CONOTEC

CONOTEC. Co., LTD

(Unit Cooler Controller)

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We appereciate your interest and support in our products.
Please make sure to read the " Handling Precaution" Before use.
And please keep this manual in a place where you can see at any time.
The handling of the controller will be convenient after reading the manual.

Manual Version : V2.0

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1 Handling Precautions

Thank you for purchasing Conotec's products.
Please be sure to read the following to use this product properly.

Safety precautions

⚠ Warning

1. Since this product is not manufactured as a safety device, be sure to use with dual safety devices in the event of using the product with devices that may cause accidents or property damage or when used for controlling.
2. Do not perform wiring, inspection or maintenance while the power is connected to the produce.
3. Be sure to mount the product on the panel. It can be the cause of electric shock.
4. Be suer to check the terminal number to connnect the power.
5. Do not disassemble, process, modify or repair this device.

⚠ Precautions

1. Before using this product, be sure to familiarize yourself with usage, safety regulations, and warnings and use onlu within the specifications or capacity.
2. Do not wire or install motors or solenoids with large inductive load.
3. Do not extend the sensor using the same cable and do not make it longer than necessary.
4. Do not use parts that generate arc nearby when opening/closing or the same power source.
5. The power line must be installed away from the power cable and aviod places where water, oil, dust are severs.
6. Do not install the product in a place exposed to direct sunlight or rain.
7. Do not install the product in a place with strong magnetic field, severe noise, vibration or impact.
8. Keep the product away from places that produce strong alkaline and strongly acidic materials.
9. Do not spray water directly for cleaning when installing the product in the kitchen.
10. Do not install the product in locations where temperature and humidity exceed the rating.
11. The sensor cable should be handle in caution so that it is not broken or scratched.
12. Keep away the sensor cable from the sensor cable, signal cable, power supply, power, load cable and use independent piping
13. Do not disassemble or modify this product. If so the product cannot receive maintenance.
14. The mark on the terminal wiring diagram is safety statement regarding warning and caution.
15. Do not use the product near equipment(high-frequency welding machine, high-frequency sewing machine, high-frequency radio, high capacity SCR controller) where strong hihg frequency noise occurs.
16. Use of the product other than the method specified by the manufacturer may result in personal injury or property damage
17. The product is not a toy, keep out of the reach of children
18. The product must be installed by specialists or qualified personnel only

19. When wiring the product, terminals and screws should be tighten with enough torque. Contact failure may cause a fire
20. Do not use a load that exceeds the rated capacity of the relay contacts.
21. Do not use load that surpassed rated value of weitching capacity of relay contact point. This may cause insulation failure, contact weld, and poor contact.
22. The company shall not take any resopnsibility for any damage caused by negligence of the consumer of do not comply with the contents of the warning or caution statement.

⚠ Danger

■ Caution, risk of electric shock

1. Electrical shock – Do not contact the AC terminal while power is on. There is a risk of electric shock.
2. Be sure to shut off the input power when checking the input source.
3. To avoid the risk of electric shock, this equipment must be connected to a protective grounding and power supply.
4. Do not block the ventilation openings.

※ The specifications of this product are subject to change without notice to improve the product performance.
Be sure to read and comply with the instructions in the handling precautions.

◈ Precautions for handling

※ This product is suitable for the following environments.

- Temperature : 0 ℃ ~ 55 ℃
- Humidity : 35 ~ 80%RH
- Indoor use only
- Pollution Degree 2
- Altitude less than 2,000M
- Installation Category II
- Avoid placing equipment that makes it difficult to manipulate the power cord.
- When used in a manner not specified by the equipment manufacturer,the provided by the equipment May damage
- Rated power : 100VAC ~ 240VAC 50/60Hz
- Main products and development

- Digital temperature/humidity controller
- Counter & Timer Controller
- Current & Voltage Panel Meter
- Temperature/humidity indicator
- Oven controller
- CO2 controller
- PID controller
- Unit Coller Controller
- Heat Pump Controller
- Chiller Controller
- Constant Temperature and Humidity Controller
- SMS Text Alarm
- Temperature/Humididty Transmitter
- Smartphone App & Monitoring System

