

# Main feature

The main feature of the XPGH is the color display screen (3.5") with 320x240 dots resolution with led backlighting. XPGH is made in DIN 96x96 format and the module dimensions are 96x96mm.

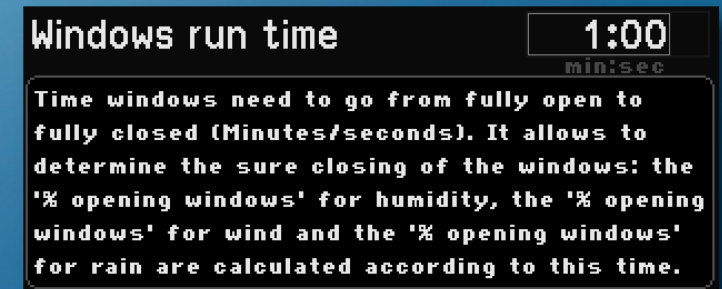


The user interface is easy and friendly. The easy touch screen system gives both the typical "easy to use" approach of a touch screen system and the strength and mechanical protection of a polycarbonate IP54 keyboard.

At every screen the function keys display a different graphic making the program very user friendly.

The user can select the display language: all the wordings, acronyms and "help" texts for programming assistance will be displayed in the chosen language.

Each programming step has its own help screen so the program has a "built in" instruction manual.





## XPGH Greenhouse climate full control



XPGH manages the greenhouse climate by controlling Ridge windows, Sides, Shading, Air circulators, Cooling, Space and Basal heating and Inflation of the double covering film.

The Ridges and Sides are controlled independently and floating proportional to the difference between the desired temperature and the ambient temperature.

The Windows are controlled in a floating proportional way to the difference between the desired temperature and the ambient temperature.

The screen is controlled according to the external brightness and the night time, when the (thermal) screen is fully unrolled and can be conditioned by the temperature (the sensor is placed at the top between the screen and the ridge in the insulated system case according to the thermal screen function).

You can also program the morning brightness set as different from the set of the day.

The Summer / Winter conditions affect the operation of the screen based on the temperature probe of the screen and the partial closure of the screens.

The Space heating is controlled by the indoor temperature and the outdoor temperature, while the Basal heating is controlled by the basal temperature probe and the hot water limit temperature probe.

The air circulators are controlled by the temperature difference accumulated between the upper and lower part of the greenhouse, as well as by the ambient humidity.

The inflation control of the double covering film takes place by setting pause and work times.

The humidity control of the greenhouse allows you to activate the dehumidification program, which starts a cycle for activating the doors, shading and heating, which allows the reduction of humidity in the greenhouse.

Cooling is controlled by the temperature and humidity of the greenhouse by activating 5 groups of fans and a water pump.

The (bidirectional) wind control and the rain control allow to determine the positions of the ridges and sides, ensuring adequate ventilation in the event of wind or rain, or total closure in the event of strong wind.

The minimum and maximum temperature and humidity alarms allow constant control of the climatic conditions of the greenhouse.

Note: the light and rain sensors can be connected to multiple XPGHs, while the temperature, humidity and wind sensors are specific for each XPGH.

# Inputs and outputs



Other available connections:

- USB plug  
XPGH has a USB plug inside.
- XNET  
Network connection card ( optional) for XPGH processor (see remote supervision).

## 2 windows control + 2 ridges



Wind sensor (left)



Rain sensor



Ridge (left)

Ridge (right)



Wind sensor (right)



Side (left)



Side (right)



Windows temperature probe



Humidity probe



FX02

(left window gear motor drive)  
(right window gear motor drive)



FX02

(left ridge gear motor drive)  
(right ridge gear motor drive)



# Screens control



FX02

(left ridge gear motor drive)  
(right ridge gear motor drive)

For all combinations and relative controls / options, a clear summary table is available on page 14

