OPTIONS

SLC X-TRA 100-800 kVA

Index

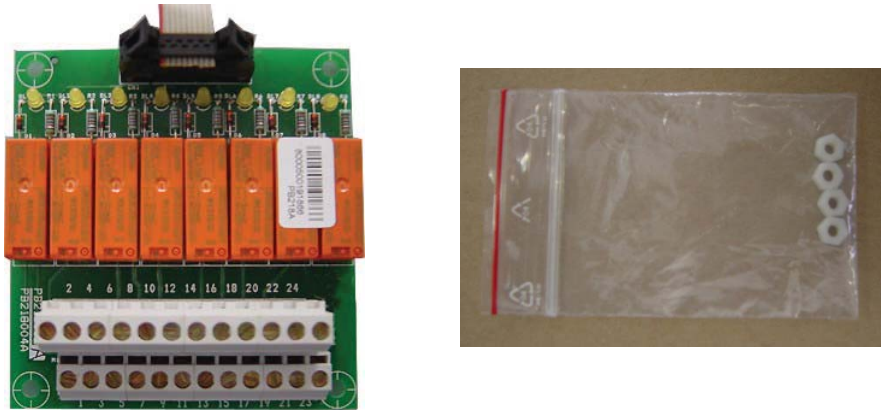
Index of pictures

A) SRC RELAY CARD OPTION

1. CONTENTS OF PACKAGE

This optional device is provided with the following components:

- SRC Interface Card
- 4 plastic nuts
- Installation and User Manual (this document)



Picture 1 – Contents of the package

2. FUNCTION

The SRC card is used to repeat to a remote location some UPS status and alarms, by means of SPDT (Single-Pole-Double-Throw) voltage free contacts.

In normal condition with no Alarms and all Status Ok, all the relays Status are energized.

2.1 INSTALLATION

For the installation of the board it is necessary to shut the unit down completely, transferring the load on MBCB (Manual Bypass), refer to the operating manual of the UPS for the correct procedure.

WARNING

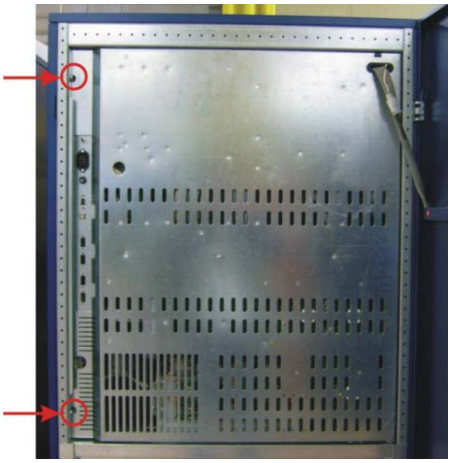
During manual bypass operation the load is supplied directly by the mains, therefore continuous supply is not guaranteed.

2.2 UPS 60...800KVA 3PH-3PH

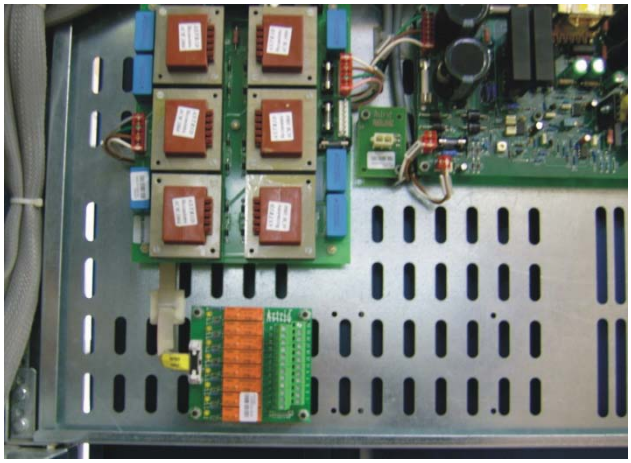
After the load is transferred on MBCB and the unit is completely switched off, open the front cover plate as shown in the Picture 4.

Place the SRC Board on the plastic support, fix with the plastic nuts contained in the package and connect the flat cable W50 to CN1 of the SRC Board.

Connect the wires to the Alarms/Status that is to be monitored.



Picture 2 – Front cover plate removal



Picture 3 – SRC installation

2.3 OPERATION

Start up the UPS following the correct procedure (refer to the Operating Manual).

Verify that without any alarms and with all status present all the relays are energized.

According to the Table1 it is possible to simulate the Alarms/Status and verify that they are transmitted remotely.

Relay	Alarms/Status	Status	M1		Led	
			Pins	Status	Name	Status
RL1	Alarm = General Alarm	Not energized	2-3	Open	D1	Off
			1-2	Closed		
RL2	Alarm = Mains fault	Not energized	5-6	Open	D2	Off
			4-5	Closed		
RL3	Alarm = Battery low	Not energized	8-9	Open	D3	Off
			7-8	Closed		
RL4	Alarm = Inverter out tolerance	Not energized	11-12	Open	D4	Off
			10-11	Closed		
RL5	Alarm = Bypass feed load	Not energized	14-15	Open	D5	Off
			13-14	Closed		
RL6	Status = Booster OK & not (BCB open)	Energized	17-18	Closed	D6	On
			16-17	Open		
RL7	Status = Inverter feeds the load	Energized	20-21	Closed	D7	On
			19-20	Open		
RL8	Status = Bypass OK	Energized	23-24	Closed	D8	On
			22-23	Open		

Table 1 – SRC Relays Map

Output Relays Specification:

Voltage 120 VAC Current 1A

Voltage 50 VDC Current 1A Resistive Load

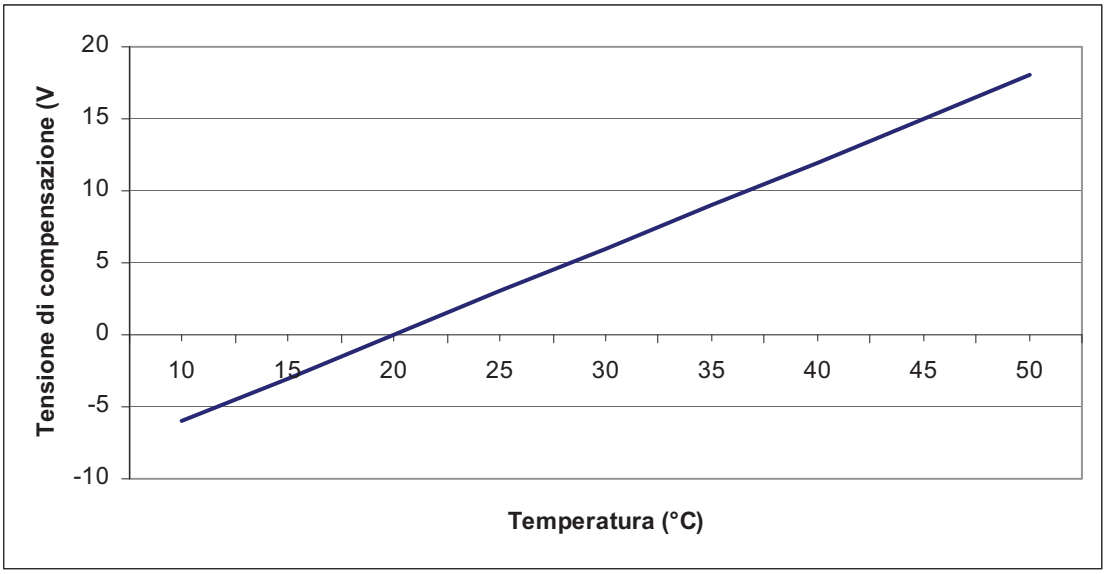
B) THERMAL PROBE OPTION

1. FUNCTIONS

The following devices, namely the “battery" thermal probe, the “battery and UPS modules” thermal probe as well as the thermal probe for external battery cabinet allow to carry out a thermal compensation by measuring the temperature of the battery compartment / cabinet.

The UPS is able to recognize the presence of the temperature probe/s automatically, to carry out the measurement/s and to perform a thermal compensation of the battery.

The compensation of the battery charging voltage is carried out according to the graph shown in Figure 1, where the compensation voltage is subtracted from the floating voltage at a temperature of 20°C.



Picture 1 – Battery compensation algorithm

Once the device has been properly installed, the temperature measurement/s can be read on the UPS front panel. In fact, a new surfing menu “Temperatures” where the information will be displayed, will be shown in the measurements section.

2. INSTALLATION

2.1 UPS EQUIPPED WITH THERMAL PROBE OPTION

To install the “battery" thermal probe for external battery cabinet already assembled by the manufacturer on the UPS, carry out all the operations specified below.

WARNING

When inserting the probe into the battery compartment or into the external battery cabinet, we recommend that you pay special attention not to short-circuit the battery.

2.1.1 Thermal probe for external battery cabinet UPS 100…800kVA 3ph-3ph UPS;

The present thermal probe is already installed in the UPS as shown in the photos below. So remove the panel of the external battery cabinet and place the thermal probe between the battery trays on free air, in central position if possible.

Picture 1 – Position of thermal probe for external battery cabinet for 100…160kVA 3ph-3ph UPS

Picture 2 – Position of thermal probe for external battery cabinet for 200…300kVA 3ph-3ph UPS

Picture 3 – Position of thermal probe for external battery cabinet for 400…800kVA 3ph-3ph UPS

At the end of the abovementioned operations, close/place the front panel of the UPS and of the external battery cabinet back to its position and start up the UPS, following the instructions indicated in the operating manual of the unit.

To ensure that the installation has been carried out properly, go to the “Temperatures” menu in the “Measurements” section and make sure the values read match the actual temperatures.

2.2 INSTALLATION OF THE OPTIONAL THERMAL PROBE KIT

2.2.1 Thermal probe for external battery cabinet for UPS 100…800kVA 3ph-3ph

Follow the instructions below to carry out the installation of the thermal probe kit for the external battery cabinet.

Switch the UPS off completely, transferring the load to Manual Bypass if needed (refer to the operating manual for the correct procedure).

ATTENTION

During Manual Bypass operations the load is directly supplied by the input, therefore no continuity can be assured to the loads.

After transferring the load to the Manual Bypass and switching the UPS off, for the correct installation of the thermal probe follow the instructions . Operating instruction for the installation of the thermal probe for external battery cabinet" (attached to the thermal probe kit for the external battery cabinet).

ATTENTION

When inserting the probe into the external battery cabinet, we recommend that you pay special attention not to short-circuit the battery.

At the end of the abovementioned operations, close the UPS door, put back the front panel of the battery cabinet and start up the UPS, following the instructions indicated in the operating manual of the unit.

To ensure that the installation has been carried out properly, go to the "Temperatures" menu in the "Measurements" section and make sure the values read match the actual temperatures.

C) REMOTE PANEL OPTION

1. CONTENTS OF PACKAGE

The package of the REMOTE PANEL device contains the following components:

- Remote panel
- AC/DC power supply (230 Vac – 12 Vdc)
- Installation and user manual (this document)

ATTENTION

For the connection you need a cable twisted cat.5 not included on the package.

Picture 1 – Contents of the package

2. FUNCTION

The remote panel is used to display 4 independent visual alarms. Each event activates the flashing of the last LED “General Alarm” and an acoustic signal that can be silenced by the user. The regular operating conditions of the UPS are indicated by the lighting of LED “UPS OK”.

3. INSTALLATION

For the installation of the remote panel it is necessary to shut the UPS down completely, transferring the load to MBCB (manual bypass). Refer to the operating manual of the UPS for the correct procedure in order to set the unit for Manual Bypass.

