

XW737K – D60K

7020350 AND 7020333

Manual for rel. 1.2

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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.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.

2 TECHNICAL FEATURES

Power module XW737K

Case: 8 DN: 140X176X148

Connections:

Disconnectable screw terminal blocks $\leq 2.5\text{mm}^2$ for probes and digital inputs and back up battery 6.3mm Faston for loads and power supply

Power supply: 230Vac $\pm 10\%$ 50/60Hz or. 110Vac $\pm 10\%$ 50/60Hz

Power absorption: 10VA max

Inputs: 4 NTC or PT1000 probes

Digital input: 1 free voltage

Relay outputs: **Total current on loads MAX. 20A**

Compressor: relay SPST 20(8) A, 250Vac

Fan: relay SPST 8(3) A, 250Vac

Light: relay SPST 8A, 250Vac

Alarm: relay SPST 8A, 250Vac

Serial DATA output/input: USB connector

Serial output for monitoring: TTL type

Communication protocol: Modbus - RTU

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

Kind of action: 1B

Pollution degree: normal

Software class: A

Operating temperature: 0 to 60°C (32 to 140°F)

Storage temperature: -25 to 60°C (-13 to 140°F)

Relative humidity: 20 to 85% (no condensing)

Measuring and regulation range:

NTC probe: -40 to 50°C (-58 to 122°F)

PT1000 probe: -100 to 50°C (-148 to 122°F)

Resolution: 0.1°C or 1°F or 1°F (selectable)

Accuracy (ambient temp. 25°C): $\pm 0.5^\circ\text{C} \pm 1$ digit

Internal real time clock with rechargeable battery

Clock battery backup: 5 months

Data memory capacity: 35500 samples

3 GENERAL DESCRIPTION

Model XW737K is microprocessor based controller suitable for applications on medium or low temperature refrigerating units. It has to be connected by means of a 3-wire cable ($\varnothing 1\text{mm}$) at a distance of up to 30 meters to the keyboard D60K.

For the connections use shielded cable AWG 18 or less.

It is provided with four relay outputs to control compressor, evaporator fans light and alarm.

It is also provided with 4 NTC or PT100 probe inputs, one for temperature control, one to control the defrost end temperature of the evaporator and the third and fourth to log temperatures 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 XWEB family. It allows programming 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.

Furthermore it is capable of logging a temperatures detected by the probes and its status.

It is provided with USB (*) output to download the data. The data are collected into standard text format (.txt) file and can be easily read with a standard spreadsheet program such as Microsoft Excel ®.

(*) USB key must have these features: FAT formatting; USB 1.1 or 2.0; Max 2GB.
DIXELL can provide USB key suitable for this application

4 USER INTERFACE



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 |
| fan | ON | Fans enabled |
| fan | Flashing | Fans delay after defrost in progress. |
| alarm | ON | An alarm is occurring |
| clock | ON | Recording activated |
| battery | ON | Battery status OK |
| battery | Flashing | Charging problem or battery failure |
| °C/°F | ON | Measurement unit |
| °C/°F | Flashing | Programming phase |

4.1 BUTTONS

| | |
|-------------|--|
| SET | SET To display target set point; in programming mode it selects a parameter or confirm an operation. |
| | (UP) To enter fast access menu In programming mode it browses the parameter codes or increases the displayed value. |
| | (DOWN); in programming mode it browses the parameter codes or decreases the displayed value. Push it for 3s to start a manual defrost |
| DATA | DATA Export data from button |
| | (LIGHT) To switch the light. |
| REC | REC Log activation and deactivation from button (Password protected) |

5 HOW TO SEE AND MODIFY THE SETPOINT

5.1 HOW TO: SEE THE SET POINT



- Push and immediately release the SET key: the display will show the Set point value.
- Push and immediately release the SET key or wait for 30 sec to display the probe value again.

5.2 HOW TO CHANGE THE SET POINT

- Push the SET key more than 2 sec to change the Set point value.
- The value of the set point will be displayed and the °C or °F LED will start blinking.
- To change the Set value push the UP or DOWN arrows within 10 sec.
- To memorize the new set point value, push the SET key again or wait 30s.