# Air circulators

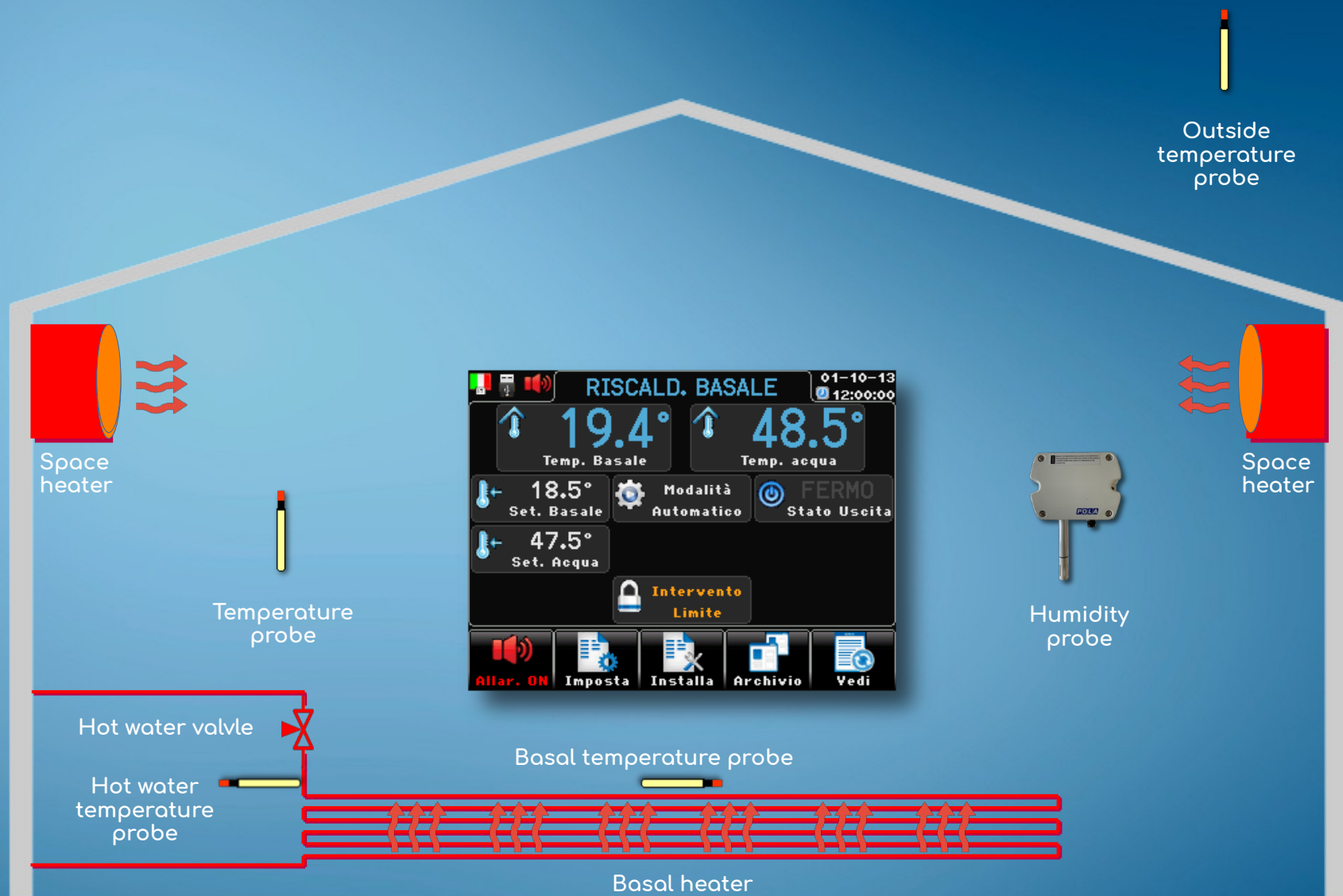


# Cooling





# Space + basal heating



# XPGH records all the parameters of the environment



**CLIMATE ARCHIVE** 01-10-13 12:00:00

Archive day: 1      Archive date: 01-10-13

	Min	Medium	Max
Ambient temperature	19.4°	23.2°	24.6°
Basal temperature	24.1°	26.2°	29.3°
Outdoor temperature	19.4°	23.2°	24.6°

Exit    Graphics    Down page    Day (-)    Day (+)

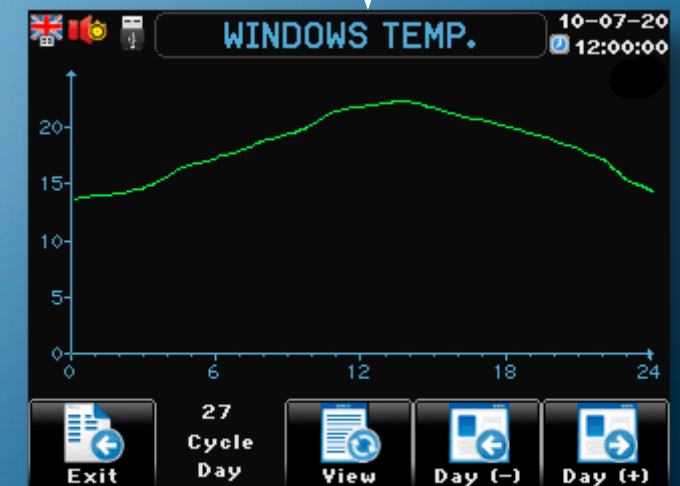


Multiple levels of registrations:

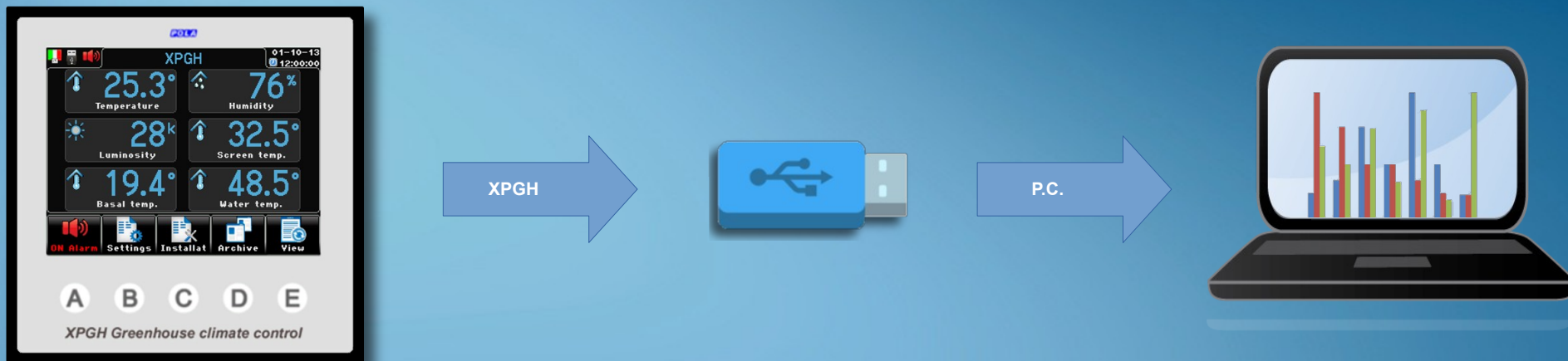
- Daily data, a recording for each day of the cycle
- Data of every single day with sampling every 15 minutes
- Full cycle data

The daily archive records the following parameters:

- Ambient temperature
- Basal temperature
- Outside temperature
- Humidity
- Luminosity
- Wind speed
- Rain intervention



