

(Unit Cooler Controller)

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We appreciate 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.

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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 tightened with enough torque. Contact failure may cause a fire.
20. 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.
21. 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 °C ~ 55 °C
- 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

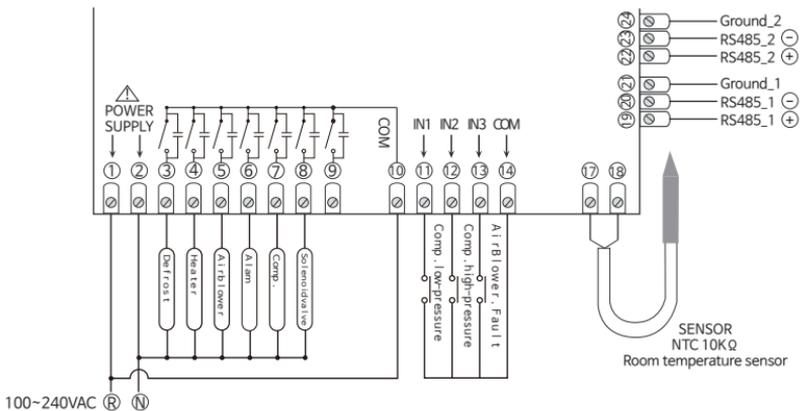
Basic Specification

Power	100~240VAC 50~60Hz
Digital input	3 Ports
Digital output	6 Ports
Analog input	Temperature sensor : 1 Port (NTC10K) Temperature Range : -55.0 ~ 99.9°C (±1°C)
Communication specification	12-/24-/48-/96-/192- Bps Modbus Protocol (RS 485 method) effective distance 1.2KM

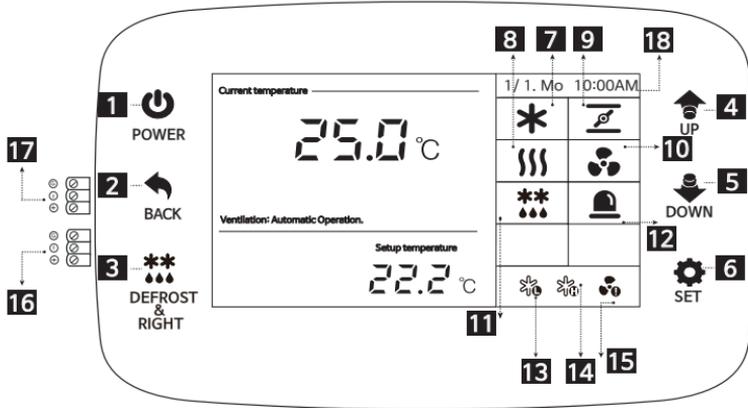
Input/Output Spec.

OUT1	Defrost
OUT2	Heater
OUT3	Air Blower
OUT4	Alarm
OUT5	Comp
OUT6	Solenoid valve

