



DATA SHEET

NXT300 SERIES TOUCH SCREEN ROOM THERMOSTAT

Product Description

The **NXT300 Series** of Touch Screen LCD Room Thermostats are designed to control FCU fans and valves in air conditioner applications by comparing the room temperature with the setting temperature with the objective of providing comfort and saving energy.

The **NXT300 Series** are micro-processor based thermostats with LCD display, factory programmed and field configurable.

Available in multi choice of colors including White(WH), Black(BL) and Gold(GL). These thermostats can also be made available in any RAL color of your choice subject to minimum order quantity. Please contact us for further information.

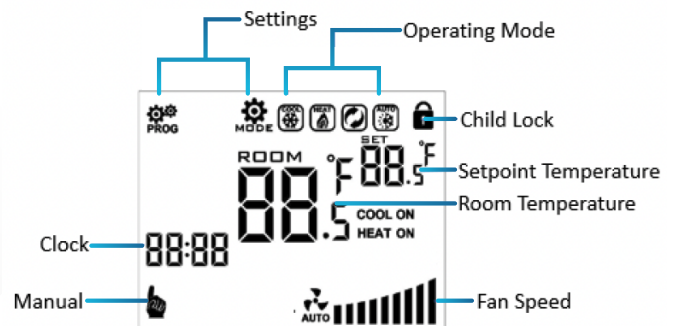
Key Features

- Modern and aesthetic design
- Scratch resistant acrylic lenses
- Simple touch button operation
- Large screen backlit display makes it easy to read even in low light
- Precise comfort control keeps temperature within 0.5°C of the set level
- Option to select external sensor
- Restore the last setting after power cycle
- Optional models -Modbus RTU, keycard function, external sensor and door contact
- Conforming to BS 3 x 3 inch back box size

Technical Information

Sensor	NTC 10K ± 1%
Temperature Range	5 - 35°C
Timing error	<1%
Current Load	3A
Shell Material	PC (Fire proof)
Dimension	86 X 86 X 50mm
Installation Box	86 * 86mm or European 60mm
Ambient Temperature & Humidity	0 ~ 45°C, 5 ~ 95% RH (Non condensing)
Storage Temperature	-10° ~ 60°C
Accuracy	±0.5°C
Power Consumption	<1.5W
Power Supply	110 ~ 240V, 50 ~ 60Hz 24V AC, 50 ~ 60Hz (depends on model)

Home Screen Display



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For further information



















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Operation

Icon	Description
	Increase key: short press to adjust data, long press to check external sensor temperature (When the sensor type is N3 in the advanced option)
	Mode switching key: short press to switch between manual mode and program mode, long press to set special function parameters
	Decrease key short press to adjust data, long press to lock/unlock keys
	Fan speed selection key: short press to set fan speed (confirm key when setting parameters), long press to enter sleep function setting
	Power key

Operation	Description
Fan Speed	Power on state ,Press“  ”to choose fan speed ; High  ; Mid  ; Low  ; Auto 
Working Mode	Power on state, long press“  ”3-5S, short press  to choose  , next press  to choose mode:     “  ” is mean cooling mode,“  ”is mean heating mode,“  ”is mean ventilation mode ; “  ” is mean auto mode
Cooling Mode or Heating mode	When cooling mode(/ heating mode), indoor temperature more (lower) 1°C than setpoint temperature, it's open the valve; after equal, closed valve, but fan is still continued to Low Speed mode. In Ventilation mode fan is not control by temperature as default If fan the controlled by temperature, then valve and fan will be closed.
Locked Function	Long press  to lock/unlock keys
Alarm	E1 : inner sensor alarm E2 : external sensor alarm
	The energy saving mode can be entered through the door card. When the door card is pulled out, the icon of the room card flashes. 1. Cooling mode, the temperature is automatically set to 26°C (you can set the cooling temperature after the door card is pulled out through the advanced option). The fan runs at low speed; 2. Heating mode, the temperature is automatically set to 18°C (the heating temperature can be set after the advanced option door card is pulled out), and the fan runs at low speed;

