

Serial No	Model	Type	Page
1	iCN-733N	32-unit AC Linked Temperature Controller	P.1
2	iQ-500LC	Central Master Controller (1:32)	P.5
3	iQ-500SN	Central Slave Controller (1:32)	P.9

iCN-733N 1-to-32 Operation and User Manual

Features

1. A single panel supports centralized control of up to 32 fan drivers (control boxes), with individual or grouped synchronous operation.
2. Key lock function prevents unauthorized operation.
3. Power recovery delay sequence (anti-overload startup) : If the system was powered on before an outage, it will restart automatically in address order with a delay upon power restoration.

Parameters

1. Parameter Table and Default Values

Basic Function Options				
	Parameter	Code	Factory Setting	Adjustable Range
1	Max. Cooling Temp. Upper Limit	cH	35.0°C	Min. Cooling Temp. Lower Limit ~35.0°C
2	Min. Cooling Temp. Lower Limit	cL	15.0°C	15.0°C ~ Max. Cooling Temp. Upper Limit
3	Max. Heating Temp. Upper Limit	hH	35.0°C	Min. Heating Temp. Lower Limit ~35.0°C
4	Min. Heating Temp. Lower Limit	hL	15.0°C	15.0°C ~ Max. Heating Temp. Upper Limit
5	Valve (3-Way Valve/Compressor) Delay Protection Time	Pd	0 (No Delay)	0(No Delay) 、 1(1 min) 、 2(3 min)
6	Temperature Compensation Setting	tc	0.0°C	-5.0~5.0°C
7	Panel Backlight	bL	30 (30 sec)	30 (30 sec) 、 -- (Always On)
8	Panel Key Tone	bu	on (Enabled)	on (Enabled) 、 oF (Disabled) Note : This function is invalid for iCN-733N

Advanced Function Options				
	Parameter	Code	Factory Setting	Adjustable Range
9	Power Recovery Mode	PP	2 (Power Off)	0(Memory Mode) 、 1(Auto Restart) 、 2(Remain Off)
10	Coil Configuration	Pi	1 (2-Pipe/DX/Boiler)	0(4-Pipe/Electric Heating) 、 1(2-Pipe/DX/Boiler)
11	Intermittent Air Supply Function	Pu	0(Intermittent Air Supply - Off)	0(Disable Intermittent Air Supply) 、 1(Enable Intermittent Air Supply)
12	Overload Protection Delayed Startup	td	0	0 、 1 、 2 、 3 、 4

Functional Description

1 Operation / Key Functions

- 1.1 Power Key : Turns fan drivers (control boxes) on/off in groups or sequentially.
- 1.2 Mode Key Mode :
 - 1.2.1 When powered on :
Press once to cycle through operation modes : Cooling, Heating, Ventilation.
 - 1.2.2 When powered off :
Press and hold for 3 seconds to enter basic function settings (see Section 2.10).
- 1.3 Fan Speed Key Fan :
 - 1.3.1 When powered on : Press once to cycle through fan speeds :
3-speed options : Auto, Low, Medium, High.
 - 1.3.2 In Ventilation mode : Auto fan speed is not available.

1.4 Temperature Adjustment Keys (▲/▼)

- 1.4.1 When powered on :
Press once to adjust set temperature by $\pm 0.5^{\circ}\text{C}$; hold to adjust rapidly.
- 1.4.2 Temperature setting range :
Cooling mode : Adjustable between minimum cooling limit and maximum cooling limit (factory preset).
Heating mode : Adjustable between minimum heating limit and maximum heating limit (factory preset).
"SET" indicator appears when adjusting.
- 1.4.3 Auto-save :
Settings are saved after 5 seconds of inactivity, then display returns to room temperature.
- 1.4.4 Ventilation mode : Temperature adjustment not available.
- 1.4.5 Scheduled on/off (0~24h) :
Press ▲/▼ simultaneously in individual control mode to set.
- 1.4.6 Menu navigation: Use ▲/▼ to scroll through options or adjust values in settings.
- 1.4.7 Key lock (Lock/Unlock):
Hold ▲/▼ for 5 seconds when powered off.
Locked state restrictions: Only power on/off, scheduled on/off (0~24h), and fan position selection are available.

1.5 ID+, ID- Fan Position Selection Keys :

- 1.5.1 Fan Selection & Status Display Cycles through fan numbers (01-32).
The panel automatically updates to display :
Current room temperature if the selected fan is connected and operational.
Error code if the fan connection is abnormal.
- 1.5.2 Connection Status Indicator
During connection establishment, the connection icon () will blink.

1.6 Fan Quantity Setting :

- 1.6.1 Configuration Process : After power-on, the panel displays P1xx :
Press ▲/▼ to set the starting ID (range: 01-32, default: 1).
After 3 seconds, the panel displays P2xx :
Press ▲/▼ to set the ending ID (range: 01-32, default: 15).

1.7 Group Synchronization Control :

- 1.7.1 Activation
Press and hold both ID+ and ID- selection keys simultaneously for 4 seconds to activate group synchronization.
Current settings (of the selected fan unit) will be applied to all synchronized fan drivers (control boxes).
- 1.7.2 Operation Mode
Panel displays "AL" and shows synchronized settings (temperature, fan speed, mode).
All operations in this mode will simultaneously control all connected fan drivers.
- 1.7.3 Timer Function Cancellation
Any pre-set individual timer functions (scheduled on/off) will be automatically canceled upon entering group mode.
- 1.7.4 Function Restrictions
The 0-24 hour scheduled on/off function is not available in group synchronization mode.
- 1.7.5 Exit Procedure
Press either ID+ or ID- to exit group mode.
System will return to individual control mode, displaying the previously selected fan number.