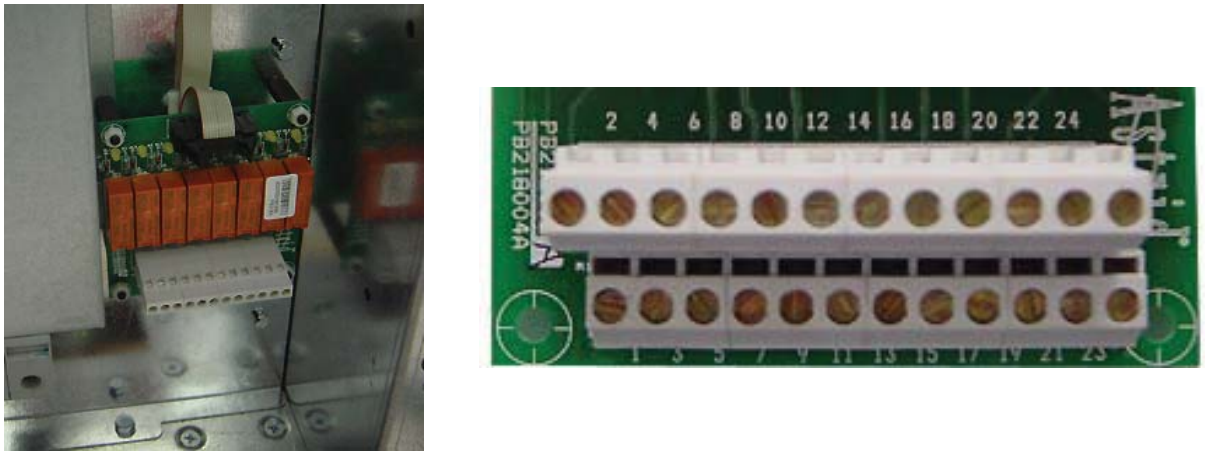
WARNING

During Manual Bypass the load is supplied directly by the mains, therefore continuous supply is not guaranteed.

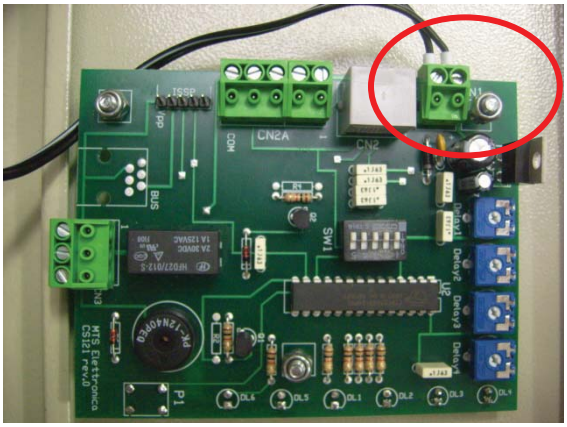
To install the remote panel it is necessary to carry out an interconnection between the CN2A connector of the remote panel and the SRC card via a 5-wire cable (as indicated in Table 1 and Figure 3).

To perform the connection you need to open the remote panel removing the two screw.

The cable must pass through the hole illustrated in Fig. 5.



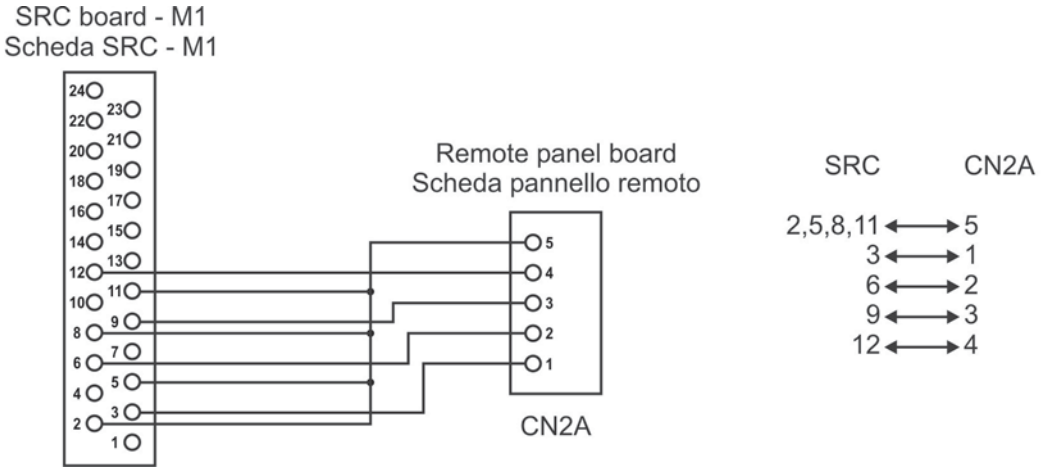
Picture 2 – Terminal board M1 of UPS’ card SRC



Picture 3 – Remote panel connector CN2A

SRC			REMOTE PANEL
Relay	**Alarms**	**Pin M1**	**Pin CN2A**
RL 1	General alarm	2	5
		3	1
RL 2	Mains failure	5	5
		6	2
RL 3	Battery autonomy end	8	5
		9	3
RL 4	Inverter out of tolerance	11	5
		12	4

Table 1 – UPS-Remote panel connections



Picture 4 – Exemplifying diagram of the connection between the remote panel and UPS' card SRC

Picture 5 – Remote panel: cable hole

Then close the remote panel and feed it via the AC/DC power supply provided with.

4. OPERATION

Start the UPS following the start-up procedure (refer to the operating manual of the UPS).

At the end of the UPS start-up, in case of normal operation, namely with no alarm present, the indication “UPS OK” must be displayed on the remote panel (green LED).

Following alarms are displayed on the panel:

DISPLAYED ALARMS	LED COLOUR
Inverter out of tolerance	Red
Battery autonomy end	Red
Mains failure	Red
General alarm	Red

Led “General alarm” lights every time an alarm is present on the UPS.

Whenever an alarm is present on the remote panel, an acoustic signal will also be activated that can be silenced by the user (by pressing the relevant button) and the last LED on the remote panel "GENERAL ALARM" will light.

D) REMOTE CONNECTION RS485 INTERFACE

1. CONTENTS OF PACKAGE

This optional device is provided with the following components:

- RS485 Interface Card SLOT-REM-PV
- Installation and User Manual (this document)

Picture 1 – Contents of the package

2. FUNCTION

A subset of the Modbus-RTU protocol is implemented over an RS485 bus.