6 FAST ACCESS MENU

This menu contains the list of probes and some values that are automatically evacuate by the board such as the superheat and the percentage of valve opening. The values: **nP** or **noP** stands for probe not present, **Err** value out of range, probe damaged not connected or incorrectly configured.

| | | |
|---|--|---|
| Entering fast access menu | | By press and release the UP arrow. The duration of the menu in case of inactivity is about 3 min. The values that will be showed depend on the configuration of the board. |
| Use or arrows to select an entry, then press | | HM Access to clock menu or reset of the RTC alarm; dP1 (Pb1) Value read by probe 1. dP2 (Pb2) Value read by probe 2. dP3 (Pb3) Value read by probe 3. dP4 (Pb4) Value read by probe 4. dPr Virtual probe for room temperature regulation [rPA and rPb]; MEM To see the used percentage of the memory rSE Real thermoregulation set point: the value includes the sum of SET , HES and/or the dynamic set point if the functions are enabled. |
| to see the value or to go on with other value. | | |
| Exit | | Pressed together or wait the timeout of about 60 sec |

7 SERVICE MENU / PROGRAMMING MODE

The SERVICE menu collects the main functions of the controller.

From the SERVICE menu is possible to:

- Enter the PARAMETER programming MENU (Pr1 / Pr2)
- Set the password and enable it for some menu
- Start the self test function
- Set the real time clock

7.1 HOW TO ENTER THE PROGRAMMING MODE

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).

| Label | Menu |
|-------|---|
| Pr1 | User parameters |
| Pr2 | PSW protected parameters PSW |
| PSu | PSW Menu: it set PSW and which menu has to be protected |
| Rtc | Real time menu (RTC) |
| SLF | Self-test |

8 Use the HOT KEY

8.1 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.

8.2 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.

9 CLOCK SETTING AND RTC ALARM RESET

| | | |
|---------|--|---|
| BEGIN | | 1. Enter the Programming Mode pressing both SET+DOWN keys for 3 sec 2. Use the UP or DOWN button till the "CLO" menu is displayed |
| Display | | CLO identify the clock RTC submenu; press |

| | | |
|---------|--|--|
| Display | | HUr = hour → press to confirm/modify Min = minutes → press to confirm/modify dAy = Day of the month → press to confirm/modify Udy = Day of the week (Sun,Mon,tuE,Ued,thE,Fri,SAt) Mon = Month → press to confirm/modify yEA = Year → press to confirm/modify |
| EXIT | | Press for about 10 sec. The operation resets the RTC alarm. |

Note: the "CLO" clock menu is available by enter Programming mode.
Warning: if the board shows the **rtF** alarm, the device has to be changed.

10 HOW TO PROGRAM THE PARAMETERS (PR1 AND PR2)

The device provide 2 programming levels: **Pr1** with direct access and **Pr2** protected with a password (intended for experts).

| | | |
|-------------------|----|---|
| ACCESS to Pr1 | | Press and hold for about 3 sec to have access to the first programming level (Pr1). |
| Select item | or | Select the parameter or submenu using the arrows. |
| Show value | | Press SET button. |
| Modify | or | Use the arrows to modify the value. |
| Confirm and store | | Press SET key: the value will blink for 3 sec, and then the display will show the next parameter. |
| EXIT | | Instantaneous exit from the programming mode, otherwise wait for about 10 sec (without press any button). |

10.1 HOW TO HAVE ACCESS TO "PR2"

To enter **Pr2** programming menu:

1. Access to a **Pr1** menu by pressing both **SET+DOWN** keys for 3 sec, the first parameter label will be showed;
2. Press **DOWN** key till the **Pr2** label will be showed, then press **SET**;
3. The blinking **PAS** label will be showed, wait some seconds;
4. Will be showed "0 - -" with blinking 0: insert the password using the keys **UP** and **DOWN** and confirming with **SET** key.

The password is enabled; use the following procedure to insert it.

11 PASSWORD MENU

In the PASSWORD MENU it's possible:

- a. to set the **PASSWORD** and set if the
- **Pr2** Parameter level
- SELF TEST function is protected by the password.

The PASSWORD MENU is accessible without password if the **PW = 0**, otherwise the password is required.

THE DEFAULT PASSWORD IS 12

11.1 HOW TO ENTER THE PASSWORD MENU PSU

Procedure:

1. Enter the **Programming Mode** pressing both **SET+DOWN** keys for 3 sec
2. Select **PSu** sub-menu
3. Push the **Set** key
4. If the password is different from 0, the password is required to enter it.
5. See paragraph 10 HOW TO PROGRAM THE PARAMETERS (PR1 AND PR2)

The Password menu contains the following parameters:

| LABEL | RANGE | DESCRIPTION |
|-------|-------|--|
| PAS | 0÷999 | Password value |
| Pr2 | n, y | Password enabled for Pr2 menu |
| SLF | n, y | Password enabled for Self Test |
| rEC | n,y | Password enabled to activate and de-active the temperature log |

12 SELF TEST MENU

12.1 TO ENTER THE SELF TEST MENU

Procedure:

3. Enter the **Programming Mode** pressing both **SET+DOWN** keys for 3 sec
4. Select **SLF** sub-menu
5. Push the **Set** key
6. If **PASSWORD** is required, insert it, as for the above description,
7. OTHERWISE the SELF TEST menu is entered directly.

