

TTM-C30 SERIES Operation Manual Controller for Refrigerator

May 2017 (First Edition)

Thank you for purchasing TTM-C30. Kindly read this operation manual for proper usage.
For details about specifications and usage, please contact the shop where you have purchased the product or our Sales Department.

Precautions Upon Usage

The following symbols are used in this operation manual for safe and proper usage of the product:

- ⚠

Warning

Improper handling may cause death, electric shock, or burn to the user.
- ⚠

Caution

Improper handling may cause minor injury to the user or damage the product.

<div>⚠</div> Warning
Wrong connection to the product may cause fire that may lead to the breakdown of the product. After the wiring work, make sure that all connections are made correctly before turning the power of the product ON. Never attempt to modify the product. Such attempt may cause damage to the product and may also cause fire or such other similar hazards.
<div>⚠</div> Caution
Wiring: Do not use any vacant terminal as relay or such other purposes. Operation: Do not use a pointed object to operate the keys.

This operation manual should be kept by the user of this product.
Unauthorized posting and reproduction of the contents of this manual is prohibited.
The contents of this operation manual may be revised without prior notice.

Model

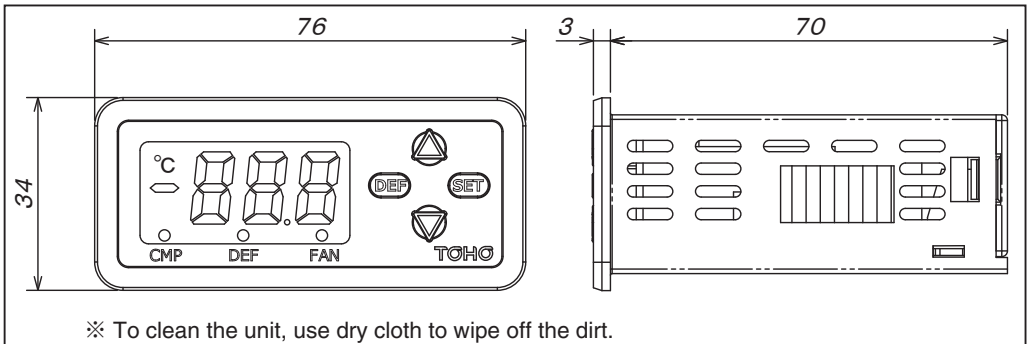
TTM-C30-□

Code	Power Supply Voltage
100	AC100V
220	AC220V

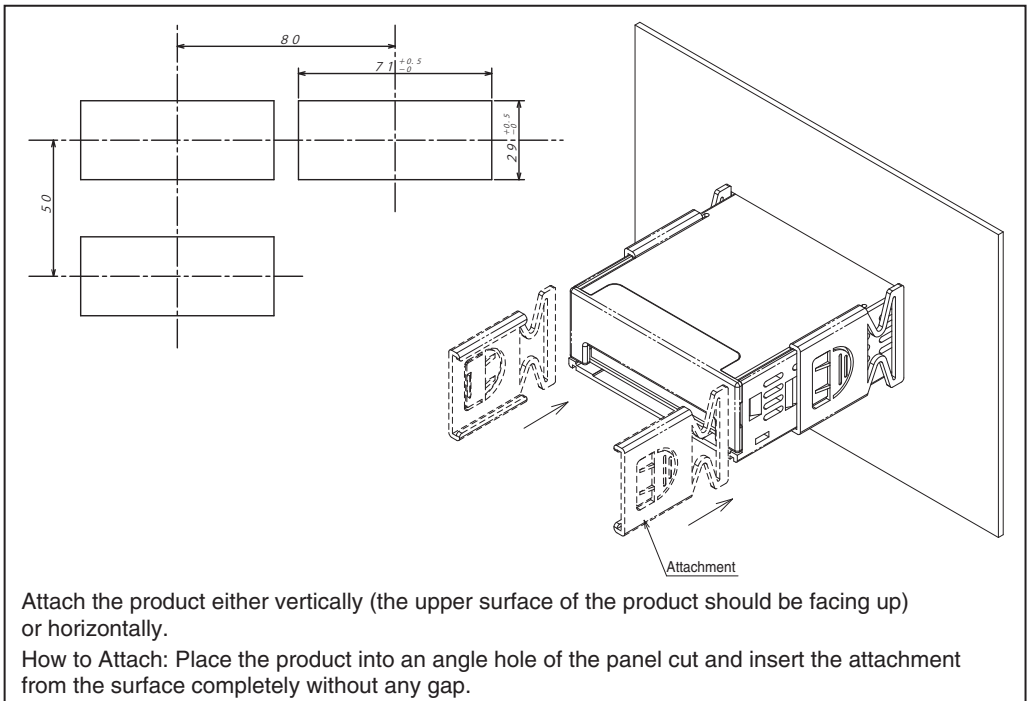
Specifications

Power Supply Voltage	AC100V±10% 50/60Hz or AC220V±10% 50/60Hz
Input	Thermostat
COMP Output	Relay Contact Output 1c (AC250V2A)
DEFROST Output	Relay Contact Output 1a (AC250V2A)
