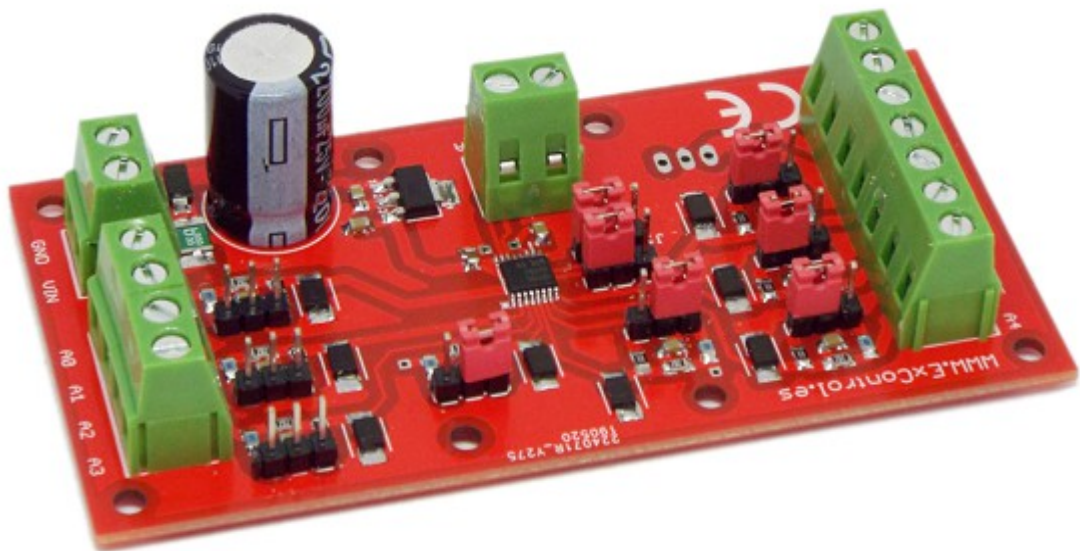


Versión 2.0

21-06-2019

# INDUSTRIAL I2C ANALOG INPUT

EXCONTROL



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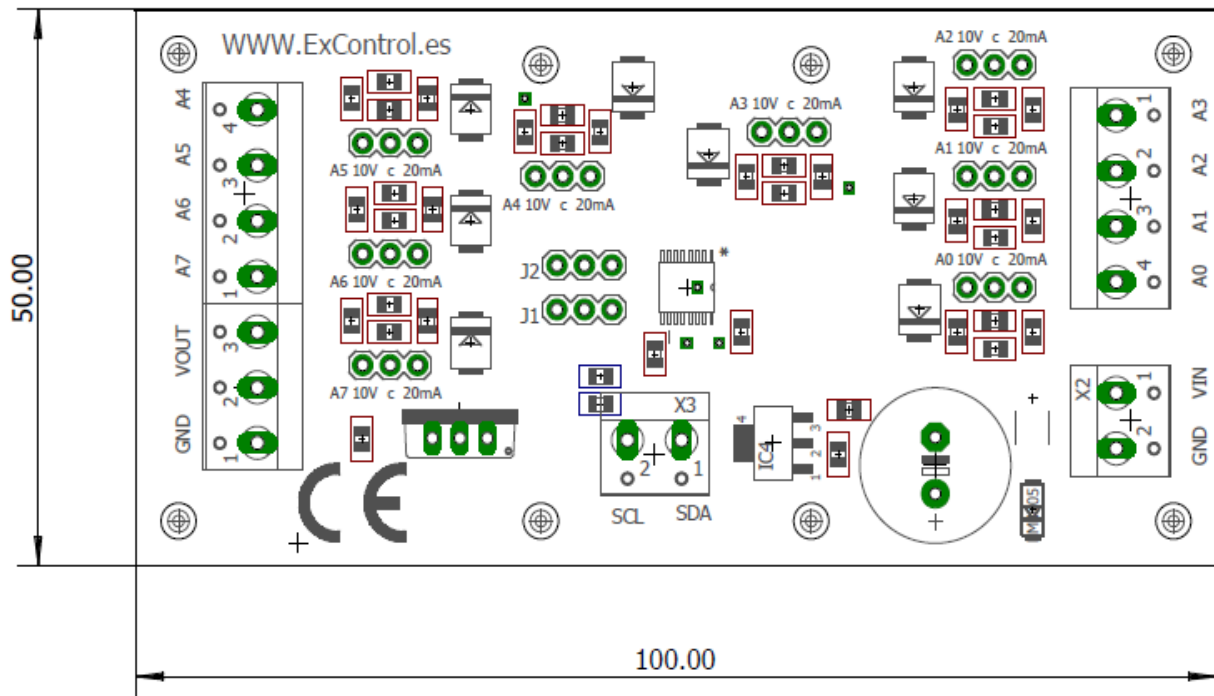
## 1 GENERAL DESCRIPTION

