SOFT CHILL	SOFT FREEZE
HARD CHILL	HARD FREEZE

Soft Chill by Temp is runing — 12 / 01 / 2015 09 : 01

Room Temp.
-19.5 ℃

XB800D Series
(v.1.0)

INDEX

1.   IMPORTANT RECOMMENDATIONS

➢ The ⚡ symbol alerts the user of non-insulated "dangerous voltage" within the product area that is sufficiently high to constitute a risk of electric shock to persons.

➢ The ⚠ symbol alerts the user of important operating and maintenance (assistance) instructions found in the documentation attached to the device.

➢ Dixell Srl cannot accept any liability for damages caused by modems that are not supported. Dixell Srl reserves the right to modify this manual without prior notice. The documentation can be downloaded from www.dixell.com even prior to purchase.

➢ This manual forms part of the product and must always be kept near the device for easy and quick reference. The device cannot be used as a safety device. Verify the limits of application before using the device.

➢ Verify that the power supply voltage is correct before connecting the device. Do not expose it to water or humidity: use the controller only within the operating limits, avoiding sudden changes in temperature and high atmospheric humidity in order to prevent condensation from forming. Recommendation: disconnect all the electric connections before performing any maintenance. Insert the probe where it cannot be reached by the End User. The device must not be opened. Consider the maximum current that can be applied to each relay. Make sure that the wires for the probes, the loads and the electrical power supply are separated and sufficiently distant from each other, without crossing or intertwining with each other. In the case of applications in industrial environments, it may be useful to use the main filters (our mod. FT1) in parallel to the inductive loads.

➢ The customer shall bear full responsibility and risk for product configuration in order to achieve the results pertaining to installation and/or final equipment/system. Upon the customer's request and following a specific agreement, Dixell s.r.l. may be present during the start-up of the final machine/application, as a consultant, however, under no circumstances can the company be held responsible for the correct operation of the final equipment/system.

➢ Since Dixell products form part of a very high level of technology, a qualification/configuration/programming/commissioning stage is required to use them as best as possible. Otherwise, these products may malfunction and Dixell cannot be held responsible. The product must not be used in any way that differs from that stipulated in the documentation.

• The device must always be inserted inside an electrical panel that can only be accessed by authorised personnel. For safety purposes, the keyboard must be the only part that can be reached.

• The device must never be hand-held while being used.

➢ It is good practice to bear the following in mind for all Dixell products:
  o Prevent the electronic circuits from getting wet as contact made with water, humidity or any other type of liquid can damage them. Comply with the temperature and humidity limits specified in the manual in order to store the product correctly.
  o The device must not be installed in particularly hot environments as high temperatures can damage it (electronic circuits and/or plastic components forming part of the casing). Comply with the temperature and humidity limits specified in the manual in order to store the product correctly.

- o Under no circumstances is the device to be opened - the user does not require the internal components. Please contact qualified service personnel for any assistance.
- o Prevent the device from being dropped, knocked or shaken as either can cause irreparable damage.
- o Do not clean the device with corrosive chemical products, solvents or aggressive detergents.
- o The device must not be used in applications that differ from that specified in the following material.

⚠ ➤ ***Separate the power of the device from the rest of the electrical devices connected inside the electrical panel. The secondary of the transformer must never be connected to the earth.***

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

1.1 PRODUCT DISPOSAL (WEEE)

With reference to Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 and to the relative national legislation, please note that:

➤ There lies the obligation not to dispose of electrical and electronic waste as municipal waste but to separate the waste.

➤ Public or private collection points must be used to dispose of the goods in accordance with local laws. Furthermore, at the end of the product's life, it is also possible to return this to the retailer when a new purchase is made.

➤ This equipment may contain hazardous substances. Improper use or incorrect disposal can have adverse effects on human health and the environment.

➤ The symbol shown on the product or the package indicates that the product has been placed on the market after 13 August 2005 and must be disposed of as separated waste.

➤ Should the product be disposed of incorrectly, sanctions may be applied as stipulated in applicable local regulations regarding waste disposal.

2.   INTRODUCTION

XB800 is a range of programmable controllers developed and manufactured by Dixell.
The range consists of programmable controllers, I/O expansions, built-in EEV driver for unipolar valve and graphical interfaces adapted to cover any type of application in refrigeration sector and any relative area, air-conditioning sector. As the system is one of the most technologically advanced, it is flexible and can be customised for it to be adapted to the user's particular requirements.

3.   GENERAL SPECIFICATIONS

The XB800 controller is powered at 24Vac/dc and use a high speed performance 32-bit ARM9 (200 MHz) microprocessor. The model is a10 DIN rail.
One of the features that distinguishes the XB800 controller is the vast range of connection options with external devices, Dixell as well as other brands; RS485 Master and Slave, LAN protocol and USB port (through the USB-ETHERNET adapter can be used as internet port) provide maximum flexibility of integration with the outside world. MODBUS RTU protocol, one of the most popular in the world, is used for serial communication.
Up to 32 MB of flash memory and all the inputs and outputs are fully configurable.

3.1   PROCESSING ENVIRONMENT

The XB800 programmable controller use the following software as a processing environment:
  ➢   ISaGRAF® to process the XB800 application.
  ➢   VISOPROG to process the LCD graphic interface application (VISOGRAPH) or TFT graphic interface application (VISOTOUCH).
ISaGRAF® software is used worldwide and allows those with no programming experience to build applications ranging from the simplest to the more sophisticated. The vast range of the most popular programming languages (Structured Text, Function Block Diagram, Ladder Diagram, Instruction List, Sequential Function Chart, Flow Chart, FBD IEC 61499) provides all programmers with access to the processing environment. Thanks also to the extensive libraries of blocks already developed by Dixell, the processing and debug times are reduced.
The SIMULATION (verification of the application without using the controller) and DEBUG options (verification of the actual application within the controller), allow the user to block and force the value of the variables to speed up the testing times.

