XW737K – D60K
7020350 AND 7020333

Manual for rel. 1.2

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 ≤ 2.5mm² for probes and digital inputs and back up battery 6.3mm Faston for loads and power supply
Power supply: 230Vac ± 10% 50/60Hz or. 110Vac ± 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°C or 1°F (selectable)
Accuracy (ambient temp. 25°C): ±0.5°C ±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 (∅ 1mm) 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 PT1000 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
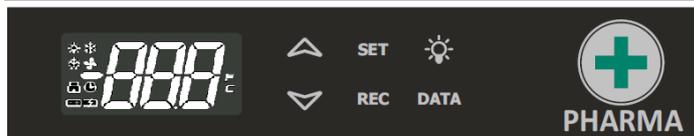
LEDS
Each LED function is described in the following table.

LED	MODE	FUNCTION
❄	ON	Compressor enabled
❄	Flashing	Anti-short cycle delay enabled
❄	ON	Defrost enabled
❄	Flashing	Drip time in progress
💨	ON	Fans enabled
💨	Flashing	Fans delay after defrost in progress.
🔔	ON	An alarm is occurring
🕐	ON	Recording activated
🔋	ON	Battery status OK
🔋	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)**; n 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
☀	**(LiG)** To switch the light.
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

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 30 sec to display the probe value again.

5.2   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.
3. 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* SET *to see the value or to go on with other value.*		**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.
Exit	SET + △	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 <u>ON</u>, 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. <u>Turn OFF</u> 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	**SET+** ▽	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 SET

Display		**HUr** = hour → press SET to confirm/modify **Min** = minutes → press SET to confirm/modify **dAy =** Day of the month → press SET to confirm/modify **Udy** = Day of the week (Sun,Mon,tuE,Ued,thE,Fri,SAt) **Mon** = Month → press SET to confirm/modify **yEA** = Year → press SET to confirm/modify
EXIT	SET + △	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	SET + ▽	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	SET	Press **SET** button.
Modify	△ or ▽	Use the arrows to modify the value.
Confirm and store	SET	Press **SET** key: the value will blink for 3 sec, and then the display will show the next parameter.
EXIT	SET + △	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:
1. Push the REC key for 3s.
2. If the PASSWORD is required, insert the PASSWORD as describe in the previous chapter.
3. The controller will display "Y" se log is enabled, or "n" if disabled
4. Use the arrow key to modify the value:
   a. To enable the log: from "n" to "Y".
   b. To disable the log: from "y" to "n".
5. 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:
1. 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
2. Push the DATA key.
3. Controller starts uploading data to USB
4. While exporting the display shows "**Lod**" message followed by the "**ALr**" message.
5. At the end the following message will be displayed:
   i. **"End"** if everything it's ok
   ii. **"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 "**IdF**" 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:
1. The alarm LED icon will be lit.
2. The alarm relay will be activated according to the **Aro** parameter.
3. 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:
6. The alarm LED icon will be lit.
7. The buzzer will ring continuously.
8. 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 of 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, 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.

d1o 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.

d3o 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 HA3 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 LA3 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.

d4o 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 displaye; **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 differente form 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 de-activated.

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 de-activated.

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 (∅ 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
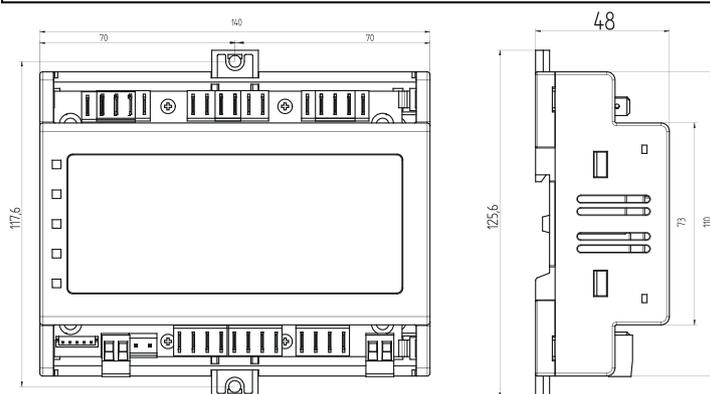
20.2 D60K – PANEL CUT OUT
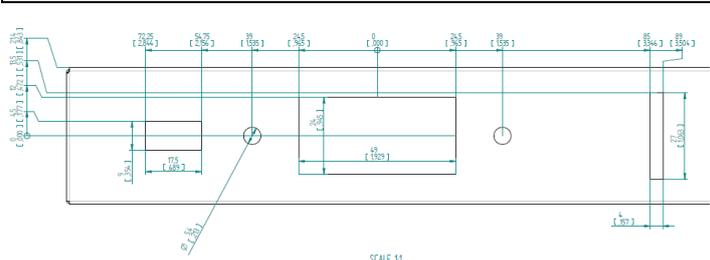
21 ELECTRICAL CONNECTIONS

XW737K is provided with disconnect-able 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 wit the serial output RS485 (Optional).

23 ALARM SIGNALS

Message	Cause	Outputs
"PF1"		Alarm output ON; Compressor output according to
	Regulating probe TR3 failure	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 recovery.
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.
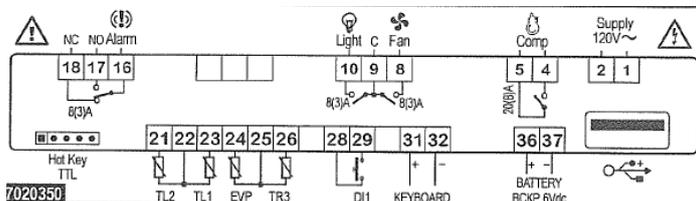Alarms "EA" and "CA" (with i1F=bAL) recover as soon as the digital input is disabled.

25 CONNECTIONS

25.1 XW737K – 7020333
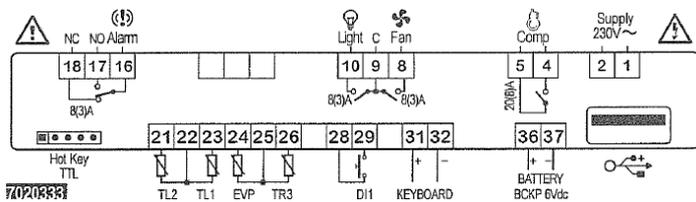
25.2 XW737K – 7020350

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 °V	-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

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