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User manual

SLR S-BOX panel and pack (Version \geq 2.0) Installation manual

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Our company organises training courses providing the indispensable know-how for the installation and maintenance of our equipment all year long.

A catalogue is available on request. Select the training programme, type of learning method and skills you need from our range, to meet your production targets.

These training courses can be organised on the premises of your company or at the training centre located at our head office in Meylan.

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SAS Sames Technologies has drafted this operating manual in French and mandated English, German, Spanish, Italian and Portuguese translations.

The company declares reservations on all translations and refuses any liability with respect to these translated documents.

SLR S-BOX panel and pack

(Version > 2.0)

Installation manual

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1. Health and safety instructions

This user manual contains links to the following user manuals:

- [see RT no. 6213](#) for the control module GNM 200.
- [see RT no. 6423](#) for the turbine speed controller
- [see RT no. 6316](#) and [see RT no. 6317](#) for the REV 600



WARNING : This equipment can be dangerous if not used in accordance with the safety rules specified in this manual:

- The SLR panel must not be modified by the user and must remain in conformity with the initial installation setup by Sames Technologies. The operator will be responsible for any modifications.
- The SLR panel must not be installed in an ATEX zone.
- The SLR panel must not be installed in a contaminated zone.
- The SLR panel must not be installed outdoors.
- The SLR panel must be installed in an area where the ambient temperature is less than or equal to 35°C and reasonably dry (relative humidity < 85% without condensation).
With the optional air conditioning, the SLR panel can be installed in an area where the temperature is > 35°C.
- The SLR panel must be connected to the plant's grounding system by a Green/Yellow wire with a diameter at least equal to the diameter of the electrical supply wire.
- The SLR panel must operate with the 2 side panels and the rear door closed, in order to maintain a protection rating of IP 20, and therefore prevent any direct or indirect contact.
- Only Sames Technologies spare parts, or a repair by the Sames repair service can ensure and guarantee the safety of the SLR panel during operation.
- Switch off the power supply and/or the air supply before carrying out maintenance on the SLR panel.
- **Information indicating that the booth ventilation is operational must be transmitted to the SLR panel to enable spraying exclusively when booth ventilation is active. If this information is not transferred or is absent, the operator is responsible for use of the unit.**

2. Description of the SLR "Sames Liquid Rack" panel or pack

2.1. Presentation

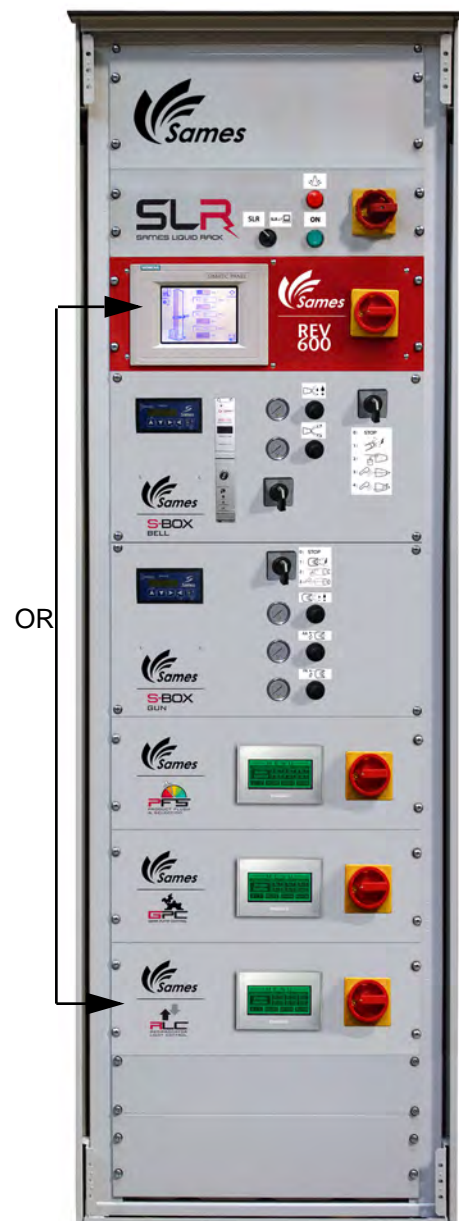
This equipment is intended for the application of liquid paint systems, using solvent-based or water-based paints, sprayers or electropneumatic guns.

Modular equipment is systematically controlled by a main SLR module.

The SLR module is designed to supply and control:

- a maximum of 2 S-BOX (BELL or 2-GUN).
- 1 PFS module (color change block)
- 1 GPC module (gear pump control module)
- 1 REV600 module (complete robot control module, type RFV 2000)
- or 1 RLC module (simplified robot control module, type RFV 2000).

42U panel: controls two 2 sprayers with 2 SBOX BELL, 1 REV 600 or 1 RLC, 1PFS, 1GPC



12U pack: Simple pilot of 1 sprayer with 1 SBOX-BELL or 2 TRP with 1 SBOX-2-GUN



2.2. The different possible configurations

Pack version	1 SLR module 1 S BOX module	1 PPH or 1 Nanobell or 1 or 2 TRP
---------------------	--------------------------------	-----------------------------------

Panel version	1 SLR module 1 S BOX module 1 to 3 peripheral modules: - 1 RLC or REV 600 module and / or - 1 GPC module and / or - 1 PFS module	1 PPH or 1 Nanobell or 1 or 2 TRP 1 to 2 RFV robots 1 to 2 pumps 1 to 2 circuits
	1 SLR module 2 S Box module 1 to 3 peripheral modules: - 1 RLC or REV 600 module and / or - 1 GPC module and / or - 1 PFS module	2 PPH or 2 Nanobell or 2 or 4 TRP 1 to 2 RFV robots 1 to 2 pumps 1 to 2 circuits

3. Handling and installation

3.1. 12U pack

Overall dimensions	H = 850 mm, W =680 mm, D =800 mm.
Weight	between 45 and 55 kg
Shade	RAL 7035
Front door with glass panel	
IP	20

The 12U pack is equipped with top carry handles.

The pack can be placed on a support surface (table) or wall-mounted by the rear, as the rear panel is articulated.

Cables and hoses can be routed by the top or bottom, via cable-gland plates with brushes.

Cable routing by the top or bottom

Hinged rear panel

Rear holes for wall mounting



3.2. 42U panel

Overall dimensions	H = 2000 + 100 mm, W = 680 mm (with pneumatic air supply), D = 600 mm
Mass	between 95 and 155 kg
Shade	RAL 7035
Front door with glass panel	
IP	20



WARNING : The panel must be lifted from the bottom. It is strictly prohibited to use lifting rings with this panel.

It is strongly recommended to attach the panel to a fixed support base, (e.g. using studs driven into the floor in the base), to prevent the panel from tipping over.

Connections must route by the rear panel, enough space must therefore be left at the rear to allow the door to open (W = 600).

Cables and hoses can be routed by the top or bottom, via cable-gland plates with brushes.

View of the rear panel



Hoses/cables routed by the top

Pneumatic supply
Emergency stop

Rear door
W = 600

Hoses/cables routed by the bottom

View of the front panel



Front door with glass panel

The panel is different if equipped with the optional air conditioning system:

Overall dimensions	H = 2000 + 100 mm, W = 680 mm + 280 mm, D = 600 mm
Weight	between 110 and 180 kg
Shade	RAL 7035
Front door with glass panel	
IP	54

4. External connections

4.1. Supplies

4.1.1. Electrical power

Voltage	230 Vac single phase + ground
Frequency	50/60 Hz
Maximum input current	16A
Maximum connection cable section	2.5 mm ²
Internal protection	16A Am

Connection of the supply to the XP terminal on the rear panel of the SLR module



4.1.2. Pneumatic

Pressure	min. 6 bar - max. 7 bar
Side connection	3/4G, in 42U version and 1/2G in 12U version
Air consumption	80 Nm ³ /h for 1 S-Box, 160 Nm ³ /h for 2 S-Box
General air characteristics according to the standard (NF ISO 8573-1)	
Maximum content for solid impurities	5mg/m ³ (class 3)**
Maximum size of solid impurities	5 μm (class 3)
Maximum content for oil	0.01 mg/ m ³ (class 1)
Dew point at 6 bar (87 psi)	3° C (37°F) (class 4)

(**) Values given for a temperature of 20°C (68°F) at an atmospheric pressure of 1013 mbar.

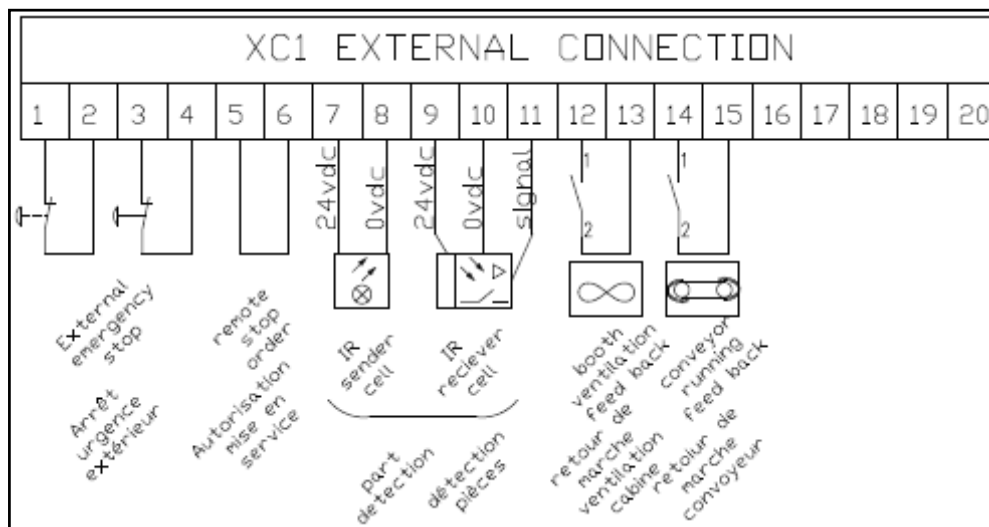
The air supply is connected upstream from the switch off valve on the left side of the pack or panel