2 Functional Specifications

- 2.1 Temperature Display
Range : 0.0°C to 50.0°C , Accuracy : $\pm 1^\circ\text{C}$, Resolution : 0.5°C
- 2.2 Detection Range : -5.0°C~55.0°C
- 2.3 Temperature Setting Range :
- 2.3.1 Cooling Mode : Adjustable between minimum cooling lockout temp and maximum cooling lockout temp.
- 2.3.2 Heating Mode : Adjustable between minimum heating lockout temp and maximum heating lockout temp.
- 2.4 Default Settings
Mode : Cooling Fan , Speed : Auto Set , Temperature : 26°C
- 2.5 Cooling Mode Operation
- 2.5.1 Valve Contact Logic :
- 2.5.1.1 Opens when room temp $\geq$ (Set Temp+0.5°C)
- 2.5.1.2 Closes when room temp $\leq$ (Set Temp - 0.5°C)
- 2.5.2 Configurable Fan Speeds : Auto, High, Medium, Low
- 2.5.2.1 Auto Speed Logic (Cooling Mode) :

Three-Stage Auto Fan Logic for Cooling Mode.

$\Delta = (\text{Room Temp} - \text{Set Temp})$	Fan Speed
$\Delta \geq 3.0$	High
$2.5 \geq \Delta \geq 2.0$	Maintain Current Speed
$\Delta = 1.5$	Medium
$1.0 \geq \Delta \geq 0.5$	Maintain Current Speed
$\Delta \leq 0$	Low

- 2.5.3 Main contact ON, heating contact OFF.
- 2.5.4 Intermittent fan OFF (Pu=0) : Fan runs continuously regardless of valve contact status.
- 2.5.5 Intermittent fan ON (Pu=1) : Fan runs when valve contact is open Fan stops when valve contact is closed.
- 2.6 Heating Mode :
- 2.6.1 2-Pipe System (Boiler/DX) Valve Contact Operation (Coil Setting Pi=1) :
- 2.6.1.1 Valve contact opens when set temp $\geq$ (room temp + 0.5°C)
- 2.6.1.2 Valve contact closes when set temp $\leq$ (room temp - 0.5°C)
- 2.6.1.3 Heating contact ON, main contact ON
- 2.6.2 4-Pipe System (Electric Heating) Heating Contact Operation (Coil Setting Pi=0) :
- 2.6.2.1 Heating contact opens when set temp $\geq$ (room temp + 0.5°C)
- 2.6.2.2 Heating contact closes when set temp $\leq$ (room temp - 0.5°C)
- 2.6.2.3 Valve contact OFF, main contact ON
- 2.6.2.4 Heating fan delay : Heating contact delays 30 sec before closing after shutdown.

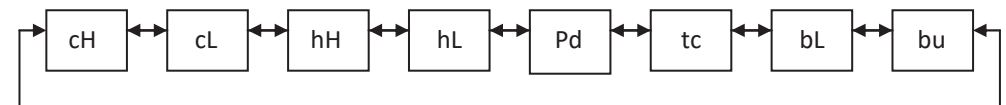
2.6.3 Adjustable Fan Speed : Auto, High, Medium, Low

2.6.3.1 Auto Speed :

Three-Stage Auto Fan Logic for Heating Mode.

$\Delta = (\text{Room Temp} - \text{Set Temp})$	Fan Speed
$\Delta \geq 3.0$	High
$2.5 \geq \Delta \geq 2.0$	Maintain Current Speed
$\Delta = 1.5$	Medium
$1.0 \geq \Delta \geq 0.5$	Maintain Current Speed
$\Delta \leq 0$	Low

- 2.6.4 Intermittent Airflow Function Off (Pu=0) : The fan operates continuously regardless of valve/electric heater contact status.
- 2.6.5 Intermittent Airflow Function On (Pu=1) : The fan operates continuously when the valve/electric heater contact is open; airflow stops when closed.
- 2.7 Valve (3-Way Valve/Compressor) Delay Protection Time :
- 2.7.1 No delay protection for valve contact (Pd=0).
- 2.7.2 1-minute delay protection for valve contact (Pd=1).
- 2.7.3 3-minute delay protection for valve contact (Pd=2).
- 2.8 Power Recovery Mode Setting :
- 2.8.1 Power-off recovery (PP=2) : Unit remains off after power restoration.
- 2.8.2 Power-on recovery (PP=1) : Unit turns on automatically with previous mode, fan speed, and set temperature.
- 2.8.3 Memory mode (PP=0) : Resumes previous ON/OFF state, mode, fan speed, and set temperature.
- 2.9 Anti-Overload Delayed Start :
- Configuration mechanism : Please contact the distributor for settings.
- 2.9.1 Automatic sequential delay recovery function :
- If the unit was ON before a power outage, it will restart automatically in sequence (based on address coding) with a time delay after power is restored.
- 2.10 Function Options :
- 2.10.1 Basic Function Option Settings :
- (1) While the controller is in OFF state, press and hold the Mode button for 3 seconds to enter basic function options.
- (2) After entering, the LCD displays cH. Use $\blacktriangle$ or $\blacktriangledown$ to cycle through the following main options : cH, cL, hH, hL, Pd, tc, bL, bu



