



Thermo Scientific
Jewett® Pass-Thru
Laboratory Refrigerators

Installation and Operation

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IMPORTANT Read this instruction manual. Failure to follow the instructions in this manual can result in damage to the unit, injury to operating personnel, and poor equipment performance.

CAUTION All internal adjustments and maintenance must be performed by qualified service personnel.

Material in this manual is for informational purposes only. The contents and the product it describes are subject to change without notice. Thermo Fisher Scientific makes no representations or warranties with respect to this manual. In no event shall Thermo be held liable for any damages, direct or incidental, arising from or related to the use of this manual.

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Chapter 1 Introduction

This product is a complete packaged unit ready to operate when plugged into an electrical source. It is not necessary to have a refrigeration serviceman set the unit in operation. The unit has been tested prior to shipment. Read all the instructions before proceeding with installation.

In this manual and on labels attached to this product, the words **WARNING** and **CAUTION** mean the following:



WARNING A potentially hazardous situation which, if not avoided, could result in serious injury or death.



CAUTION A potentially hazardous situation which, if not avoided, may result in minor or moderate injury or damage to the equipment.



WARNING The electrical hazard symbol to the left indicates situations with dangerous voltages and a potential for electric shock.



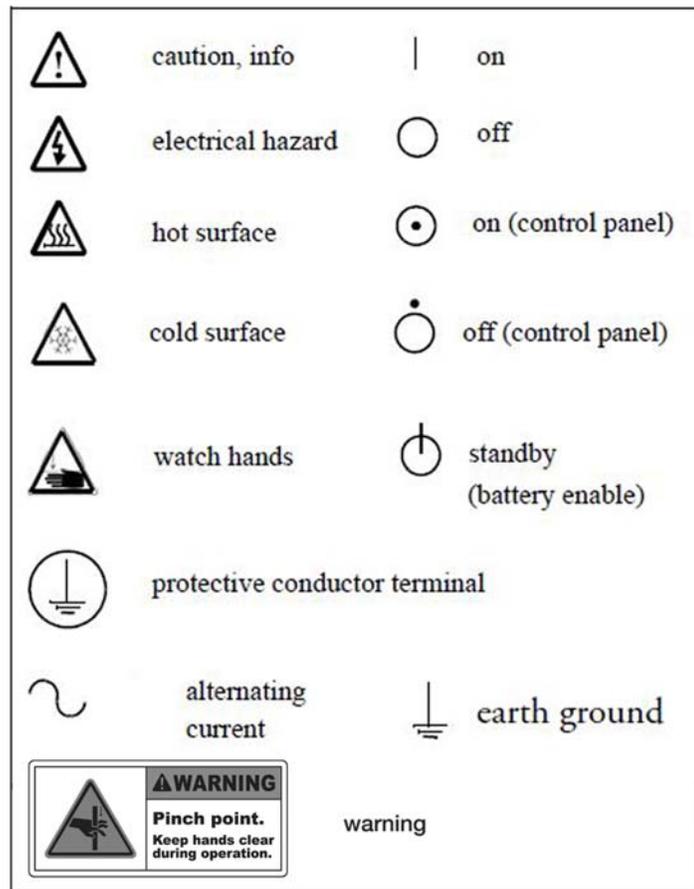
WARNING A potentially hazardous situation which, if not avoided, could result in serious injury.

Before installing, using or maintaining this product, please be sure to read this manual and product warning labels carefully. Failure to follow these instructions may cause this product to malfunction, which could result in injury or damage.

Below are important safety precautions that apply to this product:

- Use this product only in the way described in the product literature and in this manual. Before using it, verify that this product is suitable for its intended use.
- Do not modify system components, especially the controller. Use OEM exact replacement equipment or parts. Before use, confirm that the product has not been altered in any way.
- Your unit must be properly grounded in conformity with national and local electrical codes. Never connect the unit to overloaded power sources.
- Disconnect the unit from all power sources before cleaning or performing other maintenance on the product or its controls.

The following symbols are used in caution, warning and informational labels attached to the unit:



Chapter 2 Inspection for Damage

At delivery, examine the exterior for physical damage while the carrier's representative is present. If exterior damage is present, carefully unpack and inspect the unit and all accessories for damage.

If unit or accessories have been damaged in shipping place a damage claim with the carrier.

If there is no exterior damage, unpack and inspect the equipment within five days of delivery. If you find any damage, keep the packing materials and immediately report the damage to the carrier. Do not return goods to the manufacturer without written authorization. When submitting a claim for shipping damage, request that the carrier inspect the shipping container and equipment.

Inspection for Damage

Chapter 3 Operating Standards

The refrigerators described in this manual are classified for use as stationary equipment in a Pollution Degree 2 and Over voltage Category II environment.

These units are designed to operate under the following conditions:

- Indoor use
- Altitude up to 2000m
- Main supply voltage fluctuations not to exceed 10% of the nominal voltage.

Electrical Specifications:

Model	Voltage	Frequency	Current
LR25D-1B	120V	60HZ	9A
LR25D-2A*	230V	50HZ	4A
LR55D-1B	120V	60HZ	12A
LR55D-2A*	230V	50HZ	6.1A

* Not CE marked

Packing List

Inside the refrigerator is a bag containing:

- This manual

Intended Use of the Jewett Pass-Thru Laboratory Refrigeration System

The Jewett Pass-Thru Laboratory models described in this manual are high performance units which are intended for use in general research and are not intended for situations that directly support medical applications.

This product is intended for use: As cold storage in general research use.

Operating Standards
Packing List

Chapter 4 Installation

Safety instructions

- Only plug into a grounded outlet
- Do not remove ground prong
- Do not use a 3 prong to 2 prong adapter
- Do not use an extension cord
- Disconnect power before servicing
- Do not operate with any panels or parts removed

Location

1. **Measure all doorways and passageways for clearance before moving cabinet. These units will pass through a standard 30" x 84" door opening.**
2. **Inspect the interior, exterior and mechanical equipment for special instruction tags fastened at various points.**
3. **Move the unit into the desired location. Make sure the bottom is evenly supported and the floor is level. Thin shims under the points of rest can be used to equalize the distribution of weight. If the cabinet sets on an uneven floor, a slight rocking or vibration might result when the condensing unit is set in operation.**

4. For Installation requirements, remove the top cage and route the power cord out through the appropriate cord port. Make sure to install the plastic bushing around the cord to prevent cord to metal contact (Refer to the image below).