ExControl I2C Analog Input is an industrial extension, with tvs protection, The board can be connected voltage and current sources. It has 8 channels. Each channel accepts 0-3.3v, 0-10v, 0-20mA, 4-20mA.

It is compatible with arduino boards and other equipment compatible with i2c bus.

DESCRIPTION	QUANTITY	
Maximum Current	800mA max	Fuse protection and Polarity protection
Size	50x100mm	
Analog Inputs	8	<ul style="list-style-type: none"><li>• 0-10v</li><li>• 4-20mA</li><li>• 0-3,3v</li></ul>
I2C bus voltage	3.3v	Board designed for 3.3v, for five volts use the correct reference

## 2 MECHANICAL DIMENSIONS.



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## 3 PRECAUTIONS .

### 3.1 COMPATIBLE DEVICES.

This board works with standard 3,3v I2C Bus, arduino boards and other microcontroller are compatible.

### 3.2 INTENDED AUDIENCE.

This manual is intended for technicians, which must have knowledge on electrical systems..

### 3.3 GENERAL PRECAUTIONS..

The user must operate this board according to the performance specifications described in this manual.

ExControl products are not authorized for use in safety-critical applications where a failure of the product would reasonably be expected to cause severe personal injury or death.

Safety-critical applications include, without limitation, life support devices and systems, equipment or systems for the operation of nuclear facilities and weapons systems.

ExControl products are neither designed nor intended for use in military or aerospace applications or environments, nor for automotive applications or the automotive environment.

The Customer acknowledges and agrees that any such use of ExControl products is solely at the Customer's risk, and that the Customer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

#### **Warnings:**

Ignoring the directive may damage the controller.

Improper use of this product may severely damage the controller.

Refer to the controller's User Guide regarding wiring considerations.

Before using this product, it is the responsibility of the user to read the product's User Guide and all accompanying documentation.

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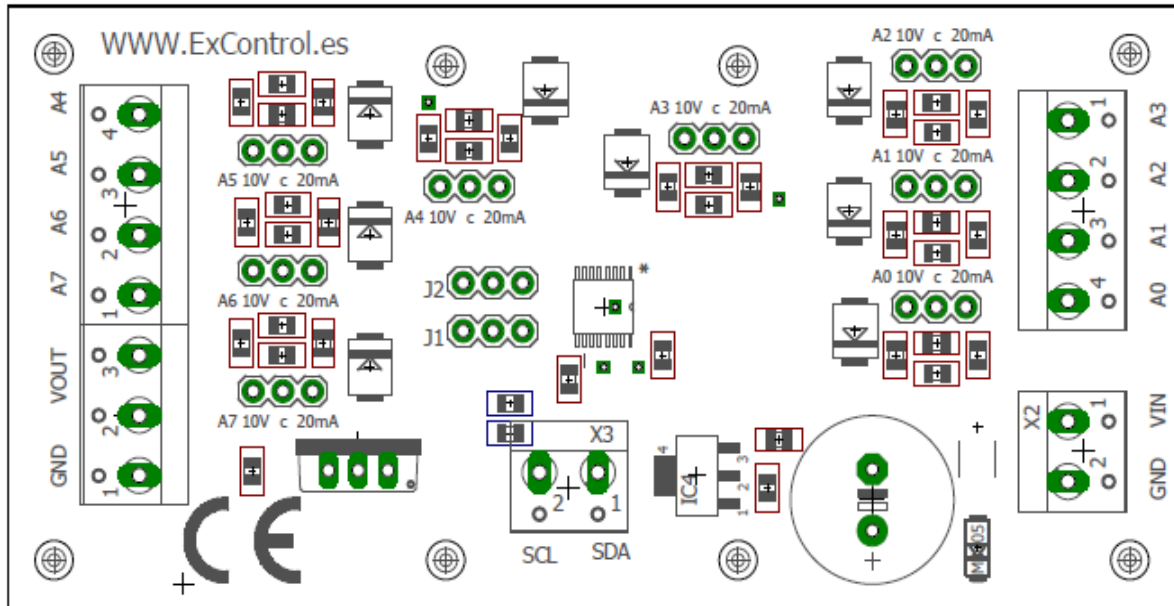
## 4 TECHNICAL SPECIFICATIONS.