UPS works as a client in a client-server architecture, that is, the UPS is normally in listening mode. Only in case of a request it will answer and therefore occupy the line for the transmission. At the end of the transmission, it will release the line for further request.

As per RS485 standard specifications, maximum cables length must not exceed 400 m.

NOTE

Modbus is developed by MODICON Inc. USA. In case of irregularity the document “Modicon Modbus Protocol Reference Guide” should be referenced.

3. INSTALLATION

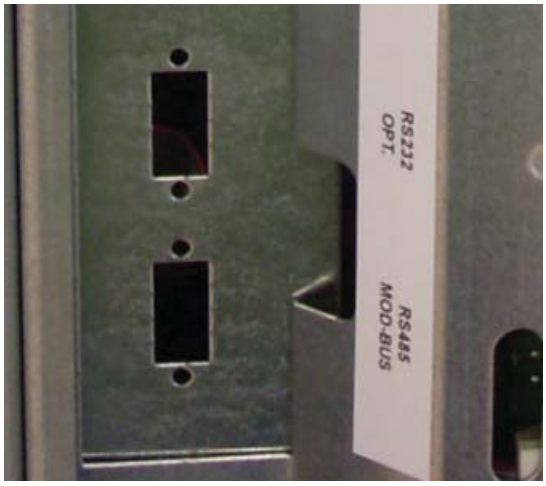
For the installation of the board it is necessary to shut the unit down completely, transferring the load on MBCB (Manual Bypass), refer to the operating manual of the UPS for the correct procedure.

WARNING

During manual bypass operation the load is supplied directly by the mains, therefore continuous supply is not guaranteed.

UPS 100-125-160- 200-250-300 -400-500-600-800kVA 3Ph-3Ph FXS: After the load is transferred on MBCB and the unit is completely switched off, open the front door and the front metal protection. Verify that the flat cable connected to the bottom slot is W30B (SLOT-REM-PV).

Connect the Board SLOT-REM-PV to the flat cable **W30B** and fix with the two screws.



Picture 2 – Mounting position of the SLOT-REM-PV card (100...800kVA series FXS)

Picture 3 – RS485 Board after the installation (100...800kVA series FXS)

4. MOD-BUS DESCRIPTION

Protocol ModBus is a high-level communication protocol (layer 7 of the OSI model) which defines the format and the communication mode between a “Master” that interrogates the system and one or more “Slaves” that reply to the Master’s queries.

The protocol defines how the Master and the Slave establish and interrupt the communication, how the transmitter and the receiver must be identified, the exchange modality of error messages and the error detection technique.

One Master can be connected to up to 247 Slave units on a ModBus line.

Only the Master may start a transmission, which can be of “question/answer” type with a single Slave, or of “broadcast” type, where the message is sent to all the devices and there is no reply from the Slaves.

The transmission occurs in RTU (Remote Terminal Unit) mode and the end of the request message to the device is identified by an interval of 100ms where no data is received. The structure of questions and answers is the following:

Slave address	Function	Data	CRC
1 byte	1 byte	“N” bytes	2 bytes

The functions made available by the protocol are identified via the codes contained in the PDU (Protocol Data Unit).

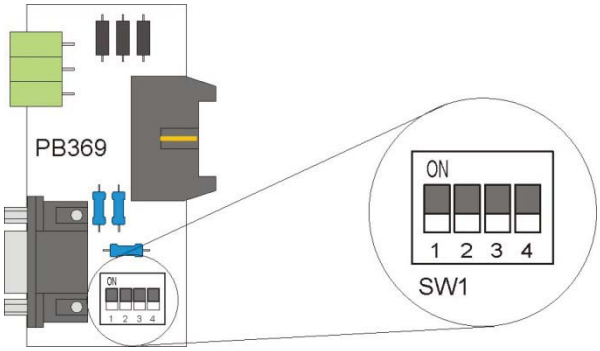
4.1 CABLE SPECIFICATION

The minimum specification requirements for the cable used to connect the data network are listed below.

- Type of cable: **twisted pairs**
- Minimum cross section: **22 AWG**
- Shield on each pair: **provided**
- Cable shielding: **copper braid (coverage > 65%)**
- Operating temperature: **-20° C … +80° C**
- Velocity of propagation: **> 66%**
- Capacity: **< 80 pF**
- Nominal attenuation: **< 2 dB/mt @ 1 MHz**
- Maximum operating voltage: **300Vrms**

4.2 CONFIGURATION DIP-SWITCHES OF MODBUS NETWORK

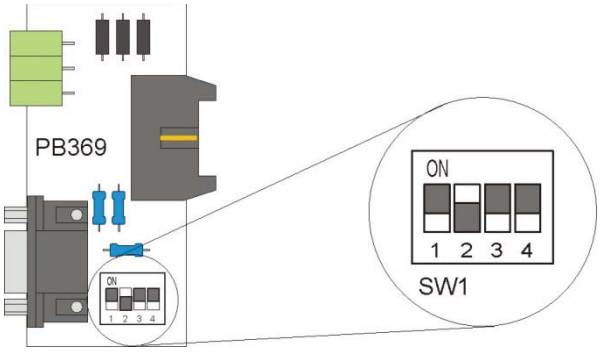
A termination resistor can be installed on UPS and the communication network be properly biased by simply moving a dip-switch installed on the Modbus interface card PB369 (SLOT-REM-PV).



Picture 4 – Dip-switch of interface card Modbus PB369

4.3 TERMINATING THE DATA NETWORK

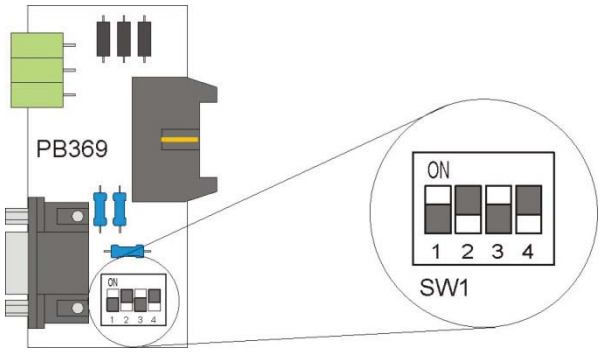
To connect the termination resistor of the data line, simply move dip-switch 2 to ON.