12.2 SELF TEST PROCEDURE

Controller will display "SLF" flashing till the **SET** key is pushed.

If the **SET** key is not pushed in 30s the controller will come back to the standard mode

1. By pushing the **SET** key the following loads are switched on in sequence while the display will show the following:

| Step | Display | Load status |
|------|---------|----------------------------------|
| 1 | OFF | All the relays off |
| 2 | 1Ld | Compressor relay and its icon on |
| 3 | 2Ld | Fan relay and its icon on |

| | | |
|---|-----|-----------------------------|
| 4 | 3Ld | Light relay and its icon on |
| 5 | 4Ld | Alarm relay and its icon on |
| 6 | bur | Buzzer on, all icons off |

2. Wait 30s or push the **SET** key to come back to the previous screen.

13 How to enable and disable the log

To activate/de-activate the LOG:

- Push the REC key for 3s.
- If the PASSWORD is required, insert the PASSWORD as describe in the previous chapter.
- The controller will display "Y" se log is enabled, or "n" if disabled
- Use the arrow key to modify the value:
 - To enable the log: from "n" to "Y".
 - To disable the log: from "y" to "n".
- To confirm the new value and exit push the **SET** key.

To exit: Wait 30s or push the **SET+UP** keys to come back to the main display.

14 How to export data and alarms to USB

To export the data into the USB key follow this:

- Insert an suitable USB(*) stick.
- (*) USB key must have these features:
 - FAT formatting
 - USB 1.1 or 2.0
 - Max 2GB
- DIXELL can provide USB KEY suitable for this application. Part number 7750001040
- Push the DATA key.
- Controller starts uploading data to USB
- While exporting the display shows "Lod" message followed by the "ALr" message.
- At the end the following message will be displayed:
 - "End" if everything it's ok
 - "Err" if exporting has not taken place.

15 ALARMS

The controller memorizes the last 100 alarms happened, together with their start and finish time.
It's possible to export the alarms as described in the previous chapter.

15.1 ACTIVE ALARMS

Controller, will show active alarm alternated with the normal visualization

16 CONTROLLING LOADS

16.1 THE 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**.

16.2 DEFROST

Defrost is performed through a simple stop of the compressor.

Parameter "ldf" controls the interval between defrost cycles, while its length depends on the temperature detected by the evaporator probe P2, when it reaches the **dtE** value, the defrost is stopped. In any case the defrost is stopped after the "MdF" time

If the evaporator probe is not present (P2P = n), the defrost length is defined by the parameter MdF.

16.3 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**.

16.3.1 TIMED ACTIVATION OF THE FANS WHEN THE COMPRESSOR IS OFF.

When **FnC=C_n** or **C_Y** (fans in parallel to the compressor), the fans will be able to carry out on and off cycles even if the compressor is switched off. The on and off interval of time follow the **Fon** and **Fof** parameters. When the compressor is stopped the fans will go on working for the **Fon** time. On the other side, with **Fon=0** the fans will stay always off when the compressor is off.

16.4 LIGHT

The light status depends on the status of the door switch.

17 SPECIAL FUNCTIONS

DEVICE OPERATIONS IN CASE OF POWER FAILURE, IF A BACK UP BATTERY IS CONNECTED

17.1.1 POWER FAILURE WITHOUT TEMPERATURE ALARM

If the controller is connected to the battery, during a power failure:

- The alarm LED icon will be lit.
- The alarm relay will be activated according to the **Aro** parameter.
- Every 5s the buzzer will ring 3 times during 1s.

The buzzer will be muted after pressing any button. It will restart ringing after the **bon** time if the power failure keeps on lasting. After pushing **SET** button, the controller will display the temperature for 5s.

17.1.2 POWER FAILURE AND TEMPERATURE ALARMS

If a temperature alarm happens during a power failure:

- The alarm LED icon will be lit.
- The buzzer will ring continuously.
- The displays will shows: real temperature for 1s, alarm label for 1s and remains off for 5s.

The buzzer will be muted for the **bon** time after pressing any button.