3.1.1   Fields of application

The possibility of all-round configuration allows the Dixell XB800 programmable controller to be used for any type of application. The same applications can be downloaded in the various models available (obviously adapting the number of inputs and outputs).
The hardware has already been used for the following applications:

  ➢   Chillers and heat pumps
  ➢   Air treatment units
  ➢   Air-conditioners
  ➢   Roof-tops
  ➢   Cooling systems
  ➢   Energy saving management in systems
  ➢   Climatic chamber control
  ➢   Cold rooms and seasoner cabinets
  ➢   Blast Chiller

3.1.2   Hardware architecture

The XB800 programmable controller is structured as follows:
  •   32-bit microprocessor used to run the application
  •   Removable screw connectors 5mm
  •   The programme and parameters are stored in a permanent flash memory. No data is lost in case of power failure.
  •   Internal web server with the Dixell website as default with the option of downloading a customised website for reading and writing variables with synoptic creation (via HTML).
  •   USB port (through the USB-ETH adapter can be used as Ethernet port)

- Connection to the dedicated remote LCD or TFT display.
- RS485 Master (ModBus RTU) or LAN (Dixell protocol).
- RS485 Slave (ModBus RTU).

The remote LCD display has the following features:
- 240x96 pixel LCD graphic display.
- 32-bit processor.
- Multilingual in ASCII or UNICODE version.
- 8 fully programmable keys.
- Panel or wall mounted.

The remote TFT display has the following features:
- 480x272 pixel TFT 4.3" graphic display.
- 256 (8 bit) colors
- Resistive touch
- Optional: NTC Analog Input, Digital Input (free of voltage), Buzzer
- Panel or wall mounted
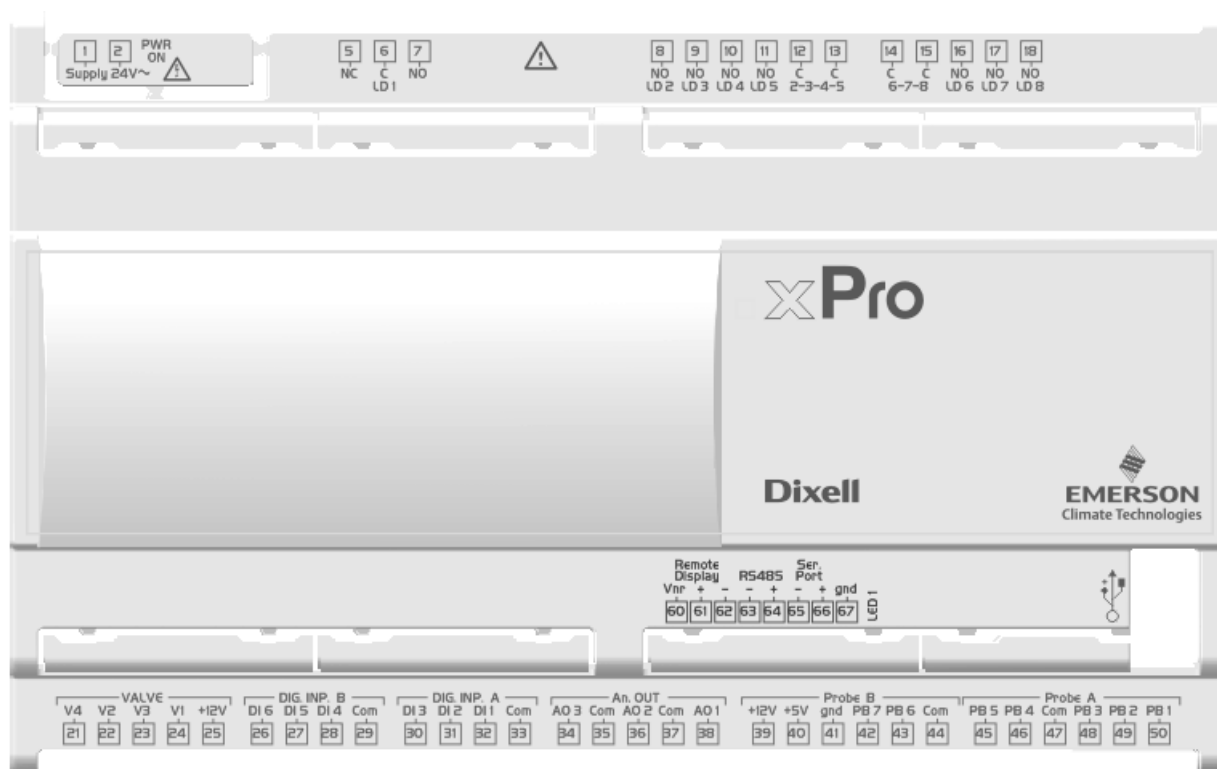
3.2   RELEVANT DATA

Operating temperature:	-10 to +60°C (14 to 140°F)
Relative humidity:	20 to 85%

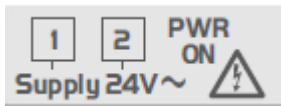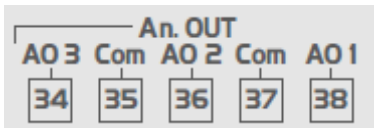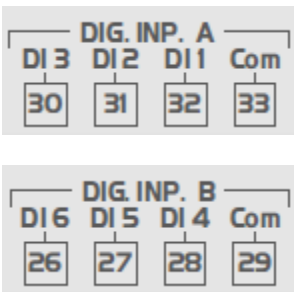## 4.   VERSIONS OF THE PROGRAMMABLE CONTROLLERS