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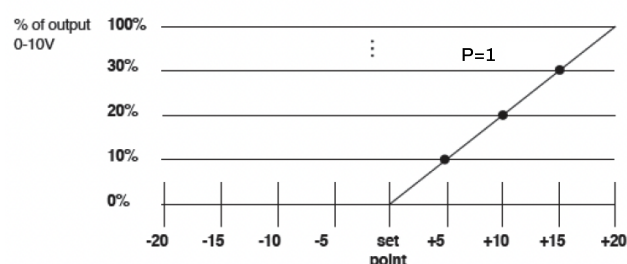
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Definition of P Valve

The proportional band is the amount of change required by the ambient temperature for the output to go from 0 to 100%. It can be adjusted from 1~10. Factory default is 2. The P value is bigger, the change of valve output will be bigger; The P value is smaller, the change of valve output will be smaller. For example, when P=2, the temperature difference between ambient temperature and set point is 5 C the valve to open about 10% when P=4, the temperature difference between ambient temperature and set point is 5C, the valve will open at 20%.

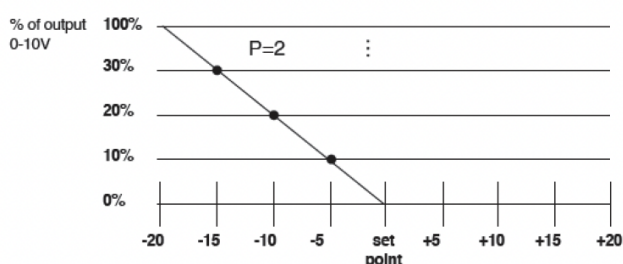
Cool Mode (P-band-1)

When the ambient temperature is above the set point the output is between 0~100%.



Heat Mode (P-band-2)

When the ambient temperature is below the set point the output is between 0~100%.



Modbus Protocol

This protocol takes standard Modbus as a reference, mainly for use for communication between thermostat and computer (PC). This protocol doesn't describe Modbus. For information about Modbus, please refer to the relevant standard documents.

Communication Setting

No	Parameter	Protocol provision
1	Operating mode	RS-485, master-slave; thermostat is the slave
2	Physical interface	A(+), B(-) two wire system
3	Baud rate	9600 bps (standard)
4	Byte Format	9 format (8 data bits+1 stop bit)
5	Modbus	RTU
6	Transmission mode	RTU Format (Please refer to the standard Modbus)
7	Thermostat address	1-255; (0 is broadcast address)
8	Command code	03, 06 and 16 (03 -read thermostat , 06-set thermostat, 16 set thermostat for several bytes)
9	CRC check code	CRC-16(Please refer to standard Modbus)
10	CRC Verification code	CRC-16(Please refer to standard Modbus)

Definition of I Valve

This feature allows you to set the integral action time for the integral to run from 0 to 100%. The value required depends on the reaction time

of the control loop. If the time is chosen too short, the control loop will become unstable and oscillate. If the time is chosen too long, the control

loop will become sluggish, It can be adjusted from 1S -60S.

Factory Default is 40S

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Set up for NXT300

1. Read the thermostat frame format

Command frame (given out by PC controller) read the thermostat state;

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Thermostat Address	03	Read the register high starting address byte	Read the register low starting address byte	Read the high byte register number	Read the low byte register number	CRC HIGH	CRC LOW

Response frame (Given out by thermostat)

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5				
Thermostat Address	03	Returns data and byte numbers	Returns the first high byte register data	Returns the first low byte register data	Returns the N high byte register data	Returns the N low byte register data	CRC HIGH	CRC LOW

2. Set the thermostat frame format

Command frame 1 (given out by PC controller)

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Thermostat Address	06	Set the register high starting address byte	Set the register low starting address byte	Set high value	Set low value	CRC HIGH	CRC LOW

Response frame (Given out by thermostat)

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Thermostat Address	06	Set the register high starting address byte	Set the register low starting address byte	Set high value(Writable)/Return state(read only)	Set low value(Writable)/Return state(read only)	CRC HIGH	CRC LOW

