Main feature

The main feature of the XP31 is the color display screen (3.5”) with 320x240 dots resolution with led backlighting. XP31 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.
XP31 manages the greenhouse climate by controlling the windows according to the ambient temperature with the option of controlling the shading and insulation based on the external brightness.

The windows are controlled in a floating proportional way according to the ambient temperature and can be conditioned by the ambient humidity, the rain sensor and the wind sensor.

The screen is controlled according to the external brightness and the night time, when the (thermal) screen is fully unrolled and can be conditioned either 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), or placed at crop level in the case of shading systems that perform the cooling 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 light and rain sensors can be connected to multiple XP31, while the temperature, humidity and wind sensors are specific for each XP31.
Inputs and outputs

INP U T S

Window temperature probe
Screen temperature probe
Luminosity probe
Humidity probe
Wind speed meter
Rain sensor
Motor thermal snap signal

OUT P U T S

Window command
Screen command
Alarm command

Other available connections:
- **USB plug**
  XP31 has a USB plug inside.
- **XNET**
  Network connection card (optional) for XP31 processor (**see remote supervision**).
For all combinations and relative controls / options, a clear summary table is available on page 16
Two windows control

Rain sensor
Wind sensor

Window (left)

Windows temperature probe

Humidity probe

Window (right)

FX02
(left window gear motor drive)
(right window gear motor drive)

For all combinations and relative controls / options, a clear summary table is available on page 16
For all combinations and relative controls / options, a clear summary table is available on page 16.
Two screens control

For all combinations and relative controls / options, a clear summary table is available on page 16.
One window + one screen control

Rain sensor
Wind sensor
Window temperature probe
Screen temperature probe
Screen
Humidity probe
Humidity
probe

For all combinations and relative controls/options, a clear summary table is available on page 16
Two windows + one screen control

Rain sensor
Wind sensor
Luminosity sensor

Screen

Window (left)
Window temperature probe

Window (right)
Window temperature probe

Screen shade / insulating

Humidity probe

FX03
(left window gear motor drive)
(right window gear motor drive)
(screen gear motor drive)

For all combinations and relative controls / options, a clear summary table is available on page 16
Two windows + two screens control

Rain sensor
Wind sensor
Luminosity sensor

Window (left)
Window (right)

Windows temperature probe
Humidity probe

Screen temperature probe

Screen 1
shading / insulating

Screen 2
shade / insulating

FX02
(left window gear motor drive)
(right window gear motor drive)

FX02
(screen 1 gear motor drive)
(screen 2 gear motor drive)

For all combinations and relative controls / options, a clear summary table is available on page 16
XP31 records all the parameters of the environment.

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:
- Window temperature
- Screen temperature
- Humidity
- Luminosity
- Wind speed
- Rain intervention
The communication with the outside world is performed by USB key.

- **Export archives**
  XP31 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 XP31 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 XP31 anytime by a user friendly procedure.
Remote supervision of XP31 processors grants the full management of system by PC.

The XP31 Net Pro supervision software enables the full remote control of network connected processors. ULAN peripheral is connected to PC through a USB connection. XP31 – ULAN connection is done by a simple 3 wires cable. In all cases where ULAN cannot be cabled to XP31 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 XP31)
- TR04: Radio-modem 485 (optional, to be used only when it is not possible to use the cable)
### Order composition summary table

<table>
<thead>
<tr>
<th>Order composition</th>
<th>XP31</th>
<th>FX01</th>
<th>FX02</th>
<th>FX03</th>
<th>LXS&lt;sup&gt;3&lt;/sup&gt; + HA20s&lt;sup&gt;4&lt;/sup&gt;</th>
<th>RHR + HA20s&lt;sup&gt;4&lt;/sup&gt;</th>
<th>RX&lt;sup&gt;3&lt;/sup&gt; + HA20s&lt;sup&gt;4&lt;/sup&gt;</th>
<th>WX</th>
<th>SX&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive electrical box 1 motor +1 temp. probe SX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive electrical box 2 motors +2 temp. probes SX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive electrical box 3 motors +3 temp. probes SX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luminosity probe + power supply</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humidity probe + power supply</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rain probe + power supply</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wind speed sensor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature probe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Options