Note



- Do not position the equipment in direct sunlight, near heating diffusers, radiators, or other sources of heat. The ambient temperature range at the location must be 59°F to 90°F (15°C) to 32°C).



Explosion Hazard

- Do not store flammable materials close to the refrigerator as fire, explosion or death may result.
- Do not store flammable materials in the refrigerator as fire, explosion or death may result.

Wiring



CAUTION Operation under electrical conditions other than those specified on the dataplate will cause permanent damage to the mechanism. The data plate is located inside the refrigerator at the top of the right hand wall.

Before connecting your freezer to a power source, be sure to check the dataplate for correct voltage. Standard NEMA plugs are provided with all units.



WARNING For personal safety and trouble-free operation, this unit must be properly grounded before it is used. Failure to ground the equipment may cause personal injury or damage to the equipment. Always conform to the National Electrical Code and local codes. Do not connect unit to already overloaded power lines.

Always connect the equipment to a dedicated (separate) circuit. Electrical codes require fuse or circuit breaker protection for branch circuit conductors. Use a dedicated branch circuit breaker and time delay fuses for #12 AWG circuits.



CAUTION Do not use an outlet that can be turned off by a switch.

Installation
Wiring

Chapter 5 Operation

Initial Startup

- Make sure that the unit is free of all wood or cardboard shipping materials, both inside and outside.
- Plug unit into a power outlet on a dedicated circuit.
- Turn unit off using power switch before unplugging or servicing.
- Allow unit to reach operating temperature before storing contents.

Performance

The refrigerator section is factory preset to operate within a +2 °C to +4 °C temperature range.

The refrigerator section temperature will be shown on the digital display at the top of the unit.

Defrost

The defrosting process initiates automatically in response to a built-in timer.

All models are set for one defrost cycle every 1 hour. The maximum length of the defrost cycle is 15 minutes. The cycle terminates automatically if during defrost the evaporator coil temperature exceeds +4°C.



Note

- All models have been provided with an electric condensate evaporator located at the cabinet bottom. Periodic cleaning of the condensate pan will ensure proper operation. Refer to image below for location of condensate pan.



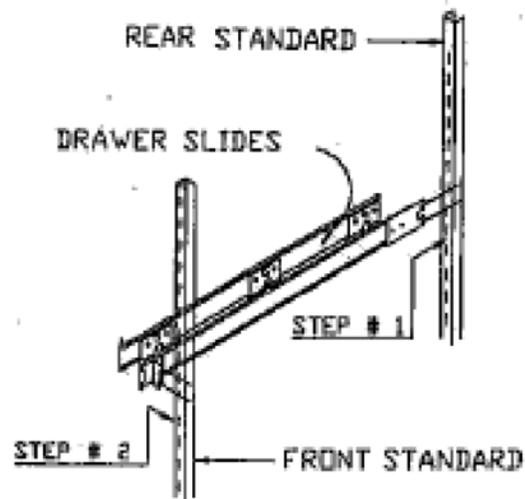
Condensate Pan

Chapter 6 Installation and Removal of Drawers

Mounting Drawer Slides

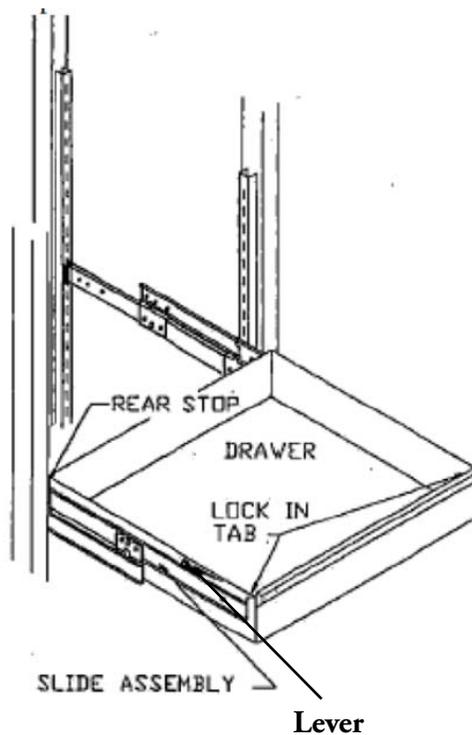


1. Push into slots in rear standard as shown in Step # 1. Make certain that the opposite drawer slides are in the same slots in the opposite standards.
2. Push into slots in front standard and press down. If necessary, tap into place.



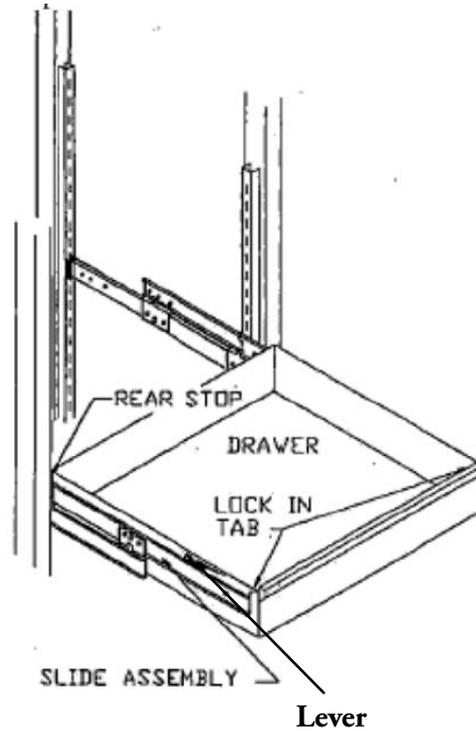
Installation

1. Place drawer on top of slides and push into rear stops.
2. Align slot on lever with the tabs on the drawer slide. Push lever down to lock in place.