### 4.1 GENERAL SPECIFICATIONS:

DESCRIPTION	
Power supply	12V VCC
Operating voltage range.	7 a 15 VCC
Power consumption	800mA max.
Shock resistance	5m/s <sup>2</sup> in the X, Y and Z direction 2 times
Ambient temperature (operating)	0° a 48°C
Ambient humidity (operating)	10% a 75% (no condensation)
Ambient environment	With no Corrosive gas.
Ambient temperature (storage)	- 20° to 60°C
Power supply holding time.	2ms min.
Weight	40g max.

## WIRING:

### 5.1 DEVICE PINOUT.



DESCRIPTION	FUNCTION
A0	Analog input 0
A1	Analog input 1
A2	Analog input 2
A3	Analog input 3
A4	Analog input 4
A5	Analog input 5
A6	Analog input 6
A7	Analog input 7
A8	Analog input 8
VIN	Power supply Positive
GND	Power supply GND.
VOUT	Optional, 78xx regulator output, only if installed by the customer, see technical note.

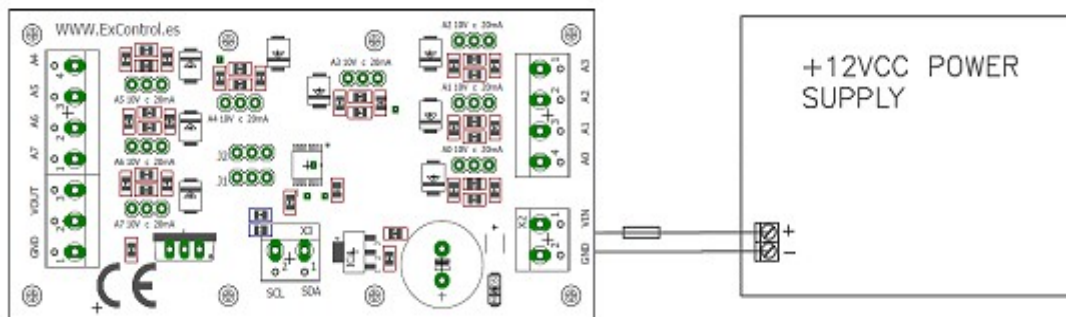


## 6.2 HOW TO CONNECT TO POWER SUPPLY..

The ExControl i2c extension card is powered by 12Vdc power supply ..

IMPORTANT, make sure that the power does not exceed 15 VDC.

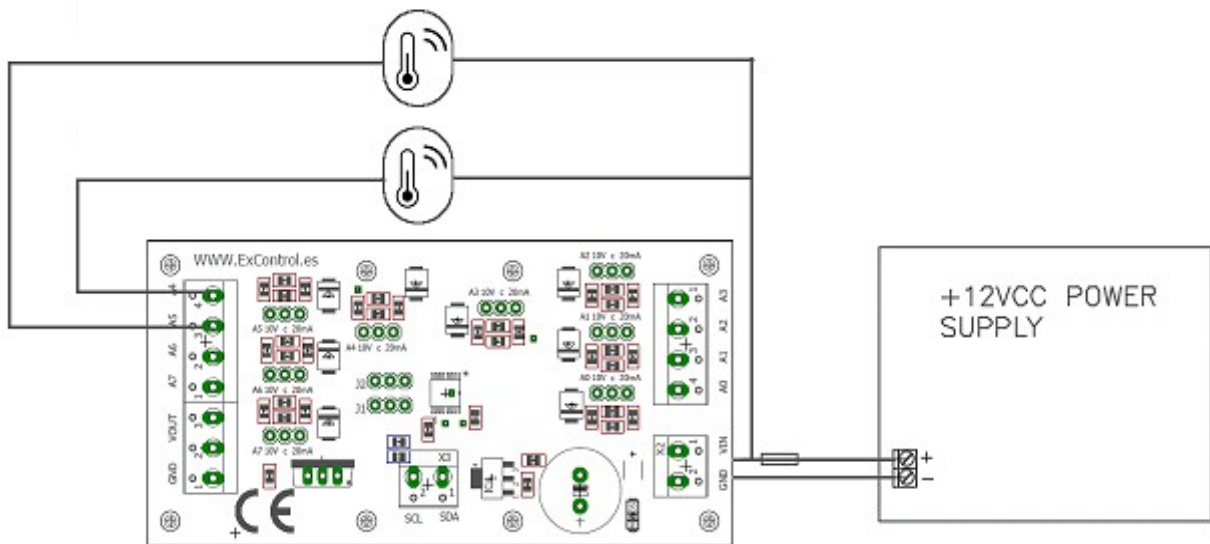
Connect the power supply according to the following image.