Basic Function Option Codes Reference	Main Menu	Sub-menu
Cooling Mode Max Temperature Limit	cH	15.0~35.0°C
Cooling Mode Min Temperature Limit	cL	15.0~35.0°C
Heating Mode Max Temperature Limit	hH	15.0~35.0°C
Heating Mode Min Temperature Limit	hL	15.0~35.0°C
Valve (3-Way/Compressor) Delay Protection Time	Pd	0,1,2
Temperature Calibration	tc	-5.0~5.0°C
Panel Backlight	bL	30, --
Keypress Tone	bu	on,oF

- (3) When the LCD displays a main option (e.g.,cH), press the Mode button to enter its sub-options.
- (4) After entering a sub-option, the LCD shows the current parameter value. Adjust it using ▲ or ▼, then press Mode to confirm and return to the main options.
- (5) During sub-option adjustment :
If Mode is held for >3 seconds, or no keys are pressed for 20 seconds, the modified settings are saved to EEPROM (non-volatile memory) and the system exits the adjustment mode. The LCD then displays room temperature.
- (6) In group sync control mode, parameter changes will be applied to all connected fan drivers (control units) simultaneously.
- 2.10.2 Advanced Function Option Settings : Contact the distributor for configuration.

3 Troubleshooting

(The system will automatically shut down when the following faults occur.)

- 3.1 E2 Error : Temperature Sensor Malfunction.
- 3.1.1 Description : "E2" indicates a temperature sensor abnormality.
Resolution : The error code remains locked on the LCD panel until repaired.
After fixing the wiring, press the Power button to reset the system.
- 3.2 E3 Error : Communication Failure.
- 3.2.1 Description : "E3" indicates no communication signal or communication error.
Resolution : The error code stays displayed on the LCD panel.
Once the wiring is repaired, the system will automatically reset.

4 Important Safety Precautions

- 4.1 Electrical Safety
Ensure the power supply is turned off before installation to prevent electric shock.
- 4.2 Wiring Compliance
Follow the wiring diagram precisely to avoid incorrect connections and potential hazards.
- 4.3 Environmental Conditions
Do not install the controller in humid locations to prevent malfunction.
- 4.4 Power-On Check
Verify correct wiring and input voltage before powering on the system.
- 4.5 Warranty Exclusion
Damage caused by improper installation is not covered under warranty.
- 4.6 Communication Cable Specifications
Use UL2464-compliant shielded cable :
24AWG or 26AWG, 3-core with braided shielding.

5 Specifications

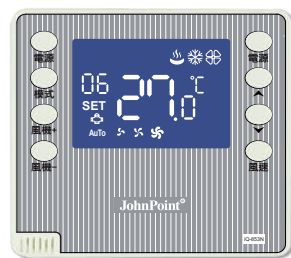
- 5.1 Dimensions
- 5.1.1 Panel Dimensions : 110mm (L) × 120mm (W) × 17mm (H)
- 5.1.2 Driver Box Dimensions : 127mm (L) × 68mm (W) × 49mm (H)
- 5.2 Environmental Limits
- 5.2.1 Operating Conditions : 0°C to 50°C, <90% RH (non-condensing)
- 5.2.2 Storage Conditions : -10°C to 60°C, <90% RH (non-condensing)
- 5.3 Input/Output
- 5.3.1 Power Supply : AC 100–240V, 50/60Hz (single-phase)
- 5.3.2 Temperature Sensor Input : ×1
- 5.3.3 Key Inputs : ×7
- 5.3.4 Output Contacts :
- 5.3.4.1 Valve Contact : 1A ×1
- 5.3.4.2 Fan Motor Contact : 3A ×3
- 5.3.4.3 Host Interlock Contact : 1A ×1 (non-energized)
- 5.3.4.4 Heater Contact (Optional) : 1A ×1 (Not included in standard configuration)
- 5.3.4.5 Fuse Rating : 5A / 250VAC
- 5.3.4.6 For Higher Loads : Use an external relay if contact capacity is insufficient.
- 5.3.5 Display Output : LCD with backlight
- 5.3.6 Maximum Communication Distance : 100m

6 Wiring Refer to the iCN 3-Wire Communication Series Wiring Guide Manual for detailed instructions.

2. Panel Overview



iCN-733N



iCN-853

NEW

iQ-500LC Central Controller 1:32 Temperature Controller User Manual

Features

- (1) Single panel supports centralized control of up to 32 fan drivers with individual operation and group synchronization.
- (2) Key lock function prevents unauthorized operation.
- (3) Power-loss recovery with sequential delay restart: Units powered on before outage will restart sequentially by address code to prevent overload.

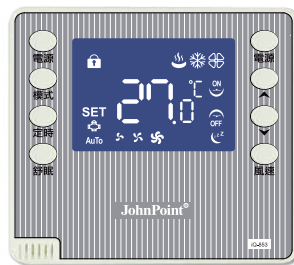
Parameter Table

1. Parameter Table and Default Values

Basic Function Options				
	Parameter	Code	Factory Setting	Adjustable Range
1	Max. Cooling Temp. Upper Limit	cH	35.0°C	Min. Cooling Temp. Lower Limit ~35.0°C
2	Min. Cooling Temp. Lower Limit	cL	15.0°C	15.0°C ~ Max. Cooling Temp. Upper Limit
3	Max. Heating Temp. Upper Limit	hH	35.0°C	Min. Heating Temp. Lower Limit ~35.0°C
4	Min. Heating Temp. Lower Limit	hL	15.0°C	15.0°C ~ Max. Heating Temp. Upper Limit
5	Valve (3-Way Valve/Compressor) Delay Protection Time	Pd	0 (No Delay)	0 (No Delay) 、 1(1 min) 、 2(3 min)
6	Temperature Compensation Setting	tc	0.0°C	-5.0~5.0°C
7	Panel Backlight	bL	30 (30 sec)	30 (30 sec) 、 -- (Always On)
8	Panel Key Tone	bu	on (Enabled)	on (Enabled) 、 oF (Disabled) Note : This function is invalid for iQ-500LC

