Temperature Controller Manual

JC-600/JC-601/JC-620/JC-622/JC-602
JC-603/JC-604/JC-605/JC-651/JC-652

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CONTENTS:

1.GENERAL WARNING

1.1 PLEASE READ BEFORE USING THIS MANUAL

- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.
- Check the application limits before proceeding.

1.2 SAFETY PRECAUTIONS

- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation.
- Warning: disconnect all electrical connections before any kind of maintenance.
- Fit the probe where it is not accessible by the End User. The instrument must not be opened.
- If failure or faulty operation send the instrument back to our company with a detailed description of the fault.
- Consider the maximum current which can be applied to each relay (see Technical Data).
- Ensure that the wires for probes, load s and the power supply are separated and far enough from each other, without crossing or intertwining.
- In case of application s in industrial environments, the use of mains filters (our mod. FT1) in parallel with inductive loads could be useful.

2. GENERAL DESCRIPTION

☐ **JC-600** It is suit for the compressor of one H. P., It provides a relay output and a NTC probe input. Special parameters that can be easily programmed through the keyboard.

☐ **JC-620** It is thermostat with off cycle defrost designed for refrigeration applications at normal temperature. It has a relay output to drive the compressor and a NTC probe input.Special parameters that can be easily programmed through the keyboard.

☐ **JC-622** It is thermostat with off cycle defrost d esigned for refrigeration applications at normal temperature. It has a relay output to drive the compressor and two NTC probe input.Special parameters can be easily programmed through the keyboard.

☐ **JC-601** It is suit for the compressor of one H. P.,It has two relay output to drive the compressor and light,a NTC probe input.Special parameters can be easily programmed through the keyboard.

☐ **JC-602** It is thermostat with off cycle defrost designed for refrigerationapplic ations at normal temperature .It has two relay output to drive the compressor an d light,two NTC probe input for the cold-room and defrost temperature.

☐ **JC-603** It is thermostat with off cycle defrost designed for refrigeration applicationsIt has three relay output to drive the compressor,glase door heater and rlight,two NTC probe input for the cold-room temperature and defrost temperature.

☐ **JC-604** It is microprocessor based controller, suitable for applications on medium or low temperature refrigerating units. It hasthree relay output to drive the compressor,defrost heater andfan,two NTC probe inputfor the cold-room and defrost temperature.

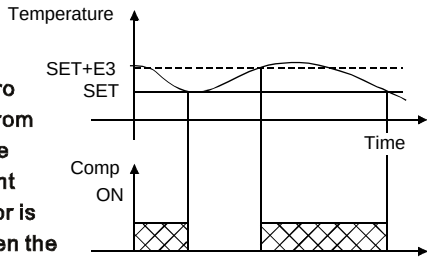
☐ **JC-605** It is microprocessor based controller, suitable for applicationson medium or low temperature refrigerating units. It has three relay output to drive the compressor, fan, electrical heater or gas defrost, two NTC probe input for the cold-room temperature and defrost temperature.

☐ **JC-651** It is thermostat with off cycle defrost designed for refrigeration applications at normal temperature. It has two relay output to drive the compressor and fan,a NTC probe input.Special parameters that can be easily programmed through the keyboard

☐ **JC-652** It is thermostat with off cycle defrost designed for refrigeration applications at normal temperature. It has two relay output to drive the compressor and fan,two NTC probe input.Special parameters that can be easily programmed through the keyboard.

3. CONTROLLING LOADS

3.1 THE COMPRESSOR



The regulation is performed according to the temperature measured by the thermostat pro be with a positive differential from the set point: if the temperature increases and reaches set point plus differential the compressor is started and then turned off when the temperaturereaches the set point value again.

In case of fault in the thermostat probe the start and stop of the compressor are timed through parameters **"E8"** and **"E7"** .

3.2 DEFROST JC-620，JC-651

Defrost is performed through a simple stop of the compressor. Parameter **"F2"** controls the interval between defrost cycles, while its length is controlled by parameter **"F1"** .

3.3 DEFROST JC-602，JC-603，JC-622，JC-652

Parameter **"F2"** controls the interval between defrost cycles, while its length is controlled by parameter **"F1"** .

- Enter the defrost status: When evaporator sensor temperature ＜ defrost termination temperature (**F3**), defrost starts.or else e xit the defrost.

3.4 DEFROSTJC-604

Parameter **"F1"** controls the interval between defrost cycles, while its length is controlled by parameter **"F2"** .