4.2. External interfaces

The SLR panel is connected to external environments by two SLR module terminal boxes:

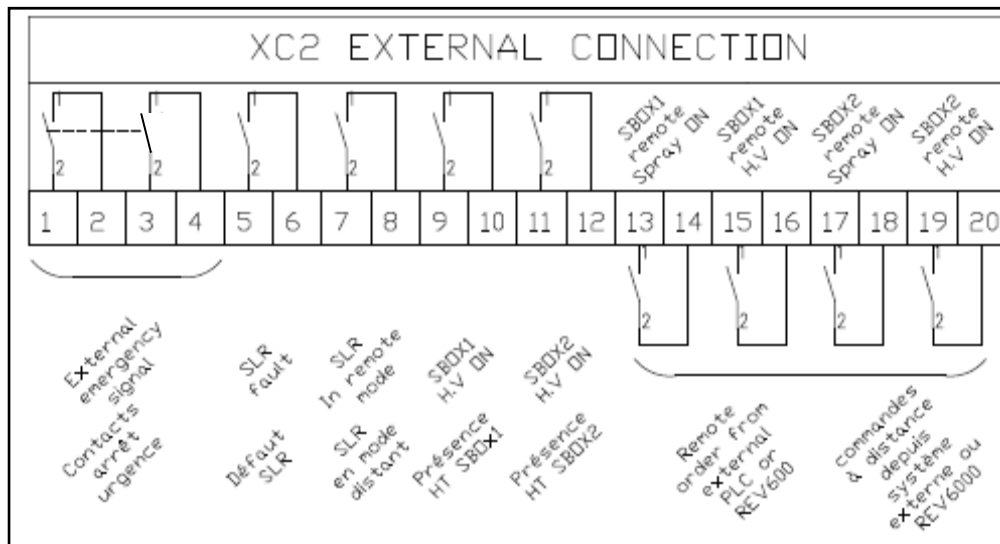
XC1 terminal box

Description	Terminals	Input Type	Remarks
External emergency stop	1-2 3-4	2 dry contacts Emergency stop system	Shunt if not used
Authorisation for external start-up	5-6	1 dry contact Start-up system	Switch off the starting up of the SLR panel. Initially shunted
Part detection, booth entrances	7-8 9-10-11	Dry contact, or 24 vdc transmitting and receiving cells or electric cell	Used for spraying management. Initially shunted between 9 & 11.
Booth ventilation feedback	12-13	Dry contact PLC input	Enables the operation of the SLR panel. Shunt if not used (see safety section at the beginning of the document).
Part conveyor feedback	14-15	Dry contact PLC input	Enables the operation of the sprayer. Shunt if not used.



XC2 terminal box

Description	Terminals	Output Type	Remarks
SLR emergency stop	1-2 3-4	1 N.O. dry contact 1 N.O contact 24VDC-4A / 230 VAC-3A	
SLR fault	5-6	1 dry contact 24VDC-0,6A / 230 VAC-0,9A	Closed contact in case of fault (image of the red indicator on the front panel). Connect to the conveyor start-up system.
SLR in remote mode	7-8	1 dry contact 24VDC-0,5A / 230 VAC-2A	Closed contact when the SLR panel can be piloted (HV trigger and spraying) remotely.
SBOX 1 H.V. ON	9-10	1 dry contact 24VDC-5A / 230 VAC-5A	High voltage GNM200 generator operation feedback, for SBOX 1
SBOX 2 H.V. ON	11-12	1 dry contact 24VDC-5A / 230 VAC-5A	High voltage GNM200 generator operation feedback, for SBOX 2
Description	Terminals	Input Type	Remarks
SBOX 1 remote spray	13-14	1 dry contact	Remote spraying pilot, for the SBOX-1. Only valid if the SLR is in remote mode.
SBOX 1 H.V. trigger	15-16	1 dry contact	Remote H.V. trigger pilot, for the SBOX-1. Only valid if the SLR is in remote mode.
SBOX 2 remote spray	17-18	1 dry contact	Remote spray pilot, for the SBOX-2. Only valid if the SLR is in remote mode.
SBOX 2 H.V. trigger	19-20	1 dry contact	Remote H.V. trigger pilot, for the SBOX-2. Only valid if the SLR is in remote mode.



5. Modules

5.1. SLR module

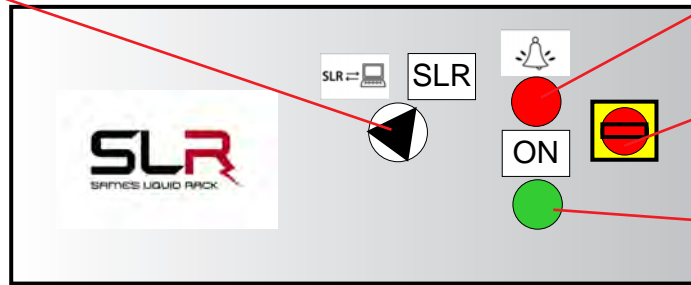
5.1.1. Description

The main SLR module, is used to supply and control the SBOX modules and the different peripheral modules.

The SLR module is in 19" 4U rackable format, in steel sheets painted RAL 7035.

Front control panel:

Remote / local mode selector.
Indicator mode OK



SLR fault indicator

General switch

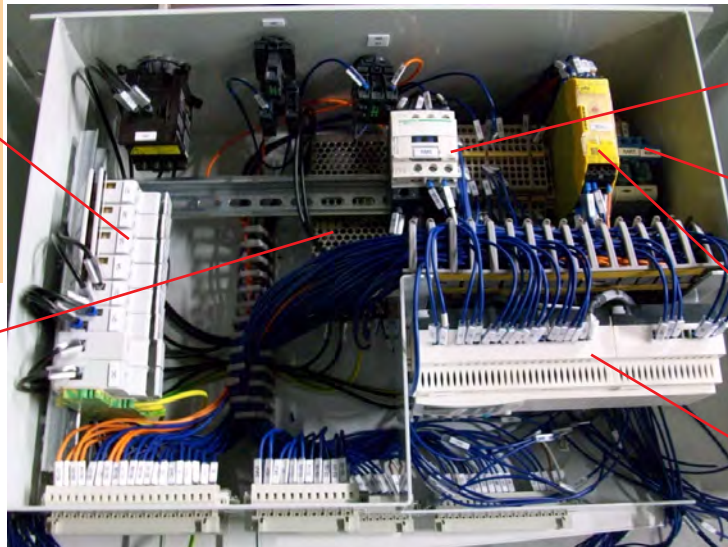
ON.
Reset fault

Inside the module:

Protection fuses:

- General
- 24 VDC power
- GNM 200
- EV
- PFS
- GPC
- REV/RLC

Power supply
24 VDC



Main contactor

Control 24 VDC relay

Emergency stop relay

Micro-PLC
24 VDC
40 I/O

5.1.2. Internal protections

The SLR module includes all protection devices for energy supplies for peripheral modules and integrated equipment. These protection devices consist of fuses:

Item	Description	Rating
QC	General protection	16A Am 10x3*38
Q1	24 Vdc supply protection devices	2A Am 10x3*38
Q3	General EV protection devices	1A Am 10x3*38
Q4	GNM 200 protection devices	1A Am 10x3*38
Q5	GPC module protection devices	10A Am 10x3*38
Q6	RLC or REV600 module protection devices	10A Am 10x3*38
Q7	PFS module protection devices	4A Am 10x3*38
F1	24 Vdc PLC protection devices	1A 5*20

QC, Q1 and Q3 to Q7 fuse holders are installed on the left side:



The fuse holder F1 is installed next to the PLC:

F1 fuse terminal
PLC protection
device

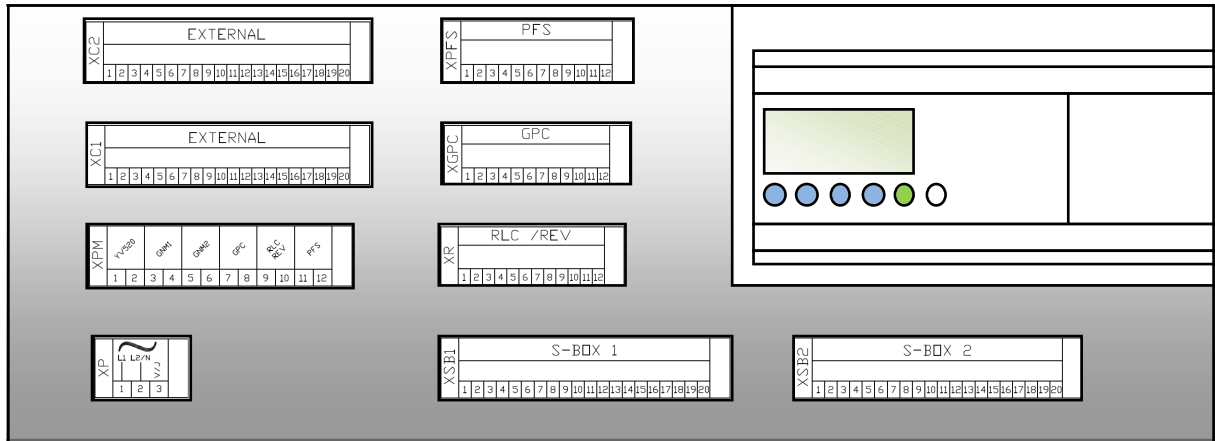


5.1.3. Connection

Terminal boxes consist of plug-in connectors, with a spring connection and a wire section of 2.5 mm². Only XP, XC1, and XC2 connectors are used for the external connection, the other connectors are intended for internal connections with other modules.