Picture 5 – Data line termination on card PB369

4.4 BIASING THE DATA NETWORK

To bias the data line, simply move dip-switch 1 and dip-switch 3 to ON.



Picture 6 – Data line biasing on card PB369

4.5 RS485 CONFIGURATION

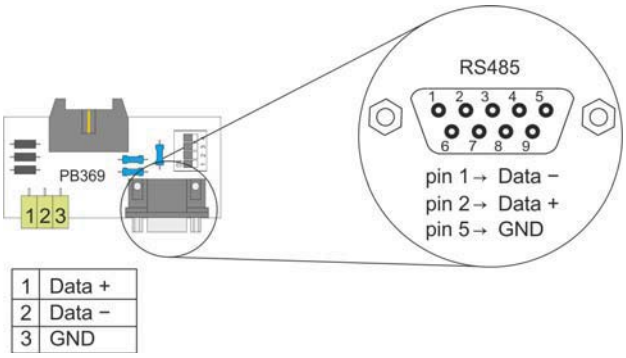
The default configuration parameters of RS485 ModBus communication that can be changed via the interface software are:

- Baud Rate: **9600**
- Start bit: **1**
- Data bit: **8**
- Stop bit: **1**
- Parity: **No**
- Hardware flow control: **none**

Only the ModBus function **Read Holding Register (0x03)** is implemented in the system.

4.6 CONNECTION TERMINAL BOARD

The following figure it shows the pins configuration of the SUB-D9 and M1connector of the card PB369.



Picture 7 – Connector SUB-D9 on card PB369

Follow general rules about wiring connection.

- Connection cables must be of “twisted-pair” shielded type, in order to reduce the noise that may deteriorate the quality of transmission.
- For the impedance matching of the communication network (termination), the resistors of the devices connected at the beginning and at the end of the transmission line must be used.
- The biasing can be performed on two different points of the network (using a maximum of 2x devices).

5. OPERATION

After the installation of the Board SLOT-REM-PV interface it is necessary to set the properly address of the Mod-Bus device.
You can change the MOD- BUS address from UPS display.

If the programmation of the new Mod-Bus address will be fine, the led will change the colour, orange-yellow-green, if an error occur, the led will became red and a message will be displayed.

The query message specifies the starting register and quantity of register to be read. Registers are addressed starting at zero.

The register data in the response message are packed as two bytes per register. For each register, the first byte contains the high order bits and the second contains the low order bits.

32-bit UPS values are packed in two registers and, again, the first register contains the high order bits.

The following registers are supported by function code 03:

REGISTER	DESCRIPTION	BIT	FORMAT	RANGE	NOTES
Booster					
Input Analog Measures					
7	Input voltage RMS (phase U)	0-15	Integer	0/9999	x10 V
8	Input voltage RMS (phase V)	0-15	Integer	0/9999	x10 V
9	Input voltage RMS (phase W)	0-15	Integer	0/9999	x10 V
10	Input current RMS (phase U)	0-15	Integer	0/9999	x10 A
11	Input current RMS (phase V)	0-15	Integer	0/9999	x10 A
12	Input current RMS (phase W)	0-15	Integer	0/9999	x10 A
13	Input mains frequency	0-15	Integer	0/999	x10 Hz
14	Input power	0-15	Integer	0/99999	x 10kVA
15	Input power factor	0-15	Integer	0/100	%
Bypass analog measures					
27	Bypass voltage RMS (phase U)	0-15	Integer	0/9999	x10 Vac
28	Bypass voltage RMS (phase V)	0-15	Integer	0/9999	x10 Vac
29	Bypass voltage RMS (phase W)	0-15	Integer	0/9999	x10 Vac
30	Bypass frequency	0-15	Integer	0/9999	x10 Hz
Battery and DC-link analog measures					
16	DC negative voltage	0-15	Integer	0/999	x10Vdc
17	DC positive voltage	0-15	Integer	0/999	x 10Vdc
18	DC Voltage	0-15	Integer	0/999	x10 Vdc
19	Battery current	0-15	Integer	-999/999	x10 A
20	Battery autonomy	0-15	Integer	0/9999	s
21	Battery autonomy	0-15	Integer	0/100	%
22	Battery temperature	0-15	Integer	-999/999	x10°C
Alarms / Status / Info					
1	A01 – Mains fault	0	boolean		
	A02 – Input wrong sequence	1			
	A03 – Booster stopped	2			
	A04 – Booster fault	3			
	A05 – DC voltage Fault	4			
	A06 – Battery in test	5			
	A07 – BCB Open	6			
	A08 – Battery discharge	7			
	A09 – Battery autonomy end	8			
	A10 – Battery fault	9			
	A11 – Shortcircuit	10			
	A12 – Stop timeout short circuit	11			
	A13 – Inverter out of tolerance	12			
	A14 – Bypass wrong sequence	13			
	A15 – Bypass fault	14			
	A16 – Bypass feed load	15			