### 6.3 ANALOG INPUT SIGNAL CONNECTIONS..

The device has independent operating modes for each input, You can see this modes in this list.

- 0-10v
- 0-20mA
- 0-3,3v



## 7 I2C BUS:

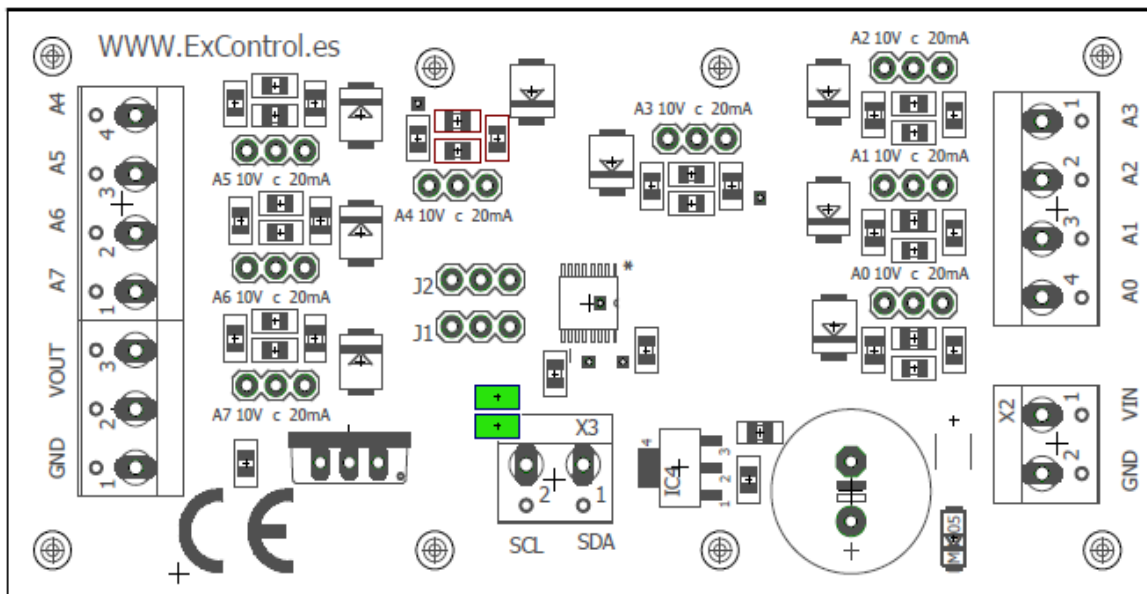
### 7.1 ESPECIFICACIONES GENERALES BUS I2C:

This allows communication with the device, the SDA (data line) and SCL (clock line) are screw terminals.

The i2c voltage level is **0-3.3v**.

The board has not pullup resistor, but can be installed on the bottom of the device.

The following image shows where you can intall the pull up resistors, the resistors are included in the package.



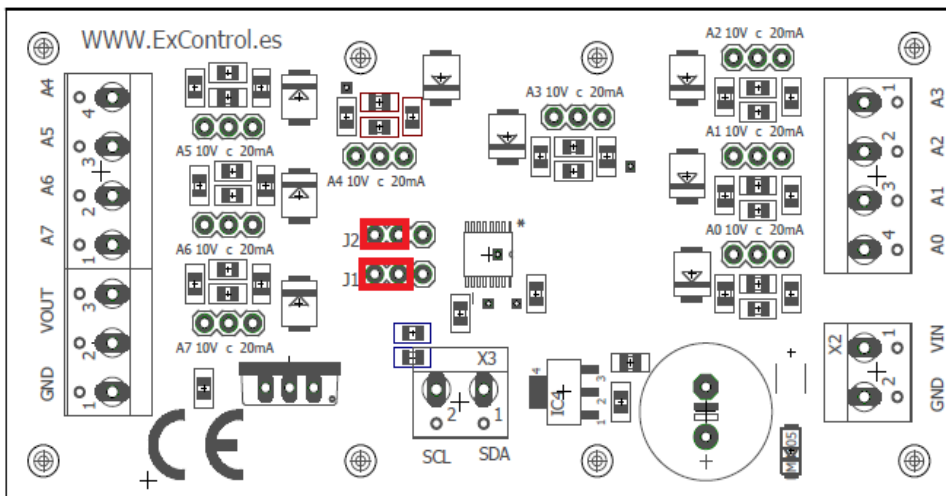
## 7.2 I2C ADDRESSING:

To device address use the addressing jumpers.