2 Basic Specifications

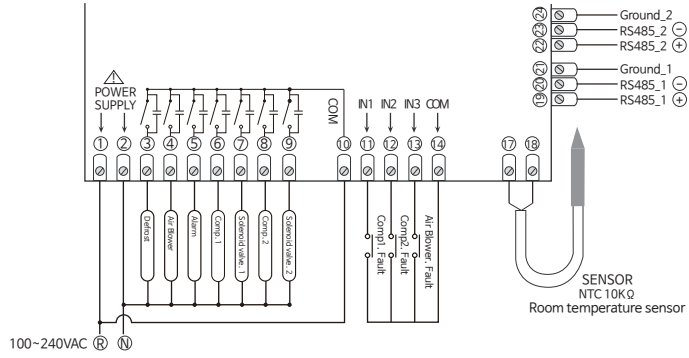
Basic Specification

Power	100~240VAC 50~60Hz
Digital input	3 Ports
Digital output	7 Ports
Analog input	Temperature sensor : 1 Port(NTC10K) Temperature Range : -55.0 ~ 99.9℃ (±1℃)
Communication specification	12-/24-/48-/96-/192- Bps Modbus Protocol(RS485 method) effective distance 1.2KM

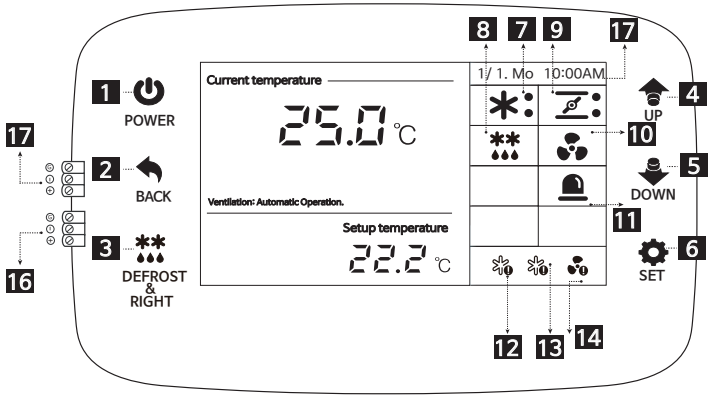
Input/Output Spec.

OUT1	Defrost
OUT2	Air Blower
OUT3	Alarm
OUT4	Comp 1
OUT5	Solenoid valve 1
OUT6	Comp 2
OUT7	Solenoid valve 2

IN1	Comp1. Fault
IN2	Comp2. Fault
IN3	Air Blower. Fault



3 Product Screen Composition



1 : System start or pause button

2 : Move to previous screen from the current menu / Mute function on the initial screen

3 : Move to the right when setup menu is selected / Forced defrost function

4 : Menu shift and setting value change / Equipment output inspection function on the initial screen

5 : Menu shift and setting value change / Alarm history function on the initial screen

6 : Menu entry and setting value selection

7 : Comp Output Icon (Stage 1/Stage 2)

8 : Defrost Output Icon.

9 : Solenoid Valve Output Icon (Stage 1/Stage 2)

