

**XJP40D**

**ACQUISITION MODULE**

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**1. GENERAL WARNING**

**1.1 PLEASE READ BEFORE USING THIS MANUAL**

- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.
- Check the application limits before proceeding.

**1.2 SAFETY PRECAUTIONS**

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

**2. GENERAL DESCRIPTION**

The XJP40D in DIN RAIL format is an acquisition module able to read up to 4 temperature via PT100 probes and is provided of 4 digital inputs at supply voltage. PT100 probes with 2 or 3 wires can be used through configuration of instrument parameter. Every XJP40D can have up to 4 sections. More precisely, it's possible to subdivide the instrument resources in 4 parts independent: with autonomous parameters and so with unique or different serial address.

Through RS485 serial output it can be integrated in a monitoring systems created by dixell or in whichever Modbus-RTU compatible system. It's programmable through useful Hot Key or through KB1-PRG and it's possible to link it to X-REP display to view the temperature values of probe linked to active section.

**3. PROGRAMMING KEYBOARD (KB1 PRG)**



▲ (UP)	▼ (DOWN)
During programming mode they slide the labels of parameters or they change the values displayed. By pressing and holding one of these buttons during modifying procedure, values change faster.	

**PRG:** **Displaying active section:** by pressing and releasing this key the name of active section is displayed. **Parameters access:** by pressing and holding the key for 3 seconds the instrument enters in programming menu of active section.

**SET:** **Displaying and modify SET POINT:** by pressing and releasing the key, the instrument displays value of set-point for 5 seconds. By pressing and holding this button at least for 3 seconds you can modify the SET value.

**SECTION:** **Section menu access:** by pressing and releasing this key you enter in section menu. One instrument can have up to 4 section (par. 1).

**COPY:** It permits to copy total configuration of one section into another section. During normal operation it allows the data upload from module to "Hot Key".

**3.1 ABOUT LED**

The display always shows the active section, either via remote keyboard or via the X-REP. There are three different colour LEDs, in the following table are presented the states it can be displayed:

LED	State of Led	Function
Yellow	Blink	RX/TX in progress
Yellow	ON	The module receive but not transmit
Yellow	OFF	It's absent the serial communication
Green	ON	Power supply is present
Red	ON	Alarm

**N.B:** Section 7.1. : LEDs states displayed during Hot Key usage.

**4. MAIN FUNCTIONS**

The instrument is provided with two type of parameters map:

- ❖ **The global parameters map**
- ❖ **The section parameters map**

Modification of global parameters map influence all active sections, while every section has one independent section map.

Through "Section" button you can modify the global section parameters, while with "Prg" button you can modify the specific section parameters.

**Global menu - "SECTION" Key**

The "Section" key allows the sections administration (up to four sections) in which the instrument can be divided, moreover it's possible to display the measured value from input of active section. With "Section" it's possible to modify the number of sections and the parameters of global map.

In the following table there is the complete list of labels of global menu:

Label	Description
<b>Snc</b>	It contains the number of enabled sections
<b>SE#</b>	The states of section #
<b>Pr1</b>	General parameters
<b>out</b>	Quit to menu

Where with SE# indication it's intended that if there are four active sections, on global menu we will have 4 labels: SE0, SE1, SE2, SE3 one for each section.

**4.1 HOW TO ENTER MENU:**

1. you enter in section menu by pressing and releasing the "Section" button. Immediately the display shows the label **Snc** (First label of the list)
2. Through **Up** or **Down** arrows you can move ahead or behind cyclically into menu.

**4.2 HOW TO MODIFY THE NUMBER OF SECTIONS SNC**

You enter in section menu and immediately you'll view the **Snc** label:

1. By pressing and releasing "Section" button, it'll appear the number of enabled sections. With **Up** or **Down** arrows you can modify the number of sections.
2. By pressing and releasing another time "Section" key, you store the number of sections and you return in main visualisation (By pressing key, number will blink for 3 seconds).
3. If the number of section isn't modified by pressing "Section" button you view the label **SE0** (label after **Snc**).