## Data transfer

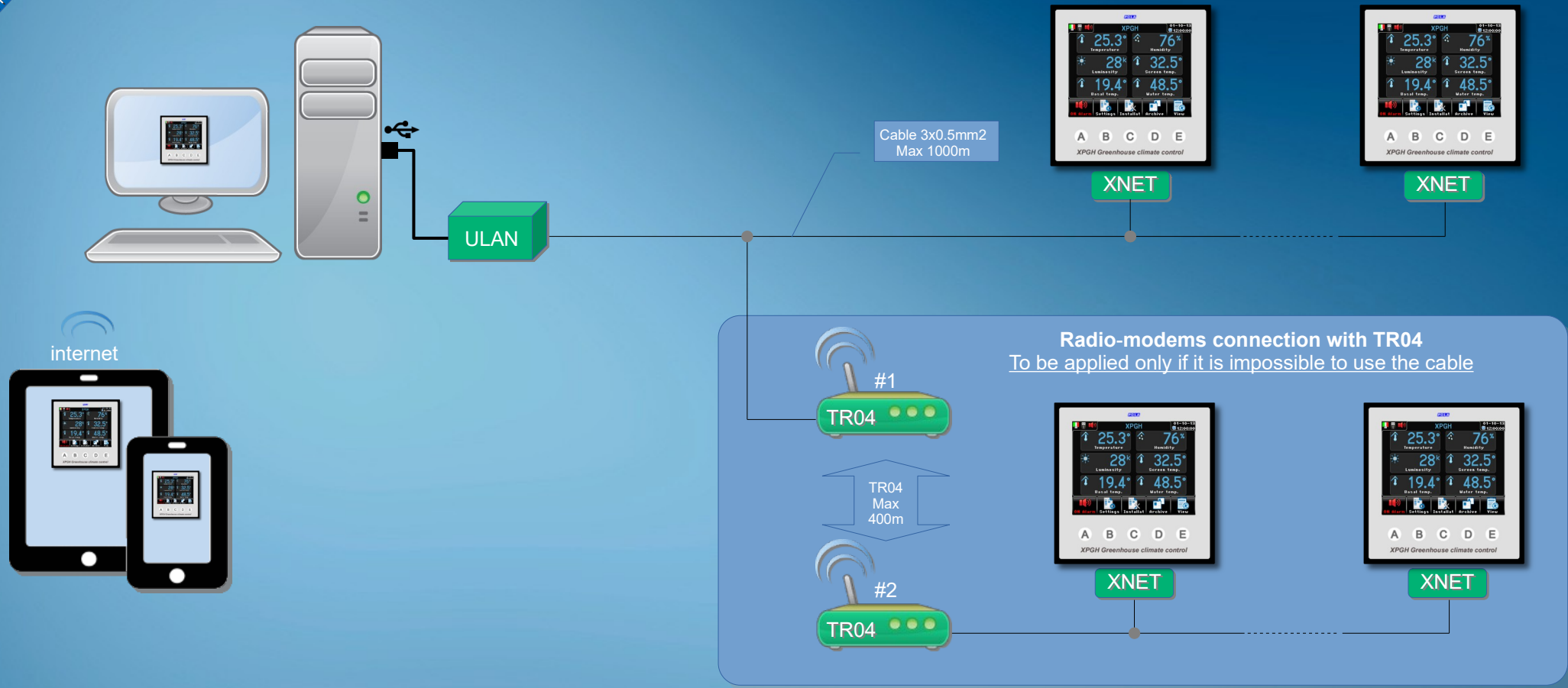


The communication with the outside world is performed by USB key.

- **Export archives**  
XPGH save in the USB memory a file containing all the day by day recorded data of the cycle.  
Connecting the USB key to a PC and by using the XPGH Dialogue software you can browse the recorded data in grid or graph formats.
- **Importing / saving the setting**  
You can save a file with all back-up infos on a USB file.  
Saved settings can be uploaded on XPGH anytime by a user friendly procedure.



# Remote supervision



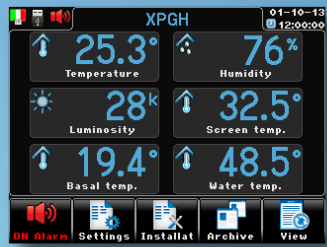
Remote supervision of XPGH processors grants the full management of system by PC.

The XPGH Net Pro supervision software enables the full remote control of network connected processors. ULAN peripheral is connected to PC through a USB connection. XPGH – ULAN connection is done by a simple 3 wires cable. In all cases where ULAN cannot be cabled to XPGH we can supply TR04 radio-modems with a reach of 400 mt.

Components for creating a supervision system:

- ULAN: Network server Pc (with USB connection)
- XNET: Network adapter card (one for each XPGH)
- TR04: Radio-modem 485 (optional, to be used only when it is not possible to use the cable)

# Sample screenshots



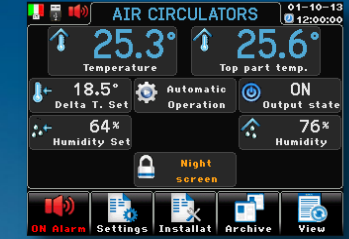
Home page view



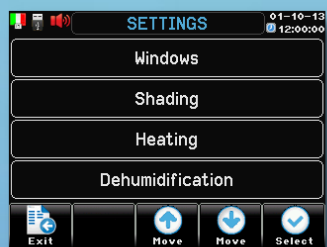
Home page view (sides functionality)



Home page view (screen functionality)



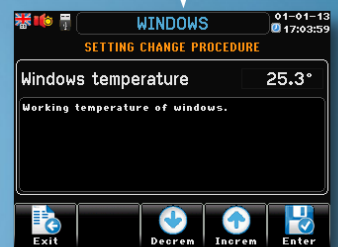
Home page view (air circ. functionality) others follow