<table>
<thead>
<tr>
<th>Motors to be driven</th>
<th>1 Screen</th>
<th>2 Screens</th>
<th>1 Screens + 1 Window</th>
<th>1 Screen + 2 Windows</th>
<th>2 Screens + 2 Windows</th>
<th>1 Window</th>
<th>2 Windows</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td></td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
</tr>
<tr>
<td></td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
</tr>
<tr>
<td></td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
</tr>
<tr>
<td></td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
<td>![Checkmark]</td>
</tr>
</tbody>
</table>

### Notes:

*<sup>1</sup> XP31 is supplied without SX temperature probes. 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.  

*<sup>2</sup> Specify the characteristics of the motors in the order (Voltage/Power/Ampere)  

*<sup>3</sup> The brightness (LXS) and rain (RX) sensors can be connected to multiple XP31s, while the temperature (SX), humidity (RHR) and wind (WX) sensors are specific to each XP31.  

*<sup>4</sup> 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).
## Options available

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XP31</td>
<td>Greenhouse control</td>
</tr>
<tr>
<td></td>
<td>Options</td>
</tr>
<tr>
<td>W02</td>
<td>IP54 box for wall mounting + gasket + transparent cover (CXP)</td>
</tr>
<tr>
<td>CXP</td>
<td>Hinged transparent cover for XP + gasket</td>
</tr>
<tr>
<td>FX01</td>
<td>Drive electrical box for one three-phase gear-motor (specify motor power), with 1 SX temperature probe included</td>
</tr>
<tr>
<td>FX02</td>
<td>Drive electrical box for two three-phase gear-motors (specify motor power), with 2 SX temperature probe included</td>
</tr>
<tr>
<td>FX03</td>
<td>Drive electrical box for three three-phase gear-motors (specify motor power), with 3 SX temperature probe included</td>
</tr>
<tr>
<td>SX</td>
<td>Temperature probe (see summary table on page 16)</td>
</tr>
<tr>
<td>HA20s</td>
<td>Power supply (it is unique for the connection of the probes: LXS, RHR, RX).</td>
</tr>
<tr>
<td>LXS</td>
<td>Luminosity probe 0-100 Klux (require HA20s*)</td>
</tr>
<tr>
<td>RHR</td>
<td>Humidity probe 0...100% (require HA20s*)</td>
</tr>
<tr>
<td>RX</td>
<td>Rain sensor to detect rainfall (rain, snow), a heating element is incorporated (require HA20s*)</td>
</tr>
<tr>
<td>WX</td>
<td>Wind meter rotating sensor</td>
</tr>
<tr>
<td>USBP</td>
<td>USB IP65 external plug (to be mounted externally, for access to the USB without the need to access the back of the XP31)</td>
</tr>
<tr>
<td>XNET</td>
<td>Network nodal point</td>
</tr>
<tr>
<td>ULAN</td>
<td>Network server Pc (with USB connection)</td>
</tr>
<tr>
<td>TR04</td>
<td>Radio-modem 485 (IP55 junction box with power supply 230/12v)</td>
</tr>
</tbody>
</table>

*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

DIN96 module for panel mounting
Protection degree: IP54 (front panel)
Case material: ABS
Power supply: 100-240V 50/60Hz
Power consumption: 3W

Dimension: 220x175x130mm (HxLxP)
Protection degree: IP54
Case material: PVC
Power supply: 100-240V 50/60Hz
Power consumption: 3W
Supplied with: CXP transparent cover that can be opened with a hinge.
Options

- CXP
- W02
- FX01
- FX02
- FX03
- SX
- LXS
- RX
- RHR
- WX
- HA20s
- ULAN
- XNET
- USBP
- TR04
# Performance comparison XP31 vs XPGH

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