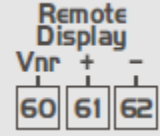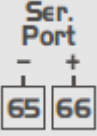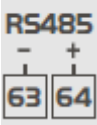The full configuration of the XB800 programmable controller is the following:
- 8 Relay
- 7 Analog Inputs (5= NTC/PTC, DI, PT1000, 2= NTC, PTC, 0..20mA, 4..20mA, 0..10V, 0..1V, 0..5V, DI, PT1000)
- 6 Digital Inputs (free of voltage)
- 3 Analog Outputs (1=PWM or 0-10V, 4-20mA, 2=0-10V, 4-20mA)
- EEV driver (for unipolar valve)
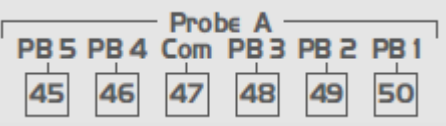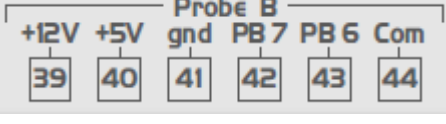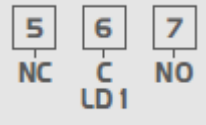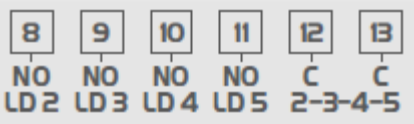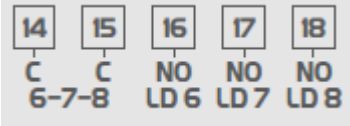
4.1   XB800 (XB800D MODEL)

4.1.1   Description of the connections

Connector	Description
PWR ON — Supply 24V~ — [1] [2]	Connector for 24Vac/dc power supply (Black color) Green LED to indicate the presence of power supply
An. OUT — AO 3 [34] Com [35] AO 2 [36] Com [37] AO 1 [38]	Connector for the Analog Outputs; depend on the model it can be: - without PWM:all the three analog output can be used as 0-10Vdc or 4-20mA - with PWM: only AO1 (38) = OUT and COM (37) = VNR while AO2 and AO3 as 0-10Vdc or 4-20mA ***Note: the PWM is available only if the Power Supply is 24Vac.***
DIG. INP. A — DI 3 [30] DI 2 [31] DI 1 [32] Com [33] DIG. INP. B — DI 6 [26] DI 5 [27] DI 4 [28] Com [29]	Potential free not opto-insulated digital inputs. ***On request (different Part Number) it is possible to have the Opto-Insulated digital input but with power supply 24Vac (in this case no potential free contacts).***

	USB port for downloads (BIOS, ISaGRAF® application, maps of parameters, network configuration, website) and uploads (log files) Through the adapter "USB-ETH" this port can be used as TCP/IP Ethernet port.
Remote Display Vnr + – 60 61 62	Connector for remote terminal: - VISOGRAPH, maximum 2 terminals for each XB800 - VISOTOUCH, maximum 1 terminal for each XB800
Ser. Port – + 65 66	Serial Port connector; depend on the model it can be: - LAN (Dixell protocol) - RS485 MASTER (ModBus RTU)
RS485 – + 63 64	RS485 connector to connect the device with a monitoring system - RS485 SLAVE (ModBus RTU)
gnd LED1 67	Ground connection for RS485 and Serial Port LED1= yellow status led
Probe A PB 5 PB 4 Com PB 3 PB 2 PB 1 45 46 47 48 49 50	Analog Input connector. PB1, PB2, PB3, PB4, PB5 = NTC, PTC, DI or PT1000
Probe B +12V +5V gnd PB 7 PB 6 Com 39 40 41 42 43 44	Analog Input connector. PB6, PB7 = NTC, PTC, 0..20mA, 4..20mA, 0..10V, 0..1V, 0..5V, DI, PT1000
VALVE V4 V2 V3 V1 +12V 21 22 23 24 25	Connector for Unipolar Valve
5 6 7 NC C NO LD1	Connector for Relay 1 - 16A changeover
8 9 10 11 12 13 NO NO NO NO C C LD2 LD3 LD4 LD5 2-3-4-5	Connector for Relay 2, 3, 4, 5 - Relay 2 = 8A or 1A/240V SSR (NO) - Relay 3 = 8A or 1A/240V SSR (NO) - Relay 4 = 8A (NO) - Relay 5 = 8A or 16A or 16A inrush (NO)
14 15 16 17 18 C C NO NO NO 6-7-8 LD6 LD7 LD8	Connector for Relay 6, 7, 8 Relay 6 = 16A Relay 7 = 8A or 16A Relay 8 = 8A or 16A