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3.Modbus Register table

Byte	Modbus Value	Remark	Specifications	Corresponding Register Address
Byte 5~6	50-350	(5.0~35.0)	Corresponding mode, cooling setting temperature, heating setting temperature, ventilation (Example; 245 = 24.5)	10030
Byte 5	00	00 cooling 01 heating 10 ventilation	Mode set high byte: usually be 0	10031
Byte 6	00-10		Mode set low byte:	
Byte 5~6	0~550	(0.0~55.0)	Thermostat read temperature low byte from sensor(read only)	10032
Byte 5	00-59	00-59	High byte: Second value, the data is HEX code	10033
Byte 6	00-59	00-59	Low byte: Minute value, the data is HEX code	
Byte 5	00-23	00-23	High byte: Hour value, the data is HEX code	10034
Byte 6	00-07	00-07	Low byte: Week value, the data is HEX code	
Byte 5	00		Compensation temperature high byte:0	10035
Byte 6	F7-09	9-9(0-36)	Compensation temperature low byte:-	
Byte 5	00	00 Auto 01 low 10 medium 11 high	Fan speed set high byte: usually be 0	10036
Byte 6	00-11		Fan speed set low byte:	
Byte 5	00	0 turn off thermostat; 1 turn on thermostat	On-Off switch mark high byte:0	10037
Byte 6	00-01		On-Off switch mark low byte:	
Byte 5	00	0 unlock thermostat ; 1 lock thermostat	Lock mark high byte:0	10038
Byte 6	00-01		Lock mark low byte:	
Byte 5	00	00 half 01 Full lock 02 Cancel the lock	Full lock and half lock mark high byte:0	10039
Byte 6	00-01		Full lock and half lock mark low byte: 00 half lock(you can turn on/off the power and adjust the temperature); 01 full lock(lock thermostat, all keys be locked) 02: cancel the lock	
Byte 5	00		Upper limiting value high byte:0	10040
Byte 6	16-50	16-50	Upper limiting value low byte:16-50	
Byte 5	00		Lower limiting value high byte:0	10041
Byte 6	5-15	5-15	Lower limiting value low byte:5-15	
Byte 5	00-01	0 sensor is normal 1 sensor is fault	High byte: sensor state mark(read only):0 sensor is normal 1 sensor is fault	10042
Byte 6	00-01	0 load off 1 load on	Low byte: load state mark(read only):0 load off 1 load on	

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3. Modbus Register table

Byte	Modbus Value	Remark	Specifications	Corresponding Register Address
Byte 5	00	00:valve off, fan off	Fan energy saving control high byte:0	10043
Byte 6	00-01	01:valve off, fan always on	Fan energy saving control low byte: 00-01 00:valve off, fan off 01:valve off, fan always on	
Byte 5	00		Key Card Type high byte:0	10044
Byte 6	00-01	00: Occupied when contact open 01: Occupied when contact close	Key Card Type low byte: 00-01 00:S1 connect S2 means put-out card status; disconnection means pull-in card status 01:S1 connect S2 means pull-in card status; disconnection means put-out card status	
Byte 5	00		Key Card Status high byte:0	10045
Byte 6	00-01	00:Unoccupied 01:Occupied	Key Card Status low byte: 00-01 00:Unoccupied 01:Occupied	
Byte 5	00		After key Card Pull Out To Cool Temperature high byte:0	10046
Byte 6	22-32	22-32	After key Card Pull Out To Cool Temperature low byte: 22-32	
Byte 5	00		After Key Card Pull Out To Heat Temperature high byte:0	10047
Byte 6	10-21	10-21	After Key Card Pull Out To Heat Temperature low byte: 10-21	

4. Note

In Modbus Master (Client), the value of collected temperature should be divided by 10.

For example: When the collected temperature is 25.5°C, the value sent from the thermostat to the controller will be 255.

Similarly, the value of the set point temperature should be multiple by 10 before write value on thermostat

For example: When the set temperature is 25.5°C, the value sent from the controller to the thermostat should be 255.

