XW40K AND T620 – V620 – CX620

1. GENERAL WARNING

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.

SAFETY PRECAUTIONS

- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation
- Warning: disconnect all electrical connections before any kind of maintenance.
- Fit the probe where it is not accessible by the End User. The instrument must not be opened.
- In case of failure or faulty operation send the instrument back to the distributor or to "Dixell S.p.A." (see address) with a detailed description of the fault.
- Consider the maximum current which can be applied to each relay (see Technical Data).
- Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or intertwining.
- In case of applications in industrial environments, the use of mains filters (our mod. FT1) in parallel with inductive loads could be useful.

2. General description

Model **XW40K** is microprocessor based controller suitable for applications on medium or low temperature refrigerating units. It has to be connected by means of a two-wire cable (∅ 1mm) at a distance of up to 30 meters to the keyboard **T620** or **V620** or **CX620**. It is provided with three relay outputs to control compressor, defrost - which can be either electrical or hot gas - and light. It is also provided with 4 NTC probe inputs, one for temperature control, one to control the defrost end temperature of the evaporator and the third and fourth to control condenser temperature 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 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**".
The relay of the second compressor is activated in parallel with the relay of the first compressor, with a possible delay set in the **AC1** parameter. Both the compressors are switched off at the same time.

3.2 FAST FREEZING

When defrost is not in progress, it can be activated by holding the "▲" key pressed for about 3 seconds. 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 "▲" for 3 seconds.

3.3 DEFROST

Two defrost modes are available through the "**tdF**" parameter: defrost through electrical heater (**tdF = EL**) and hot gas defrost (**tdF = in**). Other parameters are used to control the interval between defrost cycles (IdF), its maximum length (MdF) and two defrost modes: timed or controlled by the evaporator's probe (P2P). At the end of defrost dripping time is started, its length is set in the FSt parameter. With FSt =0 the dripping time is disabled.

4. Relay 22-23 configuration- special functions

By means of the parameter **oA3**, it's possible to configure the functions of the light relay (22-23), as described in the following paragraphs:

OA3 = LIG: LIGHT RELAY (FACTORY SETTING)

By setting oA3 = Lig the relay will work as light relay, it is switched on and off by the light button on the keyboard and is affected by status of the digital input when i1F = dor.

OA3 = CP2 2ND COMPRESSOR MANAGEMENT

By setting oA3 = cP2, the relay at terminals 22-23 will operate as "second compressor". It will be activated in parallel with the relay of the first compressor, with a possible delay set in the **AC1** parameter (seconds). Both the compressors are switched off at the same time.

OA3 = ONF: ON –OFF RELAY

By setting oA3 =onF, the relay will operate as "on-off" relay: it will be activated when the controller is switched on and it will be switched off when the controller is in stand-by status.

OA3 = AUS: AUXILIARY RELAY

By setting oA3 = AUS, the relay 22-23 will work as auxiliary thermostat (I.E.. anti condensing heater).
Parameters involved:

- **ACH (cL, Ht):** Kind of regulation for the auxiliary relay: **Ht =** heating / **CL =** cooling;
- **SAA (-50÷150)** Set point for auxiliary relay
- **SHy (0÷25.5°C)** Differential for auxiliary output.
  - With ACH = CL: aux relay **cut in** is SAA+SHy, cut out SAA.
  - With ACH = Ht: aux relay **cut in** is SAA-SHy, cut out SAA.
- **ArP (nP, P1, P2, P3, P4)** Probe for auxiliary relay
- **Sdd (n, Y)** Auxiliary output working during defrost

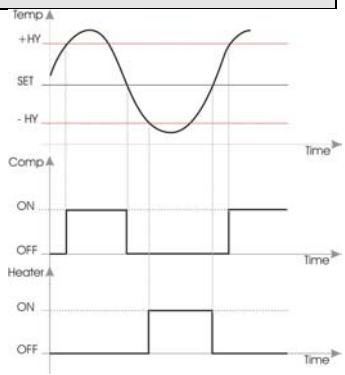
OA3 = ALR: ALARM RELAY

By setting oA3 = ALr the relay will work as alarm relay, it is switched on when an alarm happens.
Parameters involved:

