

CNT-703SJR



1 Cautions for safety

Be sure to read cautions before use for correct use.

※ The specifications and exterior sizes described in this manual may be subject to change for improving product capacity.

Warnings

- 1.This product was not manufactured as a safety device. Therefore, in case of using it as a controller such as for a device that may cause casualty, serious damage to peripheral devices, and tremendous loss of property, be sure to attach double safety devices.
- 2.Do not wire or inspect or repair while power is on.
- 3.In case of supplying power, be sure to check a terminal number for connection.
- 4.This device should not be disassembled, processed, improved, or repaired.

Cautions

- Before the installation of this device, understand fully how to use, safety regulations or warnings, and be sure to use within specified related specifications or related capacities.
- Do not wire or install it for a motor or solenoid with great inductive load.
- During the extension of a sensor, use a shielding wire, and do not make it unnecessarily longer.
- Do not use the same power supply or any part that generates arc during closing or opening directly near the power supply.
- A power line should be far apart from a high-tension wire, and the device should not be installed in a place containing much water, oil, or dust.
- Do not install it in a place under direct light or exposed to rain.
- Do not install it in a place with strong magnetism or noise or vibration or impact.
- Put it far apart from a place that may release strongly alkaline or strongly acidic substance, and use an independent pipe.
- Do not spray water directly on it for cleaning in case of installing it in the kitchen.
- Do not install it in a place where temperature/humidity exceeds rating.
- Take caution not to break a sensor wire or make any scratch.
- A sensor wire should be away from a signal line, power, and load line, and use an independent pipe.
- In case of disassembling or modifying this product voluntarily, it may not be applied with warranty service.
- A ⚠ mark on the terminal circuit diagram is a safety mark as warning or caution.
- Do not use it near any device (harmonics welder, harmonics, harmonics radio, and large capacity SCR controller) that generates strong harmonics noise.
- In case of using it with any other method than one designated by a manufacturer, injury or loss of properties may occur.
- As it is not a toy, keep out of the reach of children.
- Installation must be done by a relevant professional or a qualified person.
- Our company shall not be responsible for any damage caused by failing to observe the contents specified in the above warnings or cautions or by the fault of a consumer.

Danger

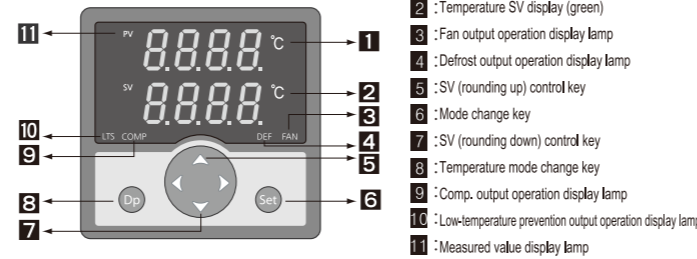
- Caution, danger regarding electric impact
 - Electric impact – Do not connect it to an AC terminal during a current flow. It may experience any electric impact.
 - During the check of input power, be sure to cut off input power.

2 Model configuration

Model	Sensor	Control Output	Range	Function
CNT-703SJR (Cooling) only	NTC	Relay Contact	Celsius : -55.0℃ ~ +99.9℃	COMP Control Defrost Control FAN Control

3 Name of Each Part

■ Name of product exterior and each part



- 1 : Temperature measurement value display (red)
- 2 : Temperature SV display (green)
- 3 : Fan output operation display lamp
- 4 : Defrost output operation display lamp
- 5 : SV (rounding up) control key
- 6 : Mode change key
- 7 : SV (rounding down) control key
- 8 : Temperature mode change key
- 9 : Comp. output operation display lamp
- 10 : Low-temperature prevention output operation display lamp
- 11 : Measured value display lamp

■ User mode change (temperature settings)

- Change of setting temperature of the main output
The SV will blink and display when pressing the **Set** key once.
▲ Or, increase/decrease the SV with the ▲ ▼ key.

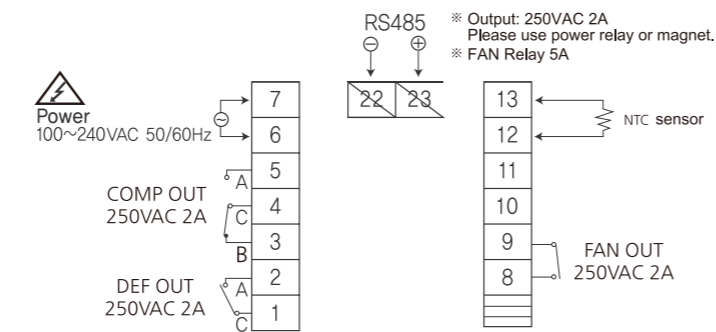
• Installer Mode Function Settings

- Pressing the **Set** key for 5 seconds or longer will allow you to enter into the installer mode and change with **Set** ▲ ▼.

