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3. USER MANUAL
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5. DIGITAL CONTROLLER MANUALS
6. PARAMETERS
7. ELECTRIC WIRE DIAGRAM (SOME USER MANUALS INCLUDES THIS)

*2a Position 6-a*

TORRAS  
P55-S

UMU

Program: HORIZON Date: 31.03.2021 11:11

Tester:

Earth Test t= 1.0 s I= 10 AAC Umax= 12 V  
AC

Testing by EN 60335  
Rmin= 0 MOhm Rmax= 200 MOhm  
Time | Resist. | Current | Error  
| Result

11:10:15 | 73 mOhm | 10.86 A |  
| OK

Insulation Test t= 1.0 s U= 1000 V Ustart= 10  
0 V Rmin= 5.00 MOhm tRamp= 1.0 s  
Time | Resist. | Voltage | Error  
| Result

11:10:18 | 697 MOhm | 1000 V |  
| OK

Flack Test t= 1.0 s U= 1000 VDC Ustart= 100 V  
Imin= 0.00 mA Imax= 1.00 mA tRamp= 1.0 s  
Time | Current | Voltage | Error  
| Result

11:10:22 | 0.0 mA | 1000 V |  
| OK

Load Test t= 90.0 s tg= 60.0 s Imax= 10.0 A  
max= 10.0 A  
Time | Current | Analog | Error  
| Result

11:11:22 | TORRAS  
| OK

Programresult-OK

UMU

CONTENT

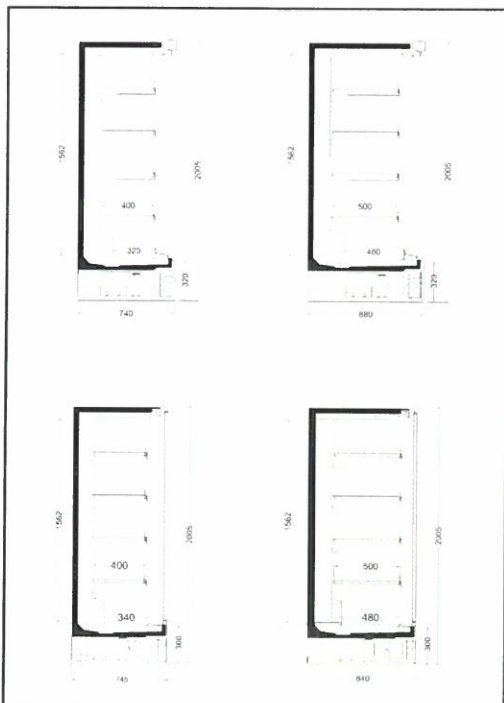
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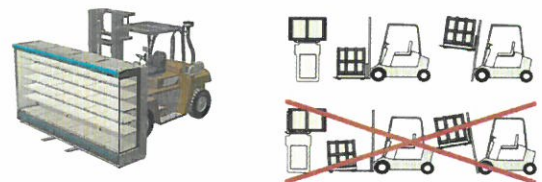
HORIZON PLUG-IN  
Installation and User Manual