- **tbA (n, y)** Alarm relay silencing
- **AoP (cL; oP)** Alarm relay polarity

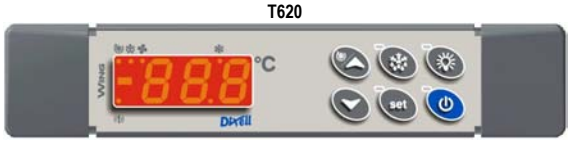
OA3 = DB: NEUTRAL ZONE

By setting **oA3 = db** the controller will perform a "neutral zone" regulation.
The heating element has to be connected to the oA3 relay (22-23)
If the temperature increases and reaches set point plus differential (**+HY**) the **compressor** is started and then turned off when the temperature reaches the set point value again.
If the temperature decreases and reaches the set point minus differential(**-HY**) the oA3 output (**heater**) is switched on and then turned OFF when the temperature reaches again the set point.



5. Keyboards

T620



V620

CX620

To display and modify target set point; in programming mode it selects a parameter or confirm an operation. By holding it pressed for 3s when max or min temperature is displayed it will be erased.

To see the max. stored temperature; in programming mode it browses the parameter codes or increases the displayed value.
By holding it pressed for 3s the fast freezing cycle is started.

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

By holding it pressed for 3s the defrost is started.

Switch ON and OFF the cold room light.

Switch ON and OFF the instrument.

KEY COMBINATIONS

To lock and unlock the keyboard.

To enter the programming mode.

To exit the programming mode.

5.1 USE OF LEDS

Each LED function is described in the following table.

LED	MODE	Function
❄	ON	The compressor is running
❄	FLASHING	- Programming Phase (flashing with LED 🌀) - Anti-short cycle delay enabled
🌀	FLASHING	Programming Phase (flashing with LED ❄)
❄	ON	The defrost is enabled
❄	FLASHING	Drip time in progress
❄	ON	The Fast Freezing cycle is enabled
((•))	ON	- ALARM signal - In "Pr2" indicates that the parameter is also present in "Pr1"
❄	ON	Continuous cycle is running
☀	ON	Energy saving enabled
💡	ON	Light on
AUX	ON	Auxiliary relay on (CX620 only)
°C/°F	ON	Measurement unit (CX620 only)

5.2 HOW TO SEE THE MIN TEMPERATURE

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

5.3 HOW TO SEE THE MAX TEMPERATURE

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

5.4 HOW TO RESET THE MAX AND MIN TEMPERATURE RECORDED

To reset the stored temperature, when max or min temperature is displayed :

1. Press SET key until "rST" label starts blinking.

N.B. After the installation RESET the temperature stored .

5.5 HOW TO SEE AND MODIFY THE SET POINT

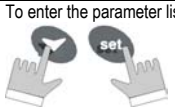
1. Push and immediately release the **SET** key: the display will show the Set point value;
2. To change the Set value push the ▲ or ▼ arrows within 10s.
3. To memorise the new set point value push the **SET** key again or wait 10s.

5.6 TO START A MANUAL DEFROST

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

5.7 TO ENTER IN PARAMETERS LIST "PR1"

To enter the parameter list "Pr1" (user accessible parameters) operate as follows:



1. Enter the Programming mode by pressing the Set and DOWN key for few seconds (🌀 and ❄ start blinking).
2. The instrument will show the first parameter present in "Pr1"

THE HIDDEN MENU

The hidden menu Includes all the parameters of the instrument.

HOW TO ENTER THE HIDDEN MENU

1. Enter the Programming mode by pressing the **Set** + ▼ keys for 3s (🌀 and ❄ start blinking).
2. Released the keys, then push again the Set+ ▼ keys for more than 7s. The Pr2 label will be displayed immediately followed from the HY parameter.
   NOW YOU ARE IN THE HIDDEN MENU.
3. Select the required parameter.
4. Press the "**SET**" key to display its value
5. Use ▲ or ▼ to change its value.
6. Press "**SET**" to store the new value and move to the following parameter.

