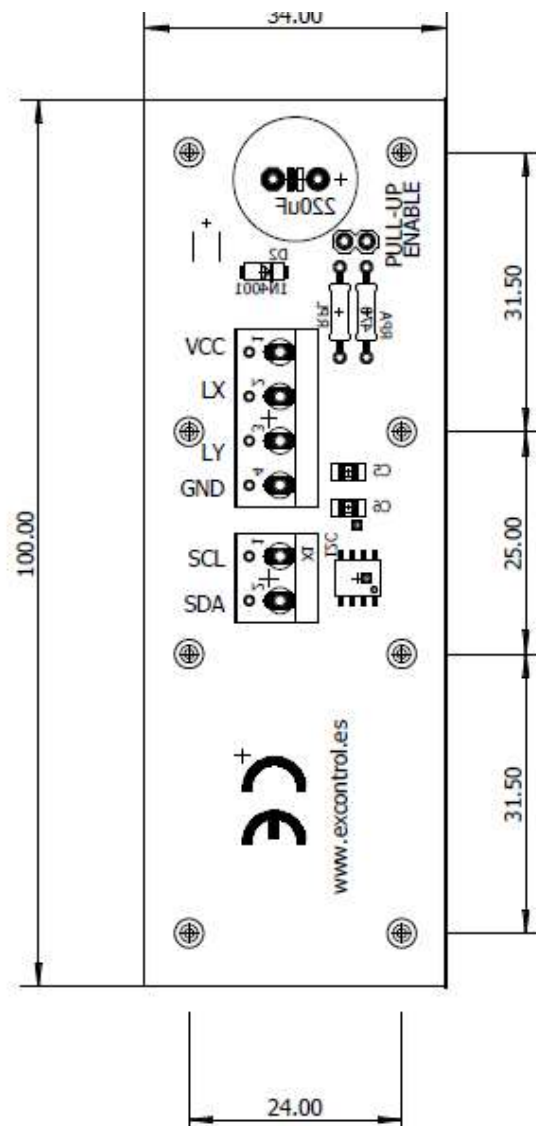


VERSIÓN 1.0

09-07-2018

# I2C EXTENDER

EXCONTROL



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## 1 GENERAL DESCRIPTION

ExControl i2c EXTENDER that creates a non-latching, bidirectional, logic interface between the normal I2C-bus and a range of other bus configurations.

This board lets you retain all the features of the standard I2C-bus while easily extending its communication distance up to 30m or 3000 pF, well beyond the limits of the standard 400-pF bus.

It can interface I2C-bus logic signals to similar buses having different voltage and current levels.

It achieves this interface without any restrictions on the normal I2C-bus protocols or clock speed.

The Board adds minimal loading to the I2C-bus node, and loadings of the new bus or remote I2C-bus nodes are not transmitted or transformed to the local node.

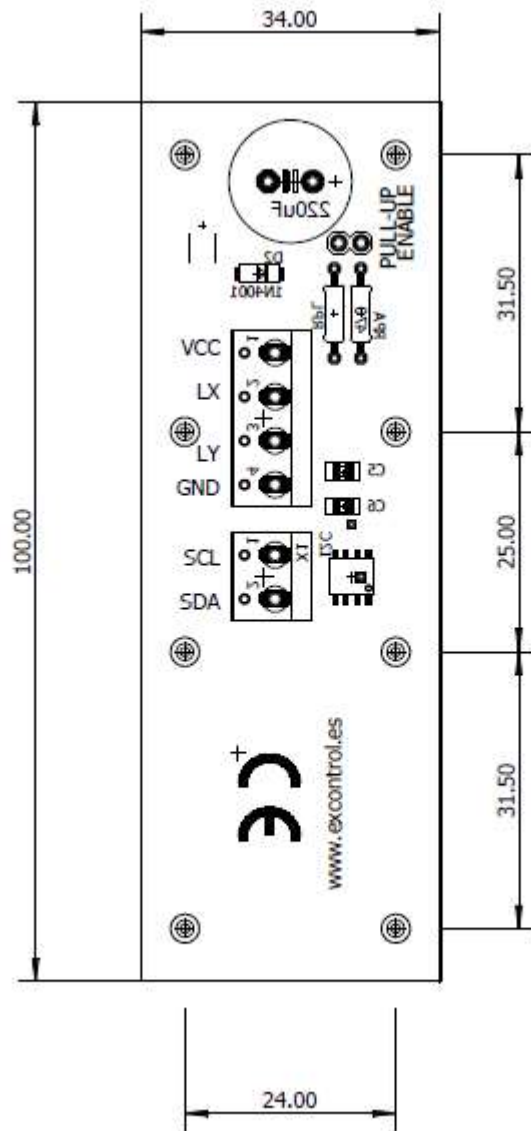
Restrictions on the number of I2C-bus devices in a system, or the physical separation between them, are virtually eliminated. Transmitting SDA and SCL signals via balanced transmission lines (twisted pairs) is simple because separate directional Tx and Rx signals are provided.