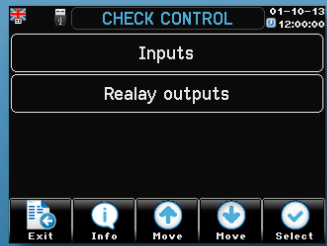
Settings selection



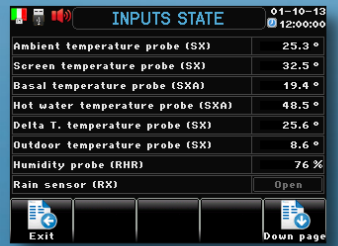
Windows parameters Settings



Windows temperature setting



Check control



Inputs state



Outputs states

# Order composition summary table

Order composition											
XPGH <sup>*1</sup>	FX01 <sup>*2</sup>	FX02 <sup>*2</sup>	FX03 <sup>*2</sup>	LXS <sup>*3</sup> + HA20s <sup>*4</sup>	RHR + HA20s <sup>*4</sup>	RX <sup>*3</sup> + HA20s <sup>*4</sup>	WX <sup>*5</sup>	SX <sup>*1</sup>	SX <sup>*1</sup>	SXA <sup>*1</sup>	
Control	Drive electrical box 1 motor + 1 temp. probe SX	Drive electrical box 2 motor + 2 temp. probe SX	Drive electrical box 3 motor + 3 temp. probe SX	Luminosity probe + power supply	Humidity probe + power supply	Rain probe + power supply	Wind speed sensor	Space heating (T. probe)	Air circulators (T. probe)	Basal heating (T. probe)	
Options											
1 Ridge + 1 Side	✓	✓				✓	✓	✓ N. 2	✓	✓	✓ N. 2
1 Ridge + 1 Side + 1 Shading	✓		✓	✓	✓	✓	✓ N. 2	✓	✓	✓ N. 2	
1 Ridge + 1 Side + 2 Shadings	✓	✓ N. 2		✓	✓	✓	✓ N. 2	✓	✓	✓ N. 2	
1 Ridge + 2 Sides	✓		✓		✓	✓	✓ N. 2	✓	✓	✓ N. 2	
1 Ridge + 2 Sides + 1 Shading	✓	✓ N. 2		✓	✓	✓	✓ N. 2	✓	✓	✓ N. 2	
1 Ridge + 2 Sides + 2 Shadings	✓	✓	✓	✓	✓	✓	✓ N. 2	✓	✓	✓ N. 2	
2 Ridges + 2 Sides	✓	✓ N. 2			✓	✓	✓ N. 2	✓	✓	✓ N. 2	
2 Ridges + 2 Sides + 1 Shading	✓	✓	✓	✓	✓	✓	✓ N. 2	✓	✓	✓ N. 2	
2 Ridges + 2 Sides + 2 Shadings	✓		✓ N. 2	✓	✓	✓	✓ N. 2	✓	✓	✓ N. 2	

Motors to be driven

Note: see next page for more details on options



## Order composition summary table

*\*1 XPGH is supplied with N.1 SX (for temperature control of Ridge windows, Sides, Space heating and temperature Alarm).*

*If you do not order the switchboards FX01-FX02-FX03 (which are equipped with N.1-2-3 SX temperature probes) you must order the additional SX probes that are needed in the system.*

*\*2 Specify the characteristics of the motors in the order (Voltage/Power/Ampere).*

*\*3 The brightness (LXS) and rain (RX) sensors can be connected to multiple XPGH, while the temperature (SX), humidity (RHR) and wind (WX) sensors are specific for each XPGH.*

*\*4 If N. 1 HA20s is already present in the system, it is not mandatory to install others (one is enough for all the sensors that require it).*