Connectors	Type	Purpose
XP	3 female points, 7.5 mm pitch	Supplies the SLR panel.
XC1	20 female points, 5 mm pitch	External interfaces
XC2	20 female points, 5 mm pitch	External interfaces
XPM	12 female points, 7.5 mm pitch	230 VAC supply to the following components: - General air solenoid valve - GNM SBOX-1 - GNM SBOX-2 - GPC - RLC / REV600 - PFS
XSB1	20 female points, 5 mm pitch	Interface with SBOX 1 control module (master).
XSB2	20 female points, 5 mm pitch	Interface with SBOX 2 control module (slave).
XPFS	12 female points, 5 mm pitch	Interface with the PFS module.
XGPC	12 female points, 5 mm pitch	Interface with the GPC module
XR	12 female points, 5 mm pitch	Interface with the RLC or REV 600 module.

Rear view of the SLR module:



5.2. S-BOX BELL

5.2.1. Description

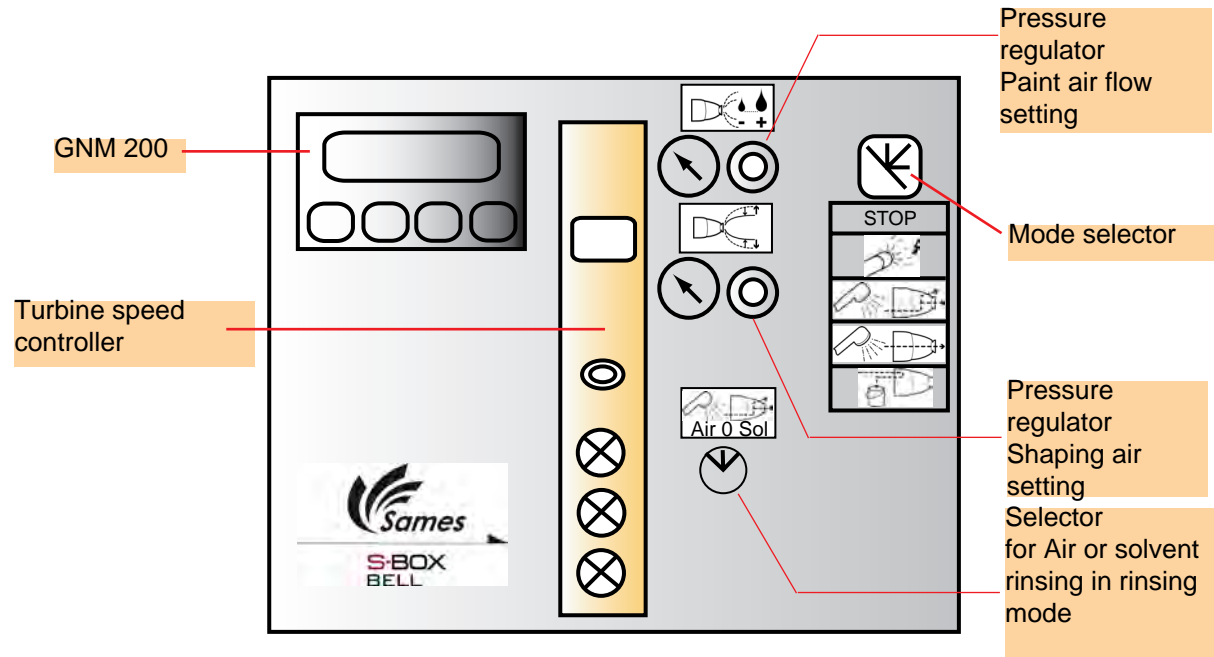
The S-BOX BELL is used to pilot a sprayer equipped with a rotating bell.

If 2 SBOX BELL are integrated, one Master module exists (SBOX-BELL 1 with 1 main mode selector) and one Slave module (SBOX-BELL-2 with an ON/OFF selector).

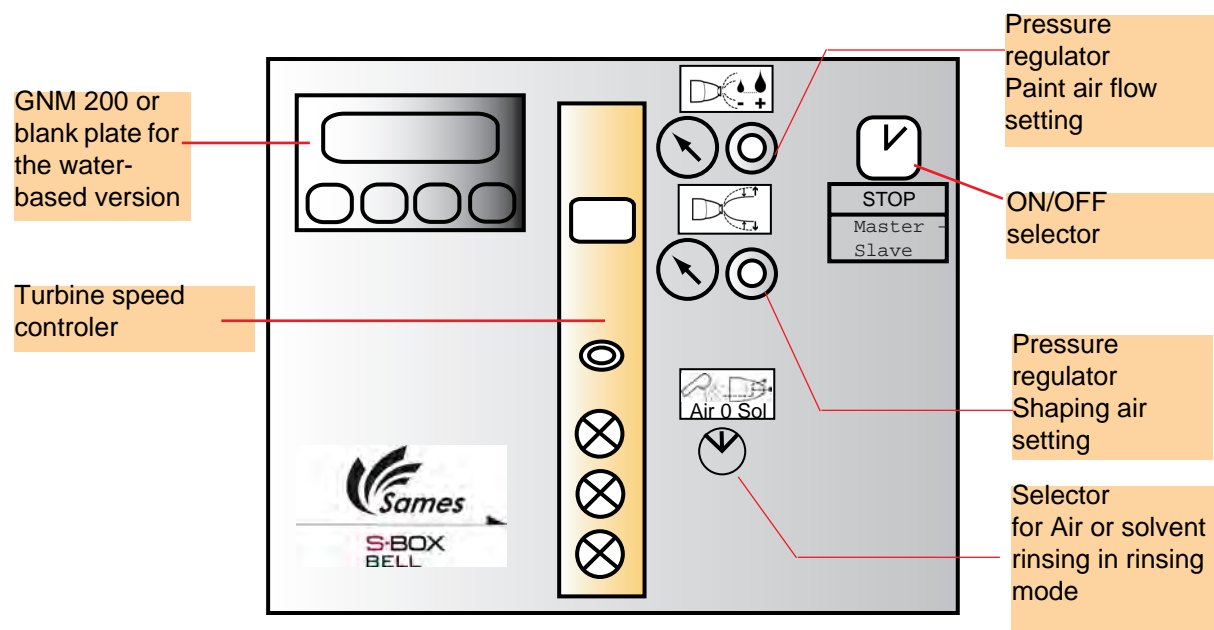
For applications using water-based paints, the GNM 200 control module is installed on the SBOX-BELL-1.

The S-BOX BELL is in 19" 8U rackable format, in steel sheets painted RAL 7035.

Front panel of the master version:



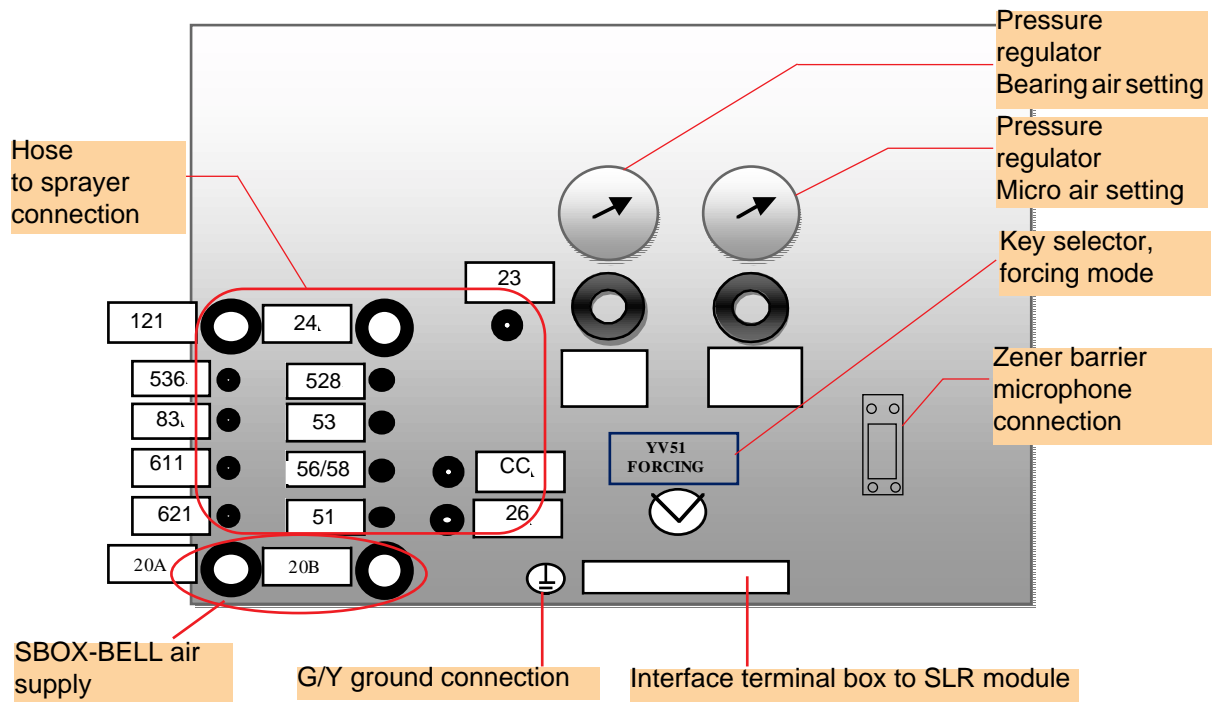
Front panel of the slave version:



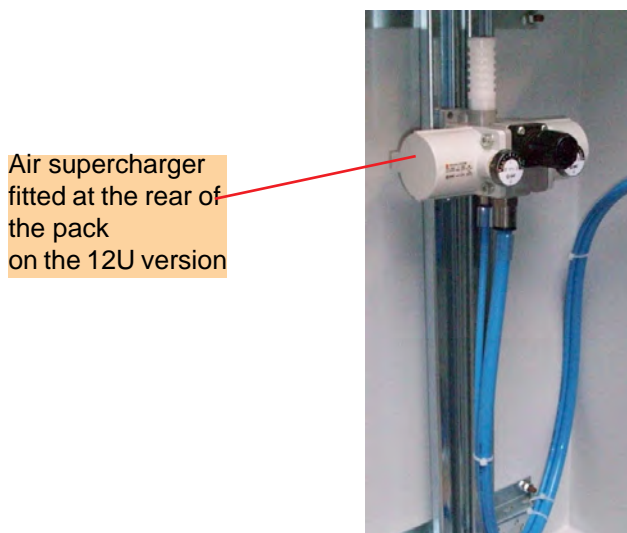
5.2.2. Connection

SBOX BELL cables are connected via the rear panel and are identical for the master and slave versions.