18 PARAMETER LIST

CLOCK AND RECORDING SETTING

| | |
|-----|---|
| Hur | Hour (1÷24h) |
| Min | Minutes (0÷60min) |
| Udy | Current day of the week (1÷7) |
| dAy | Day (1÷31) |
| Mon | Month (1÷12) |
| yEA | Year (0÷99) |
| itP | Recording interval (1÷255min) |
| rC1 | First probe recording enable y = recording enabled; n = recording disabled |
| rC2 | Second probe recording enable y = recording enabled; n = recording disabled |
| rC3 | Third probe recording enable y = recording enabled; n = recording disabled |
| rC4 | Fourth probe recording enable y = recording enabled; n = recording disabled |
| rCb | Start recording LOG key enabling y = by the LOG key is possible to start/stop recording. n = recording is always enabled |
| EU | Date format EU = European: dd/mm/yyyy US = USA: mm/dd/yyyy |
| rSd | Data erase (no÷yes) To erase the logged data, set rSd = YES and then switch the controller off and on. To cancel the data a power down and up it's necessary. |
| rSA | Alarms erase (no÷y) To erase the logged alarm, set rSA = YES and then switch the controller off and on. To cancel the alarm a power down and up it's necessary. |

REGULATION

SET Set point temperature: (LS+US) it's the temperature the cabinets has to maintain.

Hy Differential: (0.1 to 25.5°C; 1 to 45°F) differential for set point, always positive. Compressor Cut IN is Set Point plus Differential (**HY**). Compressor Cut OUT is when the temperature reaches the set point.

LS Minimum set point limit: (-55.0°C to SET; -67°F to SET) Sets the minimum acceptable value for the set point.

US Maximum set point limit: (SET to 150°C; SET to 302°F) Set the maximum acceptable value for set point.

PROBE INPUTS

ot Regulation probe calibration (term. 1-2): (-12.0 to 12.0°C; -21 to 21°F) allows to adjust possible offset of the thermostat probe.

P2P Evaporator probe presence (term. 2-3): n = not present: the defrost stops only by time;
y = present: the defrost stops by temperature and time.

oE Evaporator probe calibration: (-12.0 to 12.0°C; -21 to 21°F) allows to adjust possible offsets of the evaporator probe.

P3P Third probe presence (term. 4-5): n = not present; y = present.

o3 Third probe calibration: (-12.0 to 12.0°C; -21 to 21°F) allows to adjust possible offsets of the third probe.

P4P Fourth probe presence (term. 5-6): n = not present; y = present.

o4 Fourth probe calibration: (-12.0 to 12.0°C; -21 to 21°F) allows to adjust possible offsets of the fourth probe.

odS Outputs activation delay at start up: (0 to 255 min) 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. (AUX and Light can work)

AC Anti-short cycle delay: (0 to 30 min) interval between the compressor stop and the following restart.

Con Compressor ON time with faulty probe: (0 to 255 min) time during which the compressor is active in case of faulty thermostat probe. With **Con=0** compressor is always OFF.

COF Compressor OFF time with faulty probe: (0 to 255 min) time during which the compressor is off in case of faulty thermostat probe. With **COF=0** compressor is always active.

DISPLAY

CF Temperature measurement unit: °C = Celsius; °F = Fahrenheit. When the measurement unit is changed the SET point and the values of the regulation parameters have to be modified

rES Resolution (for °C): (in = 1°C; de = 0,1°C) allows decimal point display.
dE = 0.1°C; in = 1°C.

rEd Remote display: it select which probe is displayed by the Visograph (P1, P2, P3, P4)

dLy Display delay: (0.0 to 20min00sec; res. 10 sec) when the temperature changes, the display is updated from 1°C or 1°F after this time.

DEFROST

dtE Defrost termination temperature: (-55.0 to 150.0°C; -67 to 302°F) (Enabled only when the evaporator probe is present) sets the temperature measured by the evaporator probe which causes the end of defrost.

IdF Interval between defrosts: (1 to 120 h) determines the time interval between two defrost cycles.

MdF (Maximum) duration of defrost: (0 to 255 min) When P2P = n, no evaporator probe, it sets the defrost duration, when P2P = y, defrost end based on temperature, it sets the maximum length for defrost.

dFd Display during defrost:

rt = real temperature;
it = temperature reading at the defrost start;
Set = set point;
DEF = "dEF" label;

dAd Defrost display time out: (0 to 255 min) sets the maximum time between the end of defrost and the restarting of the real room temperature display.

FANS

FnC Fan operating mode:

C-n = running with the compressor, OFF during the defrost;
C-y = running with the compressor, ON during the defrost;
O-n = continuous mode, OFF during the defrost;
O-y = continuous mode, ON during the defrost;

Fnd Fan delay after defrost: (0 to 255 min) this is time interval between the defrost end and evaporator fans start.

FSt Fan stop temperature: (-55 to 150°C; -67 to 302°F) setting of temperature, detected by evaporator probe, above which the fan is always OFF.