4.1.2   Description of the inputs and outputs

Input No.	Type of Input	Description
1	Supply 24Vac	*Power supply (Reference "+" for 24Vdc)*
2	Supply 24Vac	*Power supply (Reference "-" for 24Vdc)*
5	LD1-NC	Relay 1 NC contact
6	LD1-C	Common relay 1 (MAX 12A)
7	LD1-NO	Relay 1 NO contact
8	LD2-NO	Relay 2 NO contact
9	LD3-NO	Relay 3 NO contact
10	LD4-NO	Relay 4 NO contact
11	LD5-NO	Relay 5 NO contact
12	2-3-4-5 C	Common relay 2-3-4-5 (MAX 12A)
13	2-3-4-5 C	Common relay 2-3-4-5 (MAX 12A)
14	6-7-8 C	Common relay 6-7-8 (MAX 12A)
15	6-7-8 C	Common relay 6-7-8 (MAX 12A)
16	LD6-NO	Relay 6 NO contact
17	LD7-NO	Relay 7 NO contact
18	LD8-NO	Relay 8 NO contact
21	V4 VALVE	Unipolar valve output
22	V2 VALVE	Unipolar valve output
23	V3 VALVE	Unipolar valve output
24	V1 VALVE	Unipolar valve output
25	+12V VALVE	Unipolar valve output (Common)
26	DI 6	Not Opto-insulated digital input 6 potential free contact
27	DI 5	Not Opto-insulated digital input 5 potential free contact
28	DI 4	NotOpto-insulated digital input 4 potential free contact
29	Com	Common not opto-insulated digital inputs 4 to 6
30	DI 3	Not Opto-insulated digital input 3 potential free contact
31	DI 2	Not Opto-insulated digital input 2 potential free contact
32	DI 1	Not Opto-insulated digital input 1 potential free contact
33	Com	Common not opto-insulated digital inputs 1 to 3
34	AO 3	Analogue output 3 0-10Vdc, 4-20mA
35	Com	Analogue output 2-3 common/GND
36	AO 2	Analogue output 2 0-10Vdc, 4-20mA
37	Com	Analogue output 1 common/GND (if PWM = VNR)
38	AO 1	Analogue output 1 0-10Vdc, 4-20mA, PWM (*if PWM=OUT and 24Vac Power supply*)
39	+12V	Additional power +12Vdc (output)
40	+5V	Additional power +5Vdc (output)
41	gnd	GND reference for 5Vdc/12Vdc and analogue inputs (0-20mA, 4-20mA, 0-10Vdc, 0-1Vdc, 0-5Vdc)
42	PB 7	Configurable analogue input 7 (NTC, PTC, 0..20mA, 4..20mA, 0..10V, 0..1V, 0..5V, DI, PT1000)
43	PB 6	Configurable analogue input 6 (NTC, PTC, 0..20mA, 4..20mA, 0..10V, 0..1V, 0..5V, DI, PT1000)
44	Com	Probes common (NTC, PTC, PT1000, DI)
45	PB 5	Configurable analogue input 5 (NTC, PTC, DI, PT1000)
46	PB 4	Configurable analogue input 4 (NTC, PTC, DI, PT1000)
47	Com	Probes common (NTC, PTC, PT1000, DI)
48	PB 3	Configurable analogue input 3 (NTC, PTC, DI, PT1000)
49	PB 2	Configurable analogue input 2 (NTC, PTC, DI, PT1000)
50	PB1	Configurable analogue input 1 (NTC, PTC, DI, PT1000)

60	Remote Display Vnr	Connection for VISOGRAPH-VISOTOUCH remote terminal (Vnr)
61	Remote Display +	Connection for VISOGRAPH-VISOTOUCH remote terminal (+)
62	Remote Display -	Connection for VISOGRAPH-VISOTOUCH remote terminal (-)
63	RS485 -	RS485 Slave connection (-)
64	RS485 +	RS485 Slave connection (+)
65	Ser. Port -	Serial Port connection (-) / depend on the model it can be LAN or RS485 MASTER
66	Ser. Port +	Serial Port connection (+) / depend on the model it can be LAN or RS485 MASTER
67	gnd	Ground reference for RS485 and Ser. Port

4.1.3   Technical specifications

4.1.3.1   Analogue inputs

Analogue conversion type:	10-bit A/D converter
Number of inputs:	7
Type of analogue input: (configurable via software parameter)	NTC Dixell (-50T110°C; 10KΩ±1% at 25°C) PTC Dixell(-55T115°C; 990Ω±1% at 25°C) PT1000 Dixell (-100T150°C; 1000Ω±1% at 0°C) Digital input (potential free contact) Voltage: 0-1V, 0-5V, 0-10V (input resistance 3.7KΩ) Current: 0-20mA, 4-20mA (input resistance 100Ω)
Digital input status variation detection time:	100ms (in any case it depends on the cycle time set by the user in the given application)
Accuracy:	NTC, PTC, PT1000: ±1% 0-1V: ±20mV 0-5V: ±100mV 0-10V:±200mV 0-20mA, 4-20mA: ±0.30mA
Additional power:	+12V: 100mA in total (between +12V and analogue outputs) +5V: 10mA
Notes: ⚠️	Any inputs that are powered with a voltage that differs from that supplied by the device (+12V or +5V) must be powered separately with another transformer (do not use the same secondary of the controller's power) in order to prevent the inputs from malfunctioning or being damaged.

4.1.3.2   Digital inputs

Type: (configurable via software parameter)	Not Opto-insulated free voltage contacts ***On request (different Part Number) it is possible to have the Opto-Insulated digital input but with power supply 24Vac (in this case no potential free contacts).***
Number of inputs:	6
Digital input status variation detection time:	100ms (in any case it depends on the cycle time set by the user in the given application)

### 4.1.3.3   Analogue outputs

|	
Type:	Non opto-insulated internal power
Number of outputs:	3
Type of analogue output: (configurable via software parameter)	2 configurable outputs 0-10Vdc 4-20mA (AO3 – AO2) 1 configurable outputs 0-10Vdc 4-20mA or PWM (AO1) ***Note: the PWM is available only if the Power Supply is 24Vac.***
Maximum load:	40mA (AO1, AO2, AO3) max with configured outputs 0-10Vdc 400Ω max with configured outputs 4-20mA 22Ω per live analogue output
Accuracy:	AO1-AO2-AO3: ±2% full scale
Resolution:	8bit
Notes:	The electrical devices controlled by these analogue outputs must be powered separately with another transformer (do not use the same secondary of the controller's power) in order to prevent the outputs from malfunctioning or being damaged.

4.1.3.4 Digital outputs

Type:	Relays with NO contacts
Number of outputs:	8
Type of output: (configurable via software parameter)	Relays with normally open contact (except LD1 that is normally closed)
Maximum load:	Depend on the configuration 8A, 16A and 1A/240Vac for SSR version
Notes: ⚠	Verify the capacity of the output used. There is double insulation between the digital outputs and the low voltage of the rest of the circuit. Do not use different voltages for the various groups of relays or within each group.