IN1	Comp. low-pressure
IN2	Comp. high-pressure
IN3	Air Blower. Fault

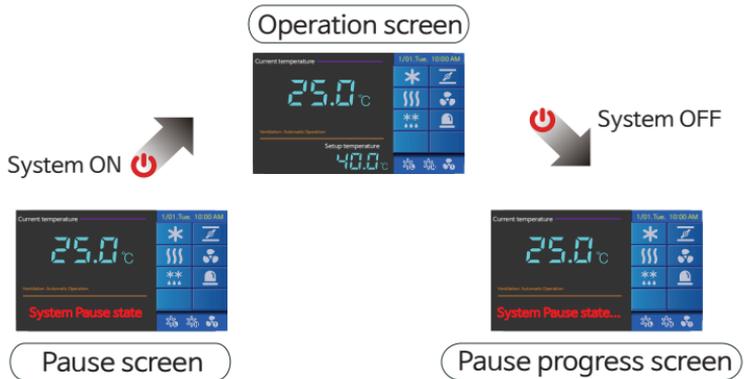


3 Product Screen Composition

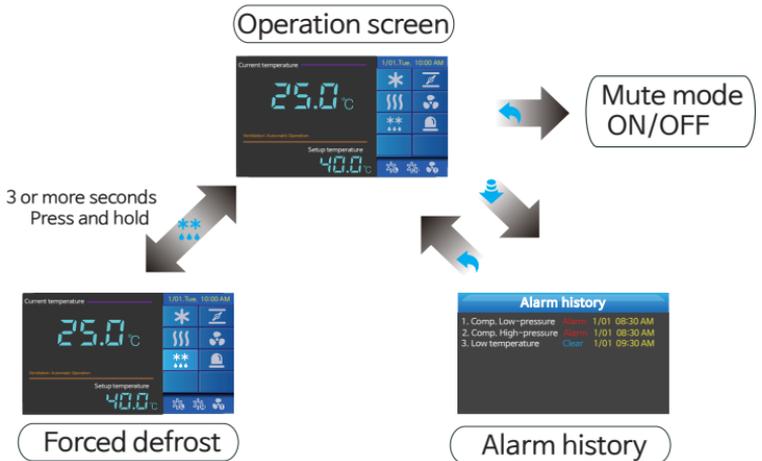


- 1** : System start or pause button
- 2** : Move to previous screen from the current menu / Mute function on the initial screen
- 3** : Move to the right when setup menu is selected / Forced defrost function
- 4** : Menu shift and setting value change / Equipment output inspection function on the initial 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
- 8** : Heater output icon
- 9** : Solenoid valve output icon
- 10** : Air blower output icon
- 11** : Defrost output icon
- 12** : Alarm output icon
- 13** : Comp. low-pressure detection icon
- 14** : Comp. high-pressure detection icon
- 15** : Air Blower. Fault Icon
- 16** : RS485 Communication terminal
- 17** : Proprietary communication terminal
- 18** : Current time display

■ System status



■ Force defros/Alarm history/Mute mode



⚙ Alarm history reset when pressed and hold for 3 seconds or more)

※ 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°C	-55.0 ~ 99.9°C	By setting the reference temperature for operation, operation will be turned OFF when the reference temperature is reached during operation
Cooling deviation	1.0°C	0.1 ~ 20.0°C	Set the ON/OFF operation range for cooling operation
Temperature compensation	0.0°C	-10.0 ~ 10.0°C	The function to calibrate the current temperature to match the actual temperature.
Overcooling prevention	Unused	Unused ~ 20.0°C	The function to prevent damage caused by overcooling

■ 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
Low-pressure detection time	5 Secs	0 ~ 600 Secs	Low-pressure alarm occurs when the signal is continuously detected for a set time
Low-pressure detection method	NC	NC / NO	Input Contact Type: Choose between Normal Close or Normal Open
Number of low-pressure detection	3 times	0 ~ 250 times	Low Pressure Instability Alarm Activates When Signal is Detected for the Set Number of Times
High-pressure detection time	5 Secs	0 ~ 600 Secs	High Pressure Alarm Activates if Signal is Continuously Detected for the Set Duration
High-pressure detection method	NC	NC / NO	Input Contact Method: Choose between Normally Closed or Normally Open
Hydraulic sensing time	5 Secs	0 ~ 600 Secs	Fan Malfunction Alarm Activates if Signal is Continuously Detected for the Set Duration
Hydraulic sensing method	NC	NC / NO	Input Contact Type: Choose between Normally Closed or Normally Open

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

■ Defrost settings

List	Initial value	Range	Function
Defrost method	General	General/Ventilation/Heating/Integrated	Sets the defrosting method.
Defrost pause time	4 hour	0 ~ 250 hour	When the freezer has operated for the set amount of time, defrosting will occur.
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°C	-55.0 ~ 99.9°C	If the current temperature is higher than the set temperature, an alarm will be triggered.
Low-temperature alarm	-55.0°C	-55.0 ~ 99.9°C	If the current temperature is lower than the set temperature, an alarm will be triggered.
Temperature Alarm Deviation	1.0°C	0.1 ~ 10.0°C	Set the deviation required for temperature alarm activation /deactivation.
Equipment operation time	-	-	Menu to check the accumulated operating time of the equipment

■ Other settings

List	Initial value	Range	Function
Communication code	No. 1	No. 1 ~ 99	When using RS485 communication, assign a station number from 1 to 99
Communication speed	96-Bps	12- ~ 192- bps	When using RS485 communication, set the communication speed
Blackout restoration	0 Secs	0 ~ 180 Secs	After a power outage and reboot, normal operation will proceed after the set time.
Time settings	-		Set 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.
Telecommunication Meta Integration	Unused	Not Used / Current / Voltage / Integrated	Set the integration status of the Telecommunication meta.
Setting value reset	Unused	Unused/used	A feature to reset all settings to their factory default values.

5 Alarm content list

■ Alarm content

Occurrence List (Alarm occurrence)	Occurrence Cause and Measures
Comp. low-pressure	When the system detected DI's Comp. 1 low pressure (INT 1)
Comp. high-pressure	When the system detected DI's Comp. 1 high pressure (INT 2)
Air Blower. Fault	When a blower malfunction in the DI system is detected (INT 3).
Low-pressure instability	When comp. low-pressure of DI is detected more than the set numbers
Temperature sensor (open/short)	When Disconnection or short in the sensor
High/low temperature	When the indoor temp. is higher than the set value of the temp. alarm

■ Controller measures upon alarm

1) Comp. low-pressure

- The comp output turns OFF, and the solenoid valve output becomes ON (other operations remain normal).
- Even during pump down, the comp output is turned OFF.

2) Comp. high-pressure

- Turn off all equipment in operation.

3) Air Blower. Fault

- Turn off all equipment in operation.

4) Low-pressure instability

- Turn off all output of equipment in progress.
- Normal operation only when the operation button is executed by user. (Manual return)

5) Sensor wiring error

- Turn off all output in progress.
- The sensor must be handled by user for normal operation. (Manual return)

6) 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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Date of Issue: 2021.06.18, Manual Version: V2.0