2	A17 – Retransfer blocked	0	boolean		
	A18 – MBYP Close	1			
	A19 – OCB Open	2			
	A20 – Overload	3			
	A21 – Thermal image	4			
	A22 – Bypass switch	5			
	A23 – EPO Close	6			
	A24 – Inv High temperature/ DC fuse blow	7			
	A25 – Inverter off	8			
	A26 – Comunication error	9			
	A27 – EEPROM Error	10			
	A28 – Critical fault	11			
	A29 – Maintenance required	12			
	A30 – General alarm	13			
	A31 – MBCB Bus close	14			
	A32 – EPO Bus close	15			
3	A33 – Asymmetric load	0	boolean		
	A34 – Service required	1			
	A35 – Diesel mode	2			
	A36 – Dc fast shutdown	3			
	A37 – High temperature rectifier	4			
	A38 – Inverter feed load	5			
	A39 – Inverter error loop	6			
	A40 – SSI fault	7			
	A41 – Booster error loop	8			
	A42 – Input Fuse blow	9			
	A43 – Current error loop	10			
	A44 – Desaturation IGBT Inverter	11			
	A45 – High temperature SSW	12			
	A46 – Lost redundancy	13			
	A47 – Sending parameters error	14			
	A48 – Reception parameters error	15			
4	A49 – Test mode error	0	boolean		
	A50 – SSW blocked	1			
	A51 – Battery temperature out of tolerance	2			
	A52 – Dc compensation error	3			
	A53 – Firmware Error	4			
	A54 – Can error	5			
	A55 –	6			
	A56 –	7			
	A57 –	8			
	A58 –	9			
	A59 –	10			
	A60 –	11			
	A61 –	12			
	A62 –	13			
	A63 – Starting sequence blocked	14			
	A64 –	15			

5	S01 – Booster Ok	0	boolean		
	S02 – Battery Ok	1			
	S03 – Inverter Ok	2			
	S04 – Inverter feed load	3			
	S05 – Inverter Synchronized	4			
	S06 – Bypass Ok	5			
	S07 – Bypass feed load	6			
	S08 – Boost charge	7			
	S09 – Inverter Master Sync	8			
	S10	9			
	S11	10			
	S12	11			
	S13	12			
	S14	13			
	S15	14			
	S16	15			
6	S17	0	boolean		
	S18	1			
	S19	2			
	S20	3			
	S21	4			
	S22	5			
	S23	6			
	S24	7			
	S25	8			
	S26	9			
	S27	10			
	S28	11			
	S29	12			
	S30	13			
	S31	14			
	S32	15			
44	UPS name (ch.0)	0-15	Ascii	0/255	
45	UPS name (ch.1)	0-15	Ascii	0/255	
46	UPS name (ch.2)	0-15	Ascii	0/255	
47	UPS name (ch.3)	0-15	Ascii	0/255	
48	UPS name (ch.4)	0-15	Ascii	0/255	
49	UPS name (ch.5)	0-15	Ascii	0/255	
50	UPS name (ch.6)	0-15	Ascii	0/255	
51	UPS name (ch.7)	0-15	Ascii	0/255	
52	UPS name (ch.8)	0-15	Ascii	0/255	
53	UPS name (ch.9)	0-15	Ascii	0/255	
54	UPS serial number (ch.0)	0-15	Ascii	0/255	
55	UPS serial number (ch.1)	0-15	Ascii	0/255	
56	UPS serial number (ch.2)	0-15	Ascii	0/255	
57	UPS serial number (ch.3)	0-15	Ascii	0/255	
58	UPS serial number (ch.4)	0-15	Ascii	0/255	
59	UPS serial number (ch.5)	0-15	Ascii	0/255	
60	UPS serial number (ch.6)	0-15	Ascii	0/255	
61	UPS serial number (ch.7)	0-15	Ascii	0/255	
62	UPS serial number (ch.8)	0-15	Ascii	0/255	
63	UPS serial number (ch.9)	0-15	Ascii	0/255	
64	OEM serial number (ch.0)	0-15	Ascii	0/255	
65	OEM serial number (ch.1)	0-15	Ascii	0/255	
66	OEM serial number (ch.2)	0-15	Ascii	0/255	

67	OEM serial number (ch.3)	0-15	Ascii	0/255	
68	OEM serial number (ch.4)	0-15	Ascii	0/255	
69	OEM serial number (ch.5)	0-15	Ascii	0/255	
70	OEM serial number (ch.6)	0-15	Ascii	0/255	
71	OEM serial number (ch.7)	0-15	Ascii	0/255	
72	OEM serial number (ch.8)	0-15	Ascii	0/255	
73	OEM serial number (ch.9)	0-15	Ascii	0/255	
74	Device type	0-15	Integer	0/255	
75	UPS nominal power	0-15	Integer	0/9999	kVA
76	Input nominal voltage RMS	0-15	Integer	0/9999	V
77	Input nominal voltage negative tolerance	0-15	Integer	0/9999	%
78	Input nominal voltage positive tolerance	0-15	Integer	0/9999	%
79	Inverter nominal voltage RMS	0-15	Integer	0/9999	V
80	Inverter nominal voltage tolerance	0-15	Integer	0/9999	%
81	Bypass nominal voltage RMS	0-15	Integer	0/9999	V
82	Bypass nominal voltage tolerance	0-15	Integer	0/9999	%
83	Output nominal voltage RMS	0-15	Integer	0/9999	V
84	Output nominal voltage tolerance	0-15	Integer	0/9999	%
85	Mains nominal frequency	0-15	Integer	0/9999	Hz
86	Mains nominal frequency tolerance	0-15	Integer	0/9999	%
87	Bypass nominal frequency	0-15	Integer	0/9999	Hz
88	Bypass nominal frequency tolerance	0-15	Integer	0/9999	%
89	Battery capacity	0-15	Integer	0/9999	Ah
90	Battery nominal autonomy	0-15	Integer	0/9999	min
91	Floating voltage	0-15	Integer	0/9999	Vdc
92	Battery autonomy end threshold	0-15	Integer	0/9999	Vdc
93	Parallel enabled	0-15	Boolean	0/1	
94	Parallel index	0-15	Integer	0/8	
95	Number of units in parallel	0-15	Integer	0/8	
96	ModBus address	0-15	Integer	0/255	
97	Rectifier firmware – version	0-15	Integer	0/999	
98	Rectifier firmware – revision	0-15	Integer	0/999	
99	Rectifier firmware – work in progress	0-15	Integer	0/999	
100	Rectifier firmware – personalization	0-15	Integer	0/999	
101	Inverter firmware – version	0-15	Integer	0/999	
102	Inverter firmware – revision	0-15	Integer	0/999	
103	Inverter firmware – work in progress	0-15	Integer	0/999	
104	Inverter firmware – personalization	0-15	Integer	0/999	
105	SSW firmware – version	0-15	Integer	0/999	
106	SSW firmware – revision	0-15	Integer	0/999	
107	SSW firmware – work in progress	0-15	Integer	0/999	
108	SSW firmware – personalization	0-15	Integer	0/999	
Inverter					
Inverter output analog measures					
23	Inverter voltage RMS (phase U)	0-15	Integer	0/9999	x10 Vac
24	Inverter voltage RMS (phase V)	0-15	Integer	0/9999	x10 Vac
25	Inverter voltage RMS (phase W)	0-15	Integer	0/9999	x10 Vac
26	Inverter frequency	0-15	Integer	0/999	x10 Hz
UPS output analog measures					
31	Output voltage RMS (phase U)	0-15	Integer	0/9999	x10 Vac
32	Output voltage RMS (phase V)	0-15	Integer	0/9999	x10 Vac
33	Output voltage RMS (phase W)	0-15	Integer	0/9999	x10 Vac
34	Output current RMS (phase U)	0-15	Integer	0/9999	x 10A
35	Output current RMS (phase V)	0-15	Integer	0/9999	x 10A
36	Output current RMS (phase W)	0-15	Integer	0/9999	x 10A
37	Output frequency	0-15	Integer	0/999	x10 Hz