Advanced Function Options				
	Parameter	Code	Factory Setting	Adjustable Range
9	Power Recovery Mode	PP	2 (Power Off)	0 (Memory Mode) 、 1 (Auto Restart) 、 2 (Remain Off)
10	Coil Configuration	Pi	1 (2-Pipe/DX/Boiler)	0 (4-Pipe/Electric Heating) 、 1 (2-Pipe/DX/Boiler)
11	Intermittent Air Supply Function	PU	0 (Intermittent Air Supply - Off)	0 (Disable Intermittent Air Supply) 、 1 (Enable Intermittent Air Supply)
12	Room Card Function	td	0	0 、 1 、 2 、 3 、 4

2. Panel Layout



iCN-853

Functional Description

1 Keypad Operations

1.1 Power Key  : Turns fan drivers (control boxes) on/off in groups or sequentially.

1.2 Mode Key **Mode** :

1.2.1 When powered on :
Press once to cycle through operation modes : Cooling, Heating, Ventilation.

1.2.2 While powered off, press and hold for 3 seconds to enter Basic Function Options (refer to section 2.10).

1.3 Fan Speed Key **Fan** :

1.3.1 When powered on, press to select fan speed :
Three-speed levels : Auto, Low, Medium, High.

1.3.2 Auto speed is unavailable in Ventilation mode.

1.4 Temperature Adjustment Keys ( / ) :

1.4.1 When powered on, press once to adjust set temperature +/-0.5°C. Press and hold to accelerate adjustment.

1.4.2 During temperature setting, "SET" indicator appears left of the value. Adjustable range :
Cooling : Adjustable between locked minimum and maximum cooling temperature limits.
Heating : Adjustable between locked minimum and maximum heating temperature limits.

1.4.3 The temperature setting is saved and the display returns to room temperature if no operation is performed within 5 seconds.

1.4.4 Temperature setting is unavailable in Ventilation mode.

1.4.5 In individual control mode, press both  and  temperature buttons simultaneously to configure 0-24 hour scheduled ON/OFF function.

1.4.6 In function options mode, select/adjust parameters or configuration values.

1.4.7 While powered off, press and hold both  and  temperature buttons for 5 seconds to enable / disable key lock (Lock). When locked, only power ON/OFF, 0-24 hour scheduling, and fan position selection can be controlled.

1.5 ID+, ID- Fan Position Selection Keys :

1.5.1 Cycles through the addresses of each fan unit (01-32). The panel automatically updates to display the corresponding room temperature. If the selected unit is operating normally, its local temperature is shown. If a communication error occurs, an error code is displayed.

1.5.2 The connecting icon  flashes while establishing communication with the selected unit.

1.6 Fan Unit Quantity Setting :

- 1.6.1 After power-on, when the panel displays "P1 xx", press the ▲ or ▼ key to set the starting ID of the fans for centralized control (setting range : 01-32, default : 1).
After 3 seconds, when the panel displays "P2 xx", press the ▲ or ▼ key to set the ending ID of the fans for centralized control (setting range : 01-32, default : 15).

1.7 Group Synchronization Control :

- 1.7.1 Press and hold both the ID+ and ID- fan position selection keys for 4 seconds to activate Group Synchronization Control. Upon activation, the settings of the currently selected fan unit will be applied to all target fan units. The configuration parameters are simultaneously sent to all fan drivers (control boxes) to achieve synchronized group control.
- 1.7.2 Once Group Synchronization Control is active, the panel displays "AL" and shows the group's set temperature, fan speed, and mode. In this state, any operation will send the same synchronized control command to all fan drivers (control boxes).
- 1.7.3 If any individual fan unit had a scheduled ON/OFF timer enabled prior to activating Group Synchronization Control, this function will be forcibly canceled upon activation.
- 1.7.4 The 0-24 hour scheduled ON/OFF function cannot be set during Group Synchronization Control.
- 1.7.5 During Group Synchronization Control, press the ID+ or ID- fan position selection key once to cancel group synchronization and return to individual control. The panel will revert to the fan unit number displayed before entering Group Synchronization Control.

2 Functional Description

- 2.1 Temperature Display Range : 0.0°C–50.0°C, Accuracy $\pm 1^\circ\text{C}$, Minimum Display Increment 0.5°C.
- 2.2 Detection Range : -5.0°C–55.0°C.
- 2.3 Temperature Setting Range :
- 2.3.1 Cooling : Adjustable from minimum cooling setpoint lower limit to maximum cooling setpoint upper limit.
- 2.3.2 Heating : Adjustable from minimum heating setpoint lower limit to maximum heating setpoint upper limit.
- 2.4 Default Mode : Cooling mode, Auto fan speed, Set temperature 26°C.
- 2.5 Cooling Mode :
- 2.5.1 Valve Contact Operation :
- 2.5.1.1 Valve contact opens when room temperature $\geq$ (Set temperature + 0.5°C).
- 2.5.1.2 Valve contact closes when room temperature $\leq$ (Set temperature – 0.5°C).
- 2.5.2 Configurable Fan Speeds : Auto, High, Medium, Low.
- 2.5.2.1 Auto Fan Speed :

Three-Stage Auto Fan Logic for Cooling Mode.