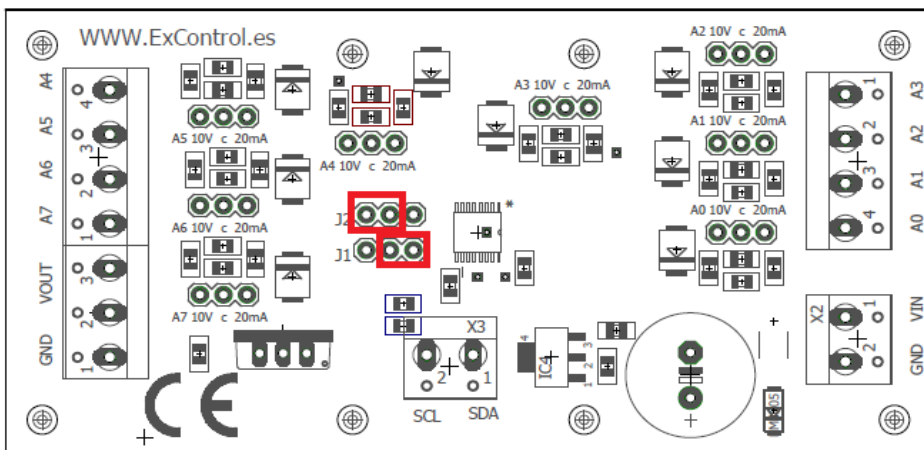
It has 4 possible addresses, you can use four cards on the same bus.