To exit: Press **SET +** ▲ or wait 15s without pressing a key.
NOTE1: if none parameter is present in Pr1, after 3s the "noP" message is displayed. Keep the keys pushed till the Pr2 message is displayed.
NOTE2: the set value is stored even when the procedure is exited by waiting the time-out to expire.

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

Each parameter present in the HIDDEN MENU can be removed or put into "THE FIRST LEVEL" (user level) by pressing **"SET + ▼"**.
In HIDDEN MENU when a parameter is present in First Level the decimal point is on.

5.8 HOW TO CHANGE THE PARAMETER VALUE

1. Enter the Programming mode.
2. Select the required parameter with ▲ or ▼.
3. Press the "**SET**" key to display its value (❄ and 🌀 LED starts blinking).
4. Use ▲ or ▼ to change its value.
5. Press "**SET**" to store the new value and move to the following parameter.

To exit: Press **SET + UP** or wait 15s without pressing a key.
NOTE: the new programming is stored even when the procedure is exited by waiting the time-out.

5.9 HOW TO LOCK THE KEYBOARD

1. Keep the ▲ and ▼ keys pressed together for more than 3 s the ▲ and ▼ keys.
2. The "POF" message will be displayed and the keyboard is locked. At this point it is only possible the viewing of the set point or the MAX o Min temperature stored and to switch ON and OFF the light, the auxiliary output and the instrument.

TO UNLOCK THE KEYBOARD

Keep the ▲ and ▼ keys pressed together for more than 3s.

5.10 ON/OFF FUNCTION (STAND BY)

By pushing the **ON/OFF** key, the instrument shows "OFF" for 5 sec. and the ON/OFF LED is switched ON.
During the OFF status, all the relays are switched OFF and the regulations are stopped; if a monitoring system is connected, it does not record the instrument data and alarms.
When the instrument is in stand by the keyboard displays "oFF".

N.B. During the OFF status the Light and AUX buttons are active.

5.11 TO SEE THE PROBE VALUES

1. Enter in "**Pr1**" level.
2. Parameters "dP1", "dP2" "dP3" and "dP4" display the value of probes 1, 2, 3 and 4.

6. Parameter List

REGULATION

Hy **Differential:** (0,1÷25,5°C; 1÷45°F): Intervention 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:** (-50,0°C÷SET; -58°F÷SET) Sets the minimum acceptable value for the set point.
US **Maximum set point limit:** (SET÷110°C; SET÷230°F) Set the maximum acceptable value for set point.

PROBE INPUTS

Ot **Thermostat probe calibration (term. 1-2): (** (-12.0÷12.0°C/ -21÷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÷12.0°C/ -21÷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÷12.0°C/ -21÷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÷12.0°C/ -21÷21°F) allows to adjust possible offsets of the fourth probe.
OdS **Outputs activation delay at start up:** (0÷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÷30 min) interval between the compressor stop and the following restart.
AC1 **Time delay between turning on compressor 2 :** (0÷255 sec) allows to set the delay between turning on the first and the second compressor. It's used with oA3 = cP2.
rtr **Percentage of the second and first probe for regulation (0÷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 **Thermostat override:** (0min ÷23h 50min) allows to set the length of the continuous cycle. Can be used, for instance, when the room is filled with new products.
CCS **Set point for continuous cycle:** (-50÷150°C) it sets the set point used during the continuous cycle.
Con **Compressor ON time with faulty probe:** (0÷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÷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 :** select which probe is displayed by the remote display (**T620or CX620 or V620**)
(**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.
dLy **Display delay:** (0 ÷20.0m; risul. 10s) when the temperature increases, the display is updated of 1 °C/1°F after this time.
dtr **Percentage of the second and first probe for visualization when Lod = dtr (0÷100; 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).