Removal

1. Lift lever up to unlock drawer from the drawer slides.
2. Lift front of drawer up and pull clear of slides.



Installation and Removal of Drawers
Removal

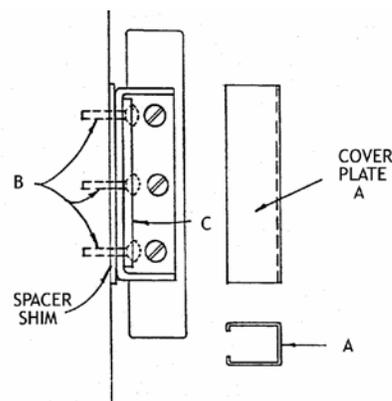
Chapter 7 Hinge and Latch Adjustment

Hinge Adjustment

1. Remove exterior hinge cover plate by opening the refrigerator door. Place a screwdriver under interior portion of cover and gently pry cover outward. Pull straight out. Close cover.
2. Loosen the three (3) screws "B" which hold adjusting plate "C" in position.
3. To tighten gasket seal, place hand against exterior of door near hinges; gently press in on door so gasket sits firmly against cabinet face. Tighten screws "B".
4. When adjustment is complete, it hinges are adjusted so gasket seal is too tight, door will tend to spring open. Door must be readjusted. To test gasket seal, insert a dollar bill (or piece of paper of similar size) between the gasket and the cabinet opening. Close door; a slight resistance to removal of the dollar bill (test strip) should be felt. Check the perimeter of the door. If the latch is loose, see latch-adjusting information.
5. Replace cover plate "A."



Note To accomplish different offsets, shims are utilized. If replacing hinges, make sure to reuse any shims furnished on the cabinet.

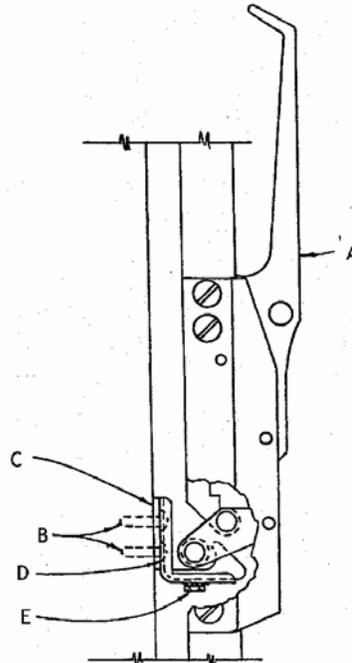


Latch and Strike Adjustment

1. Latch is fastened to door.
2. For up or down adjustment (proper latch engagement) loosen mounting screws "B".
3. Strike plate "C" remains in position.
4. Move strike "D" up or down as required and tighten screws "B" when adjustment is satisfactory. No play will be present in the latch handle with the door closed.
5. For in and out adjustment (proper gasket seal) loosen screw "E". Adjust in or out as required and tighten screw when adjustment is satisfactory.
6. The stainless steel hex head cap screw is 10/32" X 5/16" long. Use box wrench, open-end wrench, or ratchet to tighten. Do not use a nut driver or pliers.



Note If replacing latch and strike assembly, make sure to reuse any shims furnished on the cabinet.



Chapter 8 Maintenance



CAUTION A potentially hazardous situation which, if not avoided, may result in minor or moderate injury or damage to the equipment.



WARNING Use nonflammable cleaner. Failure to do so can result in death, explosion, or fire.

- Frequent cleaning of the interior and exterior with water and a good fungicidal detergent that eliminates harmful bacteria, stains and other foreign matter will keep the unit fresh and new looking.
- Shelves and/or drawers should be removed from the cabinet and thoroughly scrubbed. To clean the drawers or shelves, use a solution of water and a mild detergent. Rinse the drawers or shelves and wipe them dry with a soft cloth. For instructions on how to remove the drawers/shelves refer to [“Installation and Removal of Drawers”](#) .
- The unit cooler fans need no lubrication.
- The condensing unit needs no oil or other lubrication.
- Annual inspection of the mechanical refrigeration equipment by a qualified serviceman is recommended. A qualified mechanic can frequently make adjustments that will prevent future breakdown.

Gasket Maintenance

Periodically check the gaskets around the door for punctures or tears. Door seal integrity is critical for refrigerators and freezers. A gasket with a poor seal allows moist air to be drawn into the cabinet, resulting in quicker frost buildup on the evaporator coil, longer running time, poor temperature maintenance, and increased operation cost. Gasket leaks are indicated by condensation that forms on the interior or exterior of the unit at the point of gasket failure. Keep the door gaskets clean and debris free by cleaning with a solution of water and a mild detergent. Gently wipe the gasket dry with a soft cloth.

Condenser Maintenance



CAUTION The finned condenser can become clogged with lint or dust. The openings between the fins should be kept clean. Condensers should be cleaned at least every six months at a minimum. In heavy traffic areas, condensers load with heavy dirt more quickly. Failure to keep the condenser clean can result in equipment warm-up or erratic temperatures.

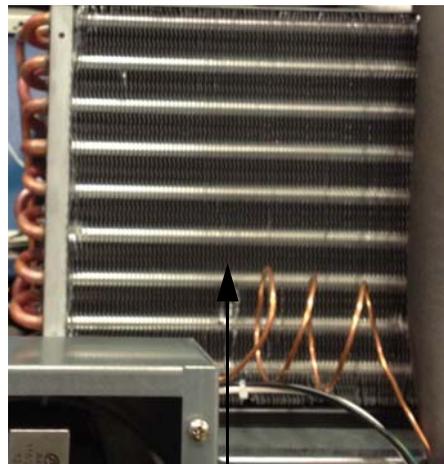


WARNING Be sure to disconnect the unit from main power before cleaning the condenser.



CAUTION Never clean near condensers with your fingers. Some surfaces are sharp.

1. **Disconnect the power.**
2. **Remove the screws on the top cage on Deck, to access the Condenser.**
3. **Use a vacuum cleaner with hose and brush attachments to clean the front face of the finned surface shown in the image below.**
4. **Clean up any loose dust and replace the grill.**
5. **Reconnect the power.**



Finned Surface

Bulb Maintenance

To replace the bulb unplug the unit. Gently turn and pull the cover so that the damaged bulb can be removed.