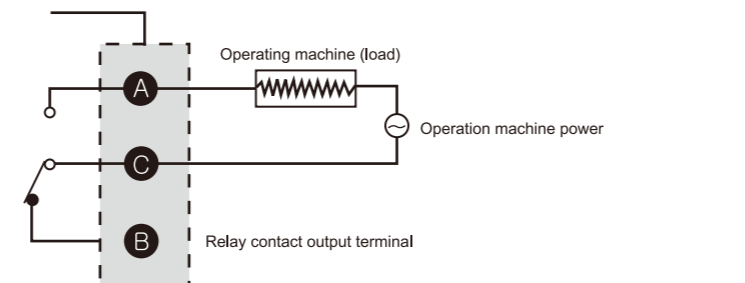
■ Operation and suspension mode change

- Pressing both ▲ ▼ keys for 2 seconds or longer will change to the operation mode or suspension mode.

4 Terminal connection diagram



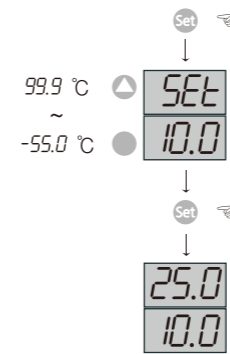
■ Examples of relay connection



※ COMP, defrost relay connection capacity is 250VAC 2A or below.
Care should be exercised as using a load that exceeds the capacity of the contact point will be the cause of contact point fusion, contact failure, and relay damage.

5 Order of changing the SV

Temperature settings



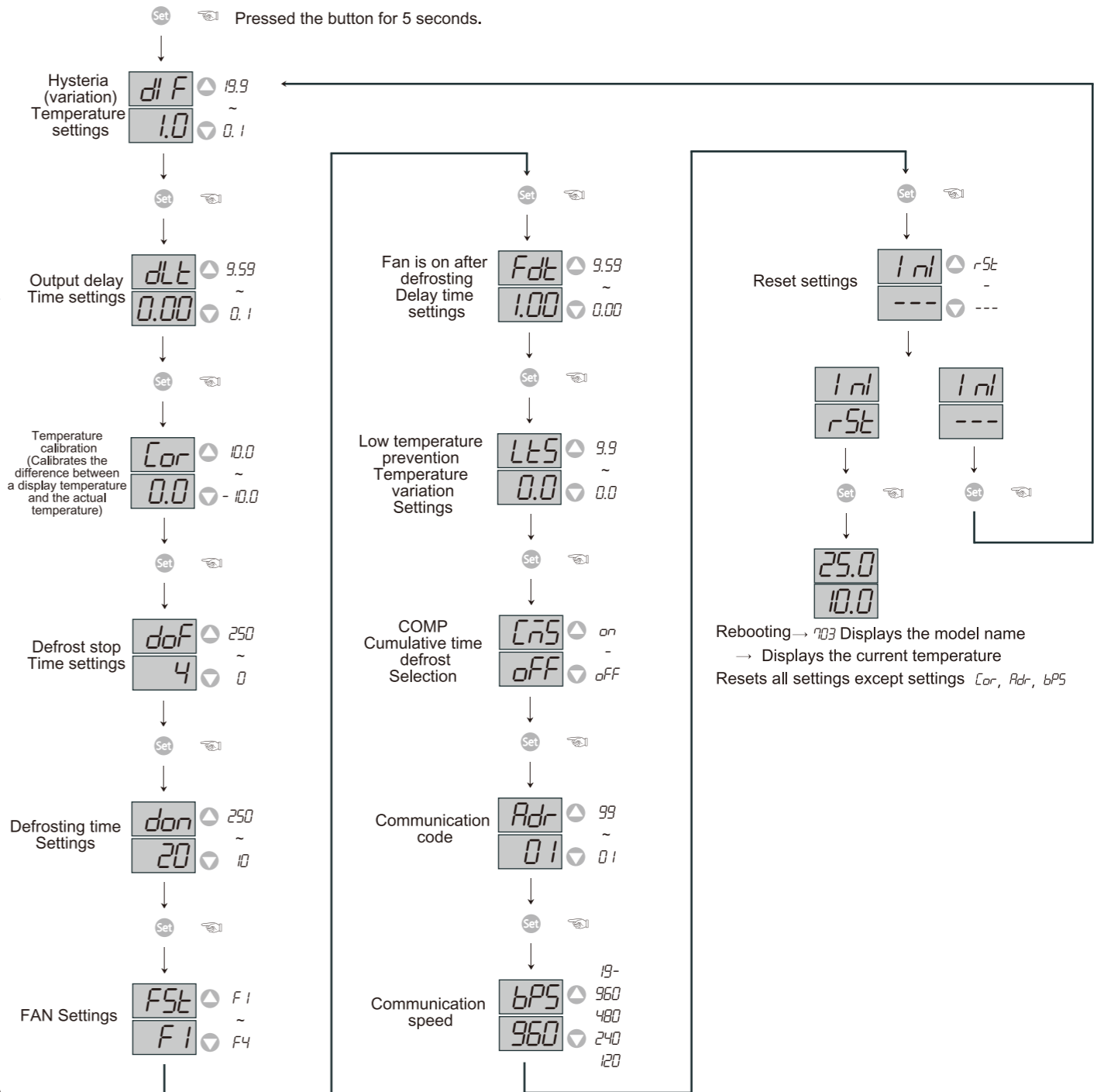
Press the **Set** key and enter into the set temperature change mode.