View of the rear panel:



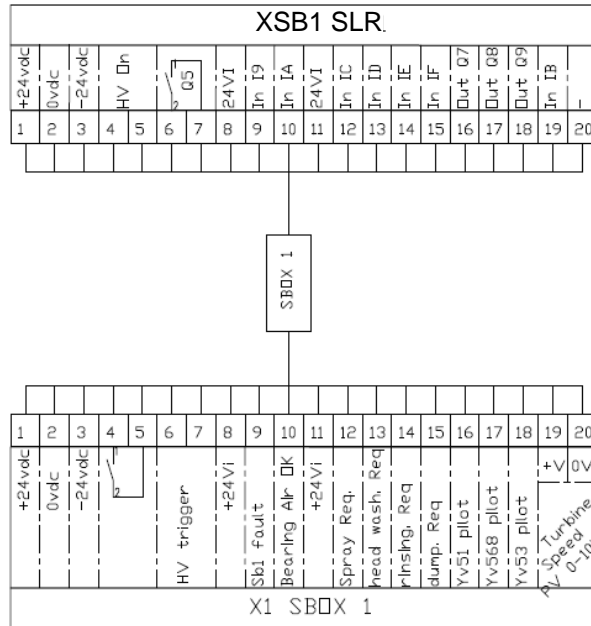
Important: with the PPH707 version, an air booster is added to the pack to supply the distributors piloting the SBOX-BELL with air supercharged. This air supercharger is either fitted on the rear panel of the pack (12U version), or on the bottom of the panel (42U version). It is supplied with 20A pressure, and output supplies the distributor inside the SBOX-BELL directly.



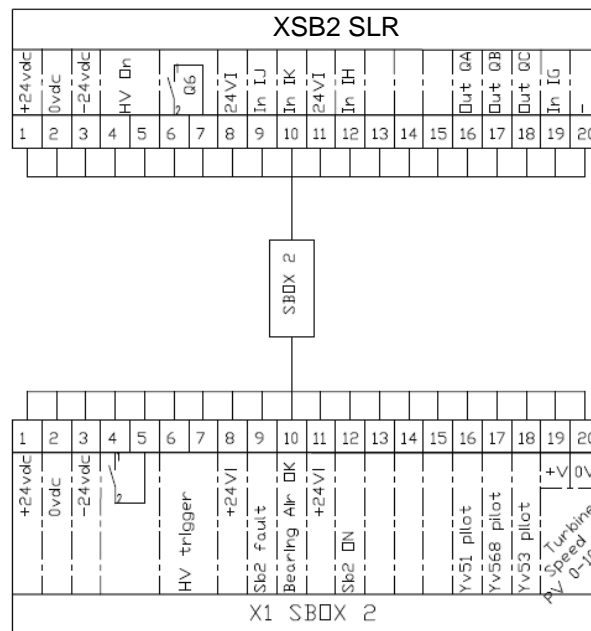
5.2.2.1. SLR connections

These connections are pre-assembled at the plant.

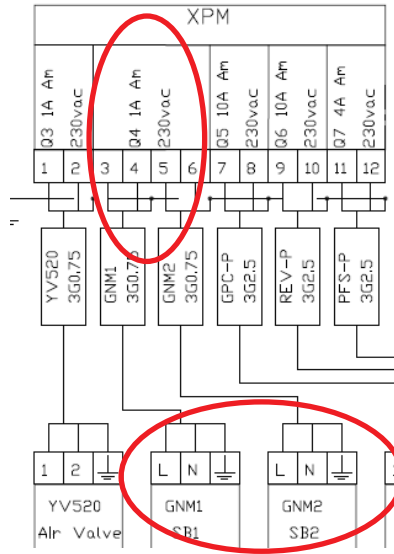
SBOX BELL -1 Master to SLR module XSB1 terminal box



SBOX BELL -2 Slave to SLR module XSB2 terminal box



230 VAC supply of 1 or 2 GNM



5.2.2.2. Connections to sprayers

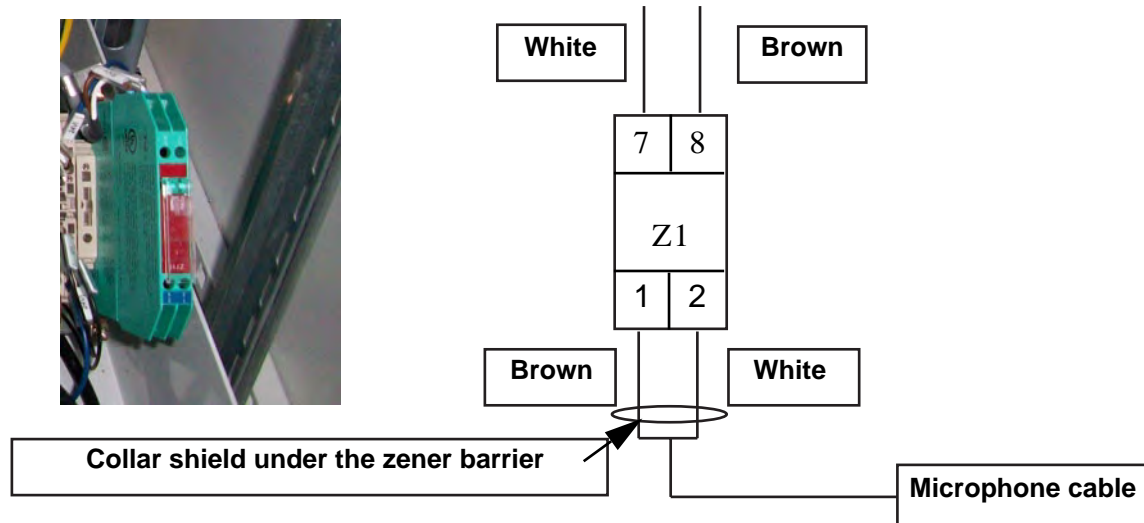
Pneumatic connections

Mark	Hose Polyamide	Function	Mark on PPH 308	Mark on Nano-bell	Mark on PPH 607
20A	10/12	S-BOX BELL supply (pressure downstream of the general electrovalve) initially connected			
20B	10/12	S-BOX BELL supply (pressure upstream of the general electrovalve) initially connected			
CC	4/6	Used for conductive products: Supply of the discharge short-circuiting jack, air pressure off when the system is OFF. Let the diameter 6 cap if not used			
23	4/6	Bearing air of the turbine, always under pressure, except when the manual valve of the general air is closed.	23	23	23
26	4/6	Microphone air supply	26	26	26
121	8/10	Supply of the air pressure regulator of the turbine rotation (activated by 621) outside the SLR cabinet			
	8/10	Output of the air pressure regulator of the turbine rotation (activated by 621) outside the SLR cabinet	21	21	21A & 21B 8/10*-> 2x6/8
24	2.7/4	Shaping air supply (pressure adjusted by the front panel regulator)	24 8/10*-> 6/8	24 & 25 8/10-> 9/12*	24A & 24B & 25 8/10*-> 3x6/8
611	2.7/4	Pilot air of the product supply regulator (paint or solvent) outside the SLR cabinet. Set the manual regulator to zero on front panel, if not used.			
621	2.7/4	Pilot air of the air pressure regulator of the turbine rotation (controlled by the rotation turbine board)			
51	2.7/4	Pilot of the paint supply valve (trigger valve)	51	51	51
53	2.7/4	Pilot of the dump valve (let the diameter 4 cap if not used)	53	53	53
56/58	2.7/4	Pilot of injector and exterior bellcup rinsing valves (let the diameter 4 cap if not used).	56 & 58	56	58
528	2.7/4	Pilot of the bellcup rinsing block air valve (let the diameter 4 cap if not used).			
536	2.7/4	Pilot of the bellcup rinsing block solvent valve (let the diameter 4 cap if not used).			
83	2.7/4	Bellcup presence pressure (safety in the fault chain). Put this input to the CC pressure (diameter 4) if not used.			83

* Connection principle: the user must pull the hose lengths with the largest diameter between the SBOX module and the sprayer.

Connecting the microphone cable

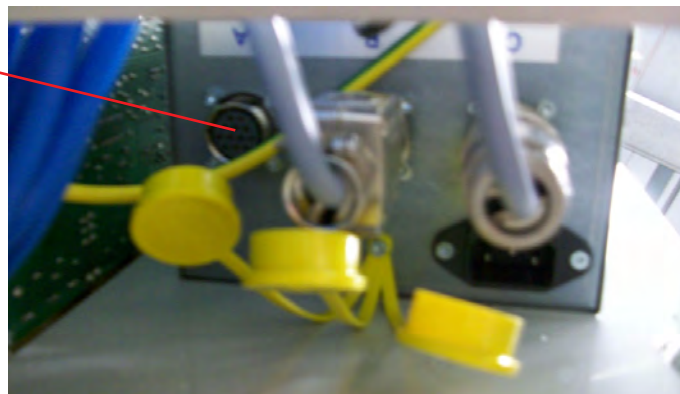
The microphone cable (supplied with the microphone), is connected to the zener barrier Z1, to the rear of the SBOX-BELL.



Connecting the HVU cable:

The cable equipped with a connector must be connected under the GNM 200 via the opening for manual access.