FAN Output	Relay Contact Output 1a (AC250V2A)
Range of Usage Temperature and Humidity	0–55°C 20–80%RH (provided that no condensation will occur)
Installation Environment	<div><div>• Place that is free from corrosive gas, dust, and oil; place that is not exposed to water; and place with less temperature change</div><div>• Place that is far from the source of electrical noise with less influence of electromagnetic field</div><div>• Place with less mechanical vibration and impact</div><div>• Place with no direct sunlight</div></div>

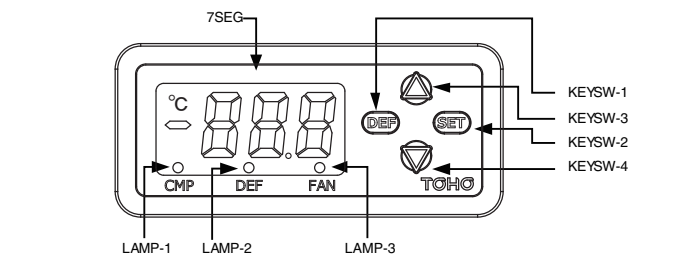
Dimensions



Dimension of Panel Cut and Installation



About the Display Panel



No.	Name	Description
7SEG	7-Segment Display Section	It displays PV, characters, and setting values.
LAMP-1	COMP Output Lamp	COMP Output Monitor Lamp
LAMP-2	DEFROST Output Lamp	DEFROST Output Monitor Lamp defrost operation. ※It blinks during
LAMP-3	FAN Output Lamp	FAN Output Monitor Lamp
KEYSW-1	DEFROST Key	It switches between defrost and stop by pressing the key for 3 seconds.
KEYSW-2	SET Key	It will be used to change program and temperature settings.
KEYSW-3	UP Key	It increases each setting value.
KEYSW-4	DOWN Key	It decreases each setting value.

Terminal Layout (back side of the product)

⚠

Warning

• Remove the back cover upon connecting wires.

• The appropriate material of copper wire for the connection of input and output is AWG16-26.

• Length of the peeled wire: 6mm.

• Tightening torque: 0.5–0.6N · m

• Check if input and output terminals are properly wired.

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Caution

• Attach the back cover after the wiring.

• Do not touch the terminal when power is ON to avoid electric shock.