$\Delta = (\text{Room Temp} - \text{Set Temp})$	Fan Speed
$\Delta \geq 3.0$	High
$2.5 \geq \Delta \geq 2.0$	Maintain Current Speed
$\Delta = 1.5$	Medium
$1.0 \geq \Delta \geq 0.5$	Maintain Current Speed
$\Delta \leq 0$	Low

- 2.5.3 Unit Contact ON, Heater Contact OFF.

- 2.5.4 Intermittent Fan Function Disabled (Pu=0) : Fan runs continuously, regardless of valve contact status.

- 2.5.5 Intermittent Fan Function Enabled (Pu=1) : Fan runs when valve contact is open; stops when valve contact is closed.

2.6 Heating Mode :

- 2.6.1 2-Pipe System (Boiler/DX) - Valve Contact Operation (Coil Setting Pi=1) :

- 2.6.1.1 Valve contact opens when Set Temperature $\geq$ (Room Temperature + 0.5°C).

- 2.6.1.2 Valve contact closes when Set Temperature $\leq$ (Room Temperature - 0.5°C).

- 2.6.1.3 Heater Contact ON, Unit Contact ON.

- 2.6.2 4-Pipe System (Electric Heater) - Heater Contact Operation (Coil Setting Pi=0) :

- 2.6.2.1 Heater contact opens when Set Temperature $\geq$ (Room Temperature + 0.5°C).

- 2.6.2.2 Heater contact closes when Set Temperature $\leq$ (Room Temperature - 0.5°C).

- 2.6.2.3 Valve Contact OFF, Unit Contact ON.

- 2.6.2.4 Heater Off Delay : In electric heating mode, heater contact delays for 30 seconds after shutdown.

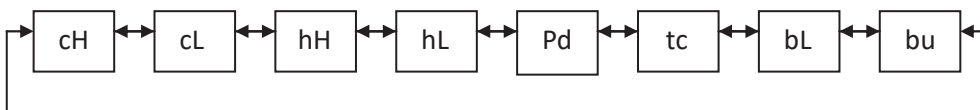
- 2.6.3 Configurable Fan Speeds : Auto, High, Medium, Low.

- 2.6.3.1 Auto Fan Speed :

Three-Stage Auto Fan Logic for Heating Mode.

$\Delta = (\text{Room Temp} - \text{Set Temp})$	Fan Speed
$\Delta \geq 3.0$	High
$2.5 \geq \Delta \geq 2.0$	Maintain Current Speed
$\Delta = 1.5$	Medium
$1.0 \geq \Delta \geq 0.5$	Maintain Current Speed
$\Delta \leq 0$	Low

- 2.6.4 Intermittent Air Supply Disabled (Pu=0) : Fan operates continuously, regardless of valve/heater contact status.
- 2.6.5 Intermittent Air Supply Enabled (Pu=1) : Fan operates when valve/heater contact is open; stops when contact is closed.
- 2.7 Valve (3-Way Valve/Compressor) Delay Protection Time :
- 2.7.1 No Delay Protection (Pd=0).
- 2.7.2 1-Minute Delay Protection (Pd=1).
- 2.7.3 3-Minute Delay Protection (Pd=2).
- 2.8 Power Recovery Mode :
- 2.8.1 Power Off (PP=2).
- 2.8.2 Power On (PP=1) : Unit restarts in previous mode, fan speed, and set temperature.
- 2.8.3 Memory (PP=0) : Resumes previous power state (ON/OFF), mode, fan speed, and set temperature.
- 2.9 Anti-Overload Startup Delay : Configurable setting. Please contact your distributor.
- 2.9.1 Features automatic sequential time-delay restoration after power failure. Units that were ON before the outage will restart automatically in sequence according to their address code.
- 2.10 Function Options :
- 2.10.1 Basic Function Settings :
- (1) While the controller is OFF, press and hold the Mode button for 3 seconds to enter basic function settings.
- (2) Use the ▲ or ▼ button to cycle through the main options : cH, cL, hH, hL, Pd, tc, bL, bu.



Basic Function Option Codes Reference	Main Menu	Sub-menu
Cooling Mode Max Temperature Limit	cH	15.0~35.0°C
Cooling Mode Min Temperature Limit	cL	15.0~35.0°C
Heating Mode Max Temperature Limit	hH	15.0~35.0°C
Heating Mode Min Temperature Limit	hL	15.0~35.0°C
Valve (3-Way/Compressor) Delay Protection Time	Pd	0,1,2
Temperature Calibration	tc	-5.0~5.0°C
Panel Backlight	bL	30, --
Keypress Tone	bu	on,oF

- (3) When the LCD displays a main option, press the Mode button to enter its sub-options.
- (4) After entering a sub-option, the LCD displays the current parameter value.
Press the ▲ or ▼ button to change the value, then press the Mode button to confirm and return to the main options. or ▼ button to change the value, then press the Mode button to confirm and return to the main options.
- (5) Saving & Exit : During sub-option adjustment, the new setting is saved to EEPROM (permanent memory) and the menu is exited, returning to room temperature display, if either :
* The Mode button is pressed and held for over 3 seconds.
* No button is pressed for 20 seconds.
- (6) When setting parameters in Group Sync Control mode, all fan drivers (control boxes) will be set synchronously.

2.10.2 Advanced Function Settings: Please contact your distributor.

3 Troubleshooting : (The controller will shut down automatically when the following faults occur)

- 3.1 Display Code E2 : Temperature sensor abnormality.
- 3.1.1 The E2 code will remain locked on the LCD panel.
After servicing the sensor, press the Power button to reset.
- 3.2 Display Code E3 : Communication not established / Communication error.
- 3.2.1 The E3 code will remain displayed on the LCD panel. After repairing the communication wiring, the system will reset automatically.