Press the ▲ ▼ keys and change set temperature.

Press the **Set** key after changing set temperature and store set temperature.

Stores set temperature and displays the current temperature.

Temperature program settings

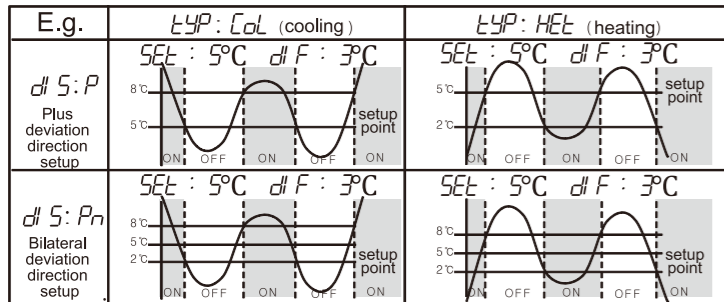


Rebooting → 703 Displays the model name
→ Displays the current temperature
Resets all settings except settings *Cor, ADr, bPS*

6 Detailed Function

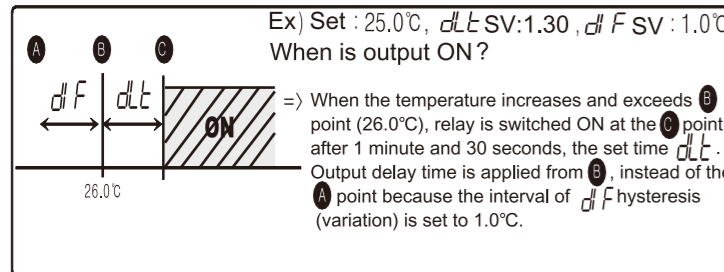
dlF : Variation temperature settings

A regular interval is required between ON and OFF in the ON/OFF control (set up ON/OFF width)
Frequent ON and OFF will shorten the lifespan of the relay or the output contact or cause hunting (generation, chattering) by noise from outside.
The temperature deviation function is used to setup temperature deviation to protect the equipment contact, etc.



dLlT : Delayed time for output operation

Use when a problem occurs by frequent repetition of ON/OFF operations of a target to control (including a cooler and a compressor, etc.,) Protects machine in operation during momentary power outage or power resupply.



Car : Current Temperature Calibration Function

The function calibrates temperature if error and reference temperature (e.g. mercury thermometer or the existing thermometer, or temperature controller) are different due to the sensor input from outside despite the product has no problem.

E.g.) Actual value : 25.0°C The display window shows 25.0°C
Displayed value : 28.0°C when Car is modified from 0.0 → -3.0
When the actual value differs 3°C

doF : Defrost stop time

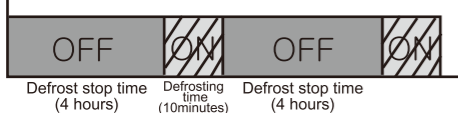
Begins defrosting when it is time for defrosting.

※ Defrost stops when set to 0

don : Defrosting time

Begins defrosting when it is time for defrosting.