In case the bulb is broken, remove the CFL bulb and cover from the unit and discard the broken pieces (refer Figure 1).



Figure 1. Cover holding the broken bulb

When replacing the bulb ensure that the light cover is put back on the CFL bulb in the unit (refer Figure 2).

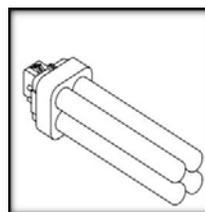


Figure 2. CFL bulb

Squeeze the cover over the square base of the CFL bulb to ensure proper fitment (refer Figure 3 and Figure 4).

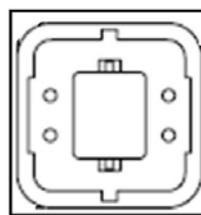


Figure 3. Square base of the bulb

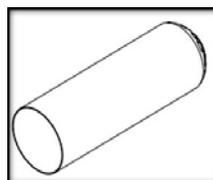


Figure 4. Light Cover

Failure to replace the bulb shield may result in physical harm. Failure to replace the shield changes the design and voids the warranty.

Digital controller with defrost and fans management
XR60CX

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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.
- In case of failure or faulty operation send the instrument back to the distributor or to "Dixell S.p.A." (see address) 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, loads and the power supply are separated and far enough from each other, without crossing or intertwining.
- In case of applications in industrial environments, the use of mains filters (our mod. FT1) in parallel with inductive loads could be useful.

2. GENERAL DESCRIPTION

Model **XR60CX**, format 32 x 74 mm, is microprocessor based controller, suitable for applications on medium or low temperature ventilated refrigerating units. It has three relay outputs to control compressor, fan, and defrost, which can be either electrical or reverse cycle (hot gas). It is also provided with three NTC or PTC probe inputs, the first one for temperature control, the second one, to be located onto the evaporator, to control the defrost termination temperature and to managed the fan, the third one, optional, to connect to the HOT KEY terminals to signal the condenser temperature alarm or to display a temperature. The digital input can operate as fourth temperature probe.

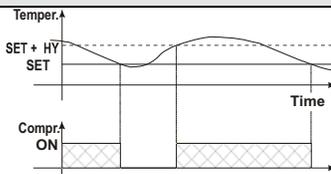
The HOT KEY output allows to connect the unit, by means of the external module XJ485-CX, to a network line ModBUS-RTU compatible such as the **dixel** monitoring units of X-WEB family. It allows to program the controller by means the HOT KEY programming keyboard.

The instrument is fully configurable through special parameters that can be easily programmed through the keyboard.

3. CONTROLLING LOADS

3.1 COMPRESSOR

The regulation is performed according to the temperature measured by the thermostat probe 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 temperature reaches the set point value again.



In case of fault in the thermostat probe the start and stop of the compressor are timed through parameters "Con" and "COF".

3.2 DEFROST

Two defrost modes are available through the "tdF" parameter: defrost through electrical heater (tdF = EL) and hot gas defrost (tdF = in). Other parameters are used to control the interval between defrost cycles (IdF), its maximum length (MdF) and two defrost modes: timed or controlled by the evaporator's probe (P2P).

At the end of defrost dripping time is started, its length is set in the FSt parameter. With FSt =0 the dripping time is disabled.

3.3 CONTROL OF EVAPORATOR FANS

The fan control mode is selected by means of the "FnC" parameter:

FnC = C_n: fans will switch ON and OFF with the compressor and **not run** during defrost;

FnC = o_n fans will run even if the compressor is off, and not run during defrost; After defrost, there is a timed fan delay allowing for drip time, set by means of the "FnD" parameter.
FnC = C_Y fans will switch ON and OFF with the compressor and **run** during defrost;
FnC = o_Y fans will run continuously also during defrost

An additional parameter "FSt" 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 "FSt".

3.3.1 Forced activation of fans

This function managed by the Fct parameter is designed to avoid short cycles of fans, that could happen when the controller is switched on or after a defrost, when the room air warms the evaporator. **Functioning**: if the difference of temperature between the evaporator and the room probes is more than the value of the Fct parameter, the fans are switched on. With Fct=0 the function is disabled.

3.3.2 Cyclical activation of the fans with compressor off.

When Fnc = c-n or c-Y (fans in parallel to the compressor), by means of the Fon and FoF parameters the fans can carry out on and off cycles even if the compressor is switched off. When the compressor is stopped the fans go on working for the Fon time. With Fon =0 the fans remain always off, when the compressor is off.

4. FRONT PANEL COMMANDS



SET: To display target set point; in programming mode it selects a parameter or confirm an operation.

(DEF) To start a manual defrost

(UP): To see the max. stored temperature; in programming mode it browses the parameter codes or increases the displayed value.

(DOWN): To see the min stored temperature; in programming mode it browses the parameter codes or decreases the displayed value.

To switch the instrument off, if onF = oFF.

Not enabled.

KEY COMBINATIONS:

To lock & unlock the keyboard.

SET + To enter in programming mode.

SET + To return to the room temperature display.

4.1 USE OF LEDS

Each LED function is described in the following table.

LED	MODE	FUNCTION
	ON	Compressor enabled
	Flashing	Anti-short cycle delay enabled
	ON	Defrost enabled
	Flashing	Drip time in progress
	ON	Fans enabled
	Flashing	Fans delay after defrost in progress.
	ON	An alarm is occurring
	ON	Continuous cycle is running
	ON	Energy saving enabled
	ON	Measurement unit
	Flashing	Programming phase

5. MAX & MIN TEMPERATURE MEMORIZATION

5.1 HOW TO SEE THE MIN TEMPERATURE

1. Press and release the key.
2. The "Lo" message will be displayed followed by the minimum temperature recorded.
3. By pressing the key again or by waiting 5s the normal display will be restored.

5.2 HOW TO SEE THE MAX TEMPERATURE

1. Press and release the key.
2. The "Hi" message will be displayed followed by the maximum temperature recorded.
3. By pressing the key again or by waiting 5s the normal display will be restored.