- Enter the defrost status: When evaporator sensor temperature ＜ defrost termination temperature (**F3**), defrost starts or else e xit the defrost
- Electrical heater defrost:After a defrost cycle and starting automatic defrost status, defrost LED on, compressor and fan stop, he ater starts. Defrost end, The heater and defrost stop, after draining time (**F6**), it goes back to normal status.

3.5 DEFROST JC-605

Parameter **"F2"** controls the interval between defrost cycles, while its length is controlled by parameter **"F1"** .

- **Defrost mode**:Electrical heater(F0=00) and gas heater(F0=01).
- Enter the defrost status: When evaporator sensor temperature ＜ defrost termination temperature (**F3**), defrost starts.or else e xit the defrost.
- Electrical heater defrost: After a defrost termination and starting automatic defrost status, defrost LED on, compressor and fan stop, heater starts. Defrost end,The heater and defrost stop, after draining time (**F6**), it goes back to normal status.
- **Gas heater defrost:** After a defrost termination and starting automatic defrost status, defrost LED on, compressor and fan stop, valve switch on , compressor start after **"F01"** parameter value. Defrost end,The heater and defrost stop, after draining time (**F6**), it goes back to normal status.

3.6 CONTROL OF EVAPORATOR FANS

The fan control mode is selected by means of the "F5" parameter:
F5=00,Switch ON and OFF with the compressor and **not run** during defrost;
F5=01,Continue run and **not run** during defrost;
F5=00,Switch ON and OFF with the compressor and **run** during defrost;
F5=01,Continue run and **run** during defrost;

parameter **"F10"** provides the setting of temperature, detected by the evaporator probe, above which the fans are always OFF. This is used to make sure circulation of air only if his temperature is lower than set in **"F10"**.

4. KEYBORAD

SET To display target set point; in programming mode it selects a parameter or confirm an operation.
(DEF) To start or stop a manual defrost.
Light(only for **JC-601,JC-602,JC-603**),To start or stop a manual defrost(only for **JC-602,JC-603**).
Glase door heater(only for **JC-603**).
(UP) Increases the parameter value;To check defrost sensor temp.
(DOWN) Decreases the parameter value.

KEY COMBINATIONS:
+ Resumed the parameters as same as factory defaults

4.1 USE OF LEDS

Each LED function is described in the following table.

LED	MODE	FUNCTION
	ON	Compressor enabled
	Flashing	Compressor start delay
	ON	Defrost enabled(not for **JC-600,JC-601**)
	Flashing	Drip time or display lock time(nor for**JC-600,JC-601**)
	ON	Fan enabled（only for **JC-604,JC-605**）
	ON	Light enabled(only for **JC-601,JC-602 ,JC-603**)
	ON	Glase door heater enabled(only for **JC-603)**

4.2 HOW TO SEE THE DEFROST TEMPERATURE

Push key and hold for 6S,the evaporator temperature is displayed, after 10s the cold-room temperature is resumed to be displayed.
（not for **JC-600,JC-620,JC-601**）。

4.3 HOW TO SEE THE SETPOINT

1,Push and immediately release the **SET** key: the display will show the Set point value;
2,Push and immediately release the **SET** key or wait for 5 seconds to display the probe value again.

4.4 HOW TO CHANGE THE SETPOINT

1,Push and immediately release the **SET** key: the display will show the Set point value;
2,Push the key or key to change the Set value within 10s;
(Set value can not exceed the value **"E1"** and **"E2"**)
3,To memorise the new set point value push the **SET** key again or wait 10s.

4.5 HOW TO START OR STOP A MANUAL DEFROST

Push or key and hold for 6s start or stop the manual defrost.
(Only for JC-601,JC-602,JC-603)

4.6 HOW TO START OR STOP THE GLASS HEATER

Push key to start or stop the glass door heater.(only for JC-603)

4.7 RESUMED THE FACTORY DEFAULTS

After push key for 1s,immediately push key and hold for 6s,display flashing,all the parameters as same as factory defaults be Resumed.

4.8 HOW TO CHANGE A PARAMETER VALUE

1,Push the **SET** key for 6s Enter the Programming mode(PA flashing).
2,Push the **SET** Key again to display E1,E2…CPA,E1 by cycle,push key or key ,display and change its value.
3,To exit and memorise the new set point value wait for 30s

Notes:
The parameter can be changed only after the correct PA to be entered, or it can only be checked,if foget the code,resumed the parameters as same as factory defaults.