1. Images

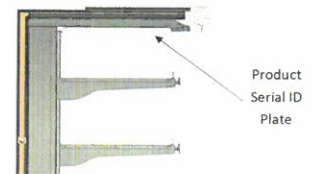
1.1 Installation Technical Drawing



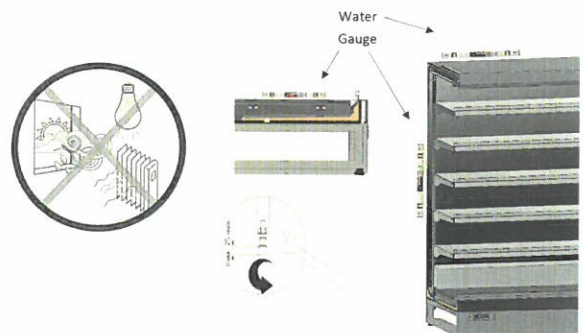
1.2 Transportation



1.3 Product Serial ID Plate

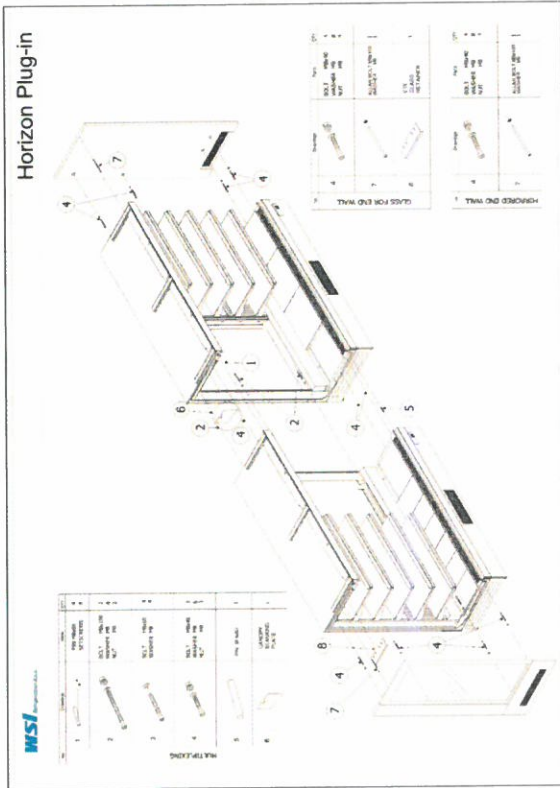


1.4 Installation and Environmental Factor

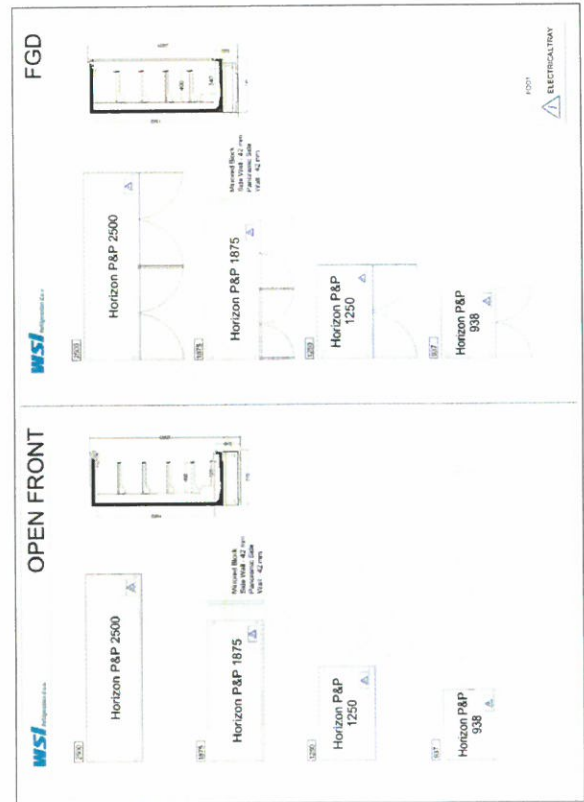


2. Images

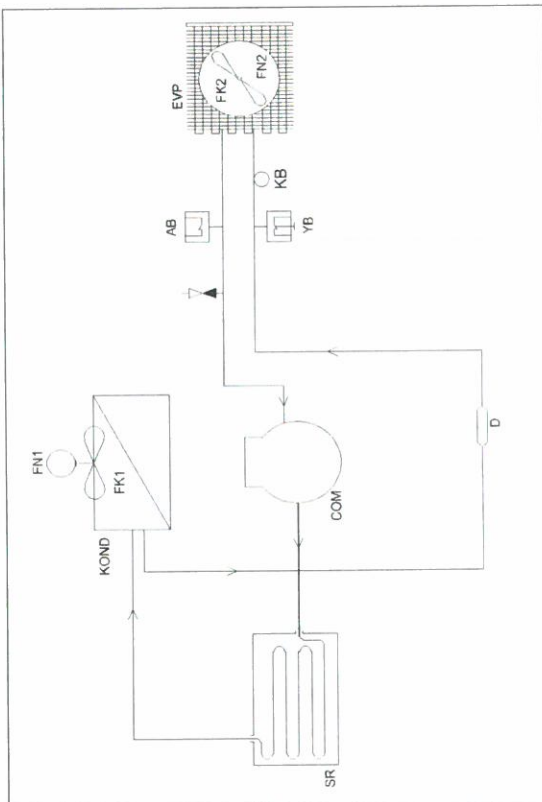
2.1 MULTIPLEXING



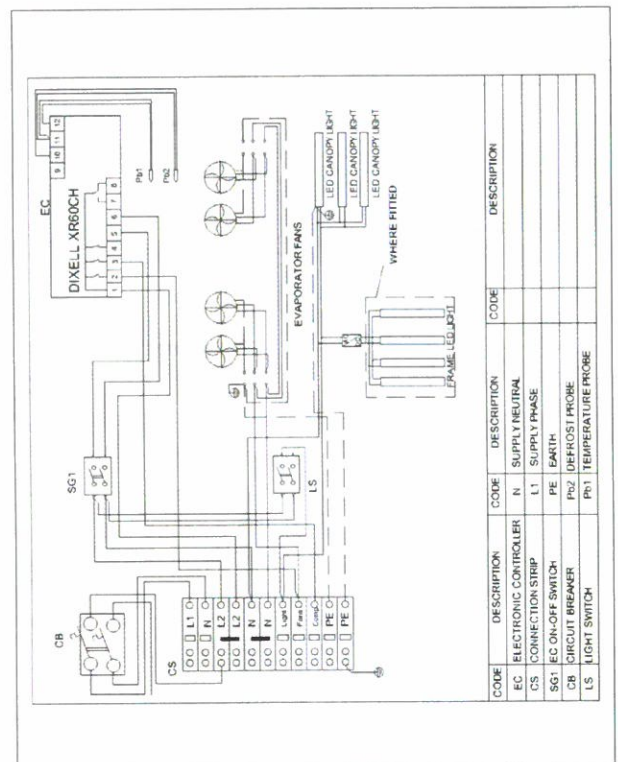
3. Image



4. Refrigeration Diagram

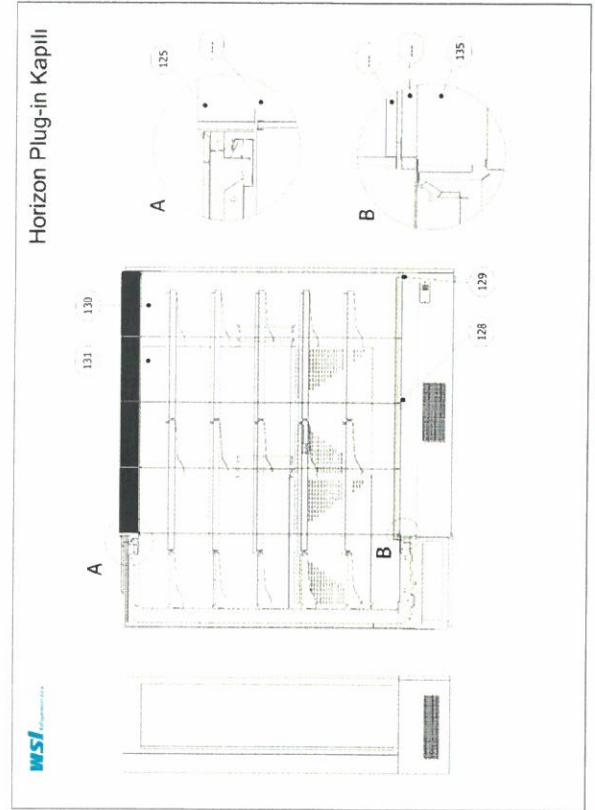
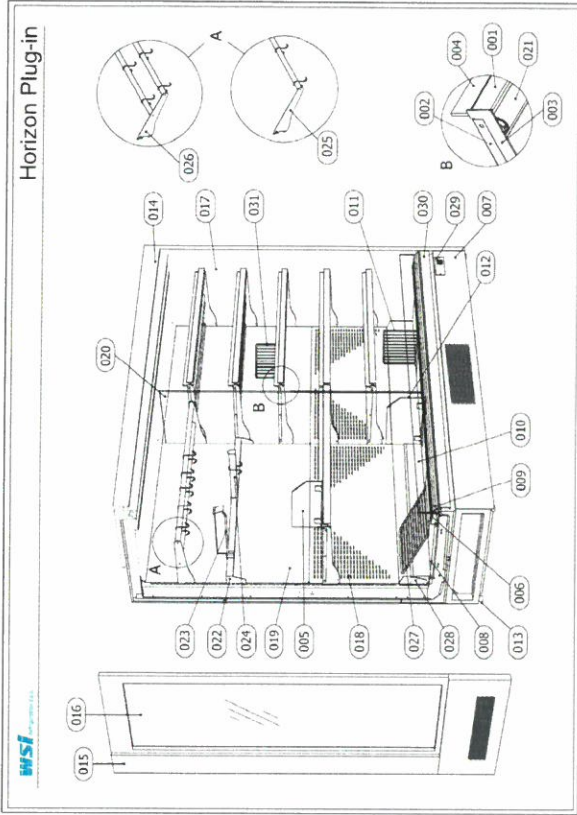


5. Electrical Wiring Diagram





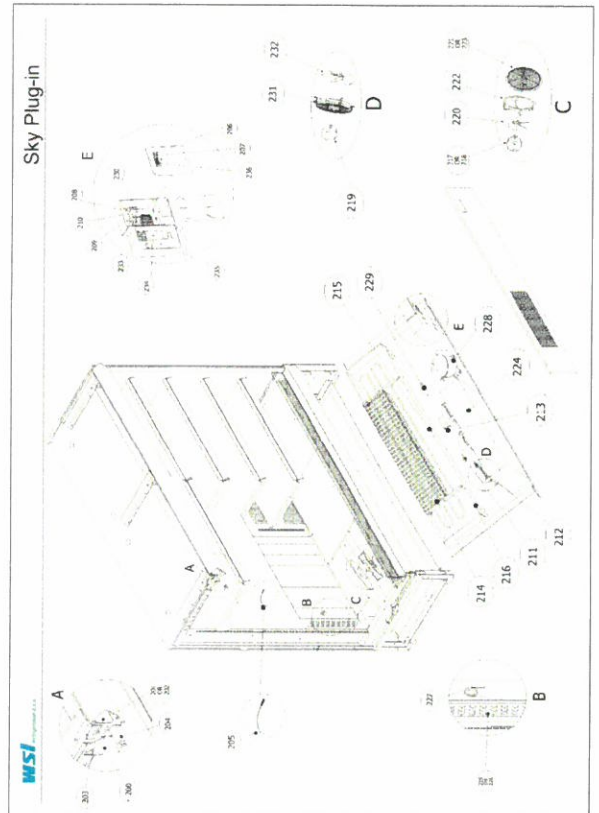
6. COSMETIC



6.1 Cosmetic Parts List

| PART NO | PART DESCRIPTION                      | 938 PART NO: | 1250 PART NO: | 1875 PART NO: | 2500 PART NO: |
|---------|---------------------------------------|--------------|---------------|---------------|---------------|
| 001     | SHELF TICKET STRIP                    |              |               |               |               |
| 002     | SHELF                                 |              |               |               |               |
| 003     | SHELF BRACKET                         |              |               |               |               |
| 004     | SHELF PERSPEX RISER                   |              |               |               |               |
| 005     | SHELF DIVIDER PERSPEX                 |              |               |               |               |
| 006     | AIR RETURN GRILL                      |              |               |               |               |
| 007     | MACHINERY GRILL                       |              |               |               |               |
| 008     | BASE PLATE                            |              |               |               |               |
| 009     | BASE TICKET STRIP                     |              |               |               |               |
| 010     | BASE PERSPEX RISER                    |              |               |               |               |
| 011     | BASE WIRE DIVIDER                     |              |               |               |               |
| 012     | BASE PERSPEX DIVIDER                  |              |               |               |               |
| 013     | FEET                                  |              |               |               |               |
| 014     | CANOPY                                |              |               |               |               |
| 015     | DUAL GLAZED END WALL GABLE SET        |              |               |               |               |
| 016     | DUAL GLAZED GLASS                     |              |               |               |               |
| 017     | BLOCK END WALL GABLE SET              |              |               |               |               |
| 018     | BACK PANEL - BOTTOM                   |              |               |               |               |
| 019     | BACK PANEL - TOP                      |              |               |               |               |
| 020     | PERSPEX SYSTEM DIVIDER                |              |               |               |               |
| 021     | SHELF LED                             |              |               |               |               |
| 022     | PIN BAR                               |              |               |               |               |
| 023     | HOOK WITH TICKET STRIP                |              |               |               |               |
| 024     | PROFILE HOOK                          |              |               |               |               |
| 025     | SINGLE ROW HANGING PROFILE            |              |               |               |               |
| 026     | DOUBLE ROW HANGING PROFILE            |              |               |               |               |
| 027     | BASE WIRE                             |              |               |               |               |
| 028     | WIRE GRILL ELEVATION BAR              |              |               |               |               |
| 029     | ISOLATOR COVER                        |              |               |               |               |
| 030     | FRONT OVERLAY                         |              |               |               |               |
| 031     | SHELF WIRE DIVIDER                    |              |               |               |               |
| 125     | CANOPY PROFILE FOR DOOR               |              |               |               |               |
| 126     | CANOPY PROFILE FOR INSULATION PLASTIC |              |               |               |               |
| 127     | BODY ALUMINIUM FOR DOOR               |              |               |               |               |
| 128     | RHS HINGE HOUSING HOLE                |              |               |               |               |
| 129     | LHS HINGE HOUSING HOLE                |              |               |               |               |
| 130     | RHS DOOR                              |              |               |               |               |
| 131     | LHS DOOR                              |              |               |               |               |
| 132     | DOOR PLASTIC                          |              |               |               |               |
| 133     | KAPI SEAL                             |              |               |               |               |
| 134     | ALUMINIUM                             |              |               |               |               |
| 135     | FRONT OVERLAY                         |              |               |               |               |

7. ENGINEERING



7.1 Engineering Parts List

| PART NO | PART DESCRIPTION                  | 938 PART NO: | 1250 PART NO: | 1875 PART NO: | 2500 PART NO: |
|---------|-----------------------------------|--------------|---------------|---------------|---------------|
| 200     | HONEYCOMB                         |              |               |               |               |
| 201     | MANUAL NIGHT BLIND                |              |               |               |               |
| 202     | ELECTRONIC NIGHT BLIND            |              |               |               |               |
| 203     | NIGHT BLIND MOTOR                 |              |               |               |               |
| 204     | T8 LED                            |              |               |               |               |
| 205     | HEAT PROBE                        |              |               |               |               |
| 206     | ON / OFF SWITCH                   |              |               |               |               |
| 207     | LIGHT ON / OFF SWITCH             |              |               |               |               |
| 208     | FUSE                              |              |               |               |               |
| 209     | CONTACTOR                         |              |               |               |               |
| 210     | ELECTRICAL BOX                    |              |               |               |               |
| 211     | HIGH PRESSURE SWITCH              |              |               |               |               |
| 212     | LOW PRESSURE SWITCH               |              |               |               |               |
| 213     | JUNCTION BOX                      |              |               |               |               |
| 214     | INDUSTRIAL CLOTH                  |              |               |               |               |
| 215     | CATHOD                            |              |               |               |               |
| 216     | CONDENSATE TRAY                   |              |               |               |               |
| 217     | EVAPORATOR FAN MOTOR              |              |               |               |               |
| 218     | EVAPORATOR Q FAN MOTOR EC         |              |               |               |               |
| 219     | CONDENSER FAN MOTOR EC            |              |               |               |               |
| 220     | METAL FAN BLADE 200mm DIA 32°     |              |               |               |               |
| 221     | FAN GAURD METAL                   |              |               |               |               |
| 222     | FAN MOUNTING RING                 |              |               |               |               |
| 223     | FAN GAURD PLASTIC                 |              |               |               |               |
| 224     | CONDENSER (Micro Channel)         |              |               |               |               |
| 225     | EVAPORATOR – OPEN FRONT           |              |               |               |               |
| 226     | EVAPORATOR - FGD                  |              |               |               |               |
| 227     | CAPILLARY                         |              |               |               |               |
| 228     | COMPRESSOR                        |              |               |               |               |
| 229     | DRIER                             |              |               |               |               |
| 230     | TIME DELAY RELAY                  |              |               |               |               |
| 231     | FAN GAURD                         |              |               |               |               |
| 232     | CONDENSER FAN BLADE 200mm DIA 32° |              |               |               |               |
| 233     | START RELAY                       |              |               |               |               |
| 234     | RUN CAPACITOR                     |              |               |               |               |
| 235     | START CAPACITOR                   |              |               |               |               |
| 236     | DIGITAL CONTROLLER                |              |               |               |               |