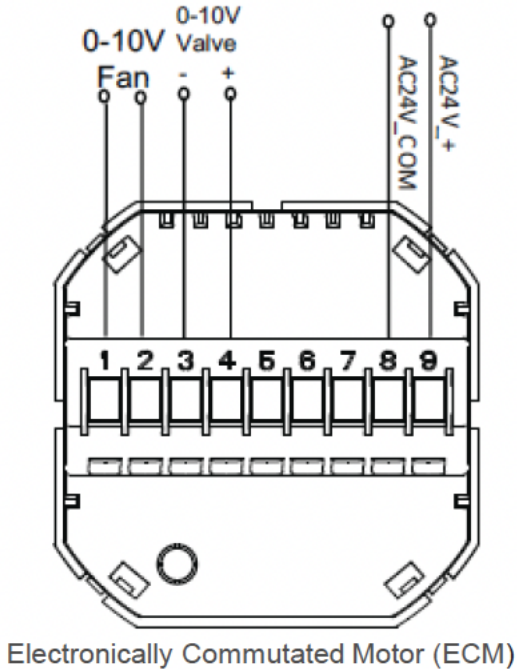
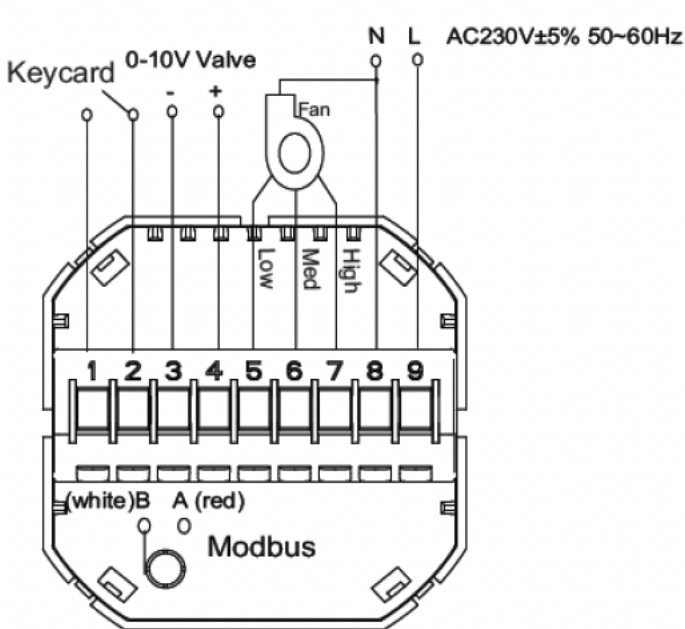
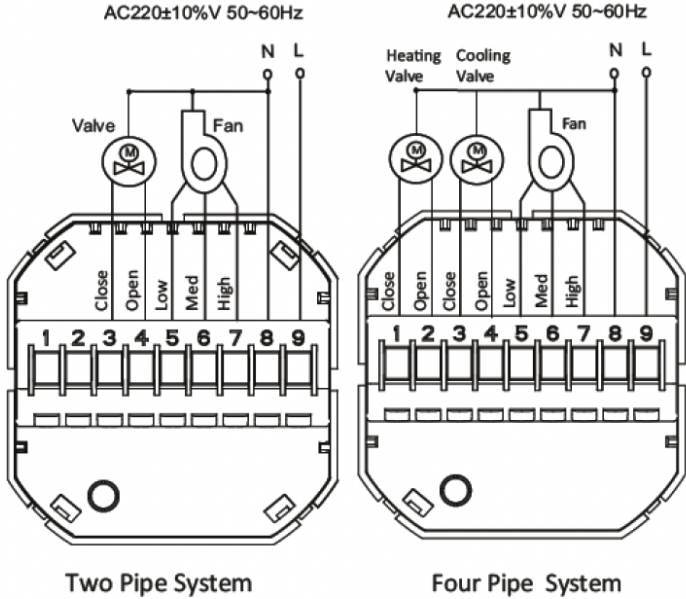
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Wiring diagram



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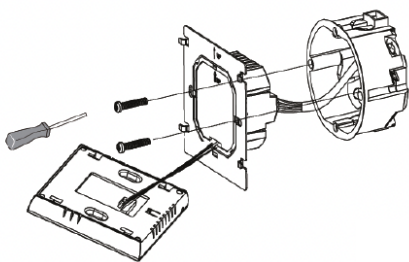
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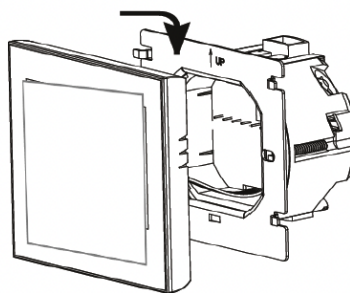
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Installation detail