DEFROST

tdF **Defrost type:**
EL = electrical heater (Compressor OFF)
in = hot gas (Compressor and defrost relays ON)
dFP **Probe selection for defrost termination: nP** = no probe; **P1** =thermostat probe; **P2 =** evaporator probe; **P3** =Third probe; **P4** = Fourth probe.
dtE **Defrost termination temperature:** (-50,0÷110,0°C; -58÷230°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÷120h) Determines the time interval between the beginning of two defrost cycles.

MdF (Maximum) duration of defrost: (0÷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.

dSd Start defrost delay: (0÷99min) This is useful when different defrost start times are necessary to avoid overloading the plant.

dFd Display during defrost:
rt = real temperature;
it = temperature reading at the defrost start;
Set = set point;
dEF = "dEF" label;
dEG = "dEG" label;

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

Fdt Drain down time: (0÷60 min.) 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 First defrost after start-up:
y = Immediately;
n = after the IdF time

dAF Defrost delay after fast freezing: (0min÷23h 50min) after a Fast Freezing cycle, the first defrost will be delayed for this time.

OA3 = AUS: AUXILIARY THERMOSTAT CONFIGURATION (terms. 22-23)

ACH Kind of regulation for auxiliary relay: **Ht** = heating; **CL** = cooling

SAA Set Point for auxiliary relay: (-50,0÷110,0°C; -58÷230°F) it defines the room temperature setpoint to switch auxiliary relay.

SHy Differential for auxiliary relay: (0,1÷25,5°C; 1÷45°F): Intervention differential for auxiliary relay set point, always positive.

ArP Probe selection for auxiliary: **nP** = aux relay is switched by digital input with i1F = AUS; **P1 =** Probe 1 (Thermostat probe); **P2 =** Probe 2 (evaporator probe); **P3 =** Probe 3 (display probe).; **P4 =** Probe 4

Sdd Auxiliary output working during defrost:
n = the auxiliary output is switched off during defrost
y = the auxiliary output goes on working during defrost

ALARMS

ALP Probe for temperature alarm setting: P1 = thermostat probe; P2 = evaporator probe; P3 = condenser 1 probe; P4 O condenser 2 probe.

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

ALU High temperature alarm setting:
ALC= rE, 0 ÷ 50°C or 90°F
ALC= Ab, ALL ÷ 110°C or 230°F
when this temperature is reached and after the ALd delay time the HA alarm is enabled.

ALL Low temperature alarm setting: ALC = rE , 0 ÷ 50 °C or 90°F; ALC = Ab , - 50°C or -58°F ÷ ALU when this temperature is reached and after the ALd delay time, the LA alarm is enabled.

AFH Temperature alarm and fan differential: (0,1÷25,5°C; 1÷45°F) Intervention differential for temperature alarm set point and fan regulation set point, always positive.

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

dAo Delay of temperature alarm at start-up: (0min÷23h 50min) time interval between the detection of the temperature alarm condition after the instrument power on and the alarm signalling.

CONDENSER TEMPERATURE ALARM

AP2 Probe selection for temperature alarm of condenser: nP = no probe; **P1** =thermostat probe; **P2 =** evaporator probe; **P3** =third probe; **P4** = fourth probe.

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

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

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

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

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

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

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

RELAY OA3 (22-23) CONFIGURATION

tbA Alarm relay silencing (with oA3=ALr):
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 Fourth relay configuration (22-23): dEF: do not select it!.**; FAn:** do not select it!.**; ALr**: alarm; **Lig**: light; **AuS**: Auxiliary relay; **onF**: always on with instrument on; **db =** heating element for neutral zone regulation; **cP2 =** second compressor, **dF2:** do not select it.

AoP Alarm relay polarity: it set if the alarm relay is open or closed when an alarm happens. **CL**= terminals 1-2 closed during an alarm; **oP** = terminals 1-2 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. **PAL** = pressure switch alarm, "CA" message is displayed; **dor** = door switch function; **dEF** = activation of a defrost cycle; **AUS** =to switch on and off the 22-23 relay with oA3 = AUS; **Htr** = kind of action inversion (cooling – heating); **FAn = not set it; ES =** Energy saving.