Conformed Standards

• Safety : EN61010-1

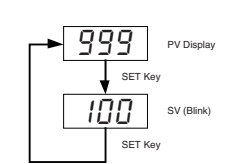
• EMC : EN61326-1

List of Parameters

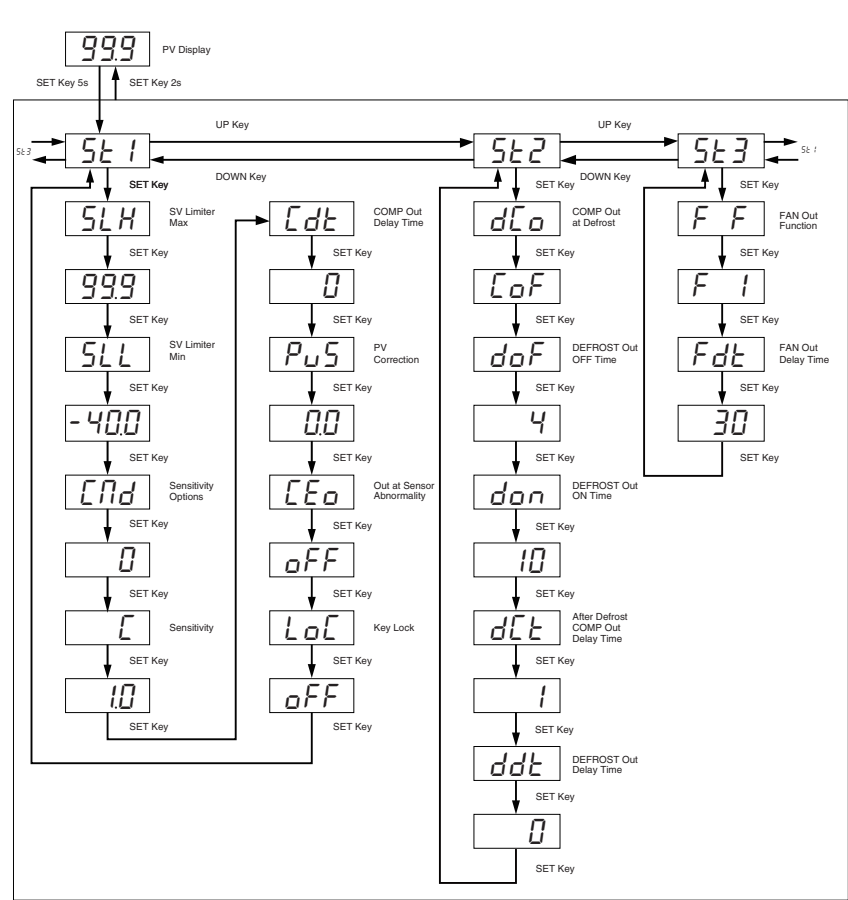
Screen Location	Name	Character	Setting Range	Initial Value	Remarks
Temperature Setting	SV Setting		$SL_L \sim SL_H$	10.0	
Program Setting	St 1	SV Limiter Max	SL_H	$SL_L \sim 99.9$	99.9
		SV Limiter Min	SL_L	$-40.0 \sim SL_L$	-40.0
		Sensitivity Options	END	$0/1$	0
		Sensitivity	E	$0.1 \sim 19.9$	1.0
		COMP Output Delay Time	Edt	$0 \sim 999$	0 Unit: Second
		PV Correction	PuS	$-9.9 \sim 9.9$	0.0
		Output at Sensor Abnormality	EEo	on/off	off
		Key Lock	LoE	on/off	off
	St 2	COMP Output at Defrost	dEo	EoF/Eon	EoF
		DEFROST Output OFF Time	doF	$0 \sim 48$	4 Unit: Hour
		DEFROST Output ON Time	don	$1 \sim 99$	10 Unit: Minute
		After Defrost COMP Output Delay Time	dEt	$0 \sim 30$	1 Unit: Minute
		DEFROST Output Delay Time	ddt	$0 \sim 999$	0 Unit: Second
	St 3	FAN Output Function	FF	$F1 \sim F4$	$F1$
		FAN Output Delay Time	Fdt	$0 \sim 999$	30 Unit: Second

Operation Flow

●Temperature Setting



●Program Setting

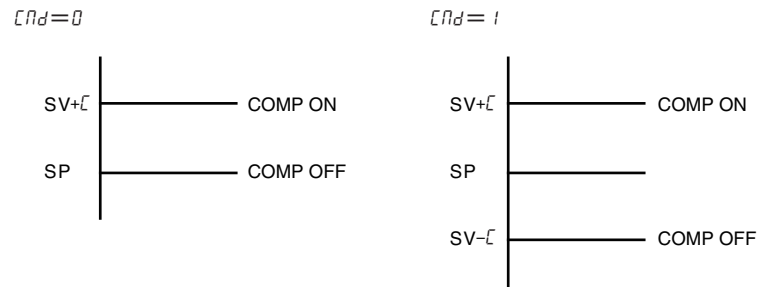


※ If no key operation is made for one minute during the program setting, the screen automatically resumes its display to PV.

About Settings

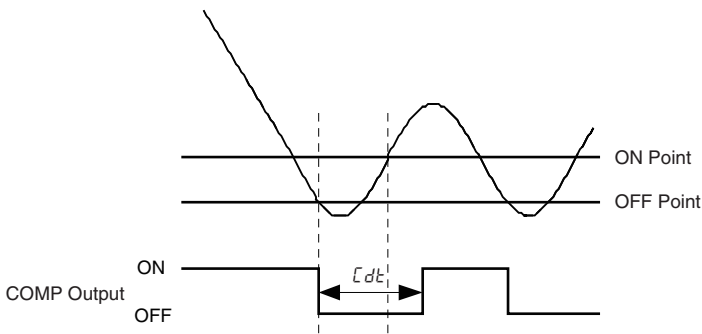
●Sensitivity Options

- ON and OFF points of COMP output will be changed.