Use the following image as a reference

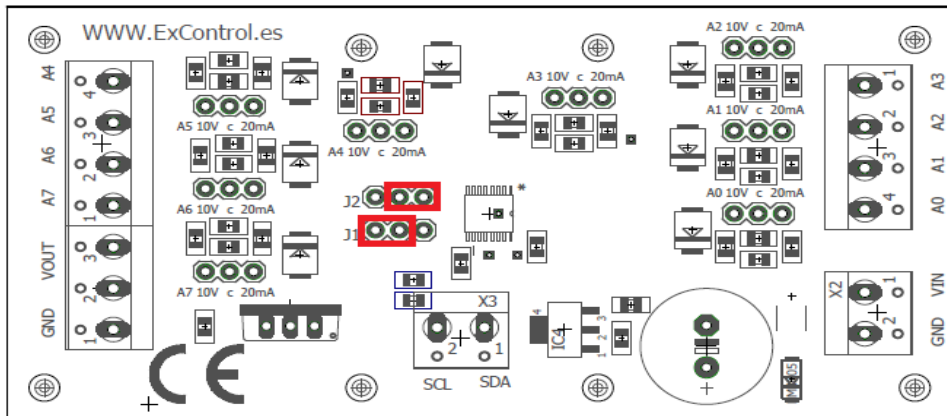
### **Address 0x48**



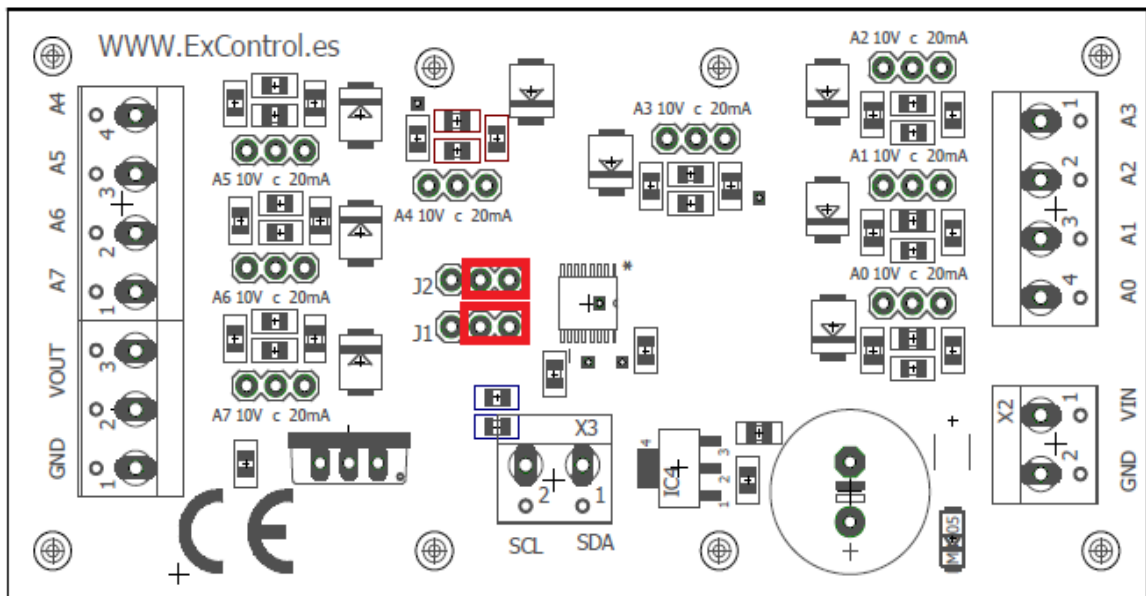
### **Address 0x49**



**Address 0x4A**

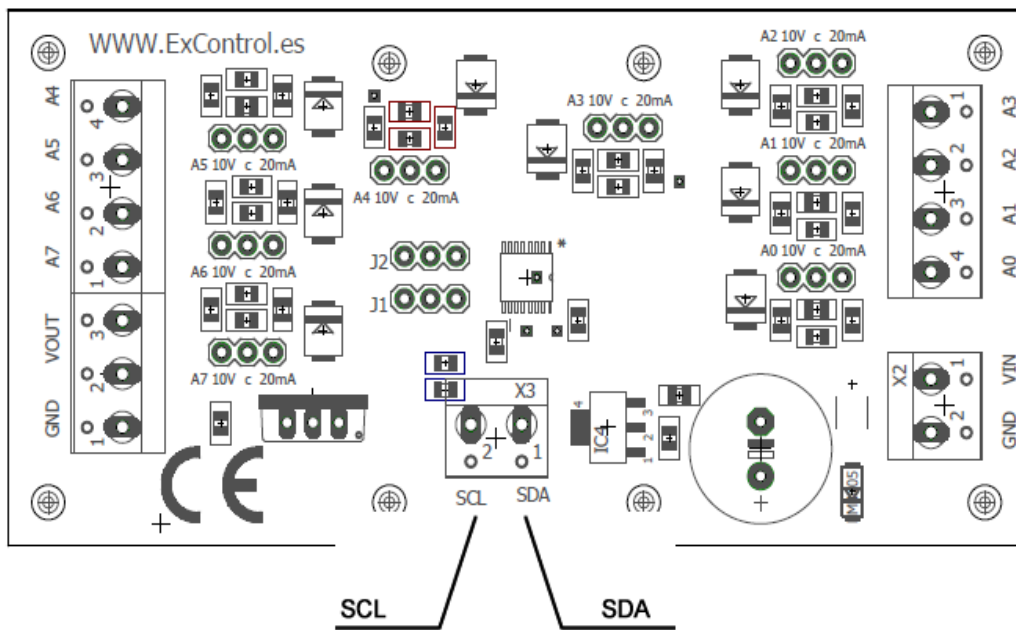


**Address 0x4B**



### 7.3 BUS WIRING:

To easily connect the device has screw connection terminals, you can identify them in the following image ..