Fon Fan ON time: (0 to 15 min) 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 Fan OFF time: (0 to 15 min) 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.

TEMPERATURE ALARMS FOR REGULATION PROBE TR3

A1C Temperature alarm configuration:

rE = High and Low alarms related to Set Point
Ab = High and low alarms related to the absolute temperature.

A1U High temperature alarm for P1:

A1C = rE, 0 to 50°C or 0 to 90°F.
A1C = Ab, A1L to 150°C or A1L to 302°F.

When this temperature is reached and after the A1d delay time the HA1 alarm is enabled.

A1L Low temperature alarm for P1:

A1C = rE, 0 to 50°C or 0 to 90°F;
A1C = Ab, -55°C to A1U or -67°F to A1U.

When this temperature is reached and after the A1d delay time, the LA1 alarm is enabled.

A1H Differential for temperature alarm recovery: (0.1 to 25.5°C; 1 to 45°F) differential for temperature alarm recovery.

A1d Temperature alarm delay: (0 to 255 min) time interval between the detection of an alarm condition and the corresponding alarm signalling.

d10 Delay of temperature alarm at start-up: (0.0 to 23h50min, res. 10 min) time interval between the detection of the temperature alarm condition after the instrument power on and the alarm signalling.

TEMPERATURE ALARMS FOR LOGGING PROBE TL1

A3U High temperature alarm for P3: (A3L to 150°C or A3L to 302°F)

When this temperature is reached and after the ALd delay time the HA3 alarm is enabled.

A3L Low temperature alarm for P3: (-55°C to A3U or -67°F to A3U)

When this temperature is reached and after the A3d delay time, the LA3 alarm is enabled.

A3H Differential for temperature alarm 3 recovery: (0.1 to 25.5°C; 1 to 45°F) differential for temperature alarm recovery..

A3d Temperature alarm 3 delay: (0 to 255 min) time interval between the detection of an alarm condition and the corresponding alarm signalling.

d30 Delay of temperature alarm 3 at start-up: (0.0 to 23h50min, res. 10 min) time interval between the detection of the temperature alarm condition after the instrument power on and the alarm signalling.

TEMPERATURE ALARMS FOR LOGGING PROBE TL2

A4U High temperature alarm for P4: (A4L to 150°C or A4L to 302°F)

When this temperature is reached and after the ALd delay time the HA4 alarm is enabled.

A4L Low temperature alarm for P4: (-55°C to A4U or -67°F to A4U)

When this temperature is reached and after the A3d delay time, the LA4 alarm is enabled.

A4H Differential for temperature alarm 4 recovery: (0.1 to 25.5°C; 1 to 45°F) differential for temperature alarm recovery..

A4d Temperature alarm 4 delay: (0 to 255 min) time interval between the detection of an alarm condition and the corresponding alarm signalling.

d40 Delay of temperature alarm 4 at start-up: (0.0 to 23h50min, res. 10 min) time interval between the detection of the temperature alarm condition after the instrument power on and the alarm signalling.

ALARM RELAY MANAGEMENT – ONLY WITH BATTERY-BACKUP CONNECTED

tbA Alarm relay disabling (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.

Aro Alarm relay activation with power failure: (n, Y)

n = the alarm relay is never activated during a power failure.

Y = the alarm relay is activated during a power failure.

ALF Alarm relay activation for all the alarms: (n, Y)

n = the alarm relay is activated only in case of a temperature alarm or regulation probe failure.

Y = the alarm relay is activated for all the alarms.

bon Time of buzzer restart after muting, in case of alarm duration: (0+30min) when 0 the buzzer is always off after muting.

AoP Alarm relay polarity: it set if the alarm relay is open or closed when an alarm happens. CL= terminals closed during an alarm; OP = terminals open during an alarm

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; dor = door switch function;

did Digital input delay: (0 to 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.**

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 RS485 serial address: (1 to 247) 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. Pt1 = Pt1000 probe, ntC = NTC probe.

rEL Software release for internal use.

PtB Parameter table code: readable only.

Pr2 Pr2 menu: access is protected by password, if PSU is different from zero

19 DIGITAL INPUT

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

19.1 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 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.

19.2 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 doesn't change. The alarm stops just after the digital input is deactivated.

19.3 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 deactivated.

19.4 DIGITAL INPUTS POLARITY

The digital input polarity depends on the i1P parameter:

i1P=CL: the input is activated by closing the contact.