4.1.3.5 Wiring diagrams
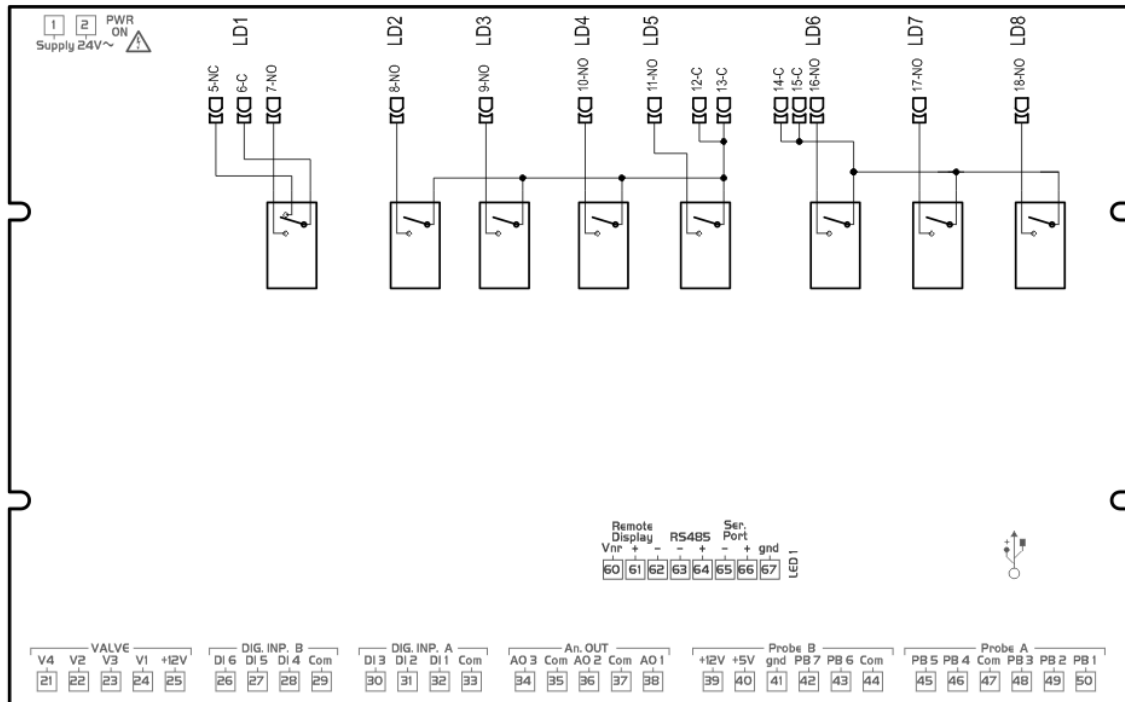
4.1.3.6 Mechanical specifications

10 DIN module
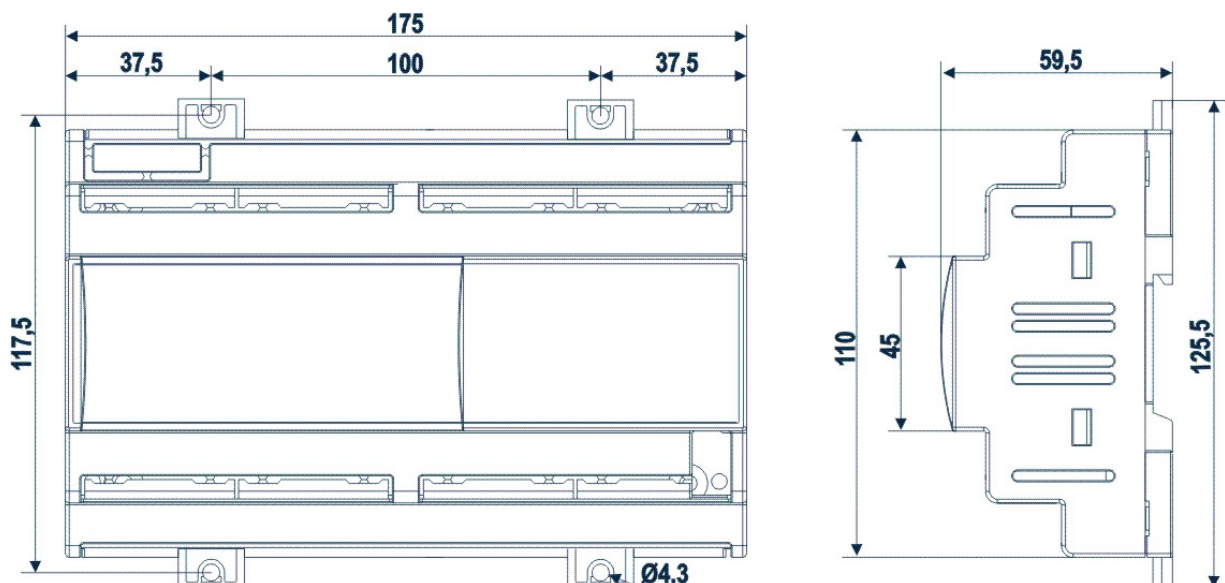
4.1.3.7 Electrical specifications

Power Supply:	24Vac +10/-10%, 50/60Hz 20 - 36Vdc
Consumption:	20VA (Vac), 15W (Vdc); with the driver 40VA (Vac), 30W (Vdc)
Connectors:	STELVIO CPM series (board), STELVIO CPF series (disconnectable)
Microprocessor:	AT91RM9200 32-bit 200Mhz
Permanent FLASH memory:	32MB, in 8-bit
RAM:	32MB in 16-bit
Internal clock:	standard

4.1.3.8 Plastic container

Mount:	On a DIN rail (EN 50022, DIN 43880) Fastened with screws via the removable plastic flaps.
Material:	PC-ABS Thermoplastic
Self-extinguishing:	V0 (UL94)
Comparative Tracking Index (CTI):	300V
Colour:	White

4.1.3.9 Product certifications

Control to classify with the definitions 2.5.1 e 2.5.2 mentioned in the section 2.5 of the general requirements EN60730-1 (2.5.1 = integrated control, 2.5.2 = incorporated control).