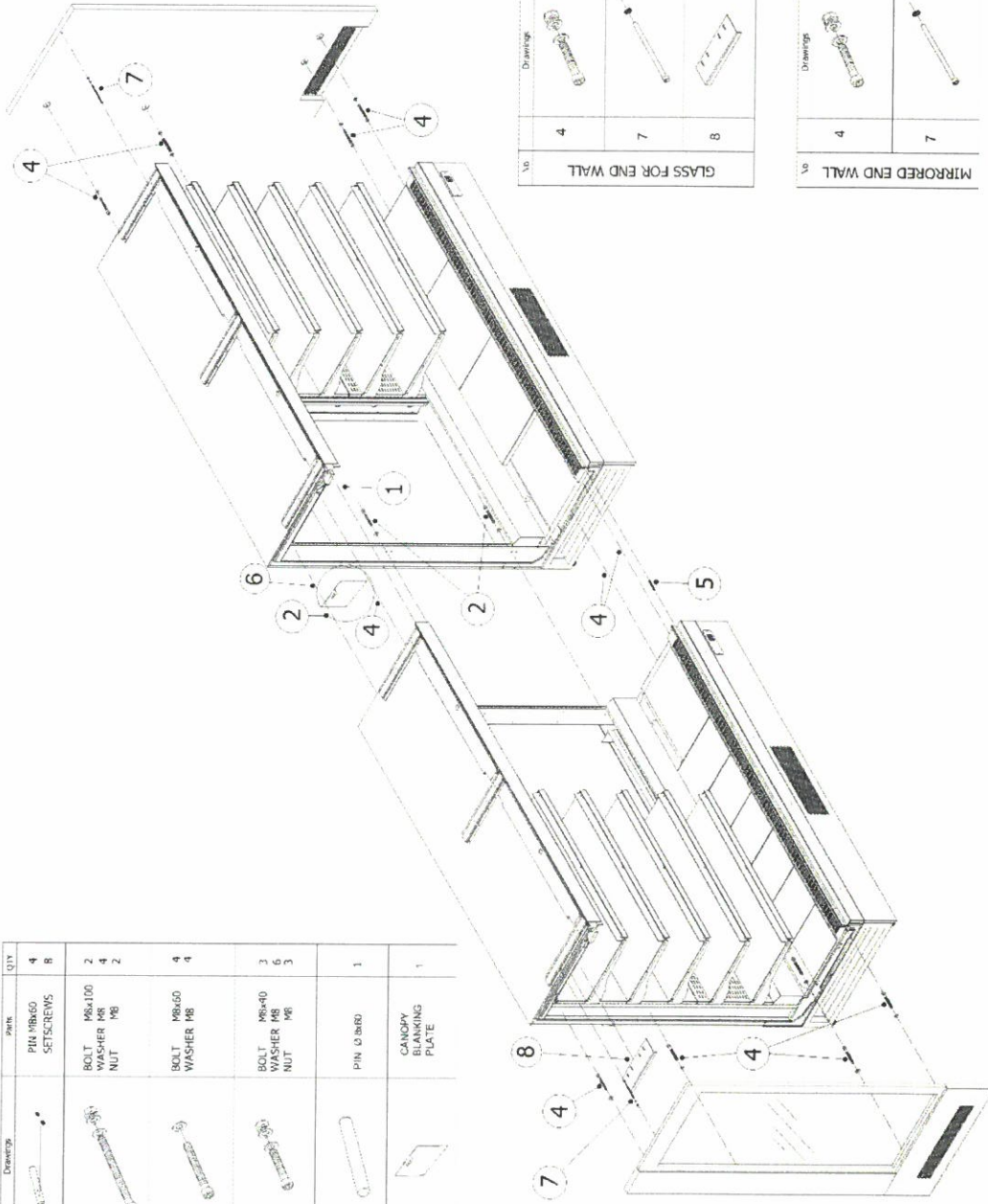
# 1.1 MULTIPLEXING

## Horizon Plug-in



| No. | Drawing | Part                  | QTY |
|-----|---------|-----------------------|-----|
| 1   |         | PIN M8x60 SETSCREWS   | 4   |
| 2   |         | BOLT WASHER M8 NUT M8 | 8   |
| 3   |         | BOLT WASHER M8        | 4   |
| 4   |         | BOLT WASHER M8        | 4   |
| 5   |         | PIN Ø 8x8             | 1   |
| 6   |         | CANOPY BLANKING PLATE | 1   |

MULTIPLEXING



| No | Drawing | Part                        | QTY |
|----|---------|-----------------------------|-----|
| 4  |         | BOLT WASHER M8 NUT M8       | 4   |
| 7  |         | ALLAN BOLT M8x100 WASHER M8 | 1   |
| 8  |         | EW GLASS RETAINER           | 1   |

GLASS FOR END WALL

| No | Drawing | Part                        | QTY |
|----|---------|-----------------------------|-----|
| 4  |         | BOLT WASHER M8 NUT M8       | 4   |
| 7  |         | ALLAN BOLT M8x100 WASHER M8 | 1   |

MIRRORED END WALL



Digital controller with defrost and fan management  
**XR70CH**

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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.
- Dixell Srl reserves the right to change the composition of its products, even without notice, ensuring the same and unchanged functionality.

**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.r.l." (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.
- Dixell Srl reserves the right to change the composition of its products, even without notice, ensuring the same and unchanged functionality.

**2. GENERAL DESCRIPTION**

Model XR70CH, format 32x74mm, is microprocessor based controller, suitable for applications on medium or low temperature ventilated refrigerating units. It has four relay outputs to control compressor, fan, and defrost, which can be either electrical or reverse cycle (hot gas). The last one can be used as light, for alarm signalling or as auxiliary output. It is also provided with up to 4 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 digital input can operate as third temperature probe. The fourth one, to connect to the HOT KEY terminals, is used to signal the condenser temperature alarm or to display another temperature.

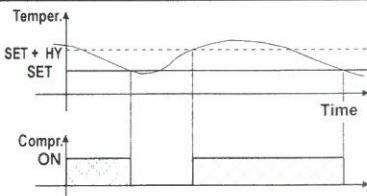
The HOT-KEY output allows to connect the unit, by means of the external module XJ485-CX, to a network line ModBUS-RTU compatible such as the dixell monitoring units of X-WEB family. It allows to program the controller by means the HOT-KEY programming keyboard.

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 Fdt parameter. With Fdt=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.

**How it works:** if the temperature difference between evaporator probe and room probe is higher than the FCt parameter value, fans will be 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 working in parallel with 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, also when the compressor is off.

**4. FRONT PANEL COMMANDS**



|            |  |
|------------|--|
| <b>SET</b> | 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 on and off (when onF=oFF).  |
|            | To switch on and off the light (when oA3=LiG).   |

**KEY COMBINATIONS:**

|              |  |
|--------------|--|
|              | To lock & unlock the keyboard.             |
| <b>SET</b> + | To enter in programming mode.              |
| <b>SET</b> + | 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       | Light on                              |
| <b>RUX</b>   | ON       | Auxiliary relay on                    |
| <b>°C/°F</b> | ON       | Measurement unit                      |
| <b>°C/°F</b> | Flashing | Programming phase                     |

**5. MAX & MIN TEMPERATURE MEMORIZATION**

**5.1 HOW TO: SEE THE MIN TEMPERATURE**

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

**5.2 HOW TO: SEE THE MAX TEMPERATURE**

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




**5.3 HOW TO: RESET THE MAX AND MIN TEMPERATURE RECORDED**

1. Keep the **SET** key pressed more than 3 sec, while the max or min temperature is displayed. ("rSt" message will be displayed)
2. To confirm the operation the "rSt" message will start blinking and the normal temperature will be displayed.

**6. MAIN FUNCTIONS**


**6.1 HOW TO: SEE THE SET POINT**

-  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 sec to display the probe value again.

**6.2 HOW TO CHANGE THE SET POINT**

1. Push the **SET** key more than 2 sec to change the Set point value.
2. The value of the set point will be displayed and the "°C" or "°F" LED will start blinking.
3. To change the Set value push the **UP** or **DOWN** arrows within 10 sec.
4. To save the new set point value, push the **SET** key again or wait for 10 sec.

**6.3 HOW TO START A MANUAL DEFOST**

-  Push the **DEF** key for more than 2 sec and a manual defrost will start.