4.9 CHANGING MENU PASSWORD

Changing menu password (**CPA**): The CPA can be checked or changed only after correct menu password to be entered. When it shows CPA, Push or key , the present password is displayed and can be changed to new password, push key confirming and restoring the new password.

5 PARAMETER

PASSWORD

PA **Menu password**: The code what must be inputted to enter the Programming mode,namely the **"CPA"** value.
CPA **Change Password:** It means locking cancelled if PA is set "00".

REGULATION

E3 **Differential**: Intervention differential for set point. Compressor Cut IN is Set Point Plus Differential . Compressor Cut OUT is when the temperature reaches the set point.
- **E1 Minimum set point:** Set the minimum acceptable value for set point.
- **E2 Maximum set point:** Set the maximum acceptable value for set point.
- **E4 Outputs activation delay at start up:** Minimum interval between the compressor stop and the following restart.
- **E5 Cold-room probe calibration**: Allows to adjust possible offset of the cold-room probe.
- **E6 Defrost probe calibration**: Allows to adjust possible offset of the defrost probe.
- **E7 Compressor ON time with faulty probe:** Time during which the compressor is active in case of faulty thermostat probe.
- **E8 Compressor OFF time with faulty probe:** Time during which the compressor is OFF in case of faulty thermostat probe.

DISPLAY

C1 **Temperature unit chage:** 00=Celsiurs; 01=Fahrenheit.

DEFROST (not for JC-600,JC-601)

F0 **Defrost type (only for JC-605):** 00 = electrical heater; 01 = hot gas
F1 **Maximum length for defrost:** Sets the maximum length for defrost.
- **F01 Compressor start delay time(only for JC-605):** Compressor start delay time when enter hot gas defrost.
- **F4 Temperature displayed during defrost:** (00 = real temperature; 01 = temperature at defrost start; 02 = "DEF" label), if choose "00" or "01" , it will continue displays this temp.or lable for 20 min.
- **F6 Drip time:**Time interval between reaching defrost termination temperature and the restoring of the control's normal operation. This time allows the evaporator to eliminate water drops that might have formed due to defrost.

F2 **Interval between defrost cycles:** Determines the time interval between the beginning of two defrost cycles.

F3 **Defrost termination temperature** (not for JC-620)**:** Sets the temperature measured by the evaporator probe, which causes the end of defrost.

FAN (only for JC-604,JC-605)

F5 **Fans operating mode** : 00= runs with the compressor, OFF during defrost; 01 = continuous mode, OFF during defrost;02 = runs with the compressor, ON during defrost; 03 = continuous mode, ON during defrost;

F7 **Fan start after defrost:**
00=start delay "**F8**" ; 01=start temperature "**F9**" .
If the evaporator sensor short or open current, the fan will start working after the comp. have worked for 2 min.

F10 **Fans stop temperature :** Setting of temperature, detected by evaporator probe, above which fans are always OFF.
(Fan not be controlled by "P5" value at comp. first stop.)

ALARMS

H1 **Maximum temperature alarm**: When this temperature is reached the alarm is enabled, after the delay time.

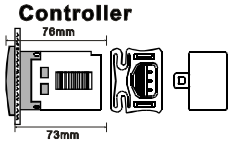
H2 **Minimum temperature alarm**: When this temperature is reached the alarm is enabled, after the delay time.

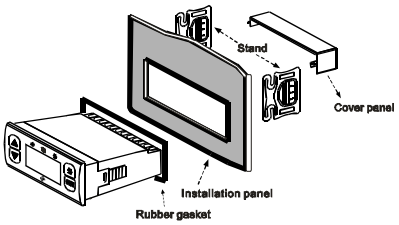
H5 **Alarm delay at Initial start up :** Time interval between the detection of an alarm condition and alarm signalling at Initial start up.

H6 **Temperature alarm delay:** Time interval between the detection of an alarm condition and alarm signalling.

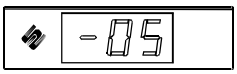
6 INSTALLATION AND MOUNTING

- Main controller panel dimension: 78×35×76mm.
- **Mounting dimension:**71×29mm;
  Main controller fixed using the special bracket supplied,the temperature range allowed for correct operation is -10~+60℃. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity.





