SX13 DIMMER REL.1.1

User Guide

WARNING: Don't connect the control cable on JP7 connector before checking the jumper configuration

Configuration Jumpers

The ner version of S13 diimer has 5 configuration jumpers. These jumpers are identified by the labels: **JP5**, **JP6**, **JP10**, **W1** e **W2** and their position can be found in the following picture:
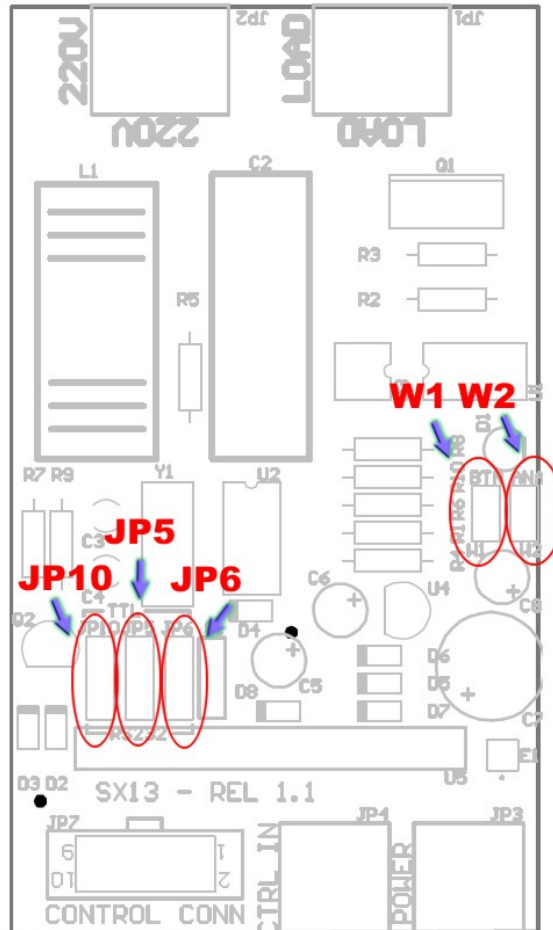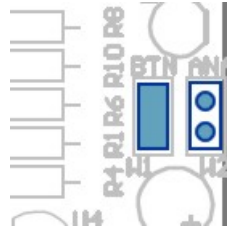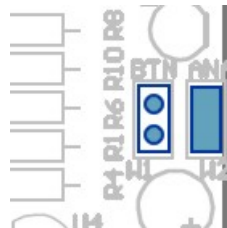
Needed configurations

The SX13 Dimmer is sold in three configurations:

- o SX13A with serial control
- o SX13B with analog control
- o SX13C with wireless control

The **SX13A** and **SX13C** versions must have the jumper W1 closed and the jumper W2 opened.


The **SX13B** version must have the jumper W1 opened and the jumper W2 closed.

There are no other configurations allowed.

Interface connector pinout

The connector JP7 is the interface connector between the serial line that controls the dimmer and the dimmer itself. The pinout of this connector can change according to the dimmer configuration: in the following table all the possibile combination are listed:
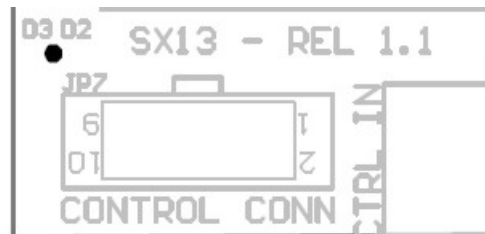
Numero PIN	Nome segnale	Config Alternativa
1	Data RX	NC
2	NC	
3	BTN_IN	
4	RTS	
5	NC	Data RX
6	NC	
7	DTR	
8	NC	
9	VCC	GND
10	GND	

The SX13 dimmer uses a serial protocol with the following parameters: 19200 baud, no parity, 1 stop bit.

The communication is one way, from the "master" (the PC or microcontroller that drives the board) toward the SX13 boards, so there is no answer to the sent commands. The only exception is represented by the wireless configuration: in this configuration the received command is echoed back to the master to ensure the correctness of reception.