**6.4 HOW TO: CHANGE A PARAMETER VALUE**

To change a parameter value, operate as follows:

1. Enter the Programming mode by pressing the **SET+DOWN** buttons for 3s (the °C or °F LED will start blinking).
2. Select the required parameter. Press the **SET** button to display its actual value.
3. Use **UP** or **DOWN** buttons to change its value.
4. Press **SET** button to store the new value and move to the following parameter.

To exit: Press **SET + UP** buttons or waiting for 15s without pressing any key.

NOTE: the set value is stored even when the procedure is exited by waiting for the time-out to expire.

**6.5 THE HIDDEN MENU**

The hidden menu includes all the parameters of the instrument.

**6.5.1 HOW TO: ENTER THE HIDDEN MENU**

1. Enter the Programming mode by pressing the **SET+DOWN** buttons for 3 sec (the °C or °F LED will start blinking).
2. Released the buttons and then push again the **SET+DOWN** buttons for more than 7s. The Pr2 label will be displayed immediately followed from the HY parameter.  
**Now it is possible to browse the hidden menu.**
3. Select the required parameter.
4. Press the **SET** button to display its value.
5. Use **UP** or **DOWN** to change its value.
6. Press **SET** to store the new value and move to the following parameter.

To exit: Press **SET+DOWN** or wait 15 sec without pressing a key.

NOTE1: if no parameter is present in Pr1 menu, after 3 sec the "noP" message will be displayed. Keep the buttons pushed till the Pr2 message will be displayed.

NOTE2: the set value is stored even when the procedure is exited by waiting for the time-out to expire

**6.5.2 HOW TO: MOVE A PARAMETER FROM THE HIDDEN MENU TO THE FIRST LEVEL AND VICEVERSA.**

Each parameter present in the hidden menu (Pr2) can be moved into the user level (Pr1) by pressing **SET+DOWN** buttons. If a parameter is part of the user level, when showed in the hidden menu the decimal point will be lit.

**6.6 HOW TO: LOCK THE KEYBOARD**

1. Keep both **UP** and **DOWN** buttons pressed for more than 3 sec.
2. The "PoF" message will be displayed and the keyboard will be locked. At this point it will be possible only to see the set point or the MAX o Min temperature stored
3. If a button is pressed more than 3 sec the "PoF" message will be displayed


**6.7 HOW TO: UNLOCK THE KEYBOARD**

Keep pressed together for more than 3 sec the **UP** and **DOWN** keys till the "Pon" message will be displayed.

**6.8 THE CONTINUOUS CYCLE**

When defrost is not in progress, it can be activated by holding the **UP** key pressed for about 3 sec. The compressor operates to maintain the CCS set point for the time set through the CCT parameter. The cycle can be terminated before the end of the set time using the same activation key **UP** for 3 sec.

**6.9 THE ON/OFF FUNCTION**

-  With "onF = oFF", pushing the **ON/OFF** key, the instrument is switched off. The "OFF" message is displayed. In this configuration, the regulation is disabled.  
To switch the instrument on, push again the **ON/OFF** key.

**WARNING:** Loads connected to the normally closed contacts of the relays are always supplied and under voltage, even if the instrument is in stand by mode.

**7. PARAMETERS**

**REGULATION**

|     |   |
|-----|---|
| HY  | <b>Differential:</b> (0.1 to 25.5°C; 1 to 45°F) intervention differential for set point. Compressor Cut IN is Set Point + differential (HY). Compressor Cut OUT is when the temperature reaches the set point.  |
| LS  | <b>Minimum set point:</b> (-100°C to SET; -148°F to SET) sets the minimum value for the set point.  |
| US  | <b>Maximum set point:</b> (SET to 150°C; SET to 302°F) set the maximum value for set point.   |
| ot  | <b>Thermostat probe calibration:</b> (-12.0 to 12.0°C; -21 to 21°F) allows to adjust possible offset of the thermostat probe.   |
| P2P | <b>Evaporator probe presence:</b> (n; Y) n = not present, the defrost stops by time; Y = present, the defrost stops by temperature.   |
| oE  | <b>Evaporator probe calibration:</b> (-12.0 to 12.0°C; -21 to 21°F) allows to adjust possible offset of the evaporator probe.   |
| P3P | <b>Third probe presence (P3):</b> (n; Y) n = not present, the terminals 18-20 operate as digital input; Y = present, the terminals 18-20 operate as third probe.  |
| o3  | <b>Third probe calibration (P3):</b> (-12.0 to 12.0°C; -21 to 21°F) allows to adjust possible offset of the third probe.  |
| P4P | <b>Fourth probe presence:</b> (n; Y) n = Not present; Y = present.  |
| o4  | <b>Fourth probe calibration:</b> (-12.0 to 12.0°C; -21 to 21°F) allows to adjust possible offset of the fourth probe.   |
| odS | <b>Outputs activation delay at start up:</b> (0 to 255min) this function is enabled at the initial start up of the instrument and inhibits any output activation for the period of time set in the parameter.   |
| AC  | <b>Anti-short cycle delay:</b> (0 to 50min) minimum interval between the compressor stop and the following restart.   |
| rtr | <b>Percentage of the second and first probe for regulation:</b> (0 to 100; 100=P1, 0=P2) it allows to set the regulation according to the percentage of the first and second probe, as for the following formula (rtr(P1-P2)/100 + P2).                               |
| CCt | <b>Compressor ON time during continuous cycle:</b> (0.0 to 24h00min, res. 10min) allows to set the length of the continuous cycle. Compressor stays on without interruption during CCt time. This is useful, for instance, when the room is filled with new products. |
| CCS | <b>Set point for continuous cycle:</b> (-55 to 150°C; -67 to 302°F) it sets the set point used during the continuous cycle.   |
| Con | <b>Compressor ON time with faulty probe:</b> (0 to 255min) time during which the compressor is active in case of faulty thermostat probe. With Con=0 compressor is always OFF.  |
| CoF | <b>Compressor OFF time with faulty probe:</b> (0 to 255min) time during which the compressor is OFF in case of faulty thermostat probe. With CoF=0 compressor is always active.   |

**DISPLAY**

|     |   |
|-----|---|
| CF  | <b>Temperature measurement unit:</b> (°C; °F) °C = Celsius; °F = Fahrenheit.<br><b>WARNING:</b> When the measurement unit is changed the SET point and the values of the parameters HY, LS, US, ot, ALU and ALL have to be checked and modified (if necessary).                               |
| rES | <b>Resolution (for °C):</b> (n=1°C; dE=0.1°C) allows decimal point display.   |
| Lod | <b>Instrument display:</b> (P1; P2, P3, P4, SET, dtr) it selects which probe is displayed by the instrument. P1 = Thermostat probe; P2 = Evaporator probe; P3 = Third probe (only for model with this option enabled); P4 = Fourth probe, SET = set point; dtr = percentage of visualization. |
| rEd | <b>X-REP display (optional):</b> (P1; P2, P3, P4, SET, dtr) it selects which probe is displayed by X- REP. P1 = Thermostat probe; P2 = Evaporator probe; P3 = Third probe (only for model with this option enabled); P4 = Fourth probe, SET = set point; dtr = percentage of visualization.   |
| dLY | <b>Display delay:</b> (0 to 20min00s; res. 10s) when the temperature increases, the display is updated of 1°C or 1°F after this time.   |
| dtr | <b>Percentage of the second and first probe for visualization when Lod=dtr:</b> (0 to 99; 100=P1, 0=P2) if Lod=dtr it allows to set the visualization according to the percentage of the first and second probe, as for the following formula (dtr(P1-P2)/100 + P2).                          |

**DEFOST**

|     |   |
|-----|---|
| tdF | <b>Defrost type:</b> (EL; in) EL = electrical heater; in = hot gas.   |
| dFP | <b>Probe selection for defrost termination:</b> (nP; P1; P2; P3; P4) nP = no probe; P1 = thermostat probe; P2 = evaporator probe; P3 =configurable probe; P4 = Probe on Hot Key plug.   |
| dTE | <b>Defrost termination temperature:</b> (-55 to 50°C; -67 to 122°F) (enabled only when EdF=Pb) sets the temperature measured by the evaporator probe, which causes the end of defrost.  |
| idF | <b>Interval between defrost cycles:</b> (0 to 120hours) determines the interval of time between two defrost cycles.   |
| MdF | <b>(Maximum) length for defrost:</b> (0 to 255min) when P2P=n, (not evaporator probe: timed defrost) it sets the defrost duration. When P2P=Y (defrost end based on temperature) it sets the maximum length for defrost.                            |
| dSd | <b>Start defrost delay:</b> (0 to 99min) this is useful when different defrost start times are necessary to avoid overloading the plant.  |
| dFd | <b>Temperature displayed during defrost:</b> (rt; it; SET; dEF) rt = real temperature; it = temperature at defrost start; SET = set point; dEF = "dEF" label.   |
| dAd | <b>MAX display delay after defrost:</b> (0 to 255min) sets the maximum time between the end of defrost and the restarting of the real room temperature display.   |
| Fdt | <b>Drip time:</b> (0 to 120min) 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. |
| dPo | <b>First defrost after start-up:</b> (n; Y)<br>• n = after the idF time,<br>• Y = immediately.  |
| dAF | <b>Defrost delay after continuous cycle:</b> (0.0 to 24h00min, res. 10min) time interval between the end of the fast freezing cycle and the following defrost related to it.  |