**N.B.:** The sections number is able to be modified in order to number of active sections. For example, if the fourth section is active (**Se3**) the number of sections is always at least four; if the second section is active (**Se1**), the number of sections is always at least two.

**4.3 DISPLAYING MEASURED VALUES**

When you have finished the configuration of the number of section, "Section" menu shows a number of labels equals to number of active sections.

1. By pressing and releasing "Section" key on the label "SE#" you can view the temperature measured by probe relative to section while the functional state of digital input is monitored by D.I.1 dot with delay did.
2. By pressing and releasing "Section" key you'll go to **SE#+1** label

3. If you don't press a key for 15 seconds you'll return to main visualisation.

**4.4 ACTIVATION OF WORKING SECTION**

To enable a section, you display a label that represent it and you press "Section" key for 3 seconds (by default active section is Se0).

N.B.: By entering in programming mode you view always the active section parameters.

**4.5 HOW TO MODIFY THE GLOBAL PARAMETERS MAP "PR1"**

You enter in Section menu and slide the labels until you display "Pr1" label, then:

1. Press and release "Section" key: it'll show the first label of the global parameters map (dAO);
2. move in menu using Up or Down arrows keys until you display the label that you want to modify;
3. Press "Set" key to display the parameter value;
4. Modify the parameter value through Up or Down arrows;
5. Press "Set" to store parameter and to go to next label. If the value of parameter is modified it'll blink for three seconds.
6. To go out from programming mode, you press "Set + Up" when a parameter label is showed or you return to function menu and wait 15 seconds.

**GLOBAL PARAMETERS**

- dAO** Delay of temperature alarm at start-up: (0 ÷ 23h 50min) time interval between detection of alarm condition and alarm signalling after power-on. This delay is counted also when digital input configured as oFF is disabled.
- EdA** Alarm delay at the end of defrost: (0 ÷ 120 min) Time interval after defrost before alarm signalling.
- rES** Resolution (for °C): (in = 1°C; de = 0,1°C) it allows visualisation with decimal point.
- CF** Measurement unit: °C = Celsius; °F = Fahrenheit
- Pbc** Probe input configuration: P2F = PT100 2 wires; P3F= PT100 3 wires
- Ptb** Parameters map: (read only) it shows the original code of the dixell parameter map
- rEL** Release Software(read only).

**4.6 EXIT**

There are two possibility to go out from menu:

- By pressing Section button on "out" label
- If you don't press keys for 15 seconds

**Section Menu – "PRG" Key**

Through "Prg" button is possible to modify the parameters map of active section. These parameters influence the behaviour of single section.

**5. PARAMETERS PROGRAMMING FOR SECTION**

**5.1 HOW TO MODIFY SECTION PARAMETERS**

To modify the parameter value work in the following manner:

1. enter in programming mode (by pressing "Prg" for 3 seconds)
2. slide the parameters list with ▲ or ▼ arrows until you display the code of parameter.
3. Press "SET" key and display the value.
4. With ▲ or ▼ you modify the value.
5. Press Set to store parameter and to go to next label.

Quit: Press SET + ▲, when view a label or wait 15 seconds without press a key.

Note: the new value is stored even if you go out from modification procedure after timeout interval is terminated

**SECTION PARAMETERS**

- SET** Set point: it allows to modify the Set Point (-200 ÷ 600°C / -328 ÷ 999°F)
- PP** Temperature probe presence: (Yes or No) it permits to disable the input probe to use only digital input
- ALU** Maximum temperature alarm setting: (0÷200°C or 0÷360°F) when SET+ALU temperature is reached and after the ALd delay time the HA alarm is enabled
- ALL** Minimum temperature alarm setting: (0÷200°C or 0÷360°F) SET-ALL temperature is reached and after the ALd delay time, the LA alarm is enabled.
- ALd** Temperature alarm delay: (0÷120 min) time interval between the detection of an alarm condition and the corresponding alarm signalling.
- Ot** Thermostat probe calibration: (-12.0+12.0°C/ -21+21°F) allows to adjust possible offset of the thermostat probe.
- diP** Digital input polarity: cL = D.I. is active if voltage is present, oP = D.I. is active if voltage isn't present; nP = D.I. not used