4 Precautions :

- 4.1 Ensure the power supply is OFF before installation to prevent electric shock.
- 4.2 Follow the wiring diagram during installation to prevent hazards caused by incorrect wiring.
- 4.3 Do not install the controller in damp locations to prevent malfunctions.
- 4.4 Verify all wiring and input power are correct before energizing.
- 4.5 Damages resulting from improper installation are not covered under warranty.
- 4.6 For communication cables, use 24AWG twisted-pair with aluminum foil/copper braid shielding or CAT5e cable.

5 Specifications :

5.1 Dimensions

5.1.1 Panel Dimensions : 110mm (L) x 120mm (W) x 17mm (H)

5.1.2 Driver Box Dimensions : 127mm (L) x 68mm (W) x 49mm (H)

5.2 Environmental Limits

5.2.1 Operating Environment : 0°C to 50°C, < 90% RH (Non-condensing)

5.2.2 Storage Environment : -10°C to 60°C, < 90% RH (Non-condensing)

5.3 Input / Output

5.3.1 Power Input : AC 100-240V, 50/60Hz (Single Phase)

5.3.2 Temperature Sensor Input x 1

5.3.3 Key Input x 7

5.3.4 Output Contacts :

5.3.4.1 Valve Contact 1A x 1

5.3.4.2 Fan Motor Contact 3A x 3

5.3.4.3 Host Interlock Contact 1A x 1 (Voltage-Free)

5.3.4.4 Heater Contact 1A x 1

5.3.4.5 Load Fuse : 5A / 250VAC

5.3.4.6 If contact rating is insufficient, add an external relay/contactactor.

5.3.5 Display Output : LCD with Backlight

5.3.6 Communication Distance : Max.1000m

6 Wiring : Please refer to the iQ-500 Network Control Series Wiring Guide.

iQ-500SN Centralized Sub-Master Controller (1-to-32) Operating Instructions

Features

1. A single panel supports control of up to 32 fan drivers (control boxes), with individual operation or group synchronization.
2. Key lock function prevents unauthorized operation.
3. Automatic sequential time-delay restoration after power failure. Units previously ON will restart automatically in sequence based on address codes.

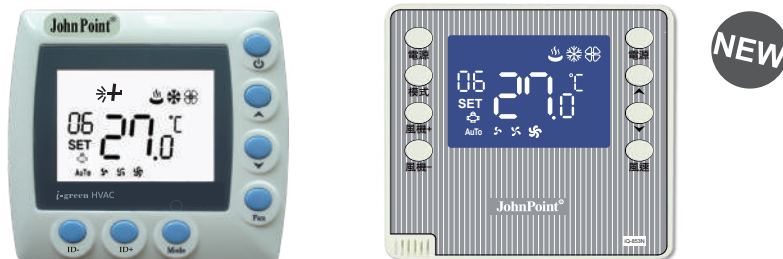
Parameter List

I. Parameter List and Default Values

Basic Function Options				
	Parameter	Code	Factory Setting	Adjustable Range
1	Max. Cooling Temp. Upper Limit	cH	35.0°C	Min. Cooling Temp. Lower Limit ~35.0°C
2	Min. Cooling Temp. Lower Limit	cL	15.0°C	15.0°C ~ Max. Cooling Temp. Upper Limit
3	Max. Heating Temp. Upper Limit	hH	35.0°C	Min. Heating Temp. Lower Limit ~35.0°C
4	Min. Heating Temp. Lower Limit	hL	15.0°C	15.0°C ~ Max. Heating Temp. Upper Limit
5	Valve (3-Way Valve/Compressor) Delay Protection Time	Pd	0 (No Delay)	0(No Delay) 、 1(1 min) 、 2(3 min)
6	Temperature Compensation Setting	tc	0.0°C	-5.0~5.0°C
7	Panel Backlight	bL	30 (30 sec)	30 (30 sec) 、 -- (Always On)
8	Panel Key Tone	bu	on (Enabled)	on (Enabled) 、 oF (Disabled) Note : This function is invalid for iQ-500SN

Advanced Function Options				
	Parameter	Code	Factory Setting	Adjustable Range
9	Power Recovery Mode	PP	2 (Power Off)	0(Memory Mode) 、 1(Auto Restart) 、 2(Remain Off)
10	Coil Configuration	Pi	1(2-Pipe/DX/Boiler)	0(4-Pipe/Electric Heating) 、 1(2-Pipe/DX/Boiler)
11	Intermittent Air Supply Function	Pu	0(Intermittent Air Supply - Off)	0(Disable Intermittent Air Supply) 、 1(Enable Intermittent Air Supply)
12	Room Card Function	td	0	0 、 1 、 2 、 3 、 4

2. Panel Layout



Functional Description

1. Operation / Key Description

- 1.1 Power Key  : Turns all fan drivers (control boxes) ON/OFF simultaneously or sequentially.

- 1.2 Mode Key **Mode** :

- 1.2.1 When unit is ON, press to select operation mode : Cooling, Heating, Fan Only.
- 1.2.2 When unit is OFF, press and hold for **3 seconds** to enter the Basic Function Settings (Refer to section 2.10).

- 1.3 Fan Key **Fan** :

- 1.3.1 When unit is ON, press to select fan speed : Auto, Low, Medium, High.
- 1.3.2 Auto fan speed is not available in Fan Only mode.