| FANS |  |
|------|--|
| FnC  | <b>Fans operating mode:</b> (C-n; o-n; C-Y; o-Y) C-n = runs with the compressor, OFF during defrost; o-n = continuous mode, OFF during defrost; C-Y = runs with the compressor, ON during defrost; o-Y = continuous mode, ON during defrost.                         |
| Fnd  | <b>Fans delay after defrost:</b> (0 to 255min) interval between end of defrost and evaporator fans start.  |
| FCt  | <b>Temperature differential to avoid fan short cycles:</b> (0 to 59°C; 0 to 90°F) (N.B.: if FCt=0 function disabled) if the difference of temperature between the evaporator and the room probes is higher than FCt value, the fans will be switched on.             |
| FSt  | <b>Fans stop temperature:</b> (-55 to 50°C; -67 to 122°F) setting of temperature, detected by evaporator probe, above which fans are always OFF.   |
| Fon  | <b>Fan ON time:</b> (0 to 15min) with Fnc=C_n or C_Y, (fan activated in parallel with compressor) it sets the evaporator fan ON cycling time when the compressor is off. With Fon=0 and FoF≠0 the fan are always off, with Fon=0 and FoF=0 the fan are always off.   |
| FoF  | <b>Fan OFF time:</b> (0 to 15min) With Fnc=C_n or C_Y, (fan activated in parallel with compressor) it sets the evaporator fan off cycling time when the compressor is off. With Fon=0 and FoF≠0 the fan are always off, with Fon=0 and FoF=0 the fan are always off. |
| FAP  | <b>Probe selection for fan management:</b> (nP; P1; P2; P3; P4) nP = no probe; P1 = thermostat probe; P2 = evaporator probe; P3 = configurable probe; P4 = Probe on Hot Key plug.  |

| ALARMS |   |
|--------|---|
| ALC    | <b>Temperature alarms configuration:</b> (Ab; rE) Ab = absolute temperature, alarm temperature is given by the ALL or ALU values. rE = temperature alarms are referred to the set point. Temperature alarm is enabled when the temperature exceeds the [SET+ALU] or [SET-ALL] values. |
| ALU    | <b>MAXIMUM temperature alarm:</b> <ul style="list-style-type: none"> <li>If ALC=Ab: [ALL to 150.0°C or ALL to 302°F]</li> <li>If ALC=rE: [0.0 to 50.0°C or 0 to 90°F]</li> </ul> when this temperature is reached the alarm is enabled, after the ALd delay time.                     |
| ALL    | <b>Minimum temperature alarm:</b> <ul style="list-style-type: none"> <li>If ALC=Ab: [-100°C to ALU; -148 to ALU]</li> <li>If ALC=rE: [0.0 to 50.0°C or 0 to 90°F]</li> </ul> when this temperature is reached the alarm is enabled, after the ALd delay time.                         |
| AFH    | <b>Differential for temperature alarm recovery:</b> (0.1 to 25.5°C; 1 to 45°F) intervention differential for recovery of temperature alarm.   |
| ALd    | <b>Temperature alarm delay:</b> (0 to 255 min) time interval between the detection of an alarm condition and alarm signalling.  |
| dAo    | <b>Exclusion of temperature alarm at start-up:</b> (0.0 to 24h00min, res. 10min) time interval between the detection of the temperature alarm condition after instrument power on and alarm signalling.   |

| CONDENSER TEMPERATURE ALARM |   |
|-----------------------------|---|
| AP2                         | <b>Probe selection for temperature alarm of condenser:</b> (nP; P1; P2; P3; P4) nP = no probe; P1 = thermostat probe; P2 = evaporator probe; P3 = configurable probe; P4 = Probe on Hot Key plug.                           |
| AL2                         | <b>Low temperature alarm of condenser:</b> (-100 to 150°C; -148 to 302°F) when this temperature is reached the LA2 alarm is signalled, possibly after the Ad2 delay.  |
| Au2                         | <b>High temperature alarm of condenser:</b> (-100 to 150°C; -148 to 302°F) when this temperature is reached the HA2 alarm is signalled, possibly after the Ad2 delay.   |
| AH2                         | <b>Differential for temperature condenser alarm recovery:</b> 0.1 to 25.5°C; 1 to 45°F  |
| Ad2                         | <b>Condenser temperature alarm delay:</b> (0 to 255 min) time interval between the detection of the condenser alarm condition and alarm signalling.   |
| dA2                         | <b>Condenser temperature alarm exclusion at start up:</b> 0.0 to 24h00min, res. 10min.  |
| bLL                         | <b>Compressor off with low temperature alarm of condenser:</b> (n; Y) n = compressor keeps on working; Y = compressor is switched off till the alarm is present, in any case regulation restarts after AC time at minimum.  |
| AC2                         | <b>Compressor off with high temperature alarm of condenser:</b> (n; Y) n = compressor keeps on working; Y = compressor is switched off till the alarm is present, in any case regulation restarts after AC time at minimum. |

| FOURTH RELAY |   |
|--------------|---|
| tbA          | <b>Alarm relay silencing (with oA3=ALr):</b> (n; Y) n = silencing disabled: alarm relay stays on till alarm condition lasts. Y = silencing enabled: alarm relay is switched OFF by pressing a key during an alarm.  |
| oA3          | <b>Second relay configuration (1-4):</b> (dEF; FAn; ALr; LiG; AUS; onF; db; dEF2; HES) dEF = defrost; FAn = do not select it; ALr = alarm; LiG = light; AUS = Auxiliary relay; onF = always on with instrument on; db = neutral zone; dEF2 = do not select it; HES = night blind. |
| AoP          | <b>Alarm relay polarity:</b> (CL; oP) it set if the alarm relay is open or closed when an alarm occurs. CL = terminals 1-4 closed during an alarm; oP = terminals 1-4 open during an alarm.   |

| DIGITAL INPUTS |   |
|----------------|---|
| i1P            | <b>Second digital input polarity:</b> (oP; CL) oP = the digital input is activated by opening the contact; CL = the digital input is activated by closing the contact.  |
| i1F            | <b>Second digital input configuration:</b> (EAL; bAL; PAL; dor; dEF; ES; AUS; Htr; FAn; HdF; onF) 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; ES = energy saving; AUS = auxiliary relay activation with oA3=AUS; Htr = type of inverting action (cooling or heating); FAn = fan; HdF = Holiday defrost (enable only with RTC); onF = to switch the controller off. |
| did            | <b>Digital input 1 alarm delay:</b> (0 to 255 min) delay between the detection of the external alarm condition and its signalling. When i1F= PAL, it is the interval of time to calculate the number of pressure switch activation.   |

|     |   |
|-----|---|
| nPS | <b>Number of pressure switch activation:</b> (0 to 15) Number of activation, during the did or d2d interval, before signalling an alarm event (i1F, i2F=PAL). If the nPS activation during did or d2d time is reached, switch off and on the instrument to restart normal regulation. |
| odC | <b>Compressor status when open door:</b> (no; FAn; CPr; F_C;) no = normal; FAn = normal; CPr = compressor OFF; F_C = compressor OFF.  |
| rrd | <b>Outputs restart after door open alarm:</b> (n; Y) n = outputs follow the odC parameter. Y = outputs restart with a door open alarm.  |
| HES | <b>Delta temperature during an Energy Saving cycle:</b> (-30.0 to 30.0°C; -54 to 54°F) it sets the increasing value of the set point [SET+HES] during the Energy Saving cycle.  |

| OTHER |   |
|-------|---|
| Adr   | <b>Serial address:</b> (1 to 247) identifies the instrument address when connected to a ModBUS compatible monitoring system.  |
| PbC   | <b>Type of probe:</b> (PtC; nTC) it allows to set the kind of probe used by the instrument: PtC = PTC probe, nTC = NTC probe. |
| onF   | <b>On/Off key enabling:</b> (nU; oFF; ES) 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   | <b>Real set point:</b> 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 INPUTS

The free voltage digital input is programmable by the i1F parameter.

### 8.1 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 statuses don't change. The alarm stops just after the digital input is deactivated.

### 8.2 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 deactivated.

### 8.3 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.

### 8.4 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 doA, the door alarm is enabled, the display shows the message dA and the regulation restarts is 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.

### 8.5 START DEFROST (i1F = DEF)

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 SWITCH THE AUXILIARY RELAY (i1F = AUS)

With oA3 = AUS the digital input switched the status of the auxiliary relay

### 8.7 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.

### 8.8 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.

### 8.9 ON OFF FUNCTION (i1F = ONF)

To switch the controller on and off.

### 8.10 DIGITAL INPUT 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 to connect the instrument to a monitoring system ModBUS-RTU compatible such as the XWEB500.

## 10. X-REP OUTPUT – OPTIONAL

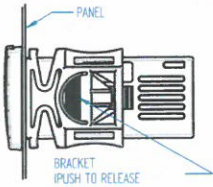
As optional, an X-REP can be connected to the instrument, through the dedicated connector.



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 XR70CH 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 to 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 2.5mm². 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. 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 UP button; the "uPL" message appears followed a by a flashing "End" label.
3. Push SET button and the "End" will stop flashing.
4. Turn OFF the instrument, remove the "HOT-KEY" and then turn it ON again.