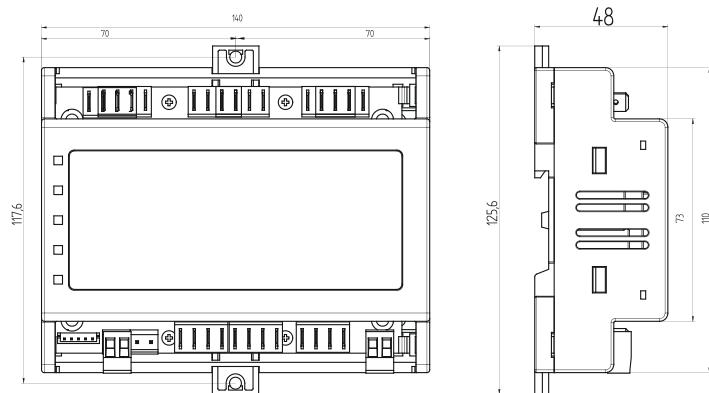
i1P=OP: the input is activated by opening the contact

20 INSTALLATION AND MOUNTING

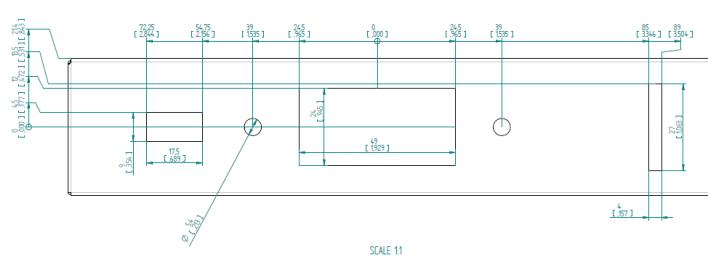
The controller XW737K shall be mounted in a din rail

It must be connected to the keyboard by means of a two-wire cable (Ø 1mm). 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 the air circulate by the cooling holes.

20.1 XW737K – 8 DIN CASE - DIMENSIONS



20.2 D60K – PANEL CUT OUT



SCALE 1:1

21 ELECTRICAL CONNECTIONS

XW737K is provided with disconnectable screw terminal blocks for probes digital input and keyboard.

To connect, power supply and relays, XW737K is provided with Faston connections (6.3mm). Heat-resistant cables have to be used.

Before connecting cables make sure the power supply complies with the instrument's requirements. Separate the probe and digital input 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.

NOTE: the maximum current allowed for all the loads is 20A.

21.1 PROBE CONNECTIONS

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.

22 TTL/RS485 SERIAL LINE

The TTL connector allows, by means of the external module TTL/RS485 (XJ485CX), to connect the unit to a network line ModBUS-RTU compatible as the Dixell monitoring system XJ500 (Version 3.0). The same TTL connector is used to upload and download the parameter list of the "HOT-KEY". The instruments can be ordered with the serial output RS485 (Optional).

23 ALARM SIGNALS

| Message | Cause | Outputs |
|---------|----------------------------------|---|
| "PF1" | Regulating probe TR3 failure | Alarm output ON; Compressor output according to parameters Con and CoF. |
| "PF2" | EVP Probe Failure | Alarm output ON; Other outputs unchanged |
| "PF3" | Logging probe TL1 failure | Alarm output ON; Other outputs unchanged |
| "PF4" | Logging probe TL2 failure | Alarm output ON; Other outputs unchanged |
| "HA1" | TR3 High Alarm | Alarm output ON; Other outputs unchanged |
| "LA1" | TR3 Low Alarm | Alarm output ON; Other outputs unchanged |
| "HA3" | High temperature alarm probe TL1 | Alarm output ON; Other outputs unchanged |
| "LA3" | Low temperature alarm probe TL1 | Alarm output ON; Other outputs unchanged |
| "HA4" | High temperature alarm probe TL2 | Alarm output ON; Other outputs unchanged |
| "LA4" | Low temperature alarm probe TL2 | Alarm output ON; Other outputs unchanged |
| "dA" | Door Open Alarm | Compressor and fans depend on "rrd" |
| "EA" | External Alarm | Output unchanged. |
| "CA" | Serious Alarm | All outputs OFF. |

The alarm message is displayed until the alarm condition is recovered.

All the alarm messages are showed alternating with the room temperature except for the "PF1" which is flashing.

24 NOTIFICATION SIGNALS

| Message | Cause | Outputs |
|---------|----------------------------|---|
| "ECO" | Energy Saving mode Enabled | Shown alternatively to the temperature. |

24.1 SILENCING BUZZER

Once the alarm signal is detected the buzzer can be silenced by pressing any key. Buzzer is mounted in the keyboard and it is an option.

24.2 "EE" ALARM

The Dixell instruments are provided with an internal check for the data integrity. The "EE" alarm flashes when a failure in the memory data occurs. In such cases the alarm output is enabled.