Allowed configurations

In the following paraghraps all allowed configurations are detailed with the correspondig jumper position. Those configuration are applicable only to the SX13A and SX13C versions of the dimmer (except where otherway specified) because are applied to the serial communication.

TTL serial line with power source on the 10 poles flat cable

In this mode the dimmer is powered from the JP7 connector (pin 9 and 10 becoming respectively +5V and GND). The serial line is TTL with 0-5V levels. This interface is the standard for all the master board made by Area SX.
The Jumper JP6 must be inserted in this position also for SX13B dimmer if you plan to power the dimmer from the JP7 connector.
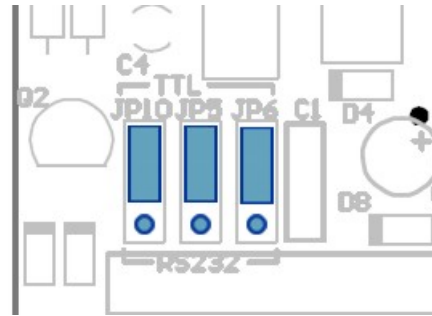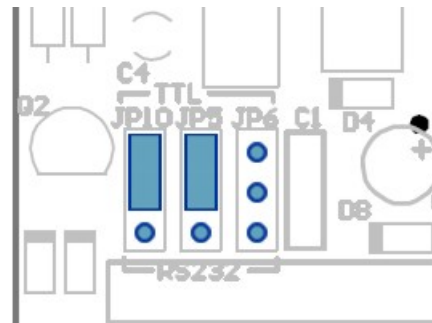
In this mode on the JP7 connector the following signals are available:

Numero PIN	Nome segnale
1	Data RX
2	NC
3	BTN_IN
4	RTS
5	NC
6	NC
7	DTR
8	NC
9	+5V
10	GND

TTL serial line with external power supply

In this modem the dimmer must be powered from the JP3 connector. The power supply level must be from 7.5V-15V CA or CC. The serial line is TTL level (0-5V).
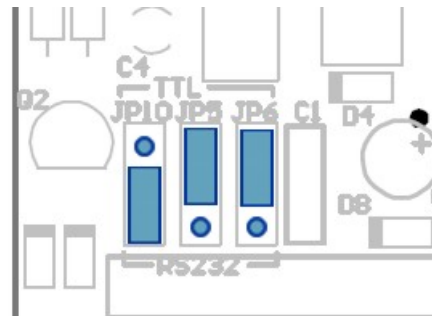

In this mode on the JP7 connector the following signals are available:

Numero PIN	Nome segnale
1	Data RX
2	NC
3	BTN_IN
4	RTS
5	NC
6	NC
7	DTR
8	NC
9	NC
10	GND

RS232 serial line with power on the 10 poles flat cable

In this configuration the dimmer is powered directly from the JP7 connector between pins 9 and 10 (+5V and GND). The serial line is RS232 compliant and is it available on the pin 1 of JP7.

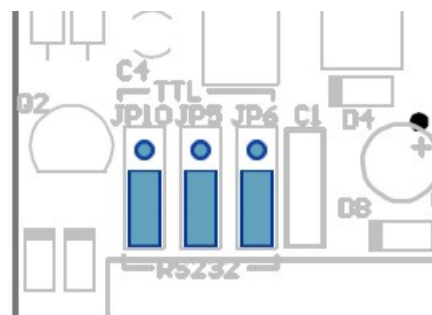In this mode on the JP7 connector the following signals are available:

Numero PIN	Nome segnale
1	Data RX
2	NC
3	BTN_IN
4	RTS
5	NC
6	NC
7	DTR
8	NC
9	+5V
10	GND

RS232 serial line on standard DB9 connector

In this configuration the dimmer can be controlled directly from an RS232 serial liner connected on a standard DB9 connector. The serial cable must be built with a flat 10 poles ribbon cable with a DB9 female connector.
The dimmer can be powered from JP3 connector or it can be powered directly from the DTR and RTS signals on serial line.
To let this "autopowered" mode work the control serial line must be RS232 compliant: some serial lines (the notebook serial line by example) are'nt fully compliants with this standard and so they can not work properly.