NOTE: the "Err" message appears in case of a failed programming operation. In this case push again button 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 pre-programmed "HOT-KEY" into the 5-PIN receptacle and then turn the Controller ON.
3. The parameter list of the "HOT-KEY" will be automatically downloaded into the Controller memory. The "doL" message will blink followed a by a flashing "End" label.
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  |
| "dA"    | Door open                        | Compressor and fans restarts   |
| "EA"    | External alarm                   | Output unchanged.  |
| "CA"    | Serious external alarm (i2F=bAL) | All outputs OFF.   |
| "CA"    | Pressure switch alarm (i2F=pAL)  | All outputs OFF  |
| "rtc"   | Real time clock alarm            | Alarm output ON; Other outputs unchanged; Defrosts according to par. idF Set real time clock has to be set |
| rtF     | Real time clock board failure    | Alarm output ON; Other outputs unchanged; Defrosts according to par. idF Contact the service               |

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 i2F=bAL) recover as soon as the digital input is disabled. Alarm "CA" (with i2F=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<br>On the display or in dP2, dP3, dP4: the selected probe is not enabled |

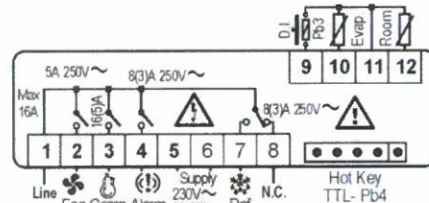
15. TECHNICAL DATA

Housing: self extinguishing ABS.  
 Case: frontal 38x80 mm; depth 62mm;  
 Mounting: panel mounting in a 71x29mm panel cut-out  
 Protection: IP20; Frontal protection: IP65  
 Connections: Screw terminal block ≤ 2.5 mm² wiring  
 Power supply: according to the model  
 12VAC/DC, ±10%  
 110AC ±10%, 50/60Hz  
 230VAC ±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 inputs: free voltage contact  
 Relay outputs: compressor SPST 8(3) A, 250VAC or SPST 16A 250VAC  
 Defrost: SPDT 8(3) A, 250VAC  
 Fan: SPST 5A, 250VAC  
 Aux: SPDT 8(3) A, 250VAC  
 Buzzer: optional  
 Data storing: on the non-volatile memory (EEPROM)  
 Internal clock back-up: 24 hours  
 Kind of action: 1B  
 Pollution degree: 2  
 Software class: A  
 Rated impulsive voltage: 2500V  
 Overvoltage Category: II  
 Operating temperature: 0 to 55°C  
 Storage temperature: -25 to 60°C  
 Relative humidity: 20 to 85% (no condensing)  
 Measuring and regulation range:  
 NTC probe: -40 to 110°C (-40 to 230°F)  
 PTC probe: -100 to 150°C (-148 to 302°F)  
 Resolution: 0.1°C or 1°C or 1°F (selectable)  
 Accuracy (ambient temp. 25°C): ±0.7°C ±1 digit

16. CONNECTIONS

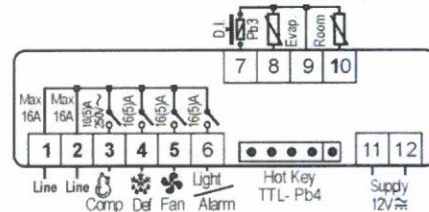
The X-REP output excludes the TTL output.. It's present in the following codes: XR70CH- xx2xx, XR70CH -xx3xx;

16.1 XR70CH – 8A OR 16A COMP. RELAY - 230VAC OR 110VAC



NOTE: The compressor relay is 8(3)A or 16(6)A according to the model. 24Vac supply: connect to the terminals 5 and 6.

16.2 XR70CH – 4 X 16A - 12VAC/DC






17. DEFAULT SETTING VALUES

| Label | Name  | Range   | Value | Level |
|-------|---|---|-------|-------|
| SEt   | Set point   | LS; US  | -5.0  | ---   |
| HY    | Differential  | [0.1 to 25.5°C]<br>[1 to 45°F]  | 2.0   | Pr1   |
| LS    | Minimum set point   | [-100°C to SET]<br>[-148°F to SET]  | -50.0 | Pr2   |
| US    | Maximum set point   | [SET to 150°C]<br>[SET to 302°F]  | 110   | Pr2   |
| ot    | Thermostat probe calibration                              | [-12.0 to 12.0°C]<br>[-21 to 21°F]  | 0.0   | Pr1   |
| P2P   | Evaporator probe presence                                 | n; Y  | Y     | Pr1   |
| oE    | Evaporator probe calibration                              | [-12.0 to 12.0°C]<br>[-21 to 21°F]  | 0.0   | Pr2   |
| P3P   | Third probe presence                                      | n; Y  | n     | Pr2   |
| o3    | Third probe calibration                                   | [-12.0 to 12.0°C]<br>[-21 to 21°F]  | 0     | Pr2   |
| P4P   | Fourth probe presence                                     | n; Y  | n     | Pr2   |
| o4    | Fourth probe calibration                                  | [-12.0 to 12.0°C]<br>[-21 to 21°F]  | 0     | Pr2   |
| odS   | Outputs delay at start up                                 | 0 to 255 min  | 0     | Pr2   |
| AC    | Anti-short cycle delay                                    | 0 to 50 min   | 1     | Pr1   |
| rtr   | P1-P2 percentage for regulation                           | 0 to 100 (100=P1, 0=P2)   | 100   | Pr2   |
| CCt   | Continuous cycle duration                                 | 0.0 to 24h00min, res. 10 min  | 0.0   | Pr2   |
| CCS   | Set point for continuous cycle                            | [-100 to 150.0°C]<br>[-148 to 302°F]  | -5    | Pr2   |
| Con   | Compressor ON time with faulty probe                      | 0 to 255 min  | 15    | Pr2   |
| CoF   | Compressor OFF time with faulty probe                     | 0 to 255 min  | 30    | Pr2   |
| CF    | Temperature measurement unit                              | °C; °F  | °C    | Pr2   |
| rES   | Resolution  | dE; in  | dE    | Pr1   |
| Lod   | Probe displayed   | P1; P2; P3; P4; SEt; dtr  | P1    | Pr2   |
| rEd²  | X-REP display   | P1; P2; P3; P4; SEt; dtr  | P1    | Pr2   |
| dLY   | Display temperature delay                                 | 0.0 to 20min00sec, res. 10 sec  | 0.0   | Pr2   |
| dtr   | P1-P2 percentage for display                              | 1 to 99   | 50    | Pr2   |
| tdF   | Defrost type  | EL; in  | EL    | Pr1   |
| dFP   | Probe selection for defrost termination                   | nP; P1; P2; P3; P4  | P2    | Pr2   |
| dtE   | Defrost termination temperature                           | [-55 to 50.0°C]<br>[-67 to 122°F]   | 8     | Pr1   |
| idF   | Interval between defrost cycles                           | 0 to 120 hours  | 6     | Pr1   |
| MdF   | (Maximum) length for defrost                              | 0 to 255 min  | 30    | Pr1   |
| dSd   | Start defrost delay                                       | 0 to 255 min  | 0     | Pr2   |
| dFd   | Displaying during defrost                                 | rt; it; SEt; dEF  | it    | Pr2   |
| dAd   | MAX display delay after defrost                           | 0 to 255 min  | 30    | Pr2   |
| Fdt   | Draining time   | 0 to 255 min  | 0     | Pr2   |
| dPo   | First defrost after start-up                              | n; Y  | n     | Pr2   |
| dAF   | Defrost delay after fast freezing                         | 0.0 to 24h00min, res. 10 min  | 0.0   | Pr2   |
| FnC   | Fan operating mode  | C-n; o-n; C-Y; o-Y  | o-n   | Pr1   |
| Fnd   | Fan delay after defrost                                   | 0 to 255 min  | 10    | Pr1   |
| FCt   | Differential of temperature for forced activation of fans | [0 to 50°C]<br>[0 to 90°F]  | 10    | Pr2   |
| FSt   | Fan stop temperature                                      | [-55 to 50.0°C]<br>[-67 to 122°F]   | 2     | Pr1   |
| Fon   | Fan on time with compressor off                           | 0 to 15 min   | 0     | Pr2   |
| FoF   | Fan off time with compressor off                          | 0 to 15 min   | 0     | Pr2   |
| FAP   | Probe selection for fan management                        | nP; P1; P2; P3; P4  | P2    | Pr2   |
| ALC   | Temperat. alarms configuration                            | rE; Ab  | Ab    | Pr2   |
| ALU   | MAXIMUM temperature alarm                                 | Rel: [0.0 to 50.0°C] [0 to 90°F]<br>AbS: [ALL to 150°C] [ALL to 302°F]  | 110.0 | Pr1   |
| ALL   | Minimum temperature alarm                                 | Rel: [0.0 to 50.0°C] [0 to 90°F]<br>AbS: [-100°C to ALU] [-148°F to ALU]  | -50.0 | Pr1   |
| AFH   | Differential for temperat. alarm recovery                 | [0.1 to 25.5°C]<br>[1 to 45°F]  | 1.0   | Pr2   |
| ALd   | Temperature alarm delay                                   | 0 to 255 min  | 15    | Pr2   |
| dAo   | Delay of temperature alarm at start up                    | 0.0 to 24h00min, res. 10 min  | 1.3   | Pr2   |
| AP2   | Probe for temperat. alarm of condenser                    | nP; P1; P2; P3; P4  | P4    | Pr2   |
| AL2   | Condenser for low temperat. alarm                         | [-100 to 150°C]<br>[-148 to 302°F]  | -40   | Pr2   |
| AU2   | Condenser for high temperat. alarm                        | [-100 to 150°C]<br>[-148 to 302°F]  | 110   | Pr2   |
| AH2   | Differ. for condenser temp. alar. recovery                | [0.1 to 25.5°C]<br>[1 to 45°F]  | 5     | Pr2   |
| Ad2   | Condenser temperature alarm delay                         | 0 to 254 min, 255(nu)   | 15    | Pr2   |
| dA2   | Delay of cond. temper. alarm at start up                  | 0.0 to 24h00min, res. 10 min  | 1.3   | Pr2   |
| bLL   | Compr. off for condenser low temperature alarm            | n; Y  | n     | Pr2   |
| AC2   | Compr. off for condenser high temperature alarm           | n; Y  | n     | Pr2   |
| tbA   | Alarm relay disabling                                     | n; Y  | Y     | Pr2   |
| oA3   | Fourth relay configuration                                | ALr = alarm; dEF = do not select it;<br>LiG = Light; AUS = AUX; onF = always on; FAn = do not select it; db = neutral zone; CP2 = second compressor; dF2 = do not select it | ALr   | Pr2   |
| AoP   | Alarm relay polarity (oA3=ALr)                            | oP; CL  | CL    | Pr2   |
| i1P   | Digital input polarity (18-19)                            | oP; CL  | CL    | Pr1   |
| i1F   | Digital input configuration (18-19)                       | EAL; bAL; PAL; dor; dEF; ES; AUS; Htr; FAn; HdF; onF  | dor   | Pr1   |
| did   | Digital input alarm delay (18-20)                         | 0 to 255 min  | 15    | Pr1   |