- dic** Digital input operating mode: StA = State; ALL = Alarm; dFr = defrost; oFF = if digital input is enabled the section goes to Standby
- did** Time interval/delay for digital input alarm:(0÷120 min. )
- Adr** Serial Address (1÷247): Identifies the instrument address when connected to Mod-BUS compatible monitoring system.

**6. ALARM MANAGEMENT**

The alarm control is disabled when:

- ❖ the sections aren't active or aren't enabled
- ❖ during dAO interval at power-on and as soon as digital input configured as oFF is disabled
- ❖ if digital input is configured at defrost and it is active
- ❖ during EdA interval after defrost end

The type of managed alarms are reassumed in the following table:

Mess.	Causes
"HA"	High temperature alarm
"LA"	Low temperature alarm
"PF"	Probe fault in active section
"EE"	Communication error with internal EEPROM

N.B.: Every alarm stops automatically when the alarm situation is finished.

**6.1 COPY FUNCTION**

To facilitate module programming operations, it's possible to copy the parameter list from "work section" to another.

1. Enter the section menu ("Section" key).
2. Slide using "UP" and "DOWN" keys the list of sections until the label of section to program is displayed.
3. By pushing "COPY" key until the code of the section flashes, the parameter list of the "work section" is pasted in the new section.

**7. X-REP & KB1 PRG & HOT KEY**

The XJP has a connector on the front to connect the programming keyboard KB1-PRG which can be used to program the modules, to connect the X-REP to display the input status or the "Hot Key".

**7.1 USE OF THE PROGRAMMING HOT KEY**

**7.1.1 Download from the Hot Key to the module**

If the programming key is plugged in, when the instrument is switched ON, the automatic DOWNLOAD of the parameters list from the "Hot Key" to the instrument will start. During this phase, RED and GREEN LEDs are turned on fixed.

At the end of data transfer phase the module displays one of the following messages:

- Green Led " ON"** : right programming.
- Red Led " ON"** : failed programming.

If the programming has failed, the instrument has to be switch OFF and ON to repeat the operation or to start the normal regulation. (The normal regulation start if you remove the "Hot Key").

**7.1.2 Upload from the module to the "Hot key"**

The module can UPLOAD the parameters list from own E2 (internal memory) to the Hot Key.

The programming keyboard has to be connected and the module switched ON. During the normal displaying, push "COPY" key for up to 3 seconds until the label "uPL" will appear.

Pressing "SET" key, the module is ready to operation of UPLOAD. Removing the keyboard and inserting the "Hot Key" within 30 sec the UPLOAD will start. During this phase, the two Led (RED and GREEN) are turned on fixed.

At the end of the data transfer phase the module displays one of the following messages:

- Only Green Led " ON"** : right programming.
- Only Red Led " ON"** : failed programming.

After removing the "Hot Key" the instrument waits 30sec before restarting normal regulation. If another "Hot key" is plugged in, the UPLOAD will be done again.

**8. INSTALLATION AND MOUNTING**

XJP modules shall be mounted on omega DIN RAIL. The ambient temperature range allowed for correct operation is 0 ÷ 60 °C. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate by the cooling holes.

**9. ELECTRICAL CONNECTIONS**

The instruments are provided with screw terminal block to connect cables with a cross section up to 2,5 mm<sup>2</sup>. Before connecting cables make sure the power supply complies with the instrument's requirements. Separate the input connection 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.

**10. SERIAL COMMUNICATIONS**

Factory serial address configuration is **Adr\_0=1**. The instrument permits to decide if you want to use unique serial address to manage all sections or if you want to use different serial address for each section.