Plug for the HV cable



[see RT no. 6213](#)

5.3. S-BOX-2-GUN

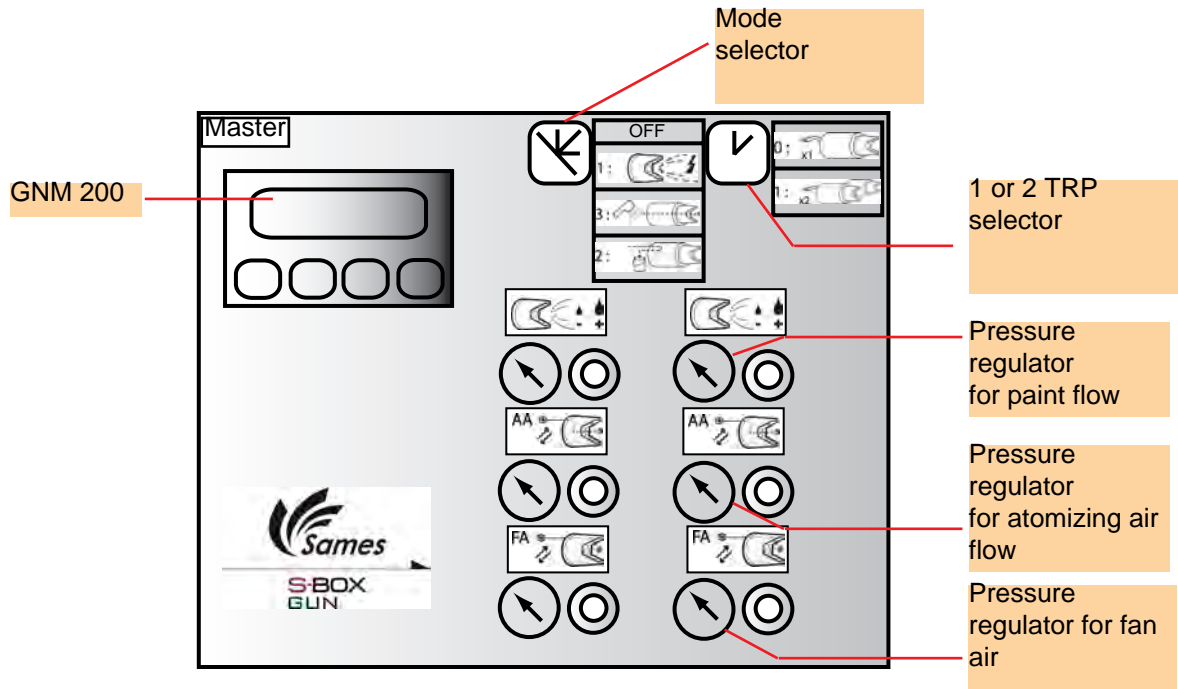
5.3.1. Description

The S-BOX-2-GUN is used to pilot two electropneumatic guns which operate in a synchronized way. If 2 SBOX-2-GUN are integrated, one Master exists (SBOX-2-GUN-1 with 1 main mode selector) and one Slave module (SBOX-2-GUN-2 with an ON/OFF selector).

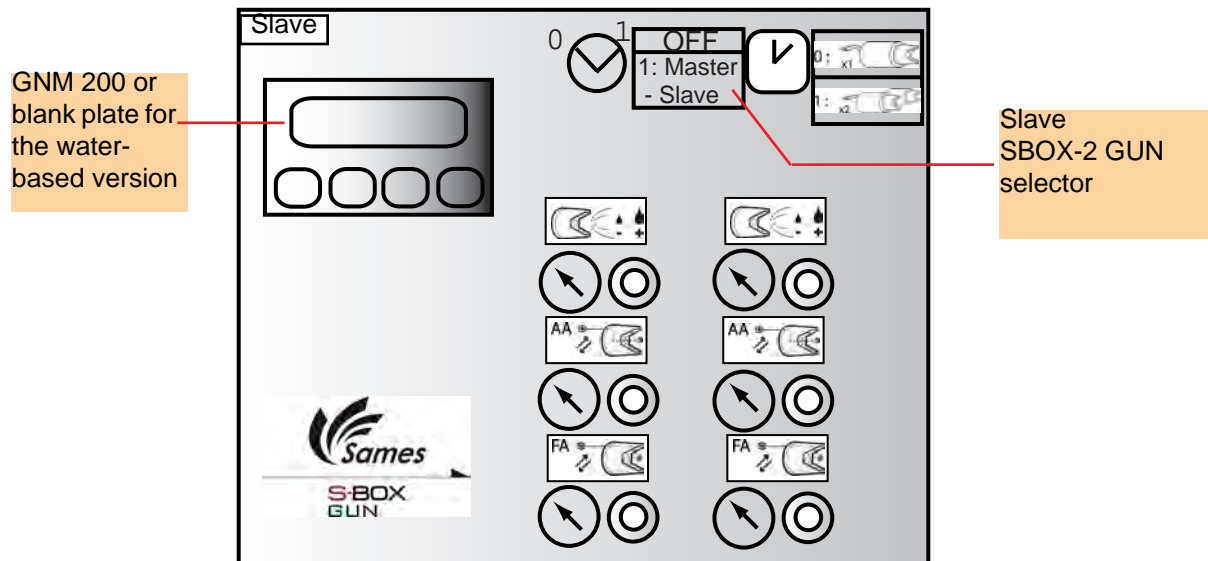
For applications using water-based paints, the GNM 200 control module is installed on the SBOX-2-GUN-1.

The S-BOX-2-GUN is in 19" 8U rackable format, in steel sheets painted RAL 7035.

Front panel of the master version:



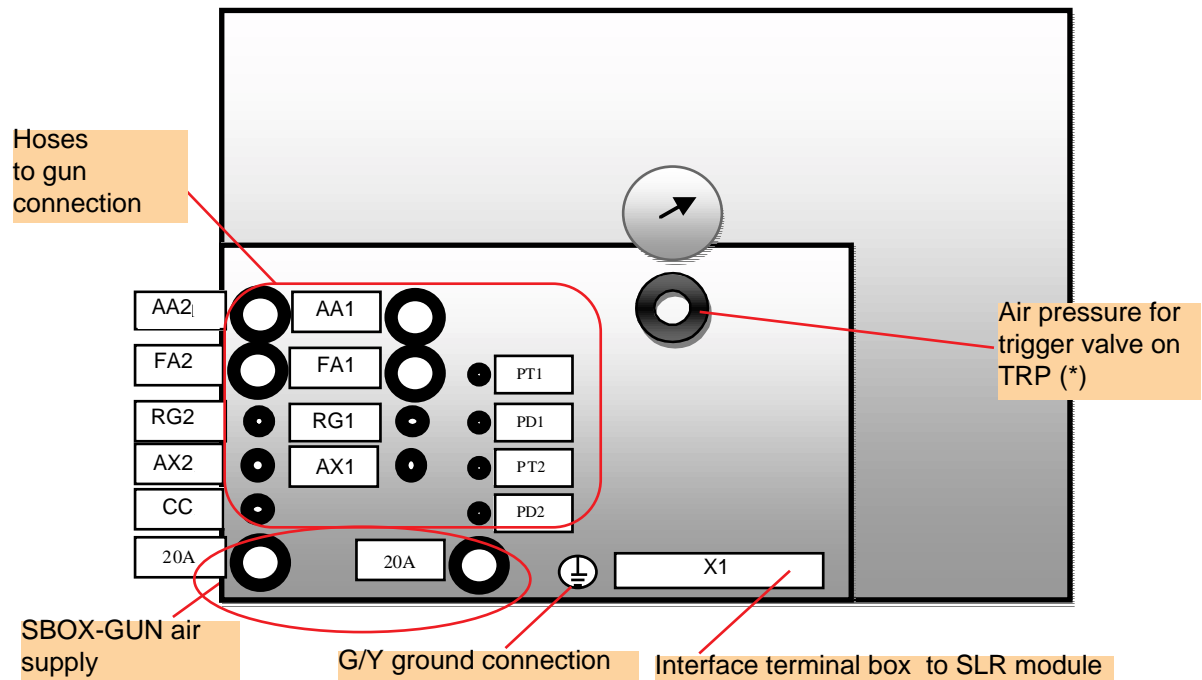
Front panel of the slave version:



5.3.2. Connection

The SBOX-2-GUN cables is connected via the rear panel. Connections are identical for both the master SBOX-2-GUN and slave SBOX-2-GUN.

View of the rear panel:



(*): This regulator on the rear panel with a 0-6 bar pressure gauge for the trigger valve pressure did not exist on previous versions of SBOX- 2-GUN.To be adjusted to 4 bar minimum.

5.3.2.1. SLR connection

This connection is pre-assembled at the plant and is identical to the connection for an SBOX-BELL ([see § 5.2.2.1 page 18](#)).

5.3.2.2. Electropneumatic gun connections

Pneumatic connections

Mark	Hose polyamide	Function	Mark on TRP1	Mark on TRP2
20A	10/12	SBOX-GUN supply (pressure downstream of the general electrovalve) initially connected		
20A	10/12	SBOX-GUN supply (pressure downstream of the general electrovalve) initially connected		
CC	4/6	Used for conductive products: supply of the dischargeshort-circuiting jack, air pressure off when the system is off (let the diameter 6 cap if not used)		
AX1	6/8	Supply of a rinsing system. (let the diameter 8 cap if not used)		
FA1	8/10	Gun 1 fan air supply (pressure adjusted by the front face regulator)	FA	
AA1	8/10	Gun 1 atomizing air supply (pressure adjusted by the front panel regulator)	AA	
RG1	2.7/4	Pilot air of the product supply regulator (paint or solvent) outside the SLR cabinet Set the manual regulator to zero on front face if not used.		
PT1	4/6	Pilot of the spray needle valve	PT	
PD1	4/6	Pilot of the dump needle valve (let the diameter 6 cap if not used)	PD	
AX2	6/8	Supply of a rinsing system. (let the diameter 8 cap if not used)		
FA2	8/10	Gun 2 fan air supply (pressure adjusted by the front face regulator)		FA
AA2	8/10	Gun 2 atomizing air supply (pressure adjusted by the front panel regulator)		AA
RG2	2.7/4	Pilot air of the product supply regulator (paint or solvent) outside the SLR cabinet Set the manual regulator to zero on front face if not used.		
PT2	4/6	Pilot of the spray needle valve		PT
PD2	4/6	Pilot of the dump needle valve (let the diameter 6 cap if not used)		PD

Connecting the HVU cable:

The cable equipped with a connector must be connected under the GNM 200 via the opening for manual access ([see § 5.2.2.2 page 20](#)).

