1. 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

1. Check the supply voltage is correct before connecting the instrument.
2. 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
3. Warning: disconnect all electrical connections before any kind of maintenance.
4. Fit the probe where it is not accessible by the End User. The instrument must not be opened.
5. Consider the maximum current which can be applied to each relay (see Technical Data).
6. Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or intertwining.

2. GENERAL DESCRIPTION

Model C1212, format, is a microprocessor based controllers suitable for applications on medium or normal temperature refrigerating units. It's provided with 2 relay outputs to control compressor and the defrost. It's also provided with 2 NTC probe inputs for temperature control.
An output allows the user to programmer the parameter list with the **.Hot Key..**

3. CONTROLLING LOADS

3.1 THE COMPRESSOR TEMPERATURE CONTROL：

When the real temperature of sensor 1 is higher than the total value of the control temperature and temperature difference (F0), the compressor time delay (F1) starts (when the time delay happens, the cooling indicator is flashing), and closes when the delay time is to F1; when it is lower than the value that the control temperature minus the temperature difference (F0), the compressor stops and KI is off. (The compressor could not stop in the three minutes after it starts).

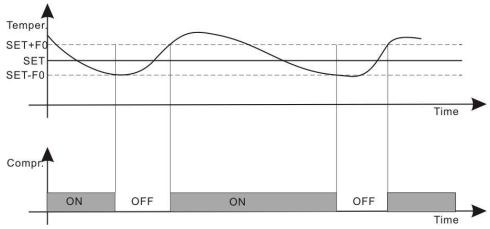
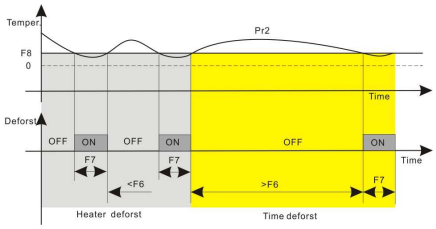


Fig.1

3.2 DEFROST CONTROL：

When the temperature of defrosting probe is lower than that of defrosting termination (F8), it begins to defrost, the compressor stops, the cooling indicator goes out, and the defrosting indicator is on(K2 is on). When the temperature of defrosting probe is higher than that of the defrosting termination (F8), it enters the normal control mode(K2 is off).



After working for a whole defrosting cycle (F6), it automatically enters the defrosting state, the compressor stops, and the cooling indicator goes out.
When the defrosting time reaches F7, it withdraws from defrosting state, and enters the normal control mode.
When the defrosting cycle sets as "00", it will cancel the function of time cycle defrosting.

3.3 SPECIAL WORKING MODE:

When the sensor temperature surpasses the highest working temperature (F3) or the sensor shot-circuit shows "H1" (H2), or when the sensor temperature is below the lowest working temperature (F2) or the opening circuit of the sensor shows "L1" (L2), it enters the fixed time working mode. The compressor operates for 45 minutes and stops for 15 minutes.

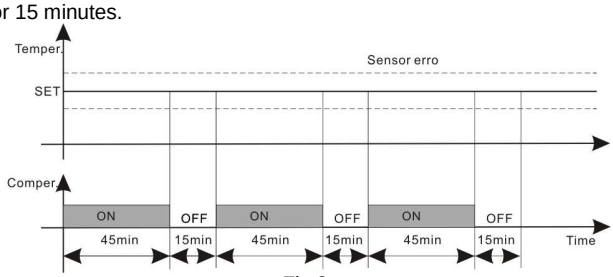


Fig.3

3.4 FAST FREEZING

When defrost is not in progress, it can be activated the keypad by holding the key pressed for about 3 seconds. The compressor operates in continuous mode for the time set through the .**F10**. parameter.

The cycle can be terminated before the end of the set time using the same activation key, for about 2 seconds.

4. 1 FRONT PANEL

SET: To display target set point; in programming mode it selects a parameter or confirm an operation.
By holding it pressed for 3s the fast freezing is started.

To start a manual defrost

▲ (**UP**): in programming mode it browses the parameter codes or increases the displayed value.
By holding it pressed for 3s the Fan cycle is started.

▼ (**DOWN**) T o see the last temperature alarm happened; in programming mode it browses
By holding it pressed for 3s light is started.
the parameter codes or decreases the displayed value.

KEY COMBINATIONS:

▲ +▼ To lock & unlock the keyboard**.**

SET +▲ To enter in programming mode.

4.2 USE OF LEDS

Each LED function is described in the following table.

LED	MODE	FUNCTION
	ON	Compressor enabled
	ON	Defrost enabled
SET	ON	Setup

4.3 HOW TO SEE THE SET POINT AND MODIFY THE SET POINT

1. Push and immediately release the **SET** key 3 second: the display will show the Set point value;
2. The SET LED start blinking;
3. Return the Set key push the **SET** or n arrows within 10s.
4. To memorize the new set point value push the **SET** key again.

4.4 TO START A MANUAL DEFROST

Push the key for more than 3 seconds and a manual defrost will start.

4.5 TO DISPLAY PR1, PR2 TEMPERATURE.

The instrument often shows the Pr1 temperature.

Push the key 1 second will show the Pr2 temperature, After a few seconds，it will resume to display the PR1 temperature.