- 1.4 Temperature Setting Keys (▲/▼) :

- 1.4.1 When the unit is ON, press to adjust the set temperature in $\pm 0.5^\circ\text{C}$ increments. Press and hold for rapid adjustment.
- 1.4.2 During temperature adjustment, "SET" is displayed to the left of the value. Adjustable range :
Cooling : Adjustable from the minimum to the maximum cooling setpoint limit.
Heating : Adjustable from the minimum to the maximum heating setpoint limit.
- 1.4.3 The setting is saved and the display reverts to room temperature if no action is performed within **5 seconds**.
- 1.4.4 Temperature setting is unavailable in Fan Only mode.
- 1.4.5 In Individual Control mode, simultaneously press the ▲ and ▼ keys to set the 0-24 hour ON/OFF timer.
- 1.4.6 In the Function Options menu, use these keys to select or adjust settings.
- 1.4.7 When the unit is OFF, press and hold both ▲ and ▼ keys for 5 seconds to enable/disable the Key Lock. When locked, only the Power ON/OFF, 0-24 hour timer, and fan driver selection functions are accessible.

- 1.5 ID+, ID- Fan Driver Selection Keys :

- 1.5.1 Cycles through the assigned numbers (01-32) of each fan driver. The panel automatically updates to display the corresponding room temperature. If communication with the selected driver is normal, its local room temperature is shown; if communication fails, an error code is displayed.
- 1.5.2 The connecting icon  blinks during the communication establishment phase after selecting a fan driver number.

1.6 Fan Driver Quantity Setting :

- 1.6.1 After power-on, "P1 xx" appears. Press the ID+ or ID- keys to set the starting ID for linked control (Range : 01-32, Default: 1). After 3 seconds, "P2 xx" appears. Press the ID+ or ID- keys to set the ending ID for linked control (Range : 01-32, Default : 15).

1.7 Group Synchronous Control :

- 1.7.1 Press and hold both ID+ and ID- keys for 4 seconds to activate Group Synchronous Control. Upon activation, the settings of the currently selected fan driver are applied to all drivers within the group. Configuration parameters are sent simultaneously to all fan drivers (control boxes) to achieve synchronized control.
- 1.7.2 In Group Synchronous Control mode, "AL" is displayed along with the group's set temperature, fan speed, and mode.
Any operation in this state will send the same synchronous command to all fan drivers.
- 1.7.3 If any individual fan driver had its ON/OFF timer enabled before entering this mode, the timer will be forcibly canceled upon activation of Group Synchronous Control.
- 1.7.4 The 0-24 hour ON/OFF timer function cannot be set in Group Synchronous Control mode.
- 1.7.5 Press the ID+ or ID- key once to exit Group Synchronous Control and return to Individual Control. The panel will revert to the fan driver number displayed prior to entering group mode.

2. Functional Description

- 2.1 Temperature Display Range : 0.0°C to 50.0°C, Accuracy $\pm 1^\circ\text{C}$, Minimum Display Increment 0.5°C.
- 2.2 Detection Range : -5.0°C to 55.0°C.
- 2.3 Temperature Setting Range :
- 2.3.1 Cooling : Minimum adjustable temperature is locked at the lower limit.
Maximum adjustable temperature is locked at the upper limit.
- 2.3.2 Heating : Minimum adjustable temperature is locked at the lower limit.
Maximum adjustable temperature is locked at the upper limit.
- 2.4 Default Settings : Cooling mode, Auto fan speed, Set temperature 26°C.
- 2.5 Cooling Mode :
- 2.5.1 Valve Contact Operation :
- 2.5.1.1 Valve contact opens when room temperature $\geq$ (Set temperature + 0.5°C).
- 2.5.1.2 Valve contact closes when room temperature $\leq$ (Set temperature - 0.5°C).
- 2.5.2 Configurable Fan Speeds : Auto, High, Medium, Low.
- 2.5.2.1 Auto Fan Speed :

Three-Stage Auto Fan Logic for Cooling Mode.

$\Delta = (\text{Room Temp} - \text{Set Temp})$	Fan Speed
$\Delta \geq 3.0$	High
$2.5 \geq \Delta \geq 2.0$	Maintain Current Speed
$\Delta = 1.5$	Medium
$1.0 \geq \Delta \geq 0.5$	Maintain Current Speed
$\Delta \leq 0$	Low

- 2.5.3 Unit Contact : ON Heater Contact : OFF

- 2.5.4 Intermittent Air Delivery (Pu=0) : Disabled

- The fan operates continuously, independent of the valve contact's status (open or closed).

- 2.5.5 Intermittent Air Delivery (Pu=1) : Enabled

- Valve contact open : Fan operates continuously.
- Valve contact closed : Fan stops.

2.6 Heating Mode :

- 2.6.1 2-Pipe System (Boiler/DX) - Valve Contact Operation (Coil Setting Pi=1) :

- 2.6.1.1 Valve contact opens when Set Temperature $\geq$ (Room Temperature + 0.5°C).

- 2.6.1.2 Valve contact closes when Set Temperature $\leq$ (Room Temperature - 0.5°C).

- 2.6.1.3 Heater Contact : ON Unit Contact : ON

- 2.6.2 4-Pipe System (Electric Heat) - Heater Contact Operation (Coil Setting Pi=0) :

- 2.6.2.1 Heater contact opens when Set Temperature $\geq$ (Room Temperature + 0.5°C).

- 2.6.2.2 Heater contact closes when Set Temperature $\leq$ (Room Temperature - 0.5°C).

- 2.6.2.3 Valve Contact : OFF Unit Contact : ON

- 2.6.2.4 Fan Shutdown Delay : When shutting down in electric heating mode, the heater contact delays for 30 seconds before turning off.

- 2.6.3 Configurable Fan Speeds : Auto, High, Medium, Low

- 2.6.3.1 Auto Fan Speed :

Three-Stage Auto Fan Logic for Heating Mode.