5.4. GPC module

5.4.1. Description

The GPC module is used to pilot up to two gear pumps (1 per SBOX circuit).

The GPC module is in 19" 4U rackable format, in steel sheets painted RAL 7035.

This module mainly consists of two speed controllers, with an embedded micro-controller, and 1 touch screen for the human-machine interface.

View of the front panel:

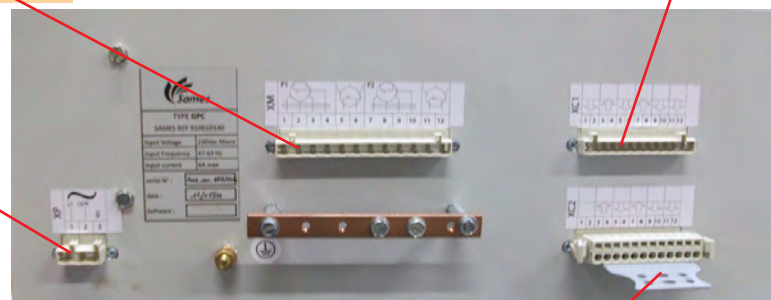


View of the rear panel:

XM pump interface connector

SLR XC1 module interface connector

230 VAC XP power connector



XC2 remote control interface connector

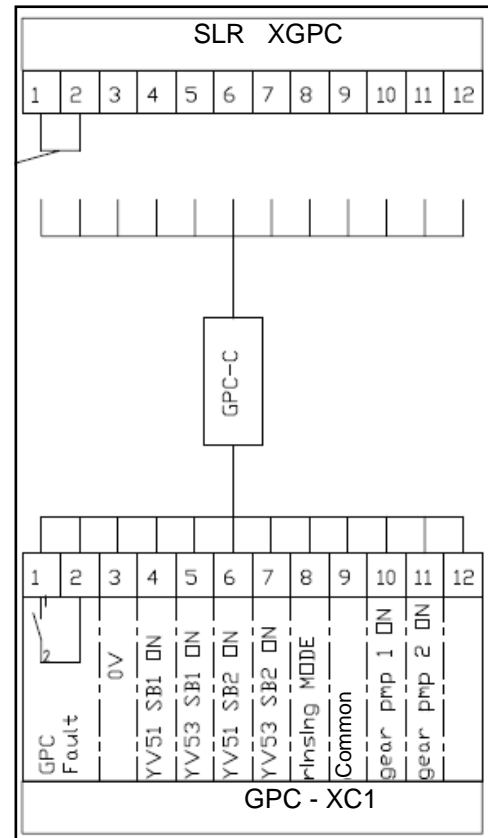
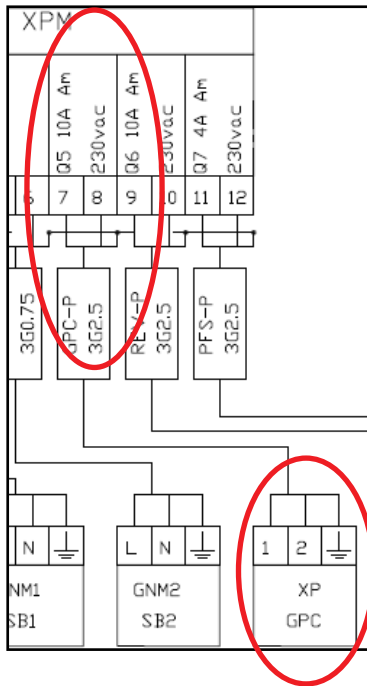
5.4.2. Connection

Interfaces with modules pass via connectors at the rear of the module.

Connectors	Type	Purpose
XP	3 female points, 7.5 mm pitch	Supplies the SLR panel in single phase 230 Vac.
XC1	12 female points, 5 mm pitch	Interfaces with the SLR module.
XC2	12 female points, 5 mm pitch	Remote pump control.
XM	12 female points, 7.5 mm pitch	Interface with the pumps

5.4.2.1. SLR interfaces

These links (XP and XC1) are pre-assembled at the plant



5.4.2.2. Remote control

XC2 terminal box

N°	Type	Description
1	GPC logic input	Pump 1 start-up order in remote mode
2		
3	0V	Pump 1 flow setpoint in remote control mode. 0-10 Vdc: 0-100%
4	10V Ana input	
5	Output (dry contact)	Pump 1 feedback
6		
7	GPC logic input	Pump 2 start-up order in remote mode
8		
9	0V	Pump 2 flow setpoint in remote control mode. 0-10 Vdc: 0-100%
10	10V Ana input	
11	Output (dry contact)	Pump 2 feedback
12		

5.4.2.3. Pump interface

XM terminal box

N°	Type	Description
1	Pump 1 U phase	Motor characteristics: U: 230 VAC (3 phases) , delta cabling for 400V/230V motors. P=0.25kW Cos_=0.77 In=1.3A Recommended cable: shielded 4G1.5 Shielding connected to the grounding system via a collar.
2	Pump 1 V phase	
3	Pump 1 W phase	
4	Pump 1 G/Y ground	
5	GPC logic input	Pump 1 motor thermal fault sensor contact
6		Shunted if not used.
7	Pump 2 U phase	Motor characteristics: U: 230 Vac (3 phases) , delta cabling for 400V/230V motors. P=0.25kW Cos_=0.77 In=1.3A Recommended cable: shielded 4G1.5 Shielding connected to the grounding system via a collar.
8	Pump 2 V phase	
9	Pump 2 W phase	
10	Pump 1 G/Y ground	
11	GPC logic input	Pump 2 motor thermal fault sensor contact
12		Shunted if not used.

5.4.3. Using a re-circulation 3 way valve

A recirculation 3 way valve can be installed thus the product can recirculate while the pump operates-permanently.

Its piloting is done in parallel of the paint supply valve for a sprayer (spray needle valve for a TRP) by adding a "Y" fitting at the exit of the paint supply valve.



WARNING : The length of the pilot hose of this valve must be higher to the length of the pilot hose of the paint supply valve.

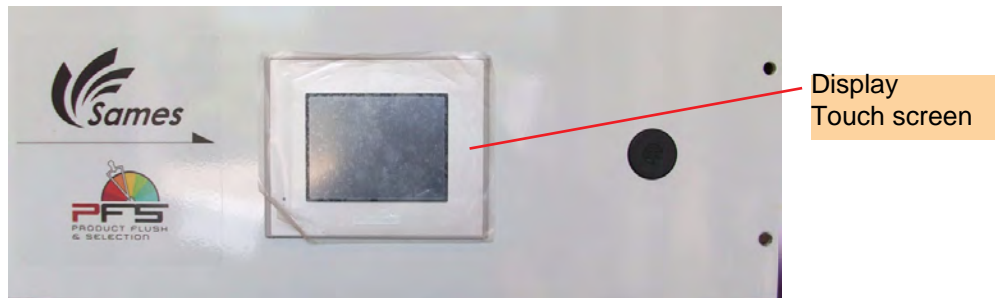
5.5. PFS module

5.5.1. Description

The PFS module can control up to two color changing blocks (6 colors per block), one per circuit SBOX
The PFS module is in 19" 4U rackable format, in steel sheets painted RAL 7035.

This module mainly consists of 1 micro-PLC with a touch screen, and 1 set of 10 distributors 2 x 3/2 or double distributors 3/2.

View of the front panel:

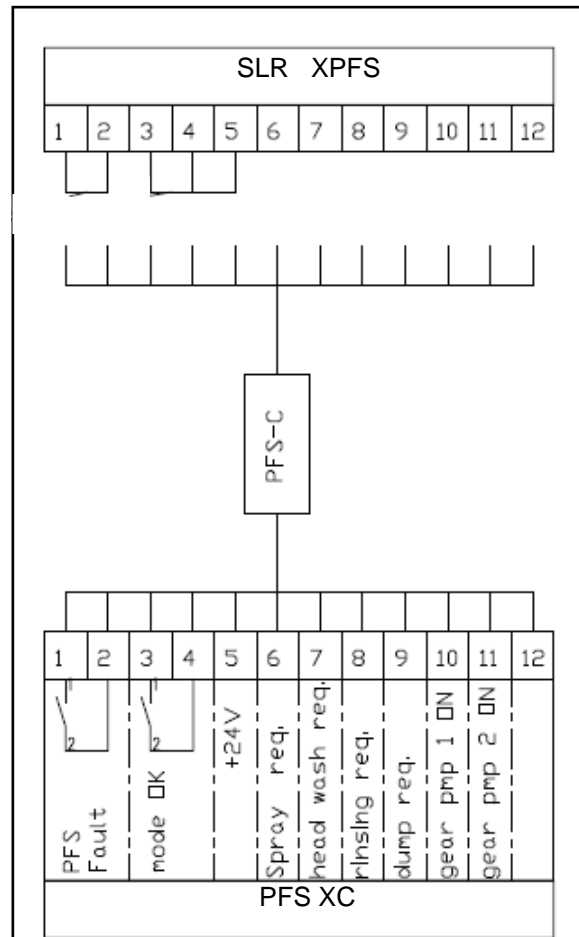
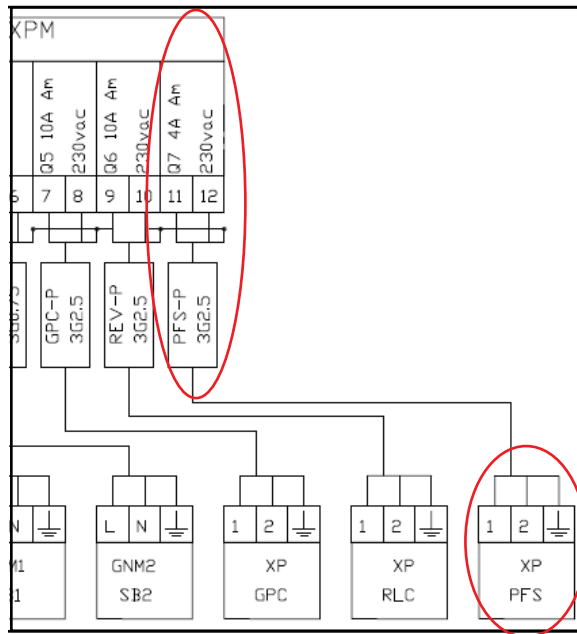


View of the rear panel:



5.5.1.1. SLR module interfaces

XP and XC links are pre-assembled at the plant.