| Label | Name                                    | Range                          | Value | Level |
|-------|---|--------------------------------|-------|-------|
| nPS   | Number of activation of pressure switch | 0 to 15                        | 15    | Pr2   |
| odC   | Compress and fan status when 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 to 30°C]<br>[-54 to 54°F] | 0     | Pr2   |
| Adr   | Serial address                          | 0 to 247                       | 1     | Pr2   |
| PbC   | Kind of probe                           | PtC; ntC                       | ntC   | Pr2   |
| onF   | on/off key enabling                     | nu; oFF; ES                    | nu    | Pr2   |
| dP1   | Room probe display                      | probe value                    | -     | Pr1   |
| dP2   | Evaporator probe display                | probe value                    | -     | Pr1   |
| dP3   | Third probe display                     | probe value                    | -     | Pr1   |
| dP4   | Fourth probe display                    | probe value                    | -     | Pr1   |
| rSE   | Real set                                | actual set                     | -     | Pr2   |
| rEL   | Software release                        | read only                      | -     | Pr2   |
| Ptb   | Map code                                | read only                      | -     | Pr2   |



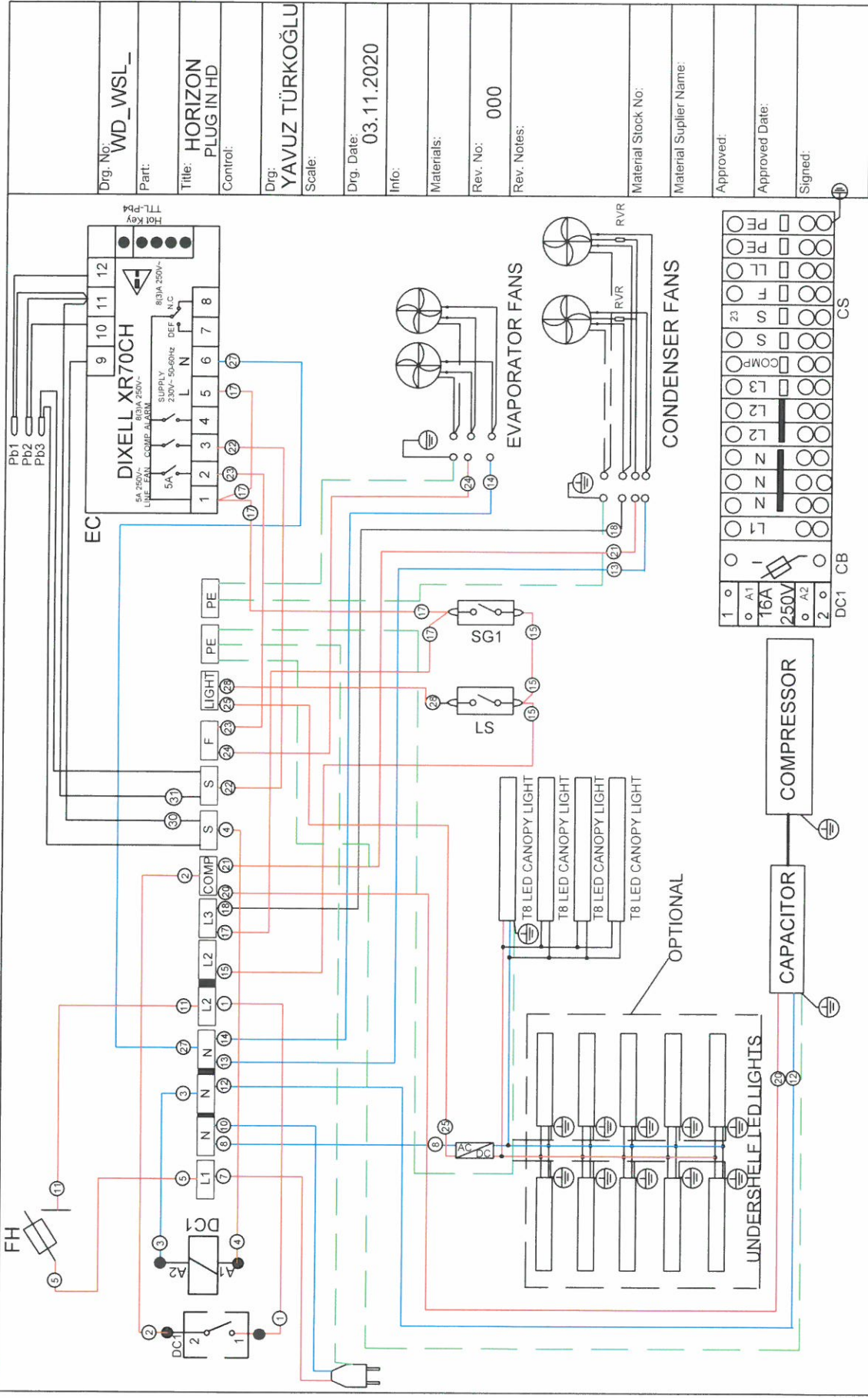
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Tel. +39.0437.9833 r.a. - Fax +39.0437.989313 - EmersonClimate.com/Dixell - dixell@emerson.com