10 : Blower Output Icon

11 : Defrost Output Icon

12 : Alarm Output Icon

13 : Comp1 Fault Detection Icon

14 : Comp2 Fault Detection Icon

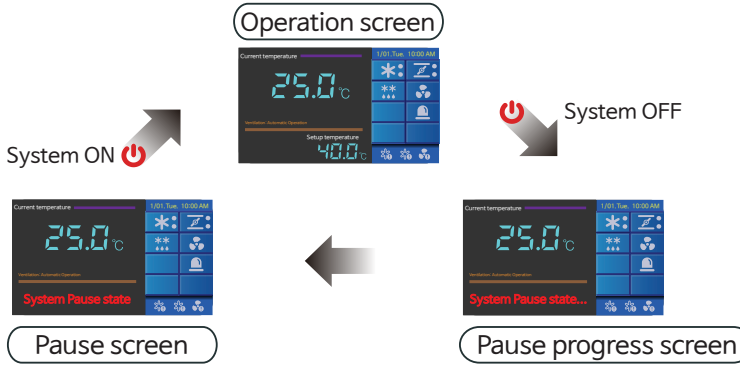
15 : Air Blower Fault Detection Icon

16 : RS485 Communication terminal

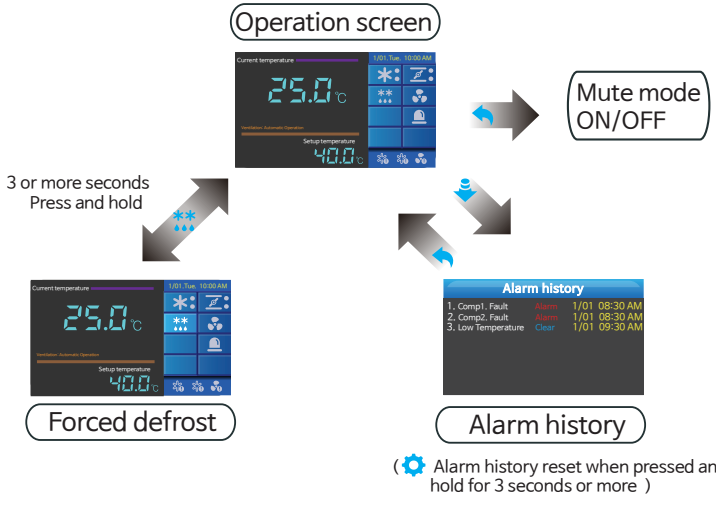
17 : Proprietary Communication Terminal

18 : Current time display

■ System status



■ Force defros/Alarm history/Mute mode



※ Up to 10 alarm can be recorded. If the number exceeds, the alarm history is sequentially overwritten form 1.

4 Setup Menu List

■ Temperature settings

List	Initial value	Range	Function
Setup temperature	20.0℃	-55.0 ~ 99.9℃	By setting the reference temperature for operation, operation will be turned OFF when the reference temperature is reached during operationa
Cooling deviation	1.0℃	0.1 ~ 20.0℃	Set the ON/OFF operation range for cooling operation
Temperature Calibration	0.0℃	-10.0 ~ 10.0℃	The function to calibrate the current temperature to match the actual temperature.
Overcooling Prevention	Unused	Unused ~ 20.0℃	The function to prevent damage caused by overcooling
Sequential Operation	Unused	Unused/used	Determine whether to use sequential operation during cooling. If used, it prevents excessive operation of a single piece of equipment.

■ Delay time settings

List	Initial value	Range	Function
Compressor delay	0 Secs	0 ~ 600 Secs	The compressor will operate after a delay for the set amount of time
Defrost fan delay	0 Secs	0 ~ 600 Secs	The pump operation will be activated after a delay set in time
Pump down	0 Secs	0 ~ 600 Secs	Close the solenoid valve when stopping the cooling operation and output the compressor for the set time
System delay	5 Secs	0 ~ 600 Secs	When stopping the equipment, turn off the output after the set delay time. If pump-down is in progress, operate separately
Fan stop delay	0 Secs	0 ~ 600 Secs	After the set time delay, the fan will stop

■ External input settings

List	Initial value	Range	Function
Comp1 Detection Time	5 Secs	0 ~ 600 Secs	If the signal is continuously detected for the set amount of time, a Comp1 alarm will occur
Comp1 Detection Method.	NC	NC / NO	Input Contact Type: Select Normal Close or Normal Open
Comp2 Detection Time	5 Secs	0 ~ 600 Secs	If the signal is continuously detected for the set amount of time, a Comp2 alarm will occur
Comp2 Detection Method	NC	NC / NO	Input Contact Type: Choose between Normal Close or Normal Open
Fan Detection Time	5 Secs	0 ~ 600 Secs	If a signal is continuously detected for the set time, a fan anomaly alarm is triggered
Fan Detection Method	NC	NC / NO	Input Contact Type: Choose between Normal Close or Normal Open.