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

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

odc Compressor status when open door: no; Fan = normal; **CPr; F_C** = Compressor 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÷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: **PbC** = PBC probe, **ntc =** NTC probe.

onF on/off key enabling: nu = disabled; **oFF =** enabled; **ES =** to start a energy saving cycle.

dP1 Thermostat probe display

dP2 Evaporator probe display

dP3 Third probe display- ***optional***.

dP4 Fourth probe display.

rSE Real set point: it shows the set point used during the energy saving cycle or during the continuous cycle.

rEL Release software: (read only) Software version of the microprocessor.

Ptb Parameter table: (read only) it shows the original code of the **dixell** parameter map.

7. Digital input

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

DOOR SWITCH INPUT (i1F = dor)

It signals the door status and the corresponding relay output status through the "**odc**" parameter: **no, Fan** = normal (any change); **CPr, F_C** = Compressor 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.

GENERIC ALARM (i1F = EAL)

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

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.

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.**

AUXILIARY OUTPUT SWITCHING (i1F =AUS)

With oA3 = AUS and i1F = AUX it switches the fourth relay (22-23).

START DEFROST (i1F = dFr)

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

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.

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.

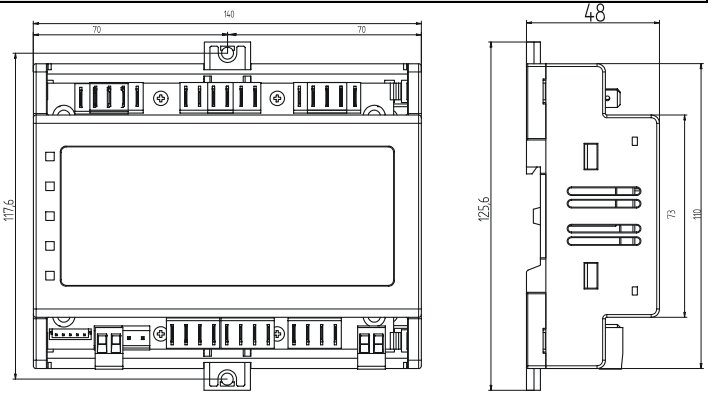
DIGITAL INPUTS POLARITY

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

8. Installation and mounting

T620 keyboard shall be mounted on vertical panel, in a 150x31 mm hole, and fixed using two screws ∅ 3 x 2mm. To obtain an IP65 protection grade use the front panel rubber gasket (mod. RG-L).
V620 keyboard shall be mounted on vertical panel, in a 72x56 mm hole, and fixed using two screws ∅ 3 x 2mm. To obtain an IP65 protection grade use the front panel rubber gasket (mod. RGW-V).
CX620 keyboard shall be mounted on vertical panel, in a 29x71 mm hole, and fixed using the special bracket supplied.
The controller **XW40K** 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 - 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.

XW40K – 8 DIN CASE - DIMENSIONS



9. Electrical connections

XW40K is provided with screw terminal blocks to connect cables with a cross section up to 2,5 mm^2 for the RS485(optional) and the keyboard. Connecting other inputs, power supply and relays, **XW40K** 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 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.
N.B. Maximum current allowed for all the loads is 20A.

9.1 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.

10. 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).

11. Use of the programming "HOT KEY "

The Wing units can UPLOAD or DOWNLOAD the parameter list from its own E2 internal memory to the **"Hot Key"** and vice-versa.

11.1 DOWNLOAD (FROM THE "HOT KEY" TO THE INSTRUMENT)

1. Turn OFF the instrument by means of the ON/OFF key, remove the TTL serial cable if present, insert the **"Hot Key"** and then turn the Wing ON.
2. Automatically the parameter list of the **"Hot Key"** is downloaded into the Wing memory, the "**DoL**" message is blinking. After 10 seconds the instrument will restart working with the new parameters.
3. Turn OFF the instrument remove the **"Hot Key",** plug in the TTL serial cable, then turn it ON again.