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4.6 HOW TO CHANGE THE PARAMETER VALUE

1. Push the **SET+**▲ key 3 second enter the Programming mode.
2. Select the required parameter with ▲ or. ▼
3. Press the **SET** key to display its value (and **SET** LED starts blinking).
4. Use ▲ or ▼ to change its value.
5. Press **SET** key to store the new value and move to the following parameter.
6. Select ED or wait 15s without pressing a key.

4.7 HOW TO LOCK THE KEYBOARD

1. TO LOCK THE KEYBOARD:- Press the ▲and ▼ buttons simultaneously and hold for more than 3 secs.
2. TO UNLOCK THE KEYBOARD:- Press the ▲ and ▼ buttons simultaneously and hold for more than 3 secs.

5. PARAMETER LIST

F0:	**(Temperature differential)** difference between the set point and the control point temperature.	**Range: 1~15˚C**	**Default: 2˚C.**
F1:	**(Anti short cycle delay)** min interval between compressor off cycle before the next on cycle.	**Range: 0~9 mins**	**Default: 2 mins**.
F2:	**(Lowest temperature set point)** set the lowest acceptable operating temperature.	**Range:-40~0˚C**	**Default: -35˚C.**
F3:	**(Highest set point)** set the highest working acceptable operating temperature.	**Range: 1~+60˚C**	**Default: + 60˚C**
F4:	**(Calibration)** calibration of PR1 temperature.	**Range: -10 ~+10˚C**	**Default: 0˚C**
F5:	**(Calibration)** calibration of PR2 temperature.	**Range: -10 ~+10˚C**	**Default: 0˚C**
F6:	**(Defrost cycle)** defrost cycle.	**Range: 0~24 hrs**	**Default 6 hrs.**
F7:	**(Defrost time)** defrost time.	**Range: 1~60 mins.**	**Default: 20 mins.**
F8:	**(Defrost termination temperature)** defrost termination when evap coil is ice free.	**Range: 0~-20˚C**	**Default: 8˚C**

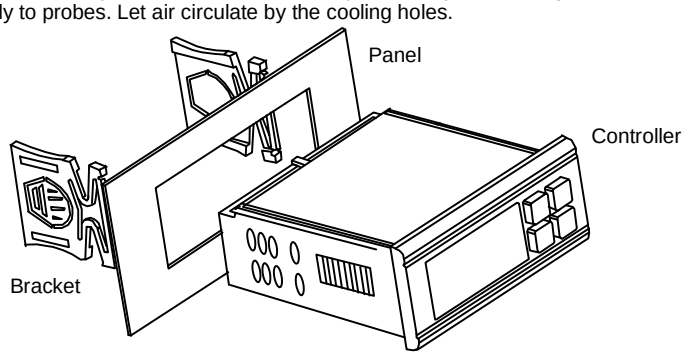
F9: **(Default set)** select **"1"** will return parameters to "**Default"** select **"2**" parameters will remain **"As set"**

Ed: **(Exit)** exit the parameter settings

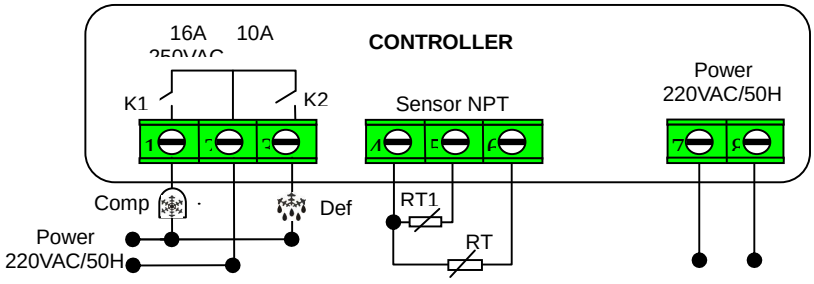
The customers can make relative adjustments of the above parameters according to their demands.

6. INSTALLATION AND MOUNTING

Instruments shall be mounted on vertical panel, in a 71x29 mm hole, and fixed using the special bracket supplied. To obtain an IP65 protection grade use the front panel rubber gasket (mod. RG-C) as shown in figure.
The temperature range allowed for correct operation is 0□60 ℃. Avoid places subject to strong vibrations, c orrosive gases, excessive dirt or humidity.
The same recommendations apply to probes. Let air circulate by the cooling holes.



7.TECHNICAL DATA

Case Material ：	Fire resistance black PC/ABS。
Case Size：	75×38×70
Mounting：	Mounting size 71×29
Protective classification：	Front，IP54
Connection：	Screw terminal
Working Condition：	-10˚C～55℃，RH＜85％，no condensing
Storage Condition：	-10˚C～70℃，RH＜85％，no condensing
Measure Range：	-40˚C～60℃
Resolution：	1˚C
Power Supply：	220VAC,±10％,50~60Hz
Power Consumption：	no more than 2W
External Fuse：	0.5A
Shockproof：	qualified to the demands of I and II instruments
Heat Insulation and Fire Resistance：	D
Relay Connection：	220v， 16A 220v， 10A
Input ：	2 NTC, four keys
Output：	2 normal opened contact
Display：	two- bit LED nixie tube display of the integer temperature between -40and 60˚C.

Connection Fig.