5.3 HOW TO RESET THE MAX AND MIN TEMPERATURE RECORDED

1. Hold press the SET key for more than 3s, while the max. or min temperature is displayed. (rSt message will be displayed)
2. To confirm the operation the "rSt" message starts blinking and the normal temperature will be displayed.

AFH Differential for temperature alarm/ fan recovery: (0,1+25,5°C; 1+45°F) Intervention differential for recovery of temperature alarm. It's also used for the restart of the fan when the FSt temperature is reached

ALd Temperature alarm delay: (0+255 min) time interval between the detection of an alarm condition and alarm signalling.

dAO Exclusion of temperature alarm at startup: (from 0.0 min to 23.5h) time interval between the detection of the temperature alarm condition after instrument power on and alarm signalling.

CONDENSER TEMPERATURE ALARM

AP2 Probe selection for temperature alarm of condenser: nP = no probe; P1 =thermostat probe; P2 = evaporator probe; P3 =configurable probe; P4 = Probe on Hot Key plug.

AL2 Low temperature alarm of condenser: (-55+150°C) when this temperature is reached the LA2 alarm is signalled, possibly after the Ad2 delay.

Au2 High temperature alarm of condenser: (-55+150°C) when this temperature is reached the HA2 alarm is signalled, possibly after the Ad2 delay.

AH2 Differential for temperature condenser alarm recovery: (0,1+25,5°C; 1+45°F)

Ad2 Condenser temperature alarm delay: (0+255 min) time interval between the detection of the condenser alarm condition and alarm signalling.

dA2 Condenser temperature alarm exclusion at start up: (from 0.0 min to 23.5h, res. 10min)

bLL Compressor off with low temperature alarm of condenser: n = no: compressor keeps on working; Y = yes, compressor is switched off till the alarm is present, in any case regulation restarts after AC time at minimum.

AC2 Compressor off with high temperature alarm of condenser: n = no: compressor keeps on working; Y = yes, compressor is switched off till the alarm is present, in any case regulation restarts after AC time at minimum.

DIGITAL INPUT

i1P Digital input polarity: oP: the digital input is activated by opening the contact; CL: the digital input is activated by closing the contact.

i1F Digital input configuration: EAL = external alarm: "EA" message is displayed; bAL = serious alarm "CA" message is displayed. PAL = pressure switch alarm, "CA" message is displayed; dor = door switch function; dEF = activation of a defrost cycle; AUS =not enabled; Htr = kind of action inversion (cooling – heating); FAn = not set it; ES = Energy saving.

did: (0+255 min) with i1F= EAL or i1F = bAL digital input alarm delay: delay between the detection of the external alarm condition and its signalling.
with i1F = dor: door open signalling delay
with i1F = PAL: time for pressure switch function: time interval to calculate the number of the pressure switch activation.

nPS Pressure switch number: (0 ÷15) Number of activation of the pressure switch, during the "did" interval, before signalling the alarm event (I2F= PAL).
If the nPS activation in the did time is reached, switch off and on the instrument to restart normal regulation.

odc Compressor and fan status when open door: no = normal; Fan = Fan OFF; CPr = Compressor OFF; F_C = Compressor and fan OFF.

rrd Outputs restart after doA alarm: no = outputs not affected by the doA alarm; yES = outputs restart with the doA alarm;

HES Temperature increase during the Energy Saving cycle : (-30,0°C+30,0°C/22+86°F) it sets the increasing value of the set point during the Energy Saving cycle.

OTHER

Adr Serial address (1+244): Identifies the instrument address when connected to a ModBUS compatible monitoring system.

PbC Type of probe: it allows to set the kind of probe used by the instrument: PbC = PBC probe, ntc = NTC probe.

onF on/off key enabling: nu = disabled; oFF = enabled; ES = not set it.

dP1 Thermostat probe display

dP2 Evaporator probe display

dP3 Third probe display- optional.

dP4 Fourth probe display.

rSE Real set point: (readable only), it shows the set point used during the energy saving cycle or during the continuous cycle.

rEL Software release for internal use.

Ptb Parameter table code: readable only.

8. DIGITAL INPUT (ENABLED WITH P3P = N)

The free voltage digital input is programmable in different configurations by the "i1F" parameter.

8.1 DOOR SWITCH INPUT (i1F = dor)

It signals the door status and the corresponding relay output status through the "odc" parameter: no = normal (any change); Fan = Fan OFF; CPr = Compressor OFF; F_C = Compressor and fan OFF. Since the door is opened, after the delay time set through parameter "did", the door alarm is enabled, the display shows the message "dA" and the regulation restarts in rtr = yES. The alarm stops as soon as the external digital input is disabled again. With the door open, the high and low temperature alarms are disabled.

8.2 GENERIC ALARM (i1F = EAL)

As soon as the digital input is activated the unit will wait for "did" time delay before signalling the "EAL" alarm message. The outputs status don't change. The alarm stops just after the digital input is de-activated.

8.3 SERIOUS ALARM MODE (i1F = bAL)

When the digital input is activated, the unit will wait for "did" delay before signalling the "CA" alarm message. The relay outputs are switched OFF. The alarm will stop as soon as the digital input is de-activated.

8.4 PRESSURE SWITCH (i1F = PAL)

If during the interval time set by "did" parameter, the pressure switch has reached the number of activation of the "nPS" parameter, the "CA" pressure alarm message will be displayed. The compressor and the regulation are stopped. When the digital input is ON the compressor is always OFF. If the nPS activation in the did time is reached, switch off and on the instrument to restart normal regulation.

8.5 START DEFROST (i1F = dFr)

It starts a defrost if there are the right conditions. After the defrost is finished, the normal regulation will restart only if the digital input is disabled otherwise the instrument will wait until the "MdF" safety time is expired.

8.6 INVERSION OF THE KIND OF ACTION: HEATING-COOLING (i1F = Htr)

This function allows to invert the regulation of the controller: from cooling to heating and viceversa.