| dixell         |           | WSL SKY-HORIZON-COMET PLUG IN DOORS ON XR70CH SET PARAMETERS |                         |          |            |         |         |      |        |      |
|----------------|-----------|--|-------------------------|----------|------------|---------|---------|------|--------|------|
| Group          | Parameter | Description  | Edit                    | Original | Vis. Level | Minimum | Maximum | Unit | Active |      |
| Regulation     | Hy        | Differential   | 4.0                     | 4.0      | Pr1        | 0.1     | 25.5    | °C   | True   |      |
|                | LS        | Minimum set point  | -5.0                    | -5.0     | Pr2        | -55.0   | 1.0     | °C   | True   |      |
|                | US        | Maximum set point  | 10.0                    | 10.0     | Pr2        | 1.0     | 150.0   | °C   | True   |      |
| Probes         | ot        | Thermostat probe calibration                                 | 0.0                     | 0.0      | Pr1        | -12.0   | 12.0    | °C   | True   |      |
|                | P2P       | Evaporator probe presence                                    | no                      | no       | Pr1        |         |         |      | True   |      |
|                | oE        | Evaporator probe calibration                                 | 0.0                     | 0.0      | Pr2        | -12.0   | 12.0    | °C   | True   |      |
|                | P3P       | Third probe presence   | Yes                     | Yes      | Pr2        |         |         |      | True   |      |
|                | o3        | Third probe calibration                                      | 0.0                     | 0.0      | Pr2        | -12.0   | 12.0    | °C   | True   |      |
|                | P4P       | Fourth probe presence  | no                      | no       | Pr2        |         |         |      | True   |      |
|                | o4        | Fourth probe calibration                                     | 0.0                     | 0.0      | Pr2        | -12.0   | 12.0    | °C   | True   |      |
| Regulation     | Ods       | Outputs delay at start up                                    | 0                       | 0        | Pr2        | 0       | 255     | min  | True   |      |
|                | Ac        | Anti-short cycle delay                                       | 0                       | 0        | Pr1        | 0       | 50      | min  | True   |      |
|                | rtr       | P1-P2 percentage for regulation                              | 100                     | 100      | Pr2        | 0       | 100     |      | True   |      |
|                | CCt       | Continuous cycle duration                                    | 00:00                   | 00:00    | Pr2        |         |         | hour | True   |      |
|                | CCS       | Set point for continuous cycle                               | -5.0                    | -5.0     | Pr2        | -55.0   | 150.0   | °C   | True   |      |
|                | Con       | Compressor ON time with faulty probe                         | 15                      | 15       | Pr2        | 0       | 255     | min  | True   |      |
|                | CoF       | Compressor OFF time with faulty probe                        | 7                       | 7        | Pr2        | 0       | 255     | min  | True   |      |
|                | CF        | Temperature measurement unit                                 | °C                      | °C       | Pr2        |         |         |      | True   |      |
|                | rES       | Resolution   | dE                      | dE       | Pr1        |         |         |      | True   |      |
|                | Lod       | Probe displayed  | P1                      | P1       | Pr2        |         |         |      | True   |      |
|                | dLy       | Display temperature delay                                    | 00:00                   | 00:00    | Pr2        |         |         | min  | True   |      |
|                | dtr       | P1-P2 percentage for display                                 | 99                      | 99       | Pr2        | 1       | 99      |      | True   |      |
|                | Defrost   | EdF  | Defrost mode            | in       | in         | Pr2     |         |      |        | True |
| tdF            |           | Defrost type   | EL                      | EL       | Pr1        |         |         |      | True   |      |
| dFP            |           | Probe selection for first defrost                            | nP                      | nP       | Pr2        |         |         |      | True   |      |
| dtE            |           | Defrost termination temperature first defrost                | 12.0                    | 12.0     | Pr1        | -55.0   | 50.0    | °C   | True   |      |
| ldF            |           | Interval between defrost cycles                              | 6                       | 6        | Pr1        | 0       | 120     | hour | True   |      |
| MdF            |           | (Maximum) length for first defrost                           | 35                      | 35       | Pr1        | 0       | 255     | min  | True   |      |
| dSd            |           | Start defrost delay  | 0                       | 0        | Pr2        | 0       | 255     | min  | True   |      |
| dFd            |           | Displaying during defrost                                    | it                      | it       | Pr2        |         |         |      | True   |      |
| dAd            |           | Max display delay after defrost                              | 20                      | 20       | Pr2        | 0       | 255     | min  | True   |      |
| Fdt            |           | Draining time  | 2                       | 2        | Pr2        | 0       | 255     | min  | True   |      |
| dPo            |           | First defrost after start-up                                 | no                      | no       | Pr2        |         |         |      | True   |      |
| dAF            |           | not used   | 00:00                   | 00:00    | Pr2        |         |         | hour | True   |      |
| Fan            |           | Fnc  | Fan operating mode      | O-y      | O-y        | Pr1     |         |      |        | True |
|                |           | Fnd  | Fan delay after defrost | 0        | 0          | Pr1     | 0       | 255  | min    | True |
|                | FCt       | Differential of temperature for forced activation of fans    | 0                       | 0        | Pr2        | 0       | 50      | °C   | True   |      |
|                | FSt       | Fan stop temperature   | 50.0                    | 50.0     | Pr1        | -55.0   | 50.0    | °C   | True   |      |
|                | Fon       | Fan on time with compressor off                              | 0                       | 0        | Pr2        | 0       | 15      | min  | True   |      |
|                | FoF       | Fan off time with compressor off                             | 0                       | 0        | Pr2        | 0       | 15      | min  | True   |      |
|                | FAP       | Probe selection for fan                                      | nP                      | nP       | Pr2        |         |         |      | True   |      |
| Alarm          | ALC       | Temperature alarms configuration                             | Ab                      | Ab       | Pr2        |         |         |      | True   |      |
|                | ALU       | Maximum temperature alarm                                    | 15.0                    | 15.0     | Pr1        | -50.0   | 150.0   | °C   | True   |      |
|                | ALL       | Minimum temperature alarm                                    | -50.0                   | -50.0    | Pr1        | -55.0   | 15.0    | °C   | True   |      |
|                | AFH       | Differential for temperature alarm recovery                  | 1.0                     | 1.0      | Pr2        | 0.1     | 25.5    | °C   | True   |      |
|                | ALd       | Temperature alarm delay                                      | 45                      | 45       | Pr2        | 0       | 255     | min  | True   |      |
|                | dAo       | Delay of temperature alarm at start up                       | 05:00                   | 05:00    | Pr2        |         |         | hour | True   |      |
|                | AP2       | Probe selection for condenser temperature alarms             | P3                      | P3       | Pr2        |         |         |      | True   |      |
|                | AL2       | Condenser low temperature alarm                              | -40.0                   | -40.0    | Pr2        | -55.0   | 150.0   | °C   | True   |      |
|                | AU2       | Condenser high temperature alarm                             | 54.0                    | 54.0     | Pr2        | -55.0   | 150.0   | °C   | True   |      |
|                | AH2       | Differ. for condenser temp. alarm recovery                   | 8.0                     | 8.0      | Pr2        | 0.1     | 25.5    | °C   | True   |      |
|                | Ad2       | Condenser temperature alarm delay                            | 0                       | 0        | Pr2        | 0       | 255     | min  | True   |      |
|                | dA2       | Delay of condenser temper. alarm at start up                 | 00:00                   | 00:00    | Pr2        |         |         | hour | True   |      |
|                | bLL       | Compressor off for condenser low temperature alarm           | no                      | no       | Pr2        |         |         |      | True   |      |
|                | AC2       | Compressor off for condenser high temperature alarm          | Yes                     | Yes      | Pr2        |         |         |      | True   |      |
|                | tbA       | Alarm relay switched off by pushing a key                    | Yes                     | Yes      | Pr2        |         |         |      | True   |      |
| Configuration  | oA3       | Third relay configuration                                    | ALr                     | ALr      | Pr2        |         |         |      | True   |      |
| Alarm          | AOP       | Alarm relay polarity   | cL                      | cL       | Pr2        |         |         |      | True   |      |
| Digital inputs | i1P       | Digital input 1 polarity                                     | cL                      | cL       | Pr1        |         |         |      | True   |      |
|                | i1F       | Digital input 1 configuration                                | dor                     | dor      | Pr1        |         |         |      | True   |      |
|                | did       | Digital input 1 alarm delay                                  | 15                      | 15       | Pr1        | 0       | 255     | min  | True   |      |
|                | nPS       | Number of activation of pressure switch                      | 15                      | 15       | Pr2        | 0       | 15      |      | True   |      |
|                | Odc       | Compress and fan status when open door                       | no                      | no       | Pr2        |         |         |      | True   |      |
| Alarm          | rrd       | Regulation restart with door open alarm                      | Yes                     | Yes      | Pr2        |         |         |      | True   |      |



|               |     |                                       |       |       |     |      |       |    |      |
|---------------|-----|---------------------------------------|-------|-------|-----|------|-------|----|------|
| Energy Saving | HES | Differential for Energy Saving        | 0     | 0     | Pr2 | -30  | 30    | °C | True |
| Other         | Hur | Hour                                  |       |       | Pr1 |      |       |    | True |
| Other         | Min | Minutes                               |       |       | Pr1 |      |       |    | True |
| Other         | dAY | Day of the week                       |       |       | Pr1 |      |       |    | True |
| Regulation    | Hd1 | First day of week end                 | nu    | nu    | Pr1 |      |       |    | True |
| Regulation    | Hd2 | Second day of week end                | nu    | nu    | Pr1 |      |       |    | True |
| Energy Saving | iLE | Working days Energy saving start time | 00:00 | 00:00 | Pr1 |      |       |    | True |
|               | dLE | Working days Energy saving duration   | 00:00 | 00:00 | Pr1 |      |       |    | True |
|               | iSE | Holiday Energy saving start time      | 00:00 | 00:00 | Pr1 |      |       |    | True |
|               | dSE | Holiday Energy saving duration        | 00:00 | 00:00 | Pr1 |      |       |    | True |
| Defrost       | Ld1 | 1st working days defrost start time   | 06:00 | 06:00 | Pr1 |      |       |    | True |
|               | Ld2 | 2nd working days defrost start time   | 13:00 | 13:00 | Pr1 |      |       |    | True |
|               | Ld3 | 3rd working days defrost start time   | 21:00 | 21:00 | Pr1 |      |       |    | True |
|               | Ld4 | 4th working days defrost start time   | nu    | nu    | Pr1 |      |       |    | True |
|               | Ld5 | 5th working days defrost start time   | nu    | nu    | Pr1 |      |       |    | True |
|               | Ld6 | 6th working days defrost start time   | nu    | nu    | Pr1 |      |       |    | True |
|               | Sd1 | 1st Holyday defrost start time        | 06:00 | 06:00 | Pr1 |      |       |    | True |
|               | Sd2 | 2nd Holyday defrost start time        | 13:00 | 13:00 | Pr1 |      |       |    | True |
|               | Sd3 | 3rd Holyday defrost start time        | 21:00 | 21:00 | Pr1 |      |       |    | True |
|               | Sd4 | 4th Holyday defrost start time        | nu    | nu    | Pr1 |      |       |    | True |
|               | Sd5 | 5th Holyday defrost start time        | nu    | nu    | Pr1 |      |       |    | True |
|               | Sd6 | 6th Holyday defrost start time        | nu    | nu    | Pr1 |      |       |    | True |
| Other         | Adr | Serial address                        | 1     | 1     | Pr2 | 1    | 247   |    | True |
| Probes        | pbC | Kind of probe                         | ntC   | ntC   | Pr1 |      |       |    | True |
| Configuration | onF | On/off key configuration              | no    | no    | Pr2 |      |       |    | True |
| Other         | dP1 | Probe 1 value                         | 0     | 0     | Pr1 |      |       |    | True |
|               | dP2 | Probe 2 value                         | 0     | 0     | Pr1 |      |       |    | True |
|               | dP3 | Probe 3 value                         | 0     | 0     | Pr1 |      |       |    | True |
|               | dP4 | Probe 4 value                         | 0     | 0     | Pr1 |      |       |    | True |
|               | rSE | Real Set point (SET + ES + SETd)      | 0     | 0     | Pr2 |      |       |    | True |
|               | rEL | Firmware Release                      | 0     | 0     | Pr2 |      |       |    | True |
|               | Ptb | Map code                              | 10    | 10    | Pr2 | 0    | 65535 |    | True |
| Regulation    | SEt | Set point                             | 1.0   | 1.0   |     | -5.0 | 10.0  | °C | True |





|                         |                       |
|-------------------------|-----------------------|
| Drg. No:                | WD_WSL_               |
| Part:                   |                       |
| Title:                  | HORIZON<br>PLUG IN HD |
| Control:                |                       |
| Drg:                    | YAVUZ TÜRKÖĞLÜ        |
| Scale:                  |                       |
| Drg. Date:              | 03.11.2020            |
| Info:                   |                       |
| Materials:              |                       |
| Rev. No:                | 000                   |
| Rev. Notes:             |                       |
| Material Stock No:      |                       |
| Material Supplier Name: |                       |
| Approved:               |                       |
| Approved Date:          |                       |
| Signed:                 |                       |

| CODE | DESCRIPTION           | CODE | DESCRIPTION          | CODE | DESCRIPTION       |
|------|-----------------------|------|----------------------|------|-------------------|
| EC   | ELECTRONIC CONTROLLER | N    | SUPPLY NEUTRAL       | PE   | EARTH             |
| TB   | TERMINAL BOX          | L1   | SUPPLY PHASE         | Pb1  | TEMPERATURE PROBE |
| LS   | LIGHT SWITCH          | F    | FANS                 | Pb2  | DEFROST PROBE     |
| SG1  | ON-OFF SWITCH         | S    | HIGH PRESSURE SWITCH | Pb3  | SUCTION PROBE     |
| FH   | FUSE HOLDER           | S    | LOW PRESSURE SWITCH  |      |                   |
| DC1  | CONTACTOR             |      |                      |      |                   |