●COMP Output Delay Time

- It is a time duration of which COMP output will be ready to turn itself ON again after it has switched from ON to OFF.



●PV Correction

- It adds PV correction value to the measured temperature and set the sum as PV.

●Output at Sensor Abnormality

- It sets the COMP output state when the sensor is open-circuited (or shorted) or when the measuring measuring circuit is broken.

●Key Lock

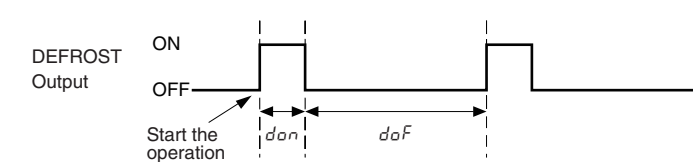
- If LoL=on, each setting on the program setting (other than the key lock) cannot be changed.

●COMP Output at Defrost

- It sets the COMP output state during the time when DEFROST output is ON.

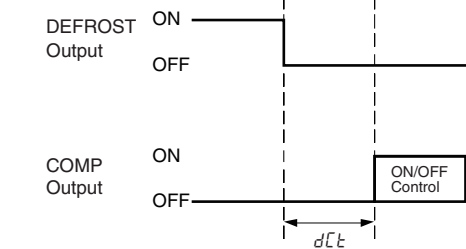
●DEFROST Output OFF Time/ON Time

- It sets time durations of OFF and ON.



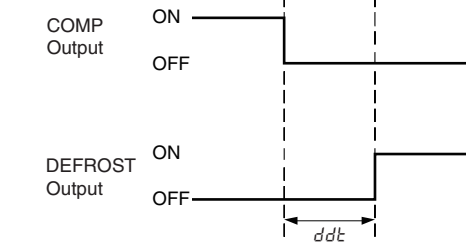
●After Defrost COMP Output Delay Time

- It is a time duration of which COMP output will be ready to turn itself ON after DEFROST output has switched from ON to OFF.



●DEFROST Output Delay Time

- It is a time duration of which DEFROST output will be ready to turn itself ON after COMP output has switched from ON to OFF.



●FAN Output Function

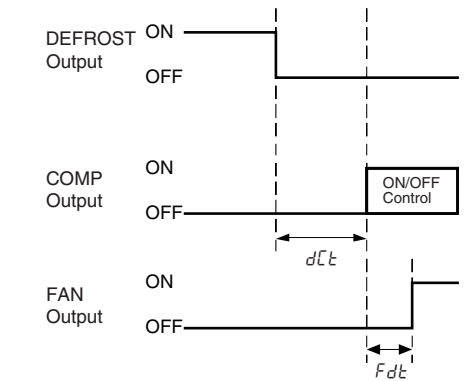
- FAN output depends on the state of COMP output and DEFROST output.

		DEFROST OFF		DEFROST ON
		COMP ON	COMP OFF	
F F	F 1	ON	OFF	OFF
	F 2	ON	ON	ON
	F 3	ON	OFF	ON
	F 4	ON	ON	OFF

●FAN Output Delay Time

- It is a time duration of which FAN output will be ready to turn itself ON after DEFROST output has switched from ON to OFF.

※ Valid only if F F= F 1 and F 4 (FAN output = OFF while DEFROST output = ON).



Abnormality

- Conditions for occurrence of/resumption from each abnormality and maneuver are the following:



- Display is for "PV Display" only.

Display	Condition of Occurrence/Restoration
--- (Under Bar)	Occurrence Condition: If the input that is lower than the display range is detected. Resumption Condition: If the input that is within the display range is detected.
--- (Over Bar)	Occurrence Condition: If the input that is higher than the display range is detected. Resumption Condition: If the input that is within the display range is detected.

- COMP Output : Depending on Output at Sensor Abnormality and COMP output setting during defrost.
- DEFROST Output : If Output at Sensor Abnormality = ON, operation will be continued.
If Output at Sensor Abnormality = OFF, DEFROST operation will be stopped.
- FAN Output : Continue the operation



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