38	Output power	0-15	Integer	0/99999	x 10 kVA
39	Output power	0-15	Integer	0/99999	x 10 kW
40	Load percentage (phase U)	0-15	Integer	0/999	%
41	Load percentage (phase V)	0-15	Integer	0/999	%
42	Load percentage (phase W)	0-15	Integer	0/999	%
43	UPS temperature	0-15	Integer	-999/999	x10 °C

(¹) These measures are present only for UPS with 3-phase input
(²) These measures are present only for UPS with 3-phase output
(³) For UPS with Nominal Power > 40kVA: the current measures are x10 Aac

Table 1 – Mod-Bus Bytes mapping

E) GALVANIC INSULATION AND ADAPTATION TRASFORMER

1. INTRODUCTION

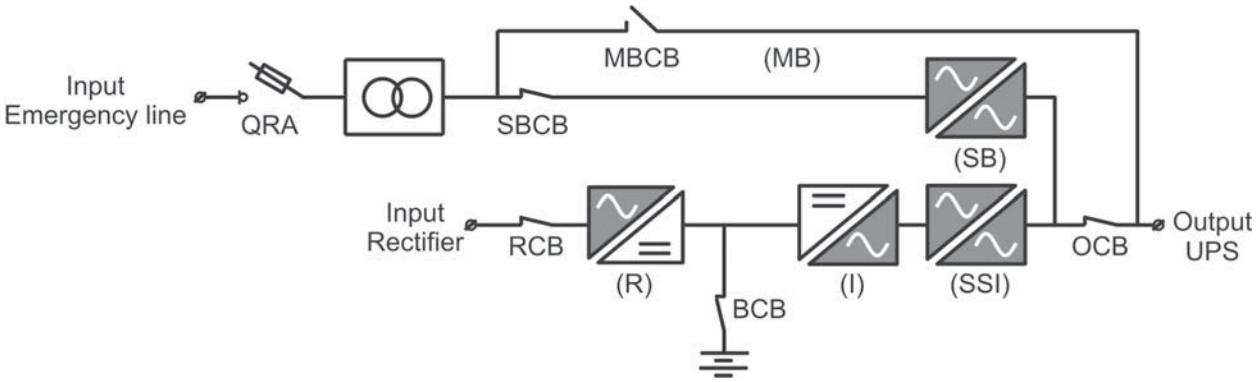
The scope of this manual is to briefly describe the parts that compose the isolating section of the bypass line and to guide the user to a correct installation of the equipment in its operating environmnent.

The user will have to read and carry out correctly the instructions given in this manual with particular attention to safety according to CEI 64-8 standards and DPR 46-90.

The manufacturer declines all responsibility of damage to people or things due to non-fulfilment of the above instructions.

2. GENERAL DESCRIPTION

To obtain galvanic insulation and/or voltage adaptation to the bypass line a isolating transformer assembled in a suitable cabined is supplied.



Picture 1 – Block diagram

N.B.: MBCB is optional for 400-800kVA line.

IMPORTANT

As the applications are always tied to the customers requests, the mechanical dimensions of the cabinet are defined during the tendering phase. Please contact our technical office for detailed information.

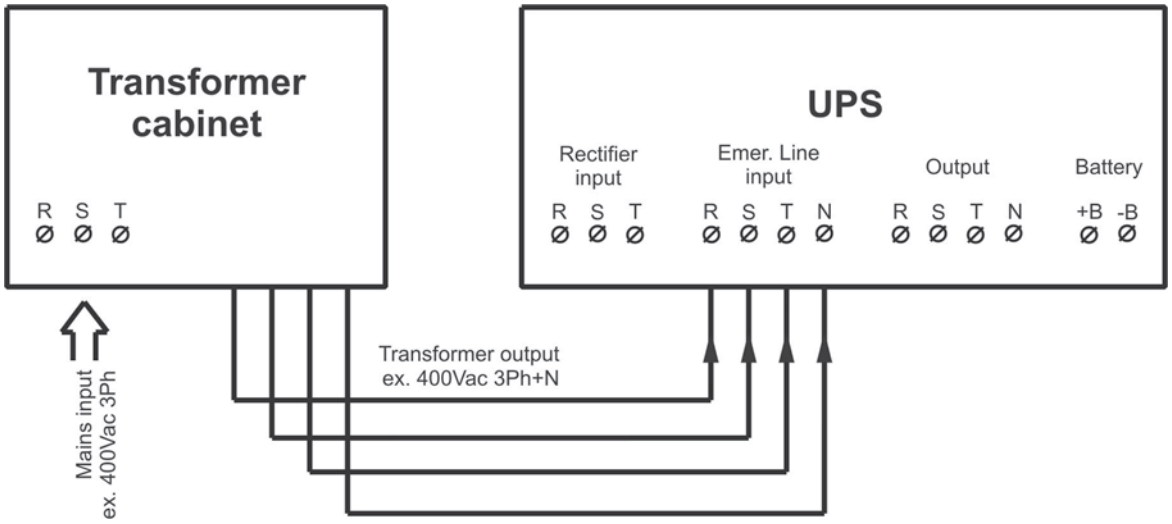
Due to the presence of the QRA switch for the supply of the isolating transformer, the start-up, shut-down and manual bypass procedures are different to those described in the standard operating manual. Therefore please read carefully the correct start-up, shut down and manual bypass procedure described in this manual.