- attached displaypanel dimension: 73（L）×23（W）×19（D）mm;
  Mounting dimension:65.3（L）×19.5（W）mm



Plase give clear indication of the attached displaypanel when indention

7 ELECTRICAL CONNECTIONS

The instrument is provided with screw terminal block to connect cables with a cross section up to 2,5 mm². Before connecting cables make sure the power supply complies with the instrument's requirements. Separate the probe cables from the power supply cables, from the outputs and the power connections. Do not exceed the maximum current allowed on each relay, in case of heavier loads use a suitable external relay.

PROBE CONNECTION

The probes shall be mounted with the bulb upwards to prevent damages due to casual liquid infiltration. It is recommended to place the thermostat probe away from air streams to correctly measure the average room temperature. Place the defrost termination probe among the evaporator fins in the coldest place, where most ice is formed, far from heaters or from the warmest place during defrost, to prevent premature defrost termination.

8 TECHNICAL DATA

1, Housing: self extinguishing ABS;
2, Protection: Ip20;
3, Frontal protection: Ip65;
4, Power supply: 230VAC±10%, 50/60Hz;
5, Power absorption: 5VA max;
6, Inputs: 1 or 2 NTC probes;
7, Relay output:
compressor: 30A/240V~,50/60HZ;
defrost: 30A/240V~,50/60HZ;
fan: 30A/240V~,50/60HZ;
light: 30A/240V~,50/60HZ;
8, Range of display: -45~45℃;
9, Range of set temperature: -45~45℃ (-40~120℉);
10,Default of set temperature: -10℃(10℉);
11,Resolution: ±1℃ (±2℉);
12,Software class: A;
13,Relative humidity: 2085% (no condensing);
14,Operating temperature:-10~+60℃;
15,Storage temperature: -30~+80℃;
16,Connections: Screw terminal block 2,5 mm² wiring.

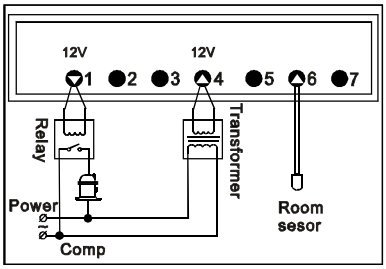
9 DEFAULT SETTING VALUES

Label	Name	Range	Default					
			JC-600 JC-601	JC-620	JC-622 JC-602 JC-603	JC-604	JC-651 JC-652	JC-605
PA	Menu password	00 ~ 99	00	00	00	00	00	00
E1	Lower set point limit	-45℃ -40℉ ~ Set temperature	-22℃ -08℉	-22℃ -08℉	-22℃ -08℉	-22℃ -08℉	-22℃ -08℉	-22℃ -08℉
E2	Higher set point limit	Set temperature ~ 45℃ 120℉	10℃ 50℉	10℃ 50℉	10℃ 50℉	05℃ 41℉	15℃ 59℉	05℃ 41℉
E3	Temperature hysteresis	01 ~ 10℃ 01 ~ 36℉	05℃ 07℉	05℃ 07℉	05℃ 07℉	05℃ 07℉	05℃ 07℉	05℃ 07℉
E4	Comp. Start delay time	00 ~ 10Min	02	02	02	02	02	02
E5	Offset on room temp.	-05℃ ~ 05℃ / ℉	00	00	00	00	00	00
E6	Offset on evep. temp.	-05℃ ~ 05℃ / ℉	- - -	- - -	00	00	00	00
E7	Comp. runs time when room temp. Err.	01 ~ 180Min	15	15	15	15	15	15
E8	Comp.runs time when evap.temp.Err.	01 ~ 180Min	45	45	45	45	45	45
F0	Defrost function	00=Electric heater 01=Hot gas	- - -	- - -	- - -	- - -	- - -	01
F01	Comp. Start delay time when hot gas defrost	00~ 20Min	- - -	- - -	- - -	- - -	- - -	00
F1	Max. Defrost duration	01 ~ 60Min	- - -	20	20	20	20	20
F2	Defrost interval time	00 ~ 24Hour	- - -	04	04	04	04	04
F3	Defrost termination temp	00 ~ 45℃ 32 ~ 110℉	- - -	- - -	12℃ 54℉	12℃ 54℉	12℃ 54℉	12℃ 54℉
F4	Display during defrost	00=Normal display 01=Last value before defrost 02= "DEF"	- - -	01	01	01	01	01
F5	Fan operating function	00=Parallel with compressor (except defrost) 01=Continuous running (except defrost) 00=Parallel with compressor (start when defrost) 01=Continuous running (start when defrost)	- - -	- - -	- - -	01	01	01
F6	Draining time	00 ~ 20Min	- - -	- - -	- - -	02	02	02
F7	Mode of fan restarts after defrost	00=Restarts delay after comp. reworking time (F8) 01=Restarts when evaporator temp. at F9.	- - -	- - -	- - -	01	01	01
F8	Restarts delay time (F7=00)	00 ~ 20Min	- - -	- - -	- - -	02	02	02
F9	Restarts subject to evap. Temp.(F7=01)	20 ~ -20℃ 68 ~ -04℉	- - -	- - -	- - -	-08℃ 18℉	12℃ 54℉	-08℃ 18℉
F10	Fan termination temperature	45 ~ -45℃ 120~ -40℉	- - -	- - -	- - -	20℃ 68℉	20℃ 68℉	20℃ 68℉
H1	Room temp. Overhigh alarm	45℃ ~ H2 120℉ ~ H2	45℃ 120℉	45℃ 120℉	45℃ 120℉	45℃ 120℉	45℃ 120℉	45℃ 120℉
H2	Room temp. Too low alarm	H1~ -45℃ H1~ -40℉	-45℃ -40℉	-45℃ -40℉	-45℃ -40℉	-45℃ -40℉	-45℃ -40℉	-45℃ -40℉
H5	Alarm starts delay time after boot-strap	00 ~180Min (Limit to first starting)	60	60	60	60	60	60
H6	Alarm starts delay time	00 ~180Min	00	00	00	00	00	00
C1	Temperature unit	00=℃ 01=℉	00	00	00	00	00	00
CPA	Changing menu password	00 ~ 99(Setting "00" , the menu password is cancelled)	00	00	00	00	00	00