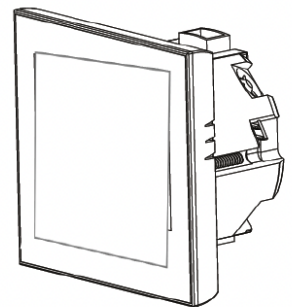
1. Fix the wall plate into the wall box by a screw driver



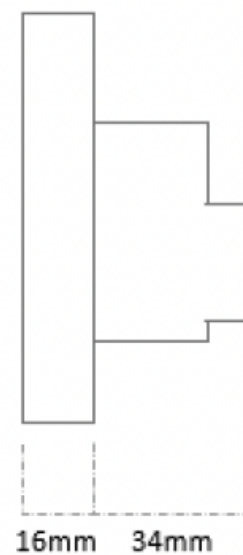
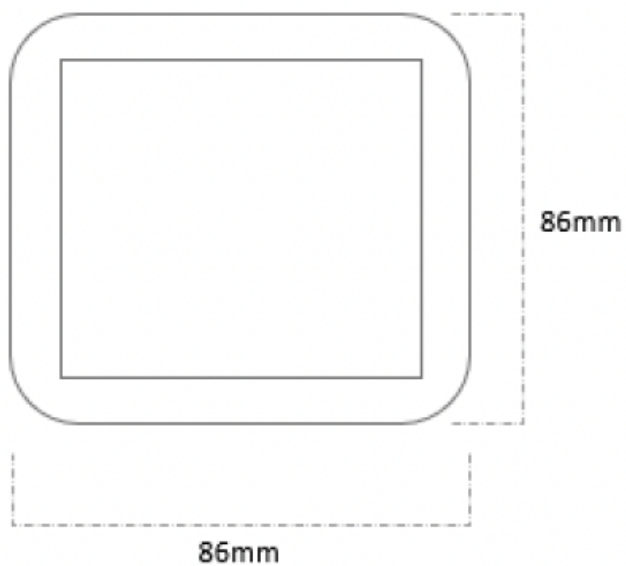
2. Connect the LCD Board onto the wall plate



3. Finished



Dimensions



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Warning

Must only be installed by a professional technician. Installation must be according to the installation drawing and instructions must be followed.

Risk of Electrical Shock: Disconnect power supply before making the electrical connection. Contact with components carrying high voltage can cause electrical shock and may result in severe personal injury or loss of life.

Product Variant

Model/ Series	NXT300
Shape	Square
Screen	LCD, Touch screen
No. Of Pipes	2 pipe, 4-pipe
Backlight Color	White, Blue
Communication	Modbus, Wi-Fi
Value Control	On/Off, 0-10 VDC
Fan Speed	3-Speed / ECM
Operations Voltage	110-240 VAC
Energy Saving Mode	Optional
Time Clock	Optional: Available (available only on Modbus RTU Model)
Schedules	Optional: Weekly programmable (available only on Modbus RTU Model)
Color	Black, White, Gold, Silver, Pink, Brushed, Stainless Steel
Special Function	Amazon Echo, Google Home, (available on WIFI Model)

Colors can also be customized to any RAL Color subject to quantity

Ordering Code

A1: Two pipe; Control Fan Coil Unit & Two wired Motorized valve. (when room temperature reaches the set point, both will turn off)

A2: Two pipe; Control Fan Coil Unit & Two wired Motorized valve.(when room temperature reaches the set point, valve will turn off but fan will turn to low speed)

B: Two pipe; Control on/off Motorized Damper

C: Two Pipe; Control Fan Coil Unit & Three wired Motorized valve

M: Two pipe; Control 0-10V Motorized Valve

F: Four pipe; Control Fan Coil Unit and Two wired Heat and Cool motorized valve

Y: Two pipe; 0-10V for Fan Speed (ECM) and Motorized Valve

T: Clock

L: Backlight

P: Weekly Programmable

N: RS485/MODBUS RTU communication

K: Keycard

E: External sensor

For example: **NXT300 A1 B M L K...** (Please add choice of color)

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