As wrong start-up procedures can cause the interruption of the power supply and/or bad damage to the equipment the manufacturer declines any responsibility of damage to people or thing due to the non-fulfilment of the given instructions.

3. CONFIGURATIONS

3.1 THREEPHASE UPS 100...800KVA

Also for three phase line has a separate input for the bypass line.
In figure 2 the interconnection diagram between transformer and UPS is shown.



Picture 2 – Connection of the transformer cabinet – UPS 3Ph 100...800kVA

3.2 START-UP PROCEDURE

Please follow the below described UPS start-up procedure

ATTENTION

Before UPS start-up check that the EPO (emergency power-off) pushbutton has not been pressed. If it has been pressed, please put it back to normal position.

1) Close QRA.

2) Close RCB and wait that the display is energized.

3) Follow the instructions given on the display.

4) If the start-up succeeds “START-UP END” will be visualized on the display.

3.3 SHUT-DOWN PROCEDURE

Please procede as follows to shut-down the UPS.

1) Open OCB.

2) Open BCB.

3) Open SBCB.

4) Open RCB.

5) Open QRA.

4. MANUAL BY-PASS PROCEDURE FOR STAND-ALONE CONFIGURATION

4.1 MANUAL BYPASS TRANSFER PROCEDURE

Please procede as follows to put the UPS in manual bypass.

ATTENTION

When the UPS is in manual-bypass the load is supplied directly by the mains and therefore continuity is not guaranteed.

1) Posisition “NORMAL-BYPASS” switch on Bypass.

2) Close MBCB

3) Open RCB and BCB.

4) Open SBCB and OCB.

NOTE

To supply the load through the manual bypass it is necessary that the QRA switch is closed.

4.2 RETURN FROM MANUAL BYPASS PROCEDURE

In order to return the UPS to normal operating condition please proceed as described below.

With “NORMAL-BYPASS” on Bypass and MBCB closed:

1) Close RCB and follow instructions given on the display.

N.B.: MBCB is optional for 400-800kVA line.

5. MANUAL BY-PASS PROCEDURE FOR PARALLEL CONFIGURATION

5.1 MANUAL BYPASS TRANSFER PROCEDURE

Please procede as follows to put the UPS in manual bypass.

ATTENTION

When the UPS is in manual-bypass the load is supplied directly by the mains and therefore continuity is not guaranteed.

1) Position all the Bypass switches on “Bypass” by commutation the system on Bypass (Led 6 orange on) for all the UPS’s of the system.

2) Close all more MBCB (all the inverters stop the modulation).

3) Starting from the UPS with the highest position to the one with the lowest position open all the switches OCB,SBCB,BCB and RCB in this order.

NOTE

To supply the load through the manual bypass QRA switch must be closed.

5.2 RETURN FROM MANUAL BYPASS PROCEDURE

The system is in Manual Bypass condition with one ore more MBCB switches closed and all the Bypass Switches in “Bypass” position according to the procedure.

To restart the system with continuity of the loads, the RCB of all the UPS’s of the system must be closed.

Follow step by step display procedure for any of system UPSes to avoid overloading of UPS static switches. When only two UPSes are connected you may close both RCBs, start UPS 1 consistently with display procedure, than start UPS 2.

N.B.: when “OPEN ALL MBCB” is requested open all the MBCB of all the UPS’s and/or MBCB on external cabinets.

N.B.: In systems with more than 2 UPS’s the return under continuity (inverter) is commanded from the programmation on mP card..

Therefore if 3 UPS’s are present with logic (N-1)/N the return under inverter occurs when the start-up of the second unit is concluded.

N.B.: MBCB is optional for 400-800kVA line.

Avda. de la Serra, 100
08460 Palautordera
BARCELONA
Tel. +34 93 848 24 00
902 48 24 00 (Only Spain)
Fax. +34 94 848 11 51
salicru@salicru.com
Tel. (S.T.S.) +34 93 848 24 00
902 48 24 01 (Only Spain)
Fax. (S.T.S.) +34 93 848 22 05
sst@salicru.com
SALICRU.COM

BRANCHES AND SERVICES AND TECHNICAL SUPPORT (S.T.S.)

BARCELONA
BILBAO
GIJÓN
LA CORUÑA
LAS PALMAS DE G. CANARIA
MADRID
MÁLAGA
MURCIA
PALMA DE MALLORCA
PAMPLONA
SAN SEBASTIÁN
SEVILLA
VALENCIA
VALLADOLID
ZARAGOZA

SUBSIDIARIES

CHINA
FRANCIA
HUNGRÍA
MARRUECOS
MÉXICO
PORTUGAL
REINO UNIDO
SINGAPUR

REST OF WORLD

ALEMANIA
ARABIA SAUDÍ
ARGELIA
ARGENTINA
BÉLGICA
BRASIL
CHILE
COLOMBIA
CUBA
DINAMARCA
ECUADOR
EGIPTO
FILIPINAS
HOLANDA
INDONESIA
IRLANDA
JORDANIA
KUWAIT
MALASIA
PERÚ
POLONIA
REPÚBLICA CHECA
RUSIA
SUECIA
SUIZA
TAILANDIA
TÚNEZ
UEA
URUGUAY
VENEZUELA
VIETNAM

Product Range

Uninterruptible Power Supply (UPS)
Lighting Flow Dimmer-Stabilizers (ILUEST)
Switch Mode Power Supplies
Static Inverters
Photovoltaic Inverters
Voltage Stabilisers and Power Line Conditioners