Electrical safety:
- EN60730-1

Electromagnetic compatibility:
- EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11

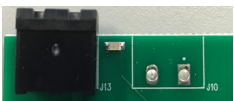### 4.1.3.10 USB-ETHERNET Adapter (Dixell specification)

The XB800 programmable controllers can be connected to a computer via an external adapter. This adapter must be used in the processing environment for the application download in the ipro. This adapter is not set up for fixed or continuous connection. If the adapter should be kept connected continuously, the room temperature must not exceed 50°C.

5. OTHER

5.1 MEANING OF THE LEDS

LEDs are present in the programmable controllers in order to indicate the status of the device.

	PWR ON	PWR ON (green) near to the power supply connector: - if on, the device is powered.
	LED1 ALARM	LED1 (yellow) near the user interface/serial line connector: - if on, the system is being updated. - if it flashes, the update has been completed or the device is functioning correctly.

6. INSTALLATION

The devices must not be installed in environments where the following situations are present:
- Temperature and humidity outside the range stipulated in the data plate. Frequent and sudden changes in temperature and/or humidity
- Direct sunlight and weathering in general
- High mechanical stress (vibrations and/or knocks)
- Sulphur and ammonia gas, smoke and salt spray that can cause corrosion and/or oxidation
- Presence of flammable or explosive gas
- Dust
- Devices that generate magnetic interference

Position the device inside the electrical panels, paying attention to the following:
- the distance between the device and the electrical power components
- the distance between the device and the power cables
- sufficient passage for the cooling air

Always comply with the laws and regulations applicable in the country where the device is installed.
Always protect the device for it to always be accessible solely by authorised personnel.
In case of malfunctions, always contact the relative distributor for the device to be repaired.

6.1 GENERAL RULES

Comply with the following recommendations during the installation process in order to prevent the device from malfunctioning.
- Separate the signal cables from the power cables (it is recommended to use BELDEN 8772-type shielded cables)
- Separate the cables of the analogue inputs from those of the digital inputs and the serial line cables from the power cables (resistive as well as inductive), in order to prevent malfunction due to electromagnetic interference
- Separate the power of the device from that of the other electrical components
- Never connect the secondary of the supply transformer to the earth
- The low voltage connections must have reinforced insulation

6.2 POWER SUPPLY

The power supply voltage of the devices is as follows:

> ➤ 24Vac +10/-10%, 50/60Hz (consumption 20VA) or 20 - 36Vdc (consumption 15W) for the version without driver

> ➤ 24Vac +10/-10%, 50/60Hz (consumption 30VA) or 20 - 36Vdc (consumption 30W) for the version with the driver

Be careful to always comply with the following recommendations:
> ➤ Never use power that differs from that indicated as the devices may be damaged.
> ➤ Always use safety transformers
> ➤ Always separate the power of the controller from that of all the other electrical devices present in the system.
> ➤ The secondary of the supply transformer of the devices must never be connected to the earth.

6.3 CONNECTION OF THE ANALOGUE INPUTS

The analogue inputs in the programmable controllers are fully configurable (from Pb6 to Pb7). NTC, PTC, 0..20mA, 4..20mA, 0..10V, 0..1V, 0..5V, Digital Input (Potential free contacts) or PT1000 type of sensors can be used.
The analogue inputs (from Pb1 to Pb5) are only NTC, PTC, PT1000 and Digital Inputs (potential free contacts).
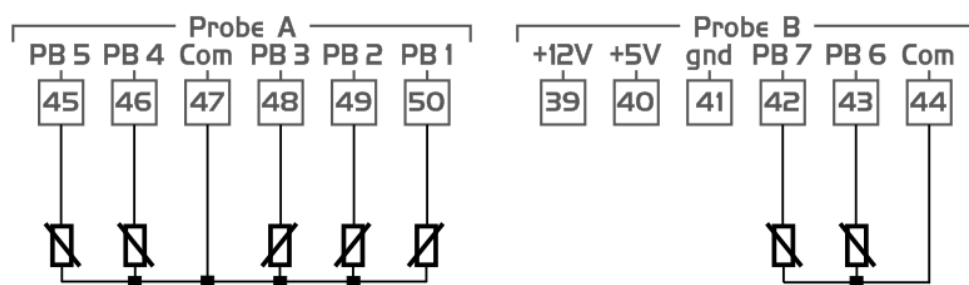
NOTE: Any devices that require 24Vac/dc power supply must be powered separately with another transformer.

6.3.1 Temperature probes (NTC, PTC and PT1000)

2 wires sensors that do not require polarity to be respected.
Each sensor must be connected through one of the inputs (from Pb1 to Pb7) and the common (Com) as shown in the diagram below.
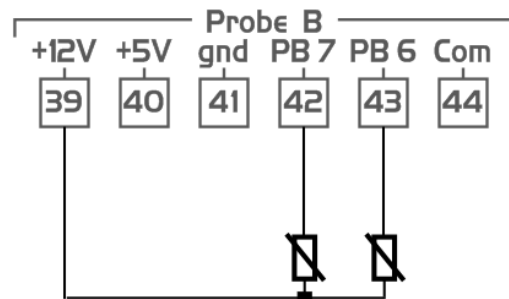

Recommendations:
- follow the diagram of the device used, for the numbering.
- the configuration is determined by the application.
- if used as a digital input (potential free - not live), use the same connection configuration of the sensors.