8.7 ENERGY SAVING (i1F = ES)

The Energy Saving function allows to change the set point value as the result of the SET+ HES (parameter) sum. This function is enabled until the digital input is activated.

8.8 DIGITAL INPUTS POLARITY

The digital input polarity depends on the "i1P" parameter.
i1P=CL: the input is activated by closing the contact.
i1P=OP: the input is activated by opening the contact

9. TTL SERIAL LINE – FOR MONITORING SYSTEMS

The TTL serial line, available through the HOT KEY connector, allows by means of the external TTL/RS485 converter, XJ485-CX, to connect the instrument to a monitoring system ModBUS-RTU compatible such as the X-WEB500/3000/300.

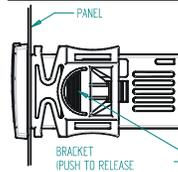
10. X-REP OUTPUT – OPTIONAL

As optional, an X-REP can be connected to the instrument, trough the HOY KEY connector. The X-REP output EXCLUDES the serial connection.



To connect the X-REP to the instrument the following connectors must be used CAB-51F(1m), CAB-52F(2m), CAB-55F(5m),

11. INSTALLATION AND MOUNTING



Instrument XR60CX shall be mounted on vertical panel, in a 29x71 mm hole, and fixed using the special bracket supplied. The temperature range allowed for correct operation is 0÷60 °C. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate by the cooling holes.

12. 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.

12.1 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.

13. HOW TO USE THE HOT KEY

13.1 HOW TO PROGRAM A HOT KEY FROM THE INSTRUMENT (UPLOAD)

1. Program one controller with the front keypad.
2. When the controller is ON, insert the "Hot key" and push ▲ key; the "uPL" message appears followed a by flashing "End"
3. Push "SET" key and the End will stop flashing.
4. Turn OFF the instrument remove the "Hot Key", then turn it ON again.

NOTE: the "Err" message is displayed for failed programming. In this case push again ▲ key if you want to restart the upload again or remove the "Hot key" to abort the operation.

13.2 HOW TO PROGRAM AN INSTRUMENT USING A HOT KEY (DOWNLOAD)

1. Turn OFF the instrument.
2. Insert a programmed "Hot Key" into the 5 PIN receptacle and then turn the Controller ON.
3. Automatically the parameter list of the "Hot Key" is downloaded into the Controller memory, the "dOL" message is blinking followed a by flashing "End".
4. After 10 seconds the instrument will restart working with the new parameters.
5. Remove the "Hot Key".

NOTE the message "Err" is displayed for failed programming. In this case turn the unit off and then on if you want to restart the download again or remove the "Hot key" to abort the operation.

14. ALARM SIGNALS

Message	Cause	Outputs
"P1"	Room probe failure	Compressor output acc. to par. "Con" and "COF"
"P2"	Evaporator probe failure	Defrost end is timed
"P3"	Third probe failure	Outputs unchanged
"P4"	Fourth probe failure	Outputs unchanged
"HA"	Maximum temperature alarm	Outputs unchanged.
"LA"	Minimum temperature alarm	Outputs unchanged.
"HA2"	Condenser high temperature	It depends on the "Ac2" parameter
"LA2"	Condenser low temperature	It depends on the "bLL" parameter

Message	Cause	Outputs
"dA"	Door open	Compressor and fans restarts
"EA"	External alarm	Output unchanged.
"CA"	Serious external alarm (i1F=bAL)	All outputs OFF.
"cA"	Pressure switch alarm (i1F=pAL)	All outputs OFF

14.1 ALARM RECOVERY

Probe alarms "P1", "P2", "P3" and "P4" start some seconds after the fault in the related probe; they automatically stop some seconds after the probe restarts normal operation. Check connections before replacing the probe.

Temperature alarms "HA", "LA", "HA2" and "LA2" automatically stop as soon as the temperature returns to normal values.

Alarms "EA" and "CA" (with i1F=bAL) recover as soon as the digital input is disabled. Alarm "CA" (with i1F=pAL) recovers only by **switching off and on** the instrument.

14.2 OTHER MESSAGES

Pon	Keyboard unlocked.
PoF	Keyboard locked
noP	In programming mode: none parameter is present in Pr1 On the display or in dP2, dP3, dP4: the selected probe is not enabled
noA	None alarm is recorded.

15. TECHNICAL DATA

Housing: self extinguishing ABS.

Case: XR60CX frontal 32x74 mm; depth 60mm;

Mounting: XR60CX panel mounting in a 71x29mm panel cut-out

Protection: IP20; **Frontal protection:** XR60CX IP65

Connections: Screw terminal block ≤ 2.5 mm² wiring.

Power supply: according to the model: 12Vac/dc, $\pm 10\%$; 24Vac/dc, $\pm 10\%$; 230Vac $\pm 10\%$, 50/60Hz, 110Vac $\pm 10\%$, 50/60Hz

Power absorption: 3VA max

Display: 3 digits, red LED, 14.2 mm high; **Inputs:** Up to 4 NTC or PTC probes.

Digital input: free voltage contact

Relay outputs: compressor SPST 8(3) A, 250Vac; SPST 16(6)A 250Vac or 20(8)A 250Vac defrost: SPDT 8(3) A, 250Vac

fan: SPST 8(3) A, 250Vac or SPST 5(2) A

Data storing: on the non-volatile memory (EEPROM).

Kind of action: 1B; **Pollution grade:** 2; **Software class:** A.;

Rated impulsive voltage: 2500V; **Overvoltage Category:** II

Operating temperature: 0+60 °C; **Storage temperature:** -30+85 °C.