In this mode on the JP7 connector the following signals are available:

Numero PIN	Nome segnale
1	NC
2	NC
3	BTN_IN
4	RTS
5	Data RX
6	NC
7	DTR
8	NC
9	GND
10	GND

Wireless 433MHz serial line

In this configuration the dimmer can be controlled by a wireless serial line over a radio link. The radio trasmitter used is the ER400TRS that is provided by default with the SX13C version; you can also add the trasmitter to the SX13A version.
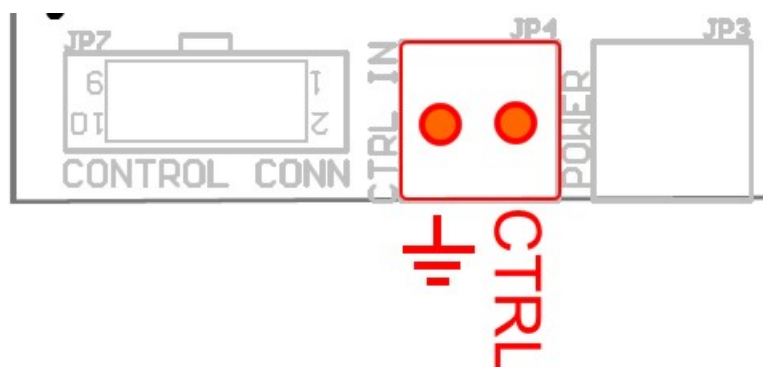The dimmer must be powered from the JP3 connector, with a voltage between 7.5 and 15V CC/AC. The jumper configuration must be:

In this mode the JP7 connector is not used.

Connector for external control signal

The external control signal can be applied on JP4 connector. The connector has the following pinout:

Serial Protocol

Command format

Byte 1	Byte 2	Byte 3	Byte 4
Command	Address	Data	Data Duplicate

All dimmer commands are 4 bytes long: the first byte is the command code, the second one the address of the dimmer that must receive the command; the third one is the data and the last byte is a replica of the data itself that is used internally to perform a basic check of integrity.

SX13 Addressing

Several SX13 boards can be connected over a single serial line; fot this reason each board has it's own address.

When a boards' chain receives a command each dimmer connected to the chain check if the address matches the internal address: if it matches the command is executed.

The addresses ranges from 0x01 (decimal 1) up to 0xFE (decimal 254).

The 0xFF (decimal 255) address is reserved and it is called "broadcast" address. When you send a command with the address byte that contains 0xFF all the dimmer boards connected to the chain execute the command, irrespective of their internal address.

The board address can be changed whenever you want using the proper command. When you change the board address it is stored in a permanent memory and it is retained even if the dimmer is powered off.

Command list

'L' Command:

This command sets the amount of power transferred to the load.
Valid data for this command ranges from 0x00 (no power transferred to the load) up to 0xFF (decimal 255) (all the power transferred to the load)

Command example:

Byte 1	Byte 2	Byte 3	Byte 4
'L' (ASCII 0x4C)	0x22	0x6A	0x6A

This command sets the load power value to 0x6A (106) on the board which address is 0x22 (34).

'S' Command

This command sets a new address for the board.
Valid data for the new address ranges from 0x01 to 0xFE.

If you have an SX13 board and you don't remember the address (or where the address has never been set) it is sufficient to connect the board on the serial line (eventually removing all the other SX13 boards) and send the 'S' command with a broadcast value (0xFF) in the address byte.

In this example we will set to 0x1C (28) the address of ALL the SX13 boards connected to the serial line:

Byte 1	Byte 2	Byte 3	Byte 4
'S' (ASCII 0x53)	0xFF	0x1C	0x1C

The following example shows a standard address change: we will change the dimmer from 0x22 address to 0x1D:

Byte 1	Byte 2	Byte 3	Byte 4
'S' (ASCII 0x53)	0x22	0x1D	0x1D