The **Adr** parameter permits to do this choice:

- By setting the same **Adr** parameter value for each section, you use unique address for all sections;
- By setting different **Adr** parameter for each section, you use a serial address for each section

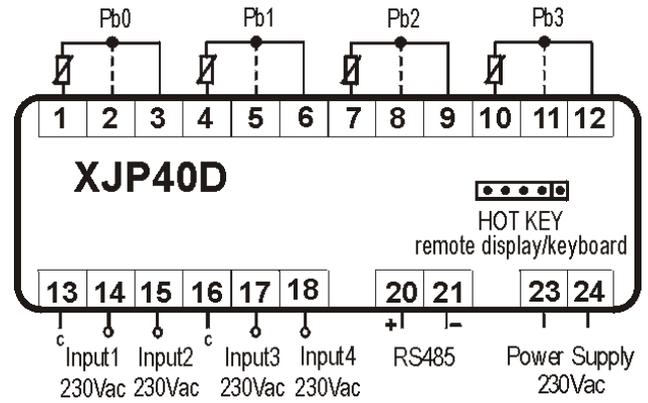
All alarms, the states and the data measured by the modules **XJP** can be sent by **RS485** serial to **ModBUS-RTU** compatible monitoring system.

**N.B.:** With **XWEB** series unique addressing system must be used. By default the unique addressing system is used, so at first time that new section is created it gets the same address of the previous section.

**11. TECHNICAL DATA**

**Housing:** self extinguishing ABS  
**Case:** 4 DIN modules 70x85 mm; depth 61mm  
**Mounting:** DIN RAIL mounted in an omega din rail  
**Connections:** Screw terminal block ≤ 2,5mm<sup>2</sup> wiring  
**Power Supply:** 230Vac ± 10% 50/60Hz (opz. 110Vac ± 10% 50/60Hz; 24Vac ± 10% 50/60Hz)  
**Power absorption:** 3VA max  
**Display:** through KB1-PRG: Three digits, LED red, height 14,2 mm  
**Analog inputs:** 4 PT100 probes 2 or 3 wires  
**Inputs:** 4 main supply digital inputs  
**RS485 Output:** RS485 serial output with ModBUS-RTU protocol  
**Data Storage:** on the non-volatile memory(EEPROM)  
**Operating temperature:** 0÷60 °C  
**Storage temperature:** -30÷85 °C  
**Relative humidity:** 20÷85% (no condensing)  
**Measuring and regulation range:** -200 ÷ +600 °C  
**Resolution:** 0,1 °C o 1°C or 1 °F  
**Precision a 25°C:** ±0,5 °C, ±1 digit

**12. WIRING CONNECTIONS**



**Pt100 2 wires:** connect to not dashed terminal  
**24/110Vac Power Supply:** connect to 23-24 terminals

**13. DEFAULT VALUES**

**13.1 GLOBAL PARAMETERS**

Label	Description	Range
dAo	Delay of temperature alarm at start-up	0 ÷ 23h50'
EdA	Alarm delay at the end of defrost	0' ÷ 120'
rES	Resolution	in = integer / dE = decimal
CF	Measurement unit	°C / °F
Pbc	Input probe configuration	P2F=2 wires / P3F=3 wires
Ptb	Parameters map	--
rEL	Release Software	--

**13.2 SECTION PARAMETERS**

Label	Description	Range
Set	Set Point	-200 ÷ 600°C / -328 ÷ 999°F
PP	Temperature probe presence	Yes / no
ALU	Maximum temperature alarm setting	0 ÷ 200°C / 0 ÷ 360°F
ALL	Minimum temperature alarm setting	0 ÷ 200°C / 0 ÷ 360°F
ALd	Temperature alarm delay	0' ÷ 120'
Ot	Thermostat probe calibration	±12°C -- ±20°F
diP	Digital input polarity	cL = closed / oP = open / nP = not present
dic	Digital input configuration	StA = state / ALL = alarm / dFr = defrost / oFF = Standby
did	Time interval/delay for digital input alarm	0' ÷ 120'
Adr	Serial Address	1 ÷ 247

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