At the end of the data transfer phase the instrument displays the following messages:
"**end** " for right programming.
The instrument starts regularly with the new programming.
"**err**" 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.

11.2 UPLOAD (FROM THE INSTRUMENT TO THE "HOT KEY")

1. Turn OFF the instrument by means of the ON/OFF key and remove the TTL serial cable if present; then turn it ON again.
2. When the Wing unit is ON, insert the "**Hot key**" and push ▲ key; the **"uPL"** message appears.
3. Push "**SET"** key to start the UPLOAD; the "**uPL**" message is blinking.
4. Turn OFF the instrument remove the **"Hot Key",** plug in the TTL serial cable, then turn it ON again.

At the end of the data transfer phase the instrument displays the following messages:
"**end** " for right programming.
"**err**" for failed programming. In this case push "SET" key if you want to restart the programming again or remove the not programmed "**Hot key**".

12. ALARM SIGNALS

Message	Cause	Outputs
"P1"	Thermostat probe failure	Alarm output ON; Compressor output according to parameters "COn" and "COF"
"P2"	Evaporator probe failure	Alarm output ON; Other outputs unchanged
"P3"	Probe 3 probe failure	Alarm output ON; Other outputs unchanged
"P4"	Probe 4 probe failure	Alarm output ON; Other outputs unchanged
"HA"	Maximum temperature alarm	Alarm output ON; Other outputs unchanged
"LA"	Minimum temperature alarm	Alarm output ON; Other 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 (i1F=bAL)	All outputs OFF.
"CA"	Pressure switch alarm (i1F=PAL)	All outputs OFF
"EE"	Data or memory failure	Alarm output ON; Other outputs unchanged

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 "P1" which is flashing.
To reset the "EE" alarm and restart the normal functioning press any key, the "**rSt**" message is displayed for about 3s.

12.1 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.

12.2 "EE" ALARM

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

12.3 ALARM RECOVERY

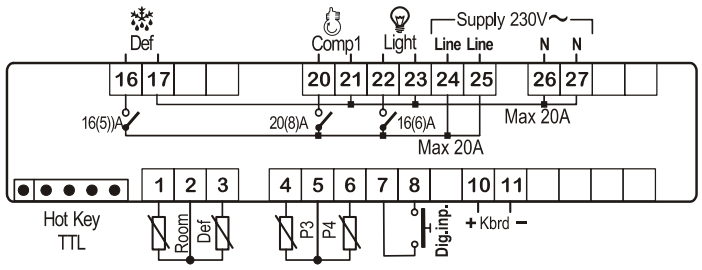
Probe alarms : "**P1**" (probe1 faulty), "**P2**" and "**P3**"; they automatically stop 10s after the probe restarts normal operation. Check connections before replacing the probe.
Temperature alarms "**HA**", "**LA**" "**HA2**" and "**LA2**" automatically stop as soon as the temperature returns to normal values.
Alarms **"EA"** and **"CA"** (with i1F=bAL) recover as soon as the digital input is disabled.
Alarm "**CA"** (with i1F=PAL) recovers only by **switching off and on** the instrument.