5.5.1.2. BR-BCC - pneumatic interface

The supply connection of the distributor block is connected using polyurethane hoses with a diameter of 5.5/ 8.

Continued 20A pressure, downstream of the general solenoid valve.

Distributor exhaust gases are vented via silencers.

Distributor output hoses are connected using 2.7/4 diameters.

Distributor outputs:

1YV528 Head rinsing air	1YV5211 Circuit rinsing air	1YV81.1 Color 1 Circuit 1	1YV81.3 Color 3 Circuit 1	1YV81.5 Color 5 Circuit 1	2YV528 Head rinsing air	2YV5211 Circuit rinsing air 2	2YV81.1 Color 1 Circuit 2	2YV81.3 Color 3 Circuit 2	2YV81.5 Color 5 Circuit 2
1YV536 Head rinsing solvent	1YV533 Circuit rinsing solvent 1	1YV81.2 Color 2 Circuit 1	1YV81.4 Color 4 Circuit 1	1YV81.6 Color 6 Circuit 1	2YV536 Head rinsing solvent	2YV533 Circuit rinsing solvent 2	2YV81.2 Color 2 Circuit 2	2YV81.4 Color 4 Circuit 2	2YV81.6 Color 6 Circuit 2
BR	BCC				BR	BCC			
Circuit 1					Circuit 2				

5.6. REV 600

5.6.1. Description

For the REV 600 control module [see RT no. 6316](#) and [see RT no. 6317](#).

The REV 600 module can pilot up to 2 two "up and down" RFV robots.

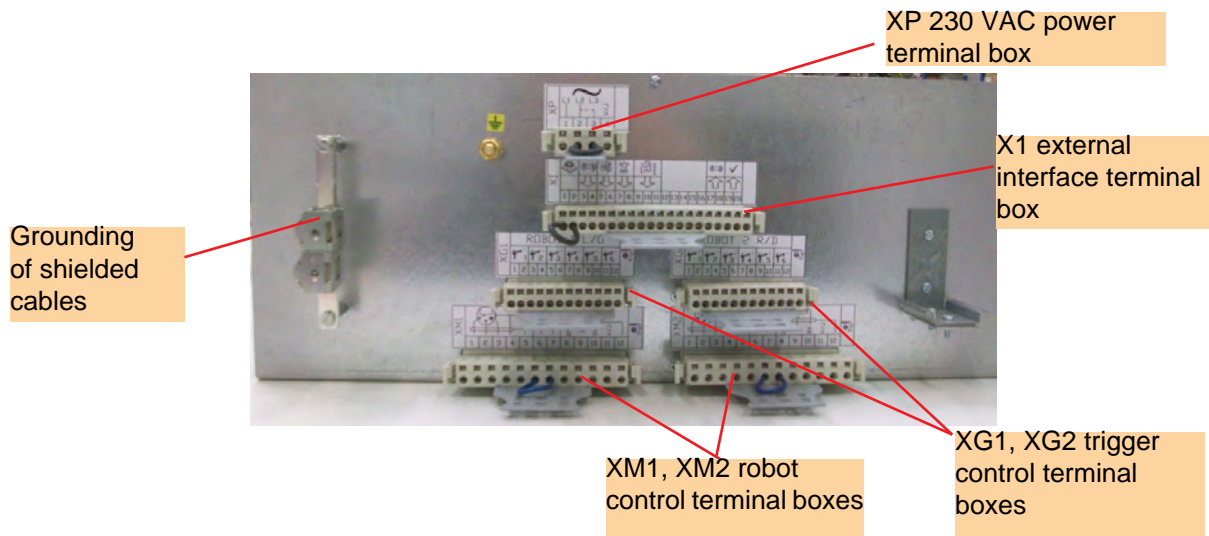
The module can also control the spraying and high voltage triggers for the SBOX modules, based on customer information (conveyor operation, booth entrance part detection, etc.)

The REV 600 module is in 19" 4U format, in galvanised steel sheets, with 1 side in aluminium painted pantone red (200C).

Front control panel:



Rear view:



5.6.2. Connection

Connectors	Type	Purpose
XP	3 female points, 7.5mm pitch	Single phase 230 Vac supply to the SLR panel, Shunt between terminals 2 and 3
XI	20 female points, 5mm pitch	External interfaces - Shunt between XI 1&2 (external emergency stop) - XI 19&20 fault transferred to the SLR rack - Data from the SLR (*): - Conveyor operation - Part detection
XG1	12 female points, 7.5mm pitch	Robot 1 trigger control, used for SBOX (spray trigger and high voltage trigger, to terminal box XC2 of the SLR module)
XG2	12 female points, 7.5mm pitch	Robot 2 trigger control, used for SBOX (spray trigger and high voltage trigger, to terminal box XC2 of the SLR module)
XM1	12 female points, 7.5mm pitch	Interface with robot 1: - Motor power (3*230 VAC) - Motor temperature sensor (shunted if not used) - Potentiometer feedback (via a zener barrier)
XM2	12 female points, 7.5mm pitch	Interface with robot 2: - Motor power (3*230 VAC) - Motor temperature sensor (shunted if not used) - Potentiometer feedback (via a zener barrier).

Important: Trigger check, with 2 SBOXes:

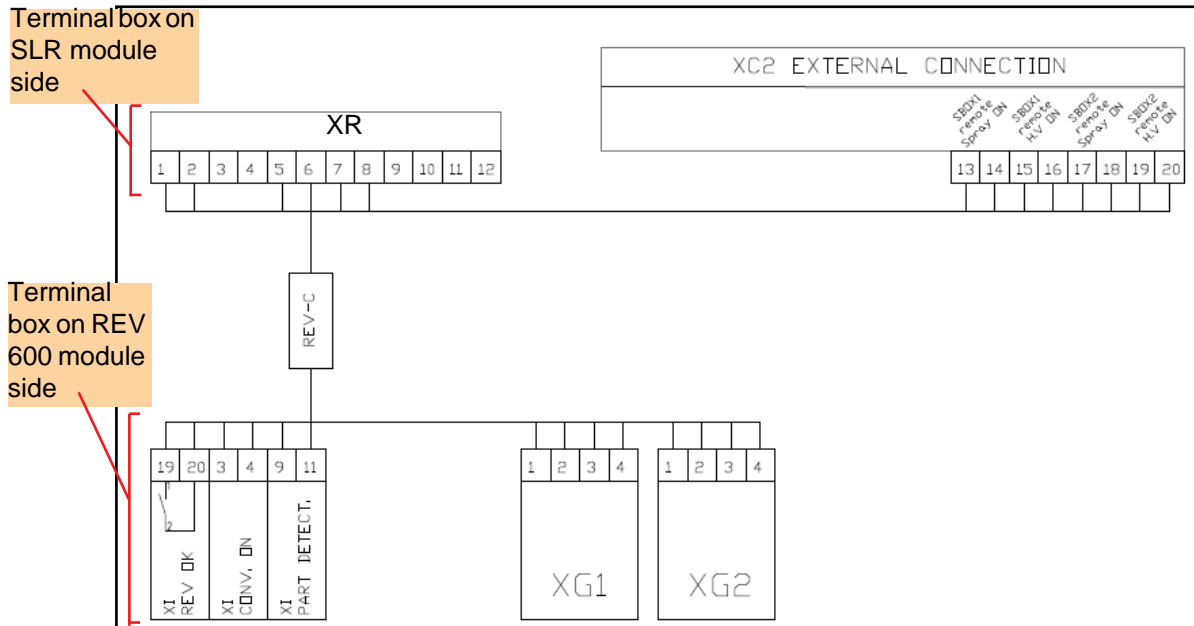
Each sprayer or gun is considered to be mounted on a separate robot by default (ROBOT 1 and ROBOT 2).

If this is not the case (2 PPH or TRP, installed on one single robot), the remote control triggers for SBOX-2 and the XC2 terminal box (terminals 17, 18, 19 and 20), must be connected to the XG1 terminal box (terminals 5, 6, 7 and 8).

(*): With previous versions of the SLR panel, part detection data and booth ventilation feedback must be transferred to connector X1, and relaying is now an internal process.

5.6.2.1. SLR interfaces

These connections are pre-assembled at the plant.



5.6.2.2. Interfaces with robots

Refer to the user manual for REV 600 ([see RT no. 6316](#)) for connections to the terminal boxes XM1 and XM2.

5.7. RLC module

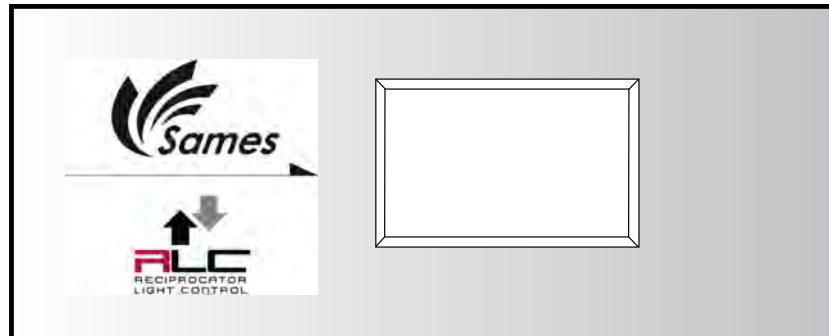
5.7.1. Description

The RLC module can control up to 2 two "up and down" robots.