6.3.2 Pressure transducers and current probes (0 - 20mA, 4 - 20mA)

2-row sensors that require +12Vdc power supply.
Two sensors must be connected through one of the inputs (from Pb6 to Pb7) and the power supply (+12V) as shown in the diagram below.
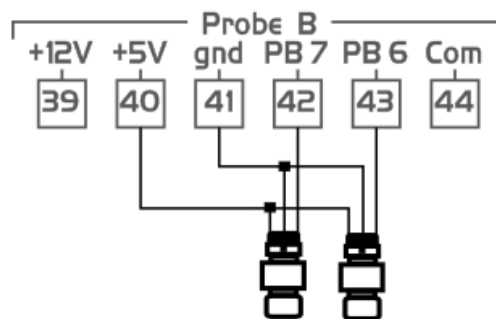

Recommendations:
- follow the diagram of the device used, for the numbering.
- the configuration is determined by the application.

6.3.3 Pressure transducers and ratiometric pressure transducers (0 - 5V)

3-row sensors that require +5Vdc power supply.
Two sensors must be connected through one of the inputs (from Pb6 to Pb7) and the power supply (+5V/GND) as shown in the diagram below.

Recommendations:
- follow the diagram of the device used, for the numbering.
- the configuration is determined by the application.

6.3.4 Live probes (0 - 1V, 0 - 5V, 0 - 10V)

3-row sensors that require +12Vdc power supply.
Two sensors must be connected through one of the inputs (from Pb6 to Pb7) and the power supply
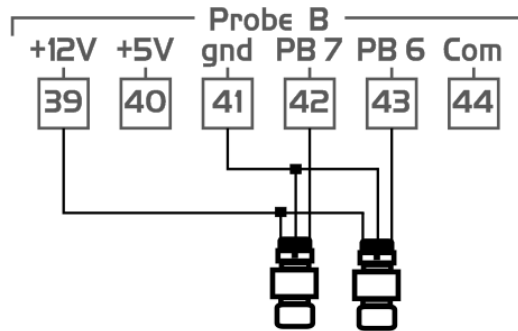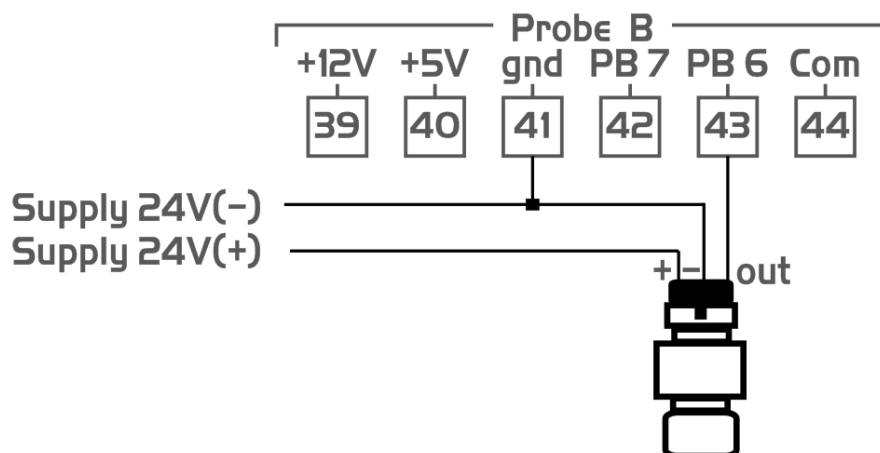(+12V/GND) as shown in the diagram below.

Recommendations:
- follow the diagram of the device used, for the numbering.
- the configuration is determined by the application.

6.3.5 Probes and transducers with 24Vac/dc power supply

3 or 4-row sensors that require +24Vac/dc power supply
Each sensor must be connected through one of the inputs (from Pb6 to Pb7), whereas the power supply as
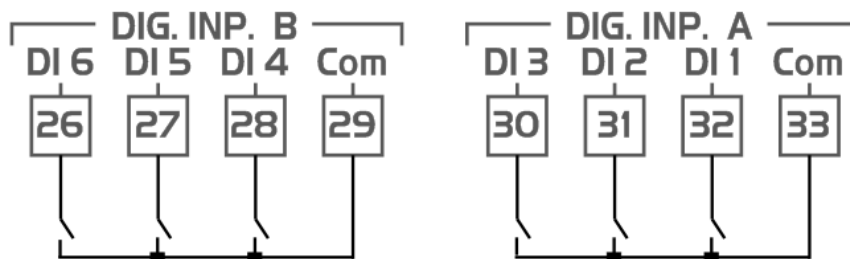shown in the diagram below.

Recommendations:
- respect the "+" and "-" polarities of the power supply.
- the power supply of the sensor must be separate from that of the programmable controller
- follow the diagram of the device used, for the numbering.
- the configuration is determined by the application.

6.4 CONNECTION OF THE DIGITAL INPUTS

The digital inputs in the programmable controllers are fully configurable.
They can be used only as potential free digital inputs.
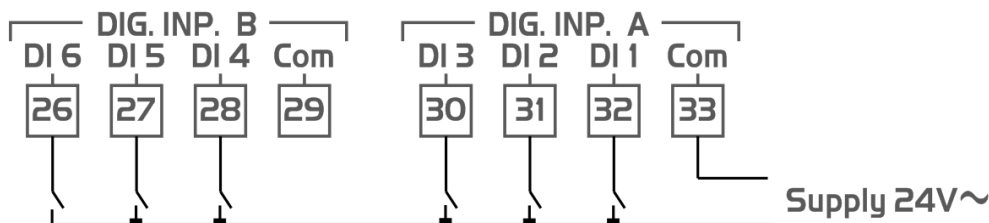
6.4.1 Potential-free digital inputs

```
  ┌──── DIG. INP. B ────┐    ┌──── DIG. INP. A ────┐
  DI 6   DI 5   DI 4   Com    DI 3   DI 2   DI 1   Com
  [26]   [27]   [28]   [29]   [30]   [31]   [32]   [33]
```

Recommendations:
- follow the diagram of the device used, for the numbering.
- the configuration is determined by the application.