※ Defrost stops when set to 0

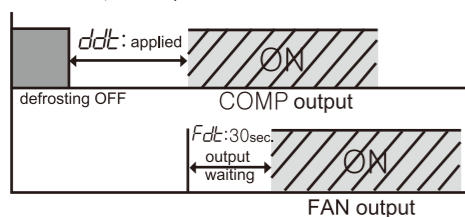


Repeat the defrost action for 10 minutes, every 4 hours.

Fdt : FAN ON delay time after defrosting

Setting range 0.00 - 9.99 (Minutes, Seconds)

E.g.) Fdt : 0.30(30sec)



Lt5 : Low temperature prevention temperature

Low temperature prevention function is OFF when Lt5 set temperature is 0.
If the current temperature is below (SV - Lt5), defrost FAN ON. (When Lt5 function is in operation, defrosting and the fan will be output immediately, regardless of the setting of the bottom fan)

FSt : See the chart of the FAN setting (F1 ~ F4) program

※ Chart

FAN	F1	COMP ON	COMP OFF	Defrost
		F2	ON	ON
F3	ON	OFF	ON	
F4	ON	ON	OFF	

Manual defrosting setting method

- Manual defrosting ON: K2 LED will be switched on when the dp key is pressed for 3 seconds or longer and starts manual defrosting. On the display window, don and the remained defrost time will be displayed in turn.
- Manual defrost OFF: Pressing the dp key again while the manual operation is in ON will turn OFF the manual operation. Or, the operation will be terminated automatically after don time.

Cns : COMP cumulative time defrost selection

on : Defrosting by COMP cumulative

off : Cycle defrosting

※ Defrosting will start if the COMP cumulative time is more than doF (Defrost stop time)

Adr : Communication code settings

To use the RS485 communication, codes from 1 to 99 should be appointed.

bPS : Communication speed settings

1200BPS / 2400BPS / 4800BPS / 9600BPS / 19200BPS

ini : Reset setting mode

After reset, a product model name will be displayed after selecting rSt and pressing the set key and displays the current temperature.

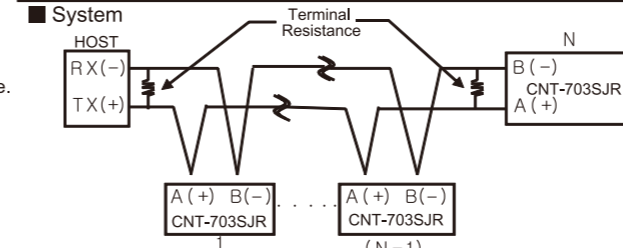
※ All SV, except Car value will be reset.

7 Setting range and default set

Display	Function	Range	Default set	Remarks
	Temperature settings	-55.0 ~ 99.9	10.0	
dlF	Variation temperature settings	0.1 ~ 19.9	1.0	Hysteresis (variation) temperature settings
dLlT	Output operation delay time settings	0.00 ~ 9.99	0.00	Minutes, seconds
Car	Temperature calibration	-10.0 ~ 10.0	0.0	Calibration of difference between display temperature and actual temperature
doF	Defrost stop time	0 ~ 250	4	Hour
don	Defrost time	0 ~ 250	20	Minute
FSt	FAN Settings	F1 ~ F4	F1	See the chart
Fdt	FAN ON delay time settings after defrosting	0.00 ~ 9.99	1.00	Minutes, seconds
Lt5	Low temperature prevention temperature	0.0 ~ 9.9	0.0	
Cns	COMP operation cumulative defrosting start setting time	on / off	off	
Adr	Communication code	01 ~ 99	01	
bPS	Communication speed	120 / 240 / 480 / 960 / 1920	960	120 : 1200bps 240 : 2400bps 480 : 4800bps 960 : 9600bps 1920 : 19200bps
ini	Reset	--- / rSt	---	Maintain settings / Reset after initialization

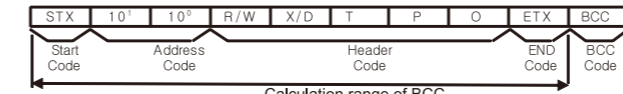
8 Communication

Applicable Standard	EIA RS485 Reference
Max. number of connections	32 units (However, Address setting is available from 01 to 99)
Communication Method	2-wire half-duplex
Communication Style	Asynchronous
Communication Distance	Within 1.2Km
Communication Speed	1200/2400/4800/9600/19200bps(selectable)
Start Bit	1Bit fixed
Stop Bit	1Bit fixed
Parity Bit	None
Data Bit	8Bit fixed
Protocol	BCC

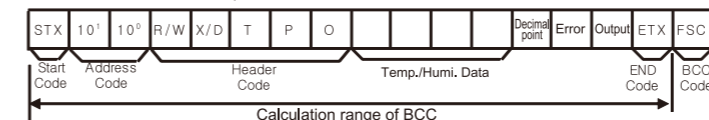


Definition of Communication Command and Block

< HOST Query Format >



< CNT-703SJR Response (Format) >



① Start Code

Displays the head of BLOCK.