Relative humidity: 20+85% (no condensing)

Measuring and regulation range: NTC probe: -40+110°C (-40+230°F);

PTC probe: -50+150°C (-58+302°F)

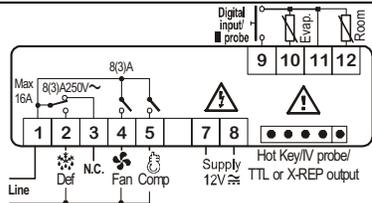
Resolution: 0,1 °C or 1 °C or 1 °F (selectable); **Accuracy (ambient temp. 25°C):** $\pm 0,7$ °C ± 1 digit

16. CONNECTIONS

The X-REP output excludes the TTL output... It's present in the following codes:

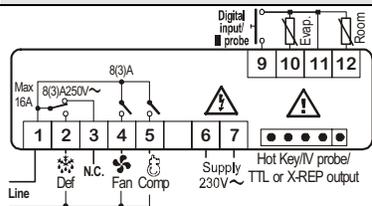
XR60CX-xx2xx, XR60CX-xx3xx;

16.1 XR60CX – 8A OR 16A COMP. RELAY - 12VAC/DV OR 24 VAC/DV



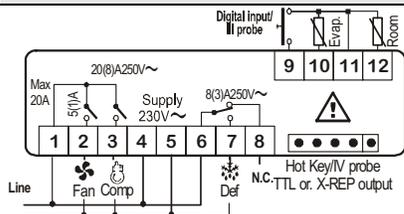
NOTE: The compressor relay is 8(3)A or 16(6)A according to the model.
24Vac/dc supply: connect to the terminals 7 and 8.

16.2 XR60CX – 8A OR 16A COMP. RELAY - 120VAC OR 230 VAC



NOTE: The compressor relay is 8(3)A or 16(6)A according to the model.
120Vac supply: connect to the terminals 6 and 7.

16.3 XR60C – 20A COMP. RELAY - 120VAC OR 230 VAC



120Vac supply: connect to the terminals 5 and 6.

17. DEFAULT SETTING VALUES

Label	Name	Range	°C/°F	---
Set	Set point	LS+US	-5.0	---
Hy	Differential	0,1+25,5°C/ 1+ 255°F	2.0	Pr1
LS	Minimum set point	-50°C+SET/-58°F+SET	-50.0	Pr2
US	Maximum set point	SET+110°C/ SET + 230°F	110	Pr2
Ot	Thermostat probe calibration	-12+12°C /-120+120°F	0.0	Pr1
P2P	Evaporator probe presence	n=not present; Y=pres.	Y	Pr1
OE	Evaporator probe calibration	-12+12°C /-120+120°F	0.0	Pr2
P3P	Third probe presence	n=not present; Y=pres.	n	Pr2
O3	Third probe calibration	-12+12°C /-120+120°F	0	Pr2
P4P	Fourth probe presence	n=not present; Y=pres.	n	Pr2
O4	Fourth probe calibration	-12+12°C /-120+120°F	0	Pr2
Ods	Outputs delay at start up	0+255 min	0	Pr2
AC	Anti-short cycle delay	0 + 50 min	1	Pr1
rtr	P1-P2 percentage for regulation	0 + 100(100=P1, 0=P2)	100	Pr2
Cct	Continuous cycle duration	0+24,0h	0.0	Pr2
CCS	Set point for continuous cycle	(-55,0+150,0°C) (-67+302°F)	-5	Pr2
COn	Compressor ON time with faulty probe	0 + 255 min	15	Pr2
COF	Compressor OFF time with faulty probe	0 + 255 min	30	Pr2
CF	Temperature measurement unit	°C + °F	°C	Pr2
rES	Resolution	in=integer; dE= dec.point	dE	Pr1
LoD	Probe displayed	P1;P2	P1	Pr2
rEd?	X-REP display	P1 - P2 - P3 - P4 - SET - dtr	P1	Pr2
dLy	Display temperature delay	0 + 20.0 min (10 sec.)	0	Pr2
dtr	P1-P2 percentage for display	1 + 99	50	Pr2
tdF	Defrost type	EL=el. heater; in= hot gas	EL	Pr1
dFP	Probe selection for defrost termination	nP; P1; P2; P3; P4	P2	Pr2
dTE	Defrost termination temperature	-50 - 50 °C	8	Pr1
ldF	Interval between defrost cycles	1 + 120 ore	6	Pr1
MdF	(Maximum) length for defrost	0 + 255 min	30	Pr1
dSd	Start defrost delay	0+99min	0	Pr2
dFd	Displaying during defrost	rt, it, SET, DEF	it	Pr2
dAd	MAX display delay after defrost	0 + 255 min	30	Pr2
Fdt	Draining time	0+120 min	0	Pr2
dPo	First defrost after startup	n=after ldF; y=immed.	n	Pr2
dAF	Defrost delay after fast freezing	0 + 23h e 50'	0.0	Pr2
Fnc	Fan operating mode	C-n, o-n, C-y, o-Y	o-n	Pr1
Fnd	Fan delay after defrost	0+255min	10	Pr1
Fct	Differential of temperature for forced activation of fans	0+50°C	10	Pr2
FSt	Fan stop temperature	-50+50°C/-58+122°F	2	Pr1
Fon	Fan on time with compressor off	0+15 (min.)	0	Pr2
Fof	Fan off time with compressor off	0+15 (min.)	0	Pr2
FAP	Probe selection for fan management	nP; P1; P2; P3; P4	P2	Pr2
ALc	Temperat. alarms configuration	rE= related to set; Ab= absolute	Ab	Pr2
ALU	MAXIMUM temperature alarm	Set+110,0°C; Set+230°F	110	Pr1
ALL	Minimum temperature alarm	-50,0°C; Set/-58°F; Set	-50.0	Pr1
AFH	Differential for temperat. alarm recovery	(0,1°C+25,5°C) (1°F+45°F)	1	Pr2
ALd	Temperature alarm delay	0 + 255 min	15	Pr2
dAO	Delay of temperature alarm at start up	0 + 23h e 50'	1.3	Pr2
AP2	Probe for temperat. alarm of condenser	nP; P1; P2; P3; P4	P4	Pr2
AL2	Condenser for low temperat. alarm	(-55 + 150°C) (-67+ 302°F)	-40	Pr2
AU2	Condenser for high temperat. alarm	(-55 + 150°C) (-67+ 302°F)	110	Pr2
AH2	Differ. for condenser temp. alar. recovery	(0,1°C + 25,5°C) (1°F + 45°F)	5	Pr2
Ad2	Condenser temperature alarm delay	0 + 254 (min.) , 255=nU	15	Pr2
dA2	Delay of cond. temper. alarm at start up	0.0 + 23h 50'	1,3	Pr2
bLL	Compr. off for condenser low temperature alarm	n(0) - Y(1)	n	Pr2
bLL	Compr. off for condenser high temperature alarm	n(0) - Y(1)	n	Pr2
AC2	temperature alarm	n(0) - Y(1)	n	Pr2
i1P	Digital input polarity	oP=opening; CL=closing	cl	Pr1
i1F	Digital input configuration	EAL, bAL, PAL, dor; dEF; Hr, AUS	dor	Pr1
did	Digital input alarm delay	0+255min	15	Pr1
Nps	Number of activation of pressure switch	0 + 15	15	Pr2
odc	Compress and fan status with open door	no; Fan; CPR; F_C	F-c	Pr2
rrd	Regulation restart with door open alarm	n - Y	y	Pr2
HES	Differential for Energy Saving	(-30°C+30°C) (-54°F+54°F)	0	Pr2
Pbc	Kind of probe	Ptc; ntc	1	Pr2
Adr	Serial address	1+247	1	Pr2
onF	on/off key enabling	nu, oFF; ES	ntc	Pr1
dP1	Room probe display	--	nu	Pr2
dP2	Evaporator probe display	--	--	Pr1
dP3	Third probe display	--	--	Pr1
dP4	Fourth probe display	--	--	Pr1
rSE	Valore set operativo	actual set	--	Pr2
rEL	Software release	--	--	Pr2
Ptb	Map code	--	--	Pr2