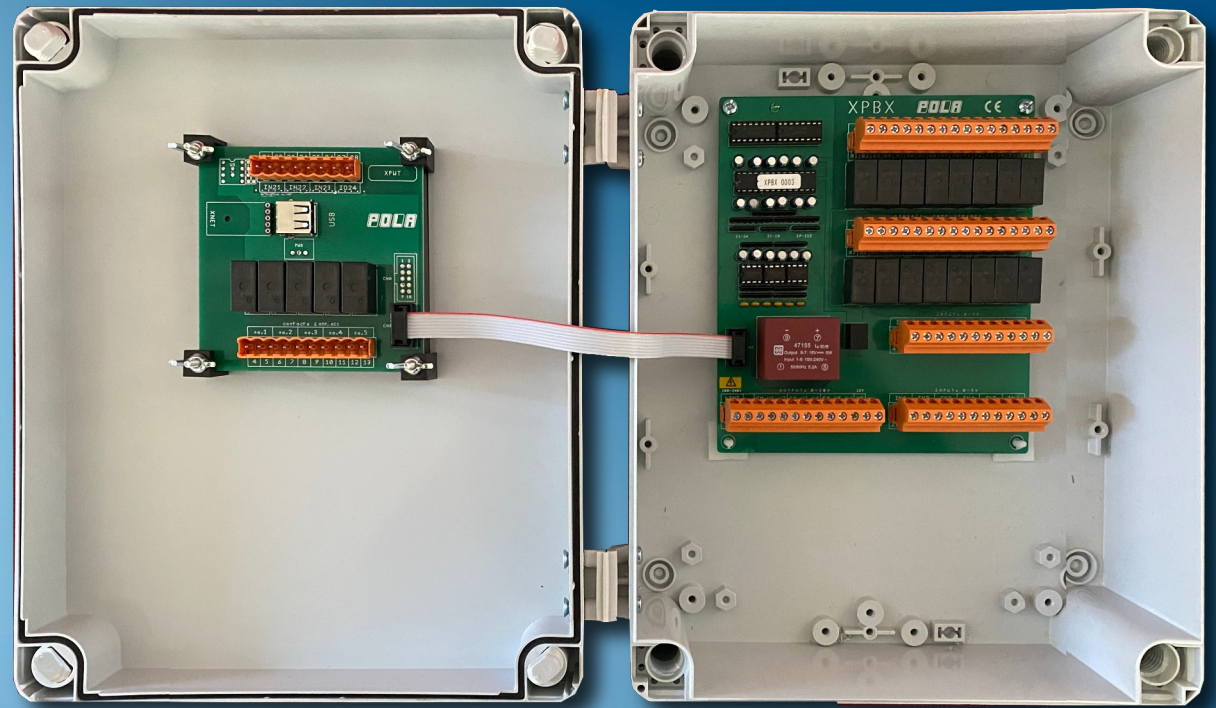
*\*5 N.2 WX must be ordered because the wind control is bi-directional (Left and Right), and acts on the doors according to the direction of the wind.*

## Options available

<i>Model</i>	<i>Description</i>
XPGH	Greenhouse climate full control (supplied in IP54 box for wall mounting + gasket + transparent cover)
<i>Options</i>	
FX01	Drive electrical box for one three-phase gear-motor (specify motor power), with 1 SX temperature probe included
FX02	Drive electrical box for two three-phase gear-motors (specify motor power), with 2 SX temperature probe included
FX03	Drive electrical box for three three-phase gear-motors (specify motor power), with 3 SX temperature probe included
SX	Temperature probe (see summary table on page 14)
SXA	Temperature probe (inox) for basal heating (see summary table on page 14)
HA20s *	Power supply (it is unique for the connection of the probes: LXS, RHR, RX).
LXS	Luminosity probe 0-100 Klux (require HA20s*)
RHR	Humidity probe 0...100% (require HA20s*)
RX	Rain sensor to detect rainfall (rain, snow), a heating element is incorporated (require HA20s*)
WX	Wind meter rotating sensor
USBP	USB IP65 external plug (to be mounted externally, for access to the USB without the need to access the back of theXPGH)
XNET	Network nodal point
ULAN	Network server Pc (with USB connection)
TR04	Radio-modem 485 (IP55 junction box with power supply 230/12v)

*\*If N .1 HA20s is already present in the system, it is not mandatory to install others (one is enough for all the sensors that require it).*

# Technical specification



Dimension: 270x230x130mm (HxLxP)

Protection degree: IP54

Case material: PVC

Power supply: 100-240V 50/60Hz

Power consumption: 5W

Supplied with: CXP transparent cover that can be opened with a hinge.



# Opzioni disponibili



FX01



FX02



FX03



SX



LXS



RX



RHR



WX



HA20s



ULAN



XNET



USBP



TR04

# Performance comparison XP31 vs XPGH

<i>Functionality</i>	XP31	XPGH
Window control	1	2 (ridges + sides)
Shading control	Yes	Yes
Brightness control	Yes	Yes
Shading temperature control	Yes	Yes
Air heating	No	Yes
Basal heating	No	Yes
Air circulators	No	Yes
Cooling	No	Yes
Cover inflation	No	Yes
Dehumidification cycle	No	Yes
Humidity sensor	Yes	Yes
Wind sensor	1	2 (Left-Right)
Rain sensor	Yes	Yes

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40<sup>th</sup>

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