13. Technical data

Keyboards
Housing: self extinguishing ABS.
Case: T620: facia 38x185 mm; depth 23mm
V620: facia 72x56 mm; depth 23mm
CX620: facia 75x36 mm; depth 23mm
Mounting: T620: panel mounting in a 150x31 mm panel cut-out with two screws. ∅ 3 x 2mm. Distance between the holes 165mm
V620: panel mounting in a 56x72 mm panel cut-out with two screws. ∅ 3x2mm. Distance between the holes 40mm
CX620: panel mounting in a 71x29mm panel cut-out
Protection: IP20; **Frontal protection:** IP65 with frontal gasket
Connections: Screw terminal block ≤ 2,5 mm^2
Power supply: from **XW40K** power module
Display: 3 digits, red LED, 14,2 mm high.
Optional output: buzzer
Power module XW40K
Case: 8 DN: 140X176X148.
Connections: Screw terminal block ≤ 2,5 mm^2 heat-resistant wiring and 6,3mm Faston
Power supply: 230Vac or. 110Vac ± 10% or 24Vac
Power absorption: 10VA max.
Inputs: 4 NTC probes
Digital inputs: 1 free voltage
Relay outputs: ***Total current on loads MAX. 20A***
compressor: relay SPST 20(8) A, 250Vac
defrost: relay SPST 16(5) A, 250Vac
light (oA3): relay SPST 16(5) A, 250Vac
Serial output : TTL standard.
Communication protocol: Modbus - RTU
Data storing: on the non-volatile memory (EEPROM).
Kind of action: 1B.
Pollution grade: normal
Software class: A.
Operating temperature: 0÷60 °C.
Storage temperature: -25÷60 °C.
Relative humidity: 20÷85% (no condensing)
Measuring and regulation range: NTC probe: -40÷110°C (-58÷230°F)
Resolution: 0,1 °C or 1°C or 1 °F (selectable).
Accuracy (ambient temp. 25°C): ±0,5 °C ±1 digit

14. CONNECTIONS

14.1 XW40K



15. Default setting values

Label	Name	Range	Default	Level
	REGULATION			
Set	Set point	LS÷US	-5.0	- - -
Hy	Differential	0,1÷25,5 °C / 1÷45°F	2.0	Pr1
LS	Minimum set point	-50,0°C÷SET / -58°F÷SET	-50.0	Pr2
US	Maximum set point	SET ÷ 110°C / SET ÷ 230°F	110	Pr2
Ot	Thermostat probe calibration	-12÷12°C /-120÷120°F	0.0	Pr1
P2P	Evaporator probe presence	n=not present; Y=pres.	Y	Pr1