24.3 ALARM RECOVERY

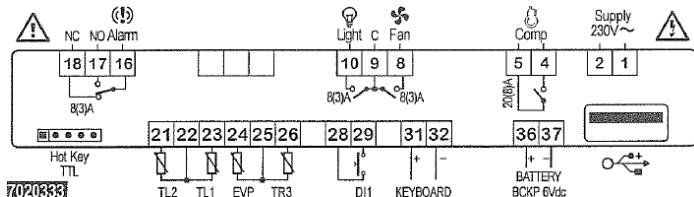
Probe alarms: "PF1" (probe1 faulty), "PF2", "PF3" and "PF4"; they automatically stop 10 sec after the probe restarts normal operation. Check connections before replacing the probe.

Temperature alarms "HA1", "LA1", "HA3", "LA3", "HA4" and "LA4" automatically stop as soon as the temperature returns to normal values.

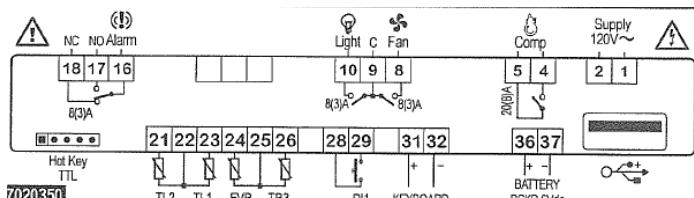
Alarms "EA" and "CA" (with i1F=bAL) recover as soon as the digital input is disabled.