STX- [02H]

② ADDRESS CODE

A code of which the host system identifies CNT-703SJR, and from 01 to 99(BCD ASCII) can be set. (E.g. - Code 01 is 30H, 31H)

③ Header Code

The name of command is shown in text.

RX(Read request) → R[52H],X[58H]

RD(Read response) → R[52H],D[44H]

WX(Write request) → W[57H],X[58H]

WD(Write response) → W[57H],D[44H]

TPO(Temperature measurement value) → T[54H],P[50H],O[30H]

④ Data Configuration

Data is expressed in Hexadecimal

⑤ Decimal point → 0[30H] No decimal point 1[31H] There is a decimal point

⑥ Error → 0[30H] No error

1[31] Sensor open error 2[32] Sensor short error

⑦ Output →

	COMP	Defrost	FAN
0(30H)	X	X	X
1(31H)	O	X	X
2(32H)	X	O	X
3(33H)	O	O	X
4(34H)	X	X	O
5(35H)	O	X	O
6(36H)	X	O	O
7(37H)	O	O	O

⑧ END Code

Displays termination of Block. ETX → [03H]

⑨ BCC

BCC is short for Block Check Character. It shows the XOR operation value from the beginning (STX) protocol to ETX.

• If there is no other ACK response

① If code numbers are inconsistent after receiving STX

② If Receive Buffer Overflow occurred

③ If borate or other communication SV is inconsistent

• Handling when there is no ACK response

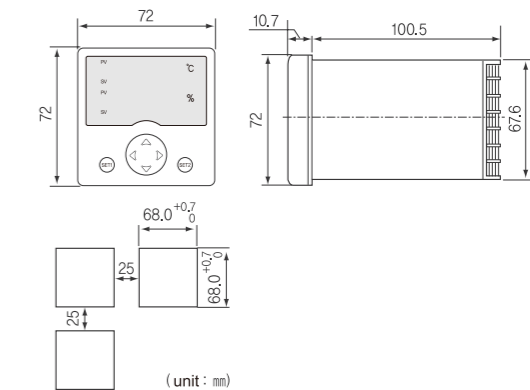
① Check the status of line

② Check communication condition (SV)

③ In the case of communication abnormality caused by noise, perform communication for 3 times for recovery.

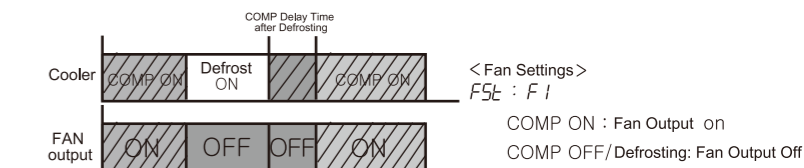
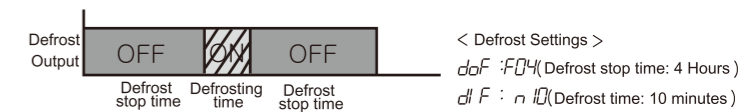
④ Change the communication speed if its abnormality is too frequent.

9 Panel dimension



Examples of temperature controller usage

What is the SV that turns off the refrigerator at 0.0°C, restarts the refrigerator at 5.0°C, shows defrosting displays every 4 hours for 10 minutes each time, the fan is switched ON at the time of COMP output, and the fan is switched OFF when COMP is OFF and defrosting?



10 Simple troubleshooting tip

If error is displayed while using the product:

• Err1 is displayed when the DATA memory element is damaged inside the product as it is affected by powerful noise from outside while in use. In such a case, contact our company for customer service.

• While the controller is equipped with supplementary measures for outside noise, it cannot endure infinite noise.

• The interior of the product may be damaged if noise (2KV) is introduced.

• The sensor has defect when o-E (Open Error) or s-E (Short Error) is displayed.

• Please check the sensor.

※ The above product specifications may be subject to change without prior notice for improvement of performance. Understand fully the contents of cautions during the handling of the product and be sure to observe them.

※ Regarding the English-language manual, please download it at our web-site.

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■ Major products and development
- Digital temperature & humidity controller
- Digital timer, current/voltage meter
- Other product development