$\Delta = (\text{Room Temp} - \text{Set Temp})$	Fan Speed
$\Delta \geq 3.0$	High
$2.5 \geq \Delta \geq 2.0$	Maintain Current Speed
$\Delta = 1.5$	Medium
$1.0 \geq \Delta \geq 0.5$	Maintain Current Speed
$\Delta \leq 0$	Low

2.6.4 Intermittent Air Delivery (Pu=0) : Disabled

The fan operates continuously, regardless of the valve/heater contact status.

2.6.5 Intermittent Air Delivery (Pu=1) : Enabled

2.7 Valve (3-Way Valve/Compressor) Delay Protection

2.7.1 No delay protection (Pd=0).

2.7.2 1-minute delay protection (Pd=1).

2.7.3 3-minute delay protection (Pd=2).

2.8 Power Recovery Setting :

2.8.1 Power ON : Force OFF (PP=2).

2.8.2 Power ON : Force ON (PP=1). Unit resumes operation with previous mode, fan speed, and set temperature.

2.8.3 Power ON : Memory (PP=0). Unit resumes its previous power state (ON/OFF), mode, fan speed, and set temperature.

2.9 Anti-Overload Startup Delay

Configuration of this feature must be arranged through your dealer.

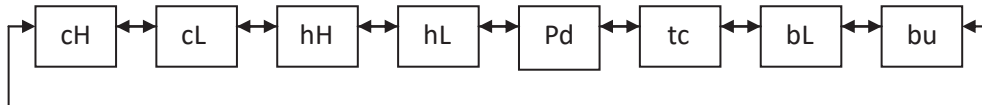
2.9.1 Features automatic sequential delay restoration after a power outage. Units that were ON before the outage will automatically restart in sequence based on their address code, with a time delay between each.

2.10 Function Options :

2.10.1 Basic Function Option Settings

(1) While the controller is in the OFF state, press and hold the Mode button for 3 seconds to enter the basic function options.

(2) After entering, the LCD will display cH. Use the ▲ or ▼ buttons to cycle through the main options : cH, cL, hH, hL, Pd, tc, bL, bu.



Basic Function Option Codes Reference	Main Menu	Sub-menu
Cooling Mode Max Temperature Limit	cH	15.0~35.0°C
Cooling Mode Min Temperature Limit	cL	15.0~35.0°C
Heating Mode Max Temperature Limit	hH	15.0~35.0°C
Heating Mode Min Temperature Limit	hL	15.0~35.0°C
Valve (3-Way/Compressor) Delay Protection Time	Pd	0,1,2
Temperature Calibration	tc	-5.0~5.0°C
Panel Backlight	bL	30, --
Keypress Tone	bu	on,oF

(3) When a main option is displayed on the LCD, press the Mode button to enter its sub-options.

(4) After entering a sub-option, the LCD will show the current parameter value. Use the ▲ or ▼ buttons to change the value. Press the Mode button to confirm the change and return to the main options.

(5) Saving & Exiting: During sub-option adjustment, the new setting is saved to EEPROM (non-volatile memory) and the adjustment mode is exited, returning the LCD to room temperature display, if either:

(6) When parameters are set in Group Synchronization Control mode, all connected fan coil unit (FCU) controllers will be set simultaneously.

2.10.2 Advanced Function Settings : Please contact your distributor.

3 Troubleshooting (The controller will shut down automatically when the following faults occur) :

3.1 Code E2 : Temperature sensor error.

3.1.1 The E2 code will remain locked on the LCD display.

After servicing the sensor, press the Power button to reset.

3.2 Code E3 : Communication error / No communication established.

3.2.1 The E3 code will remain on the LCD display. After repairing the communication wiring, the system will reset automatically.

4 Important Notes :

4.1 Before installation, ensure the power supply is turned OFF to prevent electric shock.

4.2 Prior to installation, follow the wiring diagram to prevent hazards caused by incorrect wiring.

4.3 Avoid installing the controller in damp locations to prevent malfunctions.

4.4 Before energizing, verify that all wiring and the input power supply are correct.

4.5 Damage resulting from improper installation is not covered by the manufacturer's warranty.

4.6 For communication wiring, use 24AWG twisted-pair cable with aluminum foil/braided copper shielding or CAT5e cable.

5 Specifications

5.1 Dimensions

5.1.1 Panel Dimensions: 110mm (L) x 120mm (W) x 17mm (H)

5.1.2 Driver Box Dimensions: 127mm (L) x 68mm (W) x 49mm (H)

5.2 Environmental Limits

5.2.1 Operating Environment: 0°C to 50°C, <90% RH (Non-condensing)

5.2.2 Storage Environment: -10°C to 60°C, <90% RH (Non-condensing)

5.3 Input / Output

5.3.1 Power Supply : AC 100V - 240V, 50 / 60Hz (Single Phase)

5.3.2 Temperature Sensor Input : x1

5.3.3 Key Input : x7

5.3.4 Output Contacts :

5.3.4.1 Valve Contact : 1A x1

5.3.4.2 Fan Motor Contact : 3A x3

5.3.4.3 Host Interlock Contact : 1A x1 (Voltage-Free)

5.3.4.4 Heater Contact : 1A x1

5.3.4.5 Fuse Rating : 5A / 250VAC

5.3.4.6 If contact capacity is insufficient, an external relay/contactors must be installed.

5.3.5 Display : LCD with Backlight

5.3.6 Communication Distance : Max. 1000m

6 Wiring

Please refer to the iQ-500 Network Control Series Wiring Guide for details.