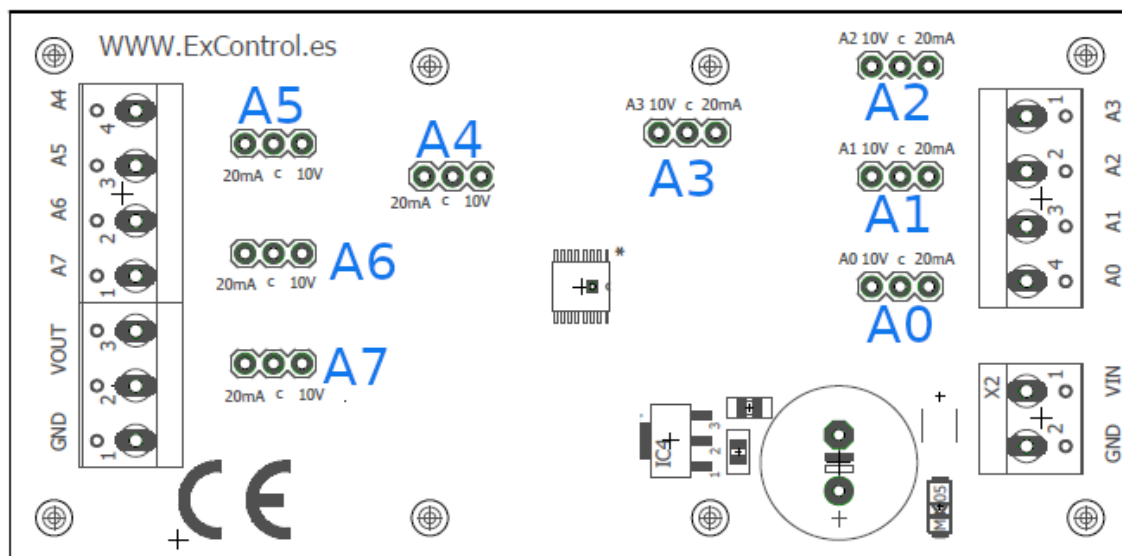
## 8 SELECTING THE MOST APPROPRIATE OPERATING MODE:

Each analog input has three modes of operation, these are the modes.

- 0-20mA.
- 0-10v
- 0-3,3

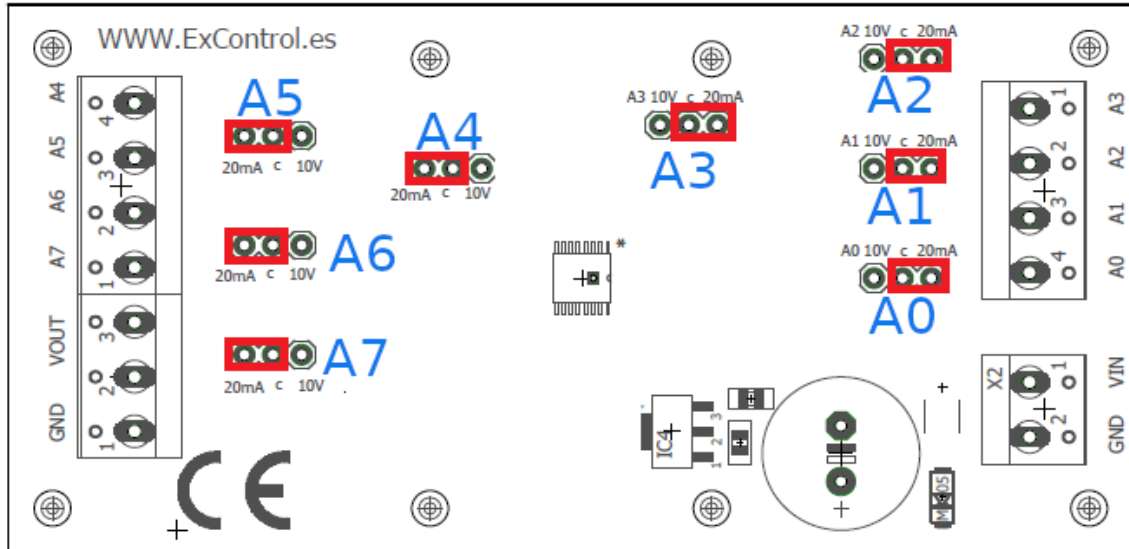
The mode selection is done through the configuration of some jumpers and the configuration of each of the inputs are independent .

In the image you can see all the configuration zones (jumper)