Label	Name	Range	Default	Level
OE	Evaporator probe calibration	-12÷12°C /-120÷120°F	0.0	Pr2
P3P	Third probe presence (1st cond. probe)	n=not present; Y=pres.	n	Pr2
O3	Third probe calibration	-12÷12°C /-120÷120°F	0	Pr2
P4P	Fourth probe presence (2nd cond. probe)	n=not present; Y=pres.	n	Pr2
O4	Fourth probe calibration	-12÷12°C /-120÷120°F	0	Pr2
OdS	Outputs activation delay at start up	0÷255 min.	0	Pr2
AC	Anti-short cycle delay	0÷30 min.	1	Pr1
Ac1	Second compressor delay	0÷255s	5	Pr2
rtr	P1-P2 percentage for regulation	0 ÷ 100 (100=P1 , 0=P2)	100	Pr2
CCt	Compressor ON time during fast freezing	0 ÷ 23h 50 min.	0.0	Pr2
CCS	Set point for continuous cycle	(-55.0÷150,0°C)	-5	Pr2
COn	Compressor ON time with faulty probe	0÷255 min.	15	Pr2
COF	Compressor OFF time with faulty probe	0÷255 min.	30	Pr2
	DISPLAY			
CF	Temperature measurement unit	°C ÷ °F	°C	Pr2
rES	Resolution (integer/decimal point)	in ÷ de	dE	Pr1
rEd	Remote display	P1 ÷ 1r2	P1	Pr2
dLy	Display temperature delay	0 ÷ 20.0 min (10 sec.)	0	Pr2
dtr	P1-P2 percentage for disply	1 ÷ 99	50	Pr2
	DEFROST			
tdF	Defrost type	EL, in	EL	Pr1
dFP	Probe selection for defrost termination	nP; P1; P2; P3; P4	P2	Pr2
dtE	Defrost termination temperature	-50,0÷110°C / -58÷230°F	8.0	Pr1
IdF	Interval between defrost cycles	1÷120h	6	Pr1
MdF	(Maximum) length for 1° defrost	0÷255 min.	30	Pr1
dSd	Start defrost delay	0÷99min	0	Pr2
dFd	Displaying during defrost	rt, it, SEt, dEF, dEG	it	Pr2
dAd	MAX display delay after defrost	0÷255 min.	30	Pr2
Fdt	Draining time	0÷60 min.	0	Pr2
dPO	First defrost after start up	n ÷ y	n	Pr2
dAF	Defrost delay after fast freezing	0 ÷ 23h 50 min.	0.0	Pr2
	AUXILIARY THERMOSTAT			
ACH	Kind of action for auxiliary relay	CL; Ht	cL	Pr2
SAA	Set Point for auxiliary relay	-50,0÷110°C / -58÷230°F	0,0	Pr2
SHy	Differential for auxiliary relay	0,1÷25,5 °C / 1÷45°F	2,0	Pr2
ArP	Probe selection for auxiliary relay	nP / P1 / P2 / P3	nP	Pr2
Sdd	Aux.output working during defrost	n, y	n	Pr2
	ALARMS			
ALP	Probe setting for temperature alarm	P1÷P4	P1	Pr2
ALC	Temperature alarms configuration	rE÷Ab	rE	Pr2
ALU	MAXIMUM temperature alarm	-50,0÷110°C / -58÷230°F	10,0	Pr1
ALL	minimum temperature alarm	-50,0÷110°C / -58÷230°F	10,0	Pr1
AFH	Temperature alarm and fan differential	0,1÷25,5 °C / 1÷45°F	2,0	Pr2
ALd	Temperature alarm delay	0÷255 min.	15	Pr2
dAO	Delay of temperature alarm at start up	0 ÷ 23h 50 min.	1,3	Pr2
AP2	Probe for temperat. alarm of condenser	nP; P1; P2; P3; P4	P4	Pr2
AL2	Condenser for low temperat. alarm	(-55 ÷ 150°C) (-67÷ 302°F)	-40	Pr2
AU2	Condenser for high temperat. alarm	(-55 ÷ 150°C) (-67÷ 302°F)	110	Pr2
AH2	Differ. for condenser temp. alar. recovery	[0,1°C ÷ 25,5°C] [1°F ÷ 45°F]	5	Pr2
Ad2	Condenser temperature alarm delay	0 ÷ 254 (min.) , 255=nU	15	Pr2
dA2	Delay of cond. temper. alarm at start up	0.0 ÷ 23h 50'	1,3	Pr2
bLL	Compr. off for condenser low temperature alarm	n(0) - Y(1)	n	Pr2
AC2	Compr. off for condenser high temperature alarm	n(0) - Y(1)	n	Pr2
	AUXILIARY OUTPUT			
tbA	Alarm relay disabling	n=no; y=yes	y	Pr2
oA3	Fourth relay configuration	ALr = alarm; dEF = do not select it; Lig =Light; AUS =AUX; onF=always on; Fan= do not select it; db = do not select it; dF2 = do not select it	Lig	Pr2
AoP	Alarm relay polarity (oA3=ALr)	oP; cL	cL	Pr2
	DIGITAL INPUT			
i1P	Digital input polarity	oP=opening;CL=closing	cL	Pr1
i1F	Digital input configuration	EAL, bAL, PAL, dor; dEF; Htr, AUS	dor	Pr1
did	Digital input alarm delay	0÷255min	15	Pr1
Nps	Number of activation of pressure switch	0 ÷15	15	Pr2
odc	Compress and fan status 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°C÷30°C; -54°F÷54°F	0	Pr2
	OTHER			
PbC	Kind of probe	Ptc; ntc	1	Pr2
Adr	Serrial address	1÷247	ntc	Pr1
onF	on/off key enabling	nu, oFF; ES	oFF	Pr2
dP1	Room probe display	--	-	Pr1
dP2	Evaporator probe display	--	-	Pr1
dP3	Third probe display	--	-	Pr1

Label	Name	Range	Default	Level
dP4	Fourth probe display	--	-	Pr1
rSE	Current set point	-		Pr1
rEL	Software release	- - -	1,1	Pr2
Ptb	Map code	- - -	-	Pr2

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