25 CONNECTIONS

25.1 XW737K – 7020333



25.2 XW737K – 7020350



26 DEFAULT VALUES

| Label | Description | Range | Value | Level |
|----------------------|---|---------------|-------|-------|
| TIME SETTING | | | | |
| Hur | Current hour | 0 ÷ 23 | - | Pr1 |
| Min | Current minute | 0 ÷ 59 | - | Pr1 |
| dAy | Day of the month | 1÷31 | - | Pr1 |
| Mon | Month | 1÷12 | - | Pr1 |
| yEA | Year | (0÷99) | - | Pr1 |
| LOG SETTING | | | | |
| itP | Recording interval | 1 ÷ 255 min | 5 | Pr1 |
| rC1 | First probe recording enable | 0 ÷ 1 | YES | Pr2 |
| rC2 | Second probe recording | 0 ÷ 1 | NO | Pr2 |
| rC3 | Third probe recording enable | 0 ÷ 1 | NO | Pr2 |
| rC4 | Fourth probe recording enable | 0 ÷ 1 | YES | Pr1 |
| rCb | Start recording REC key enabling | 0 ÷ 1 | NO | Pr1 |
| EU | Date format | 0 ÷ 1 | EU | Pr2 |
| rSd | Data erase | 0 ÷ 1 | NO | Pr2 |
| rSA | Alarms erase | 0 ÷ 1 | NO | Pr2 |
| REGULATION | | | | |
| Set | Set point | -95 ÷ -55 | -87 | Pr1 |
| Hy | Differential | 1 ÷ 26 °C | 10 | Pr2 |
| LS | Minimum set point limit | -100 ÷ -86 °C | -95 | Pr2 |
| US | Maximum set point limit | -86 ÷ 150 °C | -55 | Pr2 |
| ot | Regulation probe calibration (term. 1-2) | -12 ÷ 12 °C | -10 | Pr2 |
| P2P | Evaporator probe presence (term. 2-3) | 0 ÷ 1 | NO | Pr2 |
| oE | Evaporator probe calibration | -12 ÷ 12 °C | 0 | Pr2 |
| P3P | Third probe presence (term. 4-5) | 0 ÷ 1 | NO | Pr2 |
| o3 | Third probe calibration | -12 ÷ 12 °C | 0 | Pr2 |
| P4P | Fourth probe presence (term. 5-6) | 0 ÷ 1 | NO | Pr2 |
| O4 | Fourth probe calibration | -12 ÷ 12 °C | 0 | Pr2 |
| odS | Outputs activation delay at start up | 0 ÷ 255 min | 0 | Pr2 |
| AC | Anti-short cycle delay | 0 ÷ 30 min | 5 | Pr2 |
| Con | Compressor ON time with faulty probe | 0 ÷ 255 min | 60 | Pr2 |
| COF | Compressor OFF time with faulty probe | 0 ÷ 255 min | 5 | Pr2 |
| DISPLAY | | | | |
| CF | Temperature measurement unit | 0 ÷ 1 | °C | Pr1 |
| rES | Resolution (for °C) | 0 ÷ 1 | in | Pr1 |
| rEd | Remote display | 0 ÷ 5 | P1 | Pr2 |
| dLy | Display delay | 0 ÷ 120 min | 00:00 | Pr2 |
| DEFROST | | | | |
| dtE | Defrost termination temperature | -100 ÷ 150 °C | 4 | Pr2 |
| IdF | Interval between defrosts | 1 ÷ 120 hour | 1 | Pr2 |
| MdF | (Maximum) duration of defrost | 0 ÷ 255 min | 0 | Pr2 |
| dFd | Display during defrost | 0 ÷ 3 | rt | Pr2 |
| dAd | Defrost display time out | 0 ÷ 255 min | 2 | Pr2 |
| FAN | | | | |
| Fnc | Fan operating mode | 0 ÷ 3 | O-y | Pr2 |
| Fnd | Fan delay after defrost | 0 ÷ 255 min | 0 | Pr2 |
| FSt | Fan stop temperature | -100 ÷ 150 °C | 0 | Pr2 |
| Fon | Fan ON time | 0 ÷ 15 min | 0 | Pr2 |
| FoF | Fan OFF time | 0 ÷ 15 min | 0 | Pr2 |
| ALARMS | | | | |
| A1C | Temperature alarm configuration | 0 ÷ 1 | Ab | Pr2 |
| A1U | High temperature alarm for P1 | -100 ÷ 150 °C | -60 | Pr2 |
| A1L | Low temperature alarm for P1 | -100 ÷ -75 °C | -100 | Pr2 |
| A1H | Differential for temperature alarm recovery | 1 ÷ 26 °C | 1 | Pr2 |
| A1d | Temperature alarm delay | 0 ÷ 255 min | 0 | Pr2 |
| d1o | Delay of temperature alarm at start-up | 0 ÷ 143 min | 00:00 | Pr2 |
| A3U | High temperature alarm for P3 | -100 ÷ 150 °C | -75 | Pr2 |
| A3L | Low temperature alarm for P3 | -100 ÷ -75 °C | -100 | Pr2 |
| A3H | Differential for temperature alarm 3 recovery | 1 ÷ 26 | 1 | Pr2 |
| A3d | Temperature alarm 3 delay | 0 ÷ 255 min | 0 | Pr2 |
| d3o | Delay of temperature alarm 3 at start-up | 0 ÷ 143 hour | 00:00 | Pr2 |
| A4U | High temperature alarm for P4 | -100 ÷ 150 °C | -75 | Pr2 |
| A4L | Low temperature alarm for P4 | -100 ÷ -75 °C | -100 | Pr2 |
| A4H | Differential for temperature alarm 4 recovery | 1 ÷ 26 °C | 1 | Pr2 |
| A4d | Temperature alarm 4 delay | 0 ÷ 255 min | 0 | Pr2 |
| d4o | Delay of temperature alarm 4 at start-up | 0 ÷ 143 hour | 00:30 | Pr2 |
| tbA | Alarm relay disabling | 0 ÷ 1 | YES | Pr2 |
| Aro | Alarm relay activation with power failure | 0 ÷ 1 | YES | Pr2 |
| ALF | Alarm relay activation for all the alarms | 0 ÷ 1 | YES | Pr2 |
| bon | Time buzzer restart after muting,case alarm durat | 0 ÷ 30 min | 30 | Pr1 |
| AoP | Alarm relay polarity | 0 ÷ 1 | CL | Pr2 |
| DIGITAL INPUT | | | | |
| i1P | Digital input polarity | 0 ÷ 1 | oP | Pr2 |

| Label | Description | Range | Value | Level |
|----------------------|---|-------------|-------|-------|
| i1F | Digital input configuration | 0 ÷ 10 | dor | Pr2 |
| did | with i1F= EAL or i1F = bAL d.i alarm delay (13-14) | 0 ÷ 255 min | 1 | Pr2 |
| odc | Compressor and fan status when open door | 0 ÷ 3 | no | Pr2 |
| rrd | Outputs restart after doA alarm | 0 ÷ 1 | NO | Pr2 |
| ENERGY SAVING | | | | |
| HES | Temperat increase during the Energy Saving cycle | -30 ÷ 30 °C | 0 | Pr2 |
| OTHER | | | | |
| PAS | Valore PSW | 0÷999 | 12 | Pr2 |
| Adr | Serial address | 1 ÷ 247 | 1 | Pr1 |
| PbC | Type of probe | Ntc, Pt1 | Pt1 | Pr2 |
| rEL | Release software | | 1.2 | Pr2 |
| Ptb | Parameter table | - | | Pr2 |