### 8.1 SETTING INPUT IN 0-20mA MODE. .

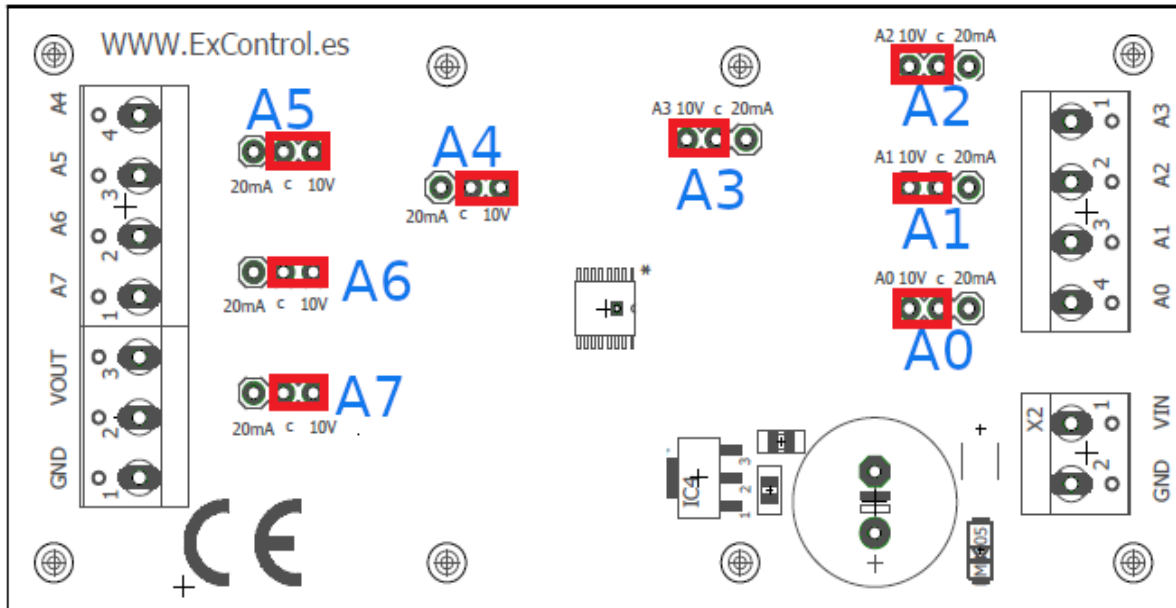
See image to select suitable jumper configuration for 0-20mA mode.





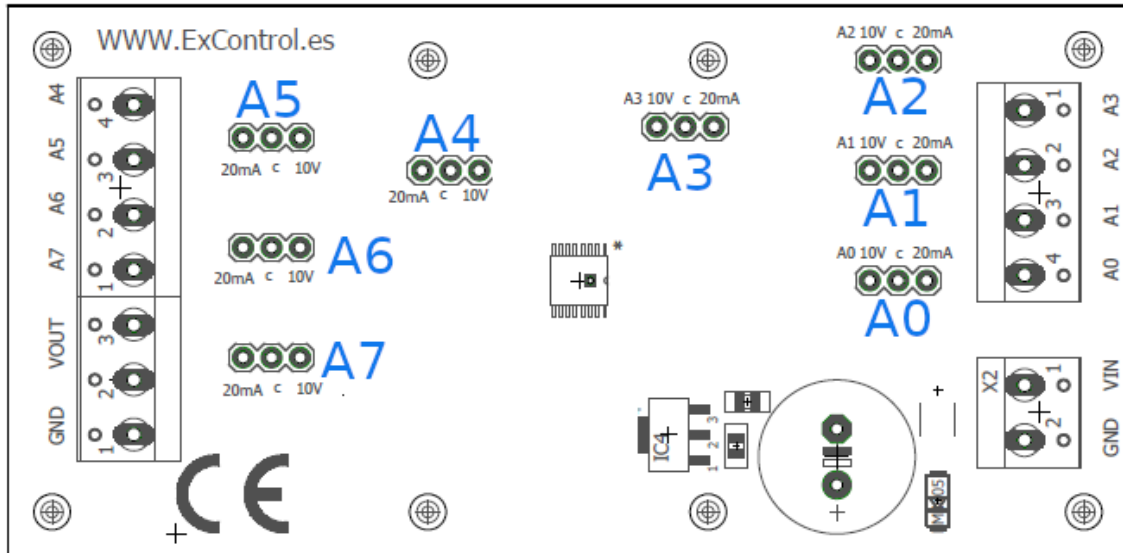
## 8.2 SETTING INPUT IN 0-10V MODE.

See image to select suitable jumper configuration for 0-10v mode.



### 8.3 SETTING INPUT IN 0-3.3V MODE.

To set the input in 0-3,3v mode remove the addressing jumper, when this has been removed the input work in 0-3,3v mode.



## 9 CONNECTING 78XX.

The device has the ability to integrate a 78xx voltage regulator to provide a stable and regulated voltage output for other equipment.

You can use the LM7805 for 5v stabilized output, 7809 for a stabilized 9v output...

The fuse **protección** limit the maximum current output up to **750mA**.

In the following image you can see the position where the regulator 78xx is installed, The voltage output is in output terminals (VOUT).