※ Please refer to the detailed setup instructions on the website manual.

■ Defrost settings

List	Initial value	Range	Function
Defrost method	General	General/AirBlower	Sets the defrosting method.
Defrost pause time	4 hour	0 ~ 250 hours	When the freezer has operated for the set amount of time, defrosting will commence
Defrost start time	10 minutes	0 ~ 250 minutes	When the defrost cycle is reached, the defrost operation will proceed for the set amount of time

■ Alarm settings

List	Initial value	Range	Function
High-temperature alarm	99.9℃	-55.0 ~ 99.9℃	If the current temperature is higher than the set temperature, an alarm will be triggered.
Low-temperature alarm	-55.0℃	-55.0 ~ 99.9℃	If the current temperature is lower than the set temperature, an alarm will be triggered
Temperature alarm deviation	1.0℃	0.1 ~ 10.0℃	Set the deviation required for temperature alarm activation/deactivation
Equipment operation time	-	-	Menu to check the operation time of accumulated equipment

■ Other settings

List	Initial value	Range	Function
Communication code	No. 1	No. 1 ~ 99	Designate station number from 1 to 99 when using RS485 communication
Communication speed	96-Bps	12- ~ 192- bps	Set the communication speed when using RS485 communication
Blackout restoration	0 Secs	0 ~ 180 Secs	In case of power failure and reboot, proceed with normal operation after set time
Time settings	-		Sets the current time on the main screen (year / month / day / hour / minute / second)
Fan output method	Automatic	Automatic/Manual	Set the output mode of the blower
Communication Meta Integration	Unused	Unused / Current / Voltage / Integrated	Set the integration status of the communication meta
Setting value reset	Unused	Unused/Used	A function to reset all settings to the factory default values

5 Alarm content list

■ Alarm content

Occurrence List (Alarm occurrence)	Occurrence Cause and Measures
Comp1. Fault	Occurs when low pressure of Comp is detected in DI (INT 1)
Comp2. Fault	Occurs when high pressure of Comp is detected in DI (INT 2)
Air Blower. Fault	Occurs when an abnormality in the blower is detected in DI (INT 3)
Temperature sensor (open/short)	When the sensor part is open-circuited or short-circuited
High/low temperature	When the indoor temperature is higher or lower than the temperature alarm setting value

■ Controller measures upon alarm

1) Comp1. Fault

- The Comp output turns OFF, and the solenoid valve output remains ON (other functions operate normally)
- During pump down, the Comp output is also turned OFF

2) Comp2. Fault

- Turn off all equipment in operation.

3) Air Blower. Fault

- Turn off all equipment in operation.

4) Sensor wiring error

- Turn off all outputs that are currently in progress
- The sensor must be manually reset by the user for normal operation (Manual return)

5) High/low-temperature occurrence

- Alarm output occurs without automatic measures.
  (Sensor inspection and machine check)

Warranty

This product is manufactured through the strict quality control and inspection process of Conotec Co., Ltd.

The product warranty period is one year after purchase in accordance with the Consumer Damage Compensation Regulations, so be sure to enter the purchase date and place of purchase at the place of purchase.

If not stated, a one-year free warranty period from the date of shipment from our company is applied.

Product name	
Product number	
When to purchase	Year Month DAY
Place of purchase	

If manufacturing defects or spontaneous breakdowns occur within the product-free warranty period, prepare a quality warranty issued at the time of purchase, and visit the place of purchase or head office to receive free repair.

If the product-free warranty period has expired or in the following cases, a fixed repair fee may be charged.

- If it is not a malfunction, you will be charged for service request, so be sure to read the instruction manual.
- In the event of a breakdown due to negligence of the consumer's handling or voluntary repair or modification
- In case of failure due to incorrect use of electric capacity
- In case of failure due to impact such as dropping
- If you do not comply with the contents of the user manual
- In case of failure due to natural disaster (fire, flood, earthquake, lightning, etc.)

■ A/S reception

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