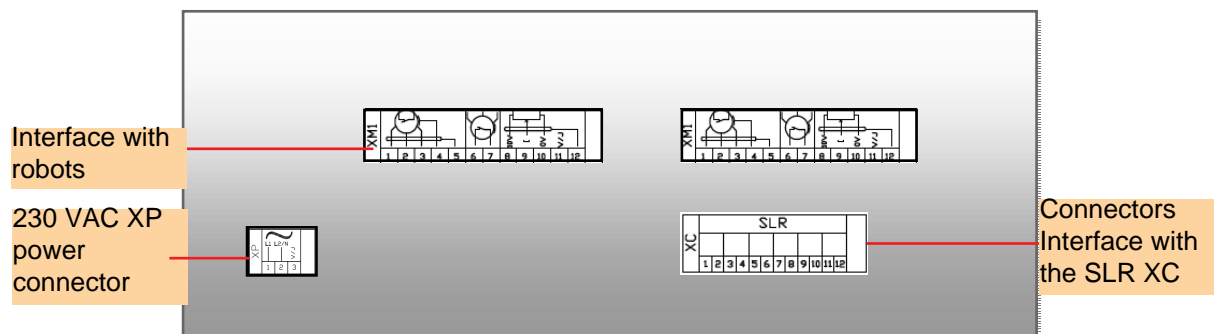
The RLC module is in 19" 4U rackable format, in steel sheets painted RAL 7035.

This module mainly consists of two speed controllers, with an embedded micro-controller, and 1 touch screen for the human-machine interface.

View of the front panel:



View of the rear panel:



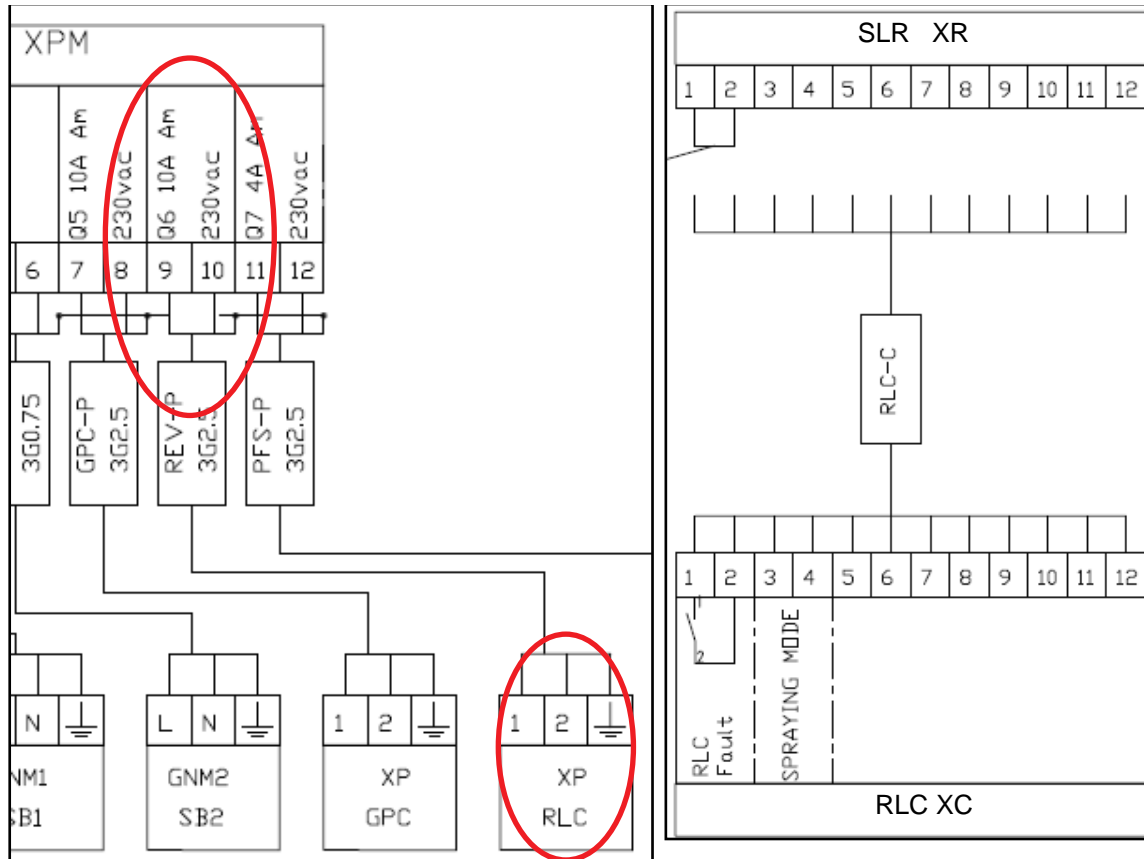
5.7.2. Connection

Interfaces with modules pass via connectors at the rear of the module.

Connectors	Type	Purpose
XP	3 female points, 7.5 mm pitch	Supplies the SLR panel in single phase 230 Vac.
XC	12 female points, 5 mm pitch	Interfaces with the SLR module
XM1	12 female points, 7.5 mm pitch	Interface with robot 1
XM2	12 female points, 7.5 mm pitch	Interface with robot 2

5.7.2.1. SLR interfaces

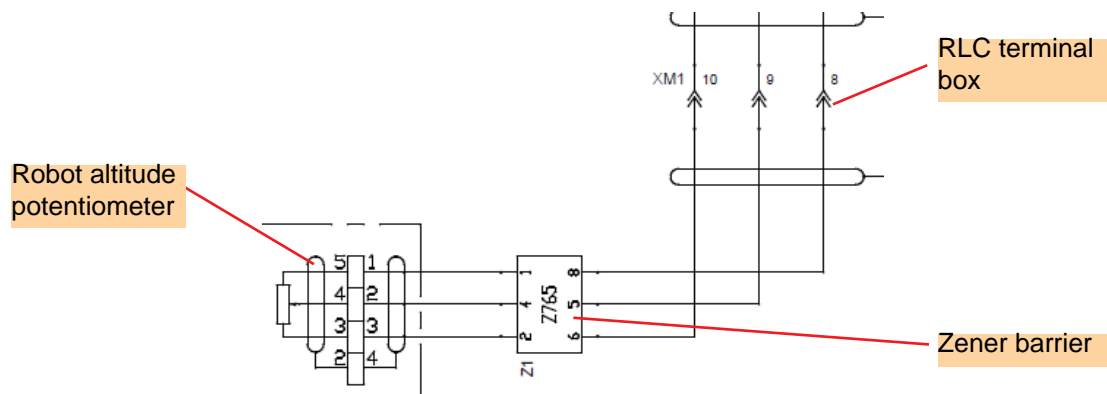
XP and XC links are pre-assembled at the plant



5.7.2.2. Robot interface

XM1 or XM2 terminal boxes:

N°	Type	Description
1	Robot 1 U phase	Motor characteristics: U: 230 VAC (3 phases) , delta cabling for 400V/230V motors. P=0.75kW Cos_ = 0.73 In = 3.55A Recommended cable: shielded 4G1.5 Shielding connected to the grounding system via a collar.
2	Robot 1 V phase	
3	Robot 1 W phase	
4	Robot 1 G/Y ground	
5	RLC logic input	Pump 1 motor thermal fault sensor contact Shunted if not used.
6		
8	10 VDC	Robot in bottom position: signal near to 0 VDC Robot in top position: signal near to 10 VDC A ZENER Z765 barrier must be used if the robot is in a dangerous area. The barrier is fitted behind the RLC module. Recommended cable: shielded 4G*0.75 Shielding connected to the grounding system via a collar.
9	Potentiometer signal –Var. 1 analogue input	
10	0 VDC	



6. Spare parts

Module	Reference	Description	Qty	Sales unit	Level Spare parts (*)
SLR	910009451	Micro-PLC with IO extension programmed, SLR V1.4	1	1	3
SLR	910014339	Micro-PLC with IO extension programmed, SLR V \geq 2.0	1	1	3
SLR, RLC, GPC, PFS	E1TALM208	24V power supply	1	1	3
SLR	110001627	PNOZ S4 emergency stop relay	1	1	2
Any module	110000966	Fem. plug-in connector 3 pts 7.5 mm pitch	1	1	2
Any module	E4PTRF587	Fem. plug-in connector 12 pts 7.5 mm pitch	1	1	2
Any module	E4PTRF588	Fem. plug-in connector 12 pts 5mm pitch	1	1	2
Any module	E4PTRF590	Fem. plug-in connector 20 pts 5mm pitch	1	1	2
SBOX	1517071	GNM 200 control module (see RT no. 6213)	1	1	3
SBOX BELL with PPH707	220000010	Turbine speed control card 100 krpm (see RT no. 6423)	1	1	3
SBOX BELL	220000157	Turbine speed control card 60 krpm (see RT no. 6423)	1	1	3
SBOX BELL	E6GPSR067AT	ZENER barrier for turbine card	1	1	2
SBOX BELL	220000163	Optional rate valve	1	1	2
SBOX BELL	220000160	0-10 bar pressure switch	1	1	2
SBOX BELL with PPH707	R4RSUR012	Booster	1	1	2
SBOX BELL	160000143	1-micron G 1/4 air filter	1	1	2
SBOX	220000258	Panel pressure regulator - G 1/4" - 0-8 bar	1	1	2
SBOX	220000261	0-6 bar pressure gauge for front fitting, D40	1	1	2
SBOX	220000262	0-4 bar vertical pressure gauge, D40	1	1	2
SBOX	220000263	0-6 bar vertical pressure gauge, D40	1	1	2
SBOX	220000260	Distributor 3/2, 24 VDC	2	10	2
RLC	910014343	Programmed RLC variator 1 (0.75 KW)	1	1	3

RLC	910014344	Programmed RLC variator 2 (0.75 KW)	1	1	3
RLC	910014340	Programmed RLC display	1	1	3
RLC	E6GPSR077AT	Zener barrier for RLC	1	1	2
GPC	910014346	Programmed GPC variator 1 (0.37 KW)	1	1	3
GPC	910014347	Programmed GPC variator 2 (0.37 KW)	1	1	3
GPC	910014341	2-pump programmed GPC display	1	1	3
PFS	910014342	Programmed PFS PLC display	1	1	3
PFS	220000259	Distributor 2*3/2, 24 VDC	1	1	2

(*)

Level 1: Standard preventive maintenance

Level 2: Corrective maintenance

Level 3: Exceptional maintenance