp.* (**TP**) + 【t4】 - 【t5】, *Fan Output* (R1) will be deenergized.

Humidity control

Humidify mode【h0 = H】

When ***Room humidity*** ≤ ***Set humidity*** (**HP**) -【h1】, and ***Humi. Output*** (R2) has stopped for【h2】, ***Humi. Output*** (R2) will be energized.

When ***Room humidity*** ≥ ***Set humidity*** (**HP**), ***Humi. Output*** (R2) will be deenergized.

Dehumidify mode【t0 = P】

When ***Room humidity*** ≥ ***Set humidity*** (**HP**) +【h1】, and ***Humi. Output*** (R2) has stopped for【h2】, ***Humi. Output*** (R2) will be energized.

When ***Room humidity*** ≤ ***Set humidity*** (**HP**), ***Humi. Output*** (R2) will be deenergized.

Over high humidity limit protection (only for humidify mode)

When ***Room humidity*** ≥ ***Set humidity*** (**HP**) +【h4】, ***Fan Output*** (R1) will be energized.

When ***Room humidity*** ≤ ***Set humidity*** (**HP**) +【h4】-【h5】, ***Fan Output*** (R1) will be deenergized.

Turn egg control（R4, R5）

Egg-Turn Output will be energized (R4 and R5 alternatively) for【u1】after deenergized for【u0】, periodically.

One ***full egg turn*** = one left turn (R4) + one right turn (R5).

There will be no egg turn after ***full egg turn*** has executed for【u2】times, and the egg turn signs will blink.

Keeping【▲】depressed for 2 seconds starts manual egg right turning; keeping 【▼】depressed for 2 seconds starts manual egg left turning.

Pressing 【S】and【▼】simultaneously shows the ***full egg turn*** counter value.

Attention: Power on reset will reset the full egg turn counter value to zero.

Timer exhaustion control (R1)

Fan Output (R1) will be energized for【u4】after deenergized for【u3】, periodically.

Warning control

When there is warning, the buzzer will beep.

The buzzer alarming could be stopped/restored by pressing【P】.

High temp. alarming: if ***Room temp.*** ≥ ***Set temp.*** (**TP**) +【t6】, ***Room temp.***/"tHi" displays alternatively.

Low temp. alarming: if ***Room temp.*** ≤ ***Set temp.*** (**TP**) -【t7】, ***Room temp.***/"tLo" displays alternatively.

High humidity alarming: if ***Room humidity*** ≥ ***Set humidity*** (**HP**) +【h6】, ***Room humidity***/"hH" displays alternatively.

Low humidity alarming: if ***Room humidity*** ≤ ***Set humidity*** (**HP**) -【h7】, ***Room humidity***/"hL" displays alternatively.

Sensor

The sensed ***Room temp.*** can be calibrated. If ***Room temp.*** is 0.2℃ lower than real temp., set 【t3】= 0.2.

The sensed ***Room humidity*** can be calibrated. If ***Room humidity*** is 2%RH higher than real, set【h3】= -2.

When sensor fails, the ***Temp. and Humi. Output*** (R3, R2) will be deenergized, and "E01" will display.

Note: do not plug in/off the sensor when power supplied.

Keypad lock

Press 〖S〗 and 〖P〗 simultaneously for 3 seconds to lock the keypad, "Lo" displays for 3 seconds. When keypad locked, any keypress will not executed, but display "Lo".

Press 〖S〗 and 〖P〗 simultaneously for 3 seconds to unlock, "Un" displays for 3 seconds.
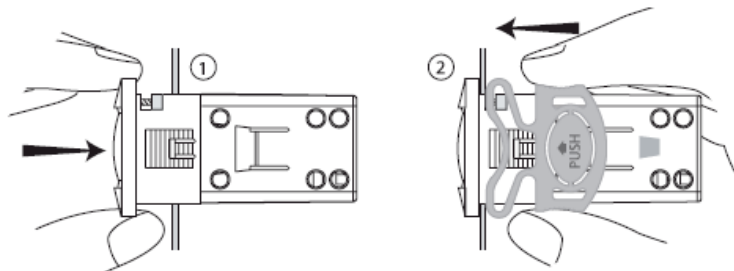
Restore to factory default setting

Press 〖P〗 and 〖▲〗 simultaneously for 3 seconds, "UnL" displays. Then press 〖▼〗 twice, all parameters will restore to *factory default* settings.

Warning

1. Do not connect wiring when power is supplied.
2. Electrical wiring must be manipulated by certified electrician.
3. Read this manual carefully. Connect according to electrical wiring diagram. Wrong connection will damage the device.
4. Do not layout the sensor bundle together with power supply bundle.
5. Avoid working in erosive, wet and strong electrical-magnetic field environment, which could affect the device works correctly.
6. This device has been checked fully before shipment. The warranty time is one year, damaged by wrong usage, such as wrong connection, is not warranted.

Installation

1. Insert the controller into hole (step one)

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

Wiring Diagram

R1: Fan.   Output 3A
R2: Humi. Output 5A
R3: Temp. Output 5A
R4&R5: Egg-Turn. Output 1A

ZL-7850A

100~240VAC 50/60Hz

Egg turning motor   Heater   Humidifier   Fan

Temp.&Humi. Sensor