Note: JC-651 without defrost termination temperature "F3" .

10 CONNECTIONS

10.1 JC-600、JC-620



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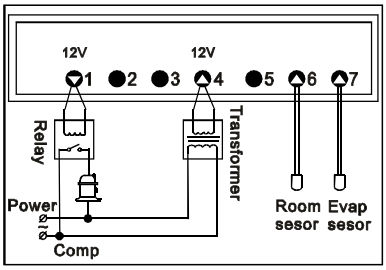

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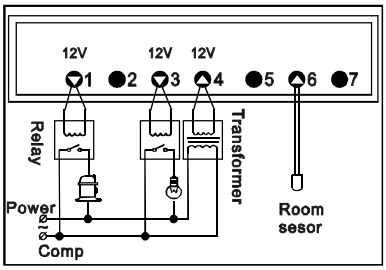

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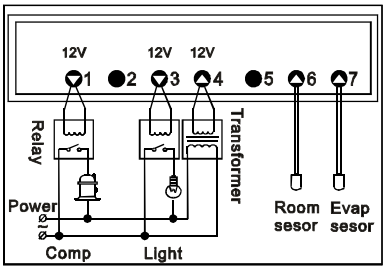

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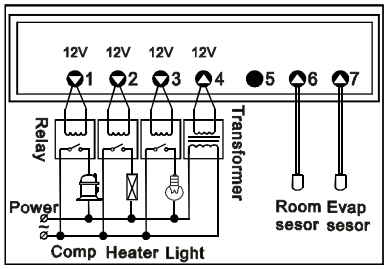

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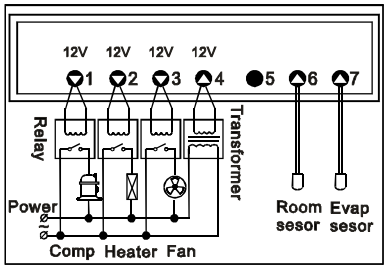

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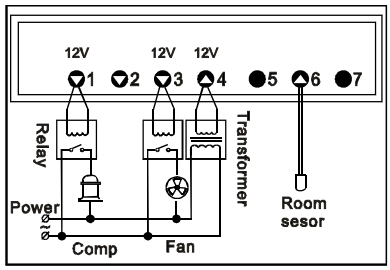
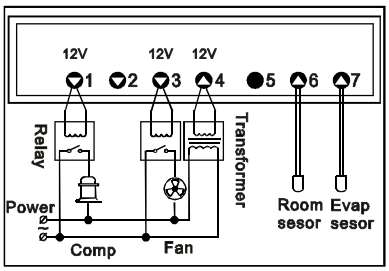


10.8 JC-652



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