² Only for models XR60CX-xx2xx, XR60CX-xx3xx;

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Chapter 9 Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
The unit will not operate	Unit is not turned on	Flip the switch in the back of the unit to the "On" position and confirm light on switch comes on.
	Power cord unplugged	Plug unit into a grounded 3 prong outlet on a dedicated circuit
	Power supply/Outlet is not working	Plug another electrical device into the outlet to confirm the outlet is receiving power. If the device does not work check and replace the building fuse or reset the circuit breaker. If problem continues call an electrician.
	Building circuit breaker tripped	Reset breaker and plug unit into a grounded 3 prong outlet on a dedicated circuit
	Power supply voltage incorrect	Verify power supply voltage matches unit voltage on dataplate
Unit warms up or temperature fluctuates (if unit is warming up remove product before troubleshooting to protect)	Door is open	Make sure door is completely closed and sealing properly
	Warm product loaded into unit	Allow ample time to recover from loading warm product
	Power supply/Outlet is not working	Plug another electrical device into the outlet to confirm the outlet is receiving power. If the device does not work check and replace the building fuse or reset the circuit breaker. If problem continues call an electrician.
	Condenser is blocked or dirty	Clean condenser to ensure sufficient airflow
	Airflow to machine compartment blocked	Maintain proper clearances around unit as described in "Installation"
	Airflow inside unit is blocked	Ensure airflow path to grill inside freezer/refrigerator is clear and there is room for airflow around contents
	Evaporator coil iced over	Look through grill inside unit to see if ice is blocking airflow through evaporator. If there is excessive ice turn unit off to defrost unit. Turn unit back on after ice is clear.
Cold or warm air from building HVAC system blowing directly on refrigeration system	Move unit out of HVAC airflow path	

Troubleshooting table continued on next page

Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
Excessive condensation or frost inside unit (some moisture/frost is normal)	Door left open	Close door
	Excessive humidity in room	Put unit in a controlled environment
	Frequent or long door openings	Reduce amount of time door is open and the frequency of openings
	Debris on gasket or sealing surface	Clean and dry gasket
	External sensor wires routed through gasket seal surface	Route sensor wires through portal on back of unit and insulate portal tunnel
	Damaged gasket	Replace gasket
	Hinge out of adjustment	Adjust hinge per instructions in “Hinge and Latch Adjustment”
	Latch out of adjustment	Adjust latch per instructions in “Hinge and Latch Adjustment”
	Unit not level preventing condensate water from draining	Level unit by placing thin shims under the points where the unit contacts the floor
The unit seems noisy	Unit normal operation	The compressor and fans in the unit will make some noise when running. Keeping proper spacing to the wall and ceiling will help to minimize noise.
	Condenser is blocked or dirty	Clean condenser to ensure sufficient airflow
	Loose parts	Check around unit for loose and rattling parts. Tighten any loose screws, especially after performing maintenance such as condenser cleaning.
	Unit not level	Make sure floor is level and all casters are resting on floor. If necessary level unit by placing thin shims under the points where the unit contacts the floor.
Door will not close completely or it pops open	Door blocked by unit contents	Move contents to prevent obstruction with door
	Drawer or shelf not in position	Push drawer or shelf back into the correct position
	Hinge out of adjustment	Adjust hinge per instructions in “Hinge and Latch Adjustment”
	Latch out of adjustment	Adjust latch per instructions in “Hinge and Latch Adjustment”
	Unit not sitting level	Level the unit with shims
The door is difficult to open	Gaskets dirty or sticky	Clean and dry gasket
	Ice buildup on gasket	Clean and dry gasket
	Latch out of adjustment	Adjust latch per instructions in “Hinge and Latch Adjustment”
	Vacuum lock	Wait a short period after door has been closed to re-open.

Light in refrigerator does not turn on	Light switch is off	Turn light switch on
	Light bulb is burned out	Replace light bulb with Philips PL-C 13W/841/4P (314357H01) and install the light cover (314755H02) on the bulb.
	Door switch is stuck	Check door switch at top of refrigerator opening to make sure it slides in and out when door is opened.

Chapter 10 Accessories

Optional accessories.

Material-No.	Description
7460TA	Drawer set (7 drawers) for LR25D models
7461TA	Drawer set (14 drawers) for LR55D models
7462TA	Additional extra drawer
7465TA	Additional extra shelf
7478TA	Right-hand hinge door, non controller side for model LR25D
7468TA	Left-hand hinge door, controller side for model LR25D
7471TA	Integrated 7ER chart recorder
7472TA	Integrated HemaPro 2000 surveillance center

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