6.4.2 Power supply 24Vac digital inputs

On request (different Part Number) it is possible to have the Opto-Insulated digital input but with power supply 24Vac (in this case no potential free contacts).

```
  ┌──── DIG. INP. B ────┐    ┌──── DIG. INP. A ────┐
  DI 6   DI 5   DI 4   Com    DI 3   DI 2   DI 1   Com
  [26]   [27]   [28]   [29]   [30]   [31]   [32]   [33]
                                                    └── Supply 24V~
```

Recommendations:
- follow the diagram of the device used, for the numbering.
- the configuration is determined by the application.
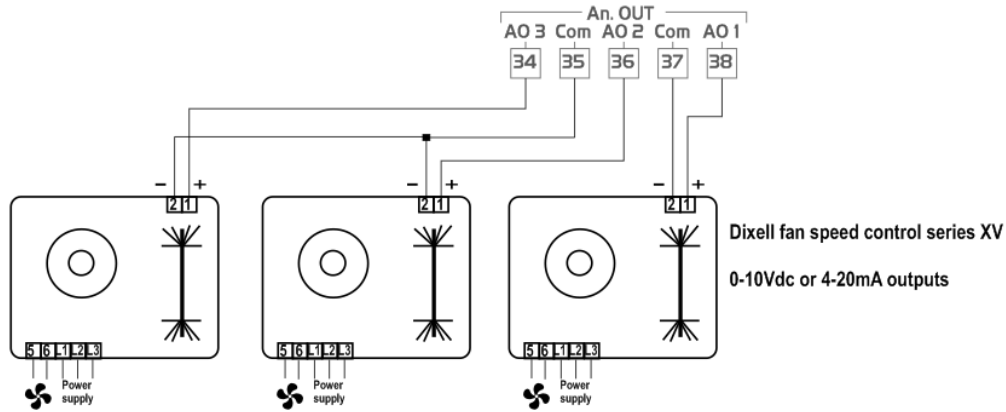
6.5 CONNECTION OF THE ANALOGUE OUTPUTS

Depending on the model and configurations, it is possible to use analogue outputs such as 0-10Vdc, 4-20mA or PWM (the PWM configuration requires the Dixell XVxx module fan speed to be controlled and can be used only in the A01 outputs).

NOTE: the analogue outputs are not opto-insulated. Any devices that require 24Vac/dc power supply must be powered separately with another transformer.

Note: the PWM is available only if the Power Supply is 24Vac.

6.5.1 0-10Vdc, 4-20mA Analogue output for fan speed control

The three analog outputs AO1, AO2 and AO3 can be used to drive an external fan speed control (Dixell XV series) through the 0-10Vdc or 4-20mA.
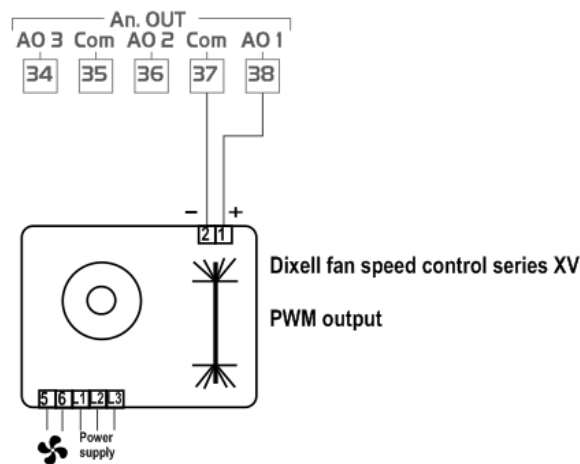

Recommendations:
- follow the diagram of the device used, for the numbering.
- the configuration is determined by the application.

6.5.2 PWM analogue output for control

The analog outputs AO1 (depend on the model), can be used to drive an external fan speed control (Dixell XV series) through the PWM signal.

Note: the PWM is available only if the Power Supply is 24Vac.

Recommendations:
- follow the diagram of the device used, for the numbering.
- the configuration is determined by the application.

6.6 CONNECTION OF THE DIGITAL OUTPUTS

Depending on the model, the digital outputs can have different connection specifications.
The relays have been split into groups, each of them with a separate common.
The same voltage must always be used for the various groups of relays and within each group.
For the electrical specifications, refer to the relative paragraphs of the different models.

Certain versions have SSR relays (solid state relay), which are suitable to control devices where numerous commutations are required, which would not be supported by an electromechanical relay. For the electrical specifications, refer to the specifications of the model using such relays.

7. ELECTRONIC EXPANSION VALVE DRIVER

7.1 GENERAL RULES

XB800 is able to drive a wide range of stepper valves, in the following table are indicated the maximum values of current that the actuator can supply to the stepper wiring. When the EEV valve is connected it is necessary to use the TF40D transformer to power supply the XB800 and the maximum current of each winding of the valve must be 0,3A.

NOTE: the electrical power absorption of the valve can be unrelated to refrigeration power that valve has. Before using the actuator, please, read the technical manual of the valve supplied by the manufacturer and check the maximum current used to drive the valve in order to verify that they are lower than that indicated here above.

7.2 ELECTRICAL CONNECTIONS

The XB800 driver can manage the following electronic expansion valves:

Connection numbering	SER Sporland	SAGINOMIYA	EX3 Emerson	EXM/EXL Emerson
V4 VALVE	ORANGE	ORANGE	WHITE	WHITE
V2 VALVE	RED	RED	BROWN	ORANGE
V3 VALVE	YELLOW	YELLOW	BLACK	YELLOW
V1 VALVE	BLACK	BLACK	BLUE	BLUE
+12V VALVE (Common)	GRAY	GRAY	GRAY	BROWN