The Tx and Rx signals may be directly connected, without causing latching, to provide an alternative bidirectional signal line with I2C-bus properties.

It is compatible with arduino boards and i2c bus.

DESCRIPTION	QUANTITY	
I Max	250mA	Fuse protection and Polarity protection
Size	340x100mm	
Maximun capacitance	3000pF	

## 2 MECHANICAL DIMENSIONS



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### 3 APPLICATIONS.

- Dual, bidirectional, unity-voltage gain buffer
- Requires no external directional control
- Compatible with standard I2C-bus
- Wide supply voltage range (5 to 12 V)
- Clock speeds to at least 100 kHz and 400 kHz or beyond, depending on application
- ESD protection exceeds 2500 V HBM per Mil Std 883C-3015.7 and 400 V MM per JESD22-A115
- All I/O have diodes to VCC and GND
- Latch-up free, Latch-up testing is done to JEDEC Standard D78, which exceeds 100 Ma

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### 4 KEY FEATURES.

Upgrading standard I2C-bus systems to:

- Increase total connected capacitance
- Easily drive signals over longer cables, up to 30 m
- Improve noise immunity
- implement multi-drop signal distribution using low-cost twisted-pair cables

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### 4 PRECAUTIONS.

#### 4.1 ARDUINO BOARD COMPATIBILITY.

ExControl Shield Works with original Arduino board and other microcontroller using i2c bus.

#### 4.2 INTENDED AUDIENCE.

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

#### 4.3 GENERAL PRECAUTIONS.

The user must operate this device 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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## 5 TECHNICAL SPECIFICATIONS.

### 5.1 GENERAL SPECIFICATIONS:

DESCRIPTION	
Power supply	12V VCC
Operating voltage range	5 to 12VCC
Power consumption	250mA max.
Shock resistance	75m/s <sup>2</sup> in the X, Y and Z direction 2 times
Ambient temperature (operating)	0° to 48°C
Ambient humidity (operating)	10% to 85% (no condensation)
Ambient environment (operating)	With no corrosive gas.
Ambient temperature (storage)	- 20° to 60°C
Power supply holding time	2ms min.
Weight	50g max.

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## **6 WIRING:**

### **6.1 HOW TO CONNECT TO POWER SUPPLY.**

The board are 12Vdc supplied. IMPORTANT. -

Make sure that the power supply mains output is not higher than 13Vdc.

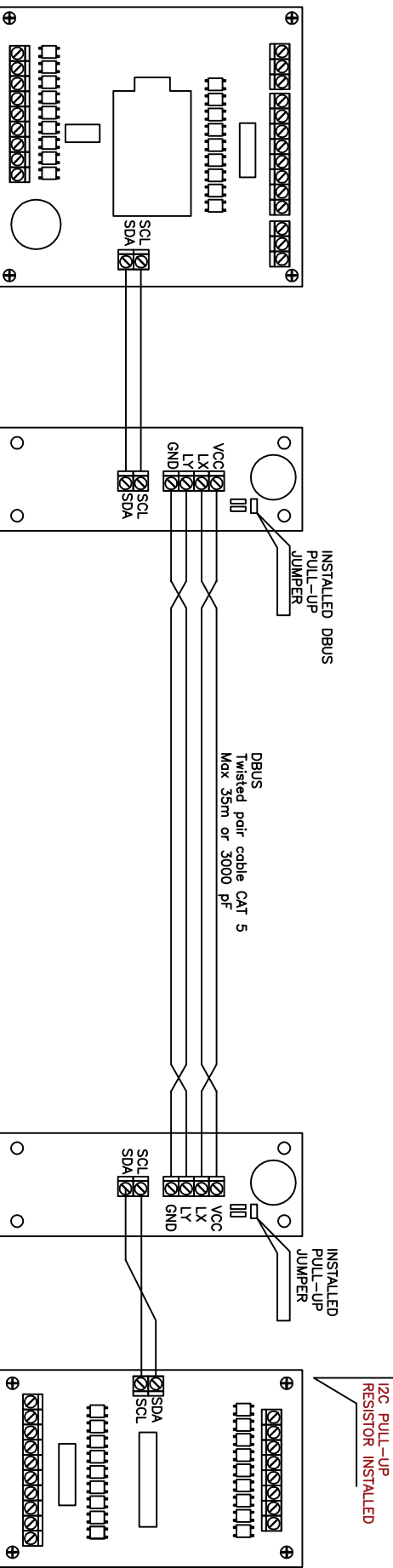
The feeding is done between the VCC and GND connections.

You can use UTP or FTP wire to power supply the device.

### **6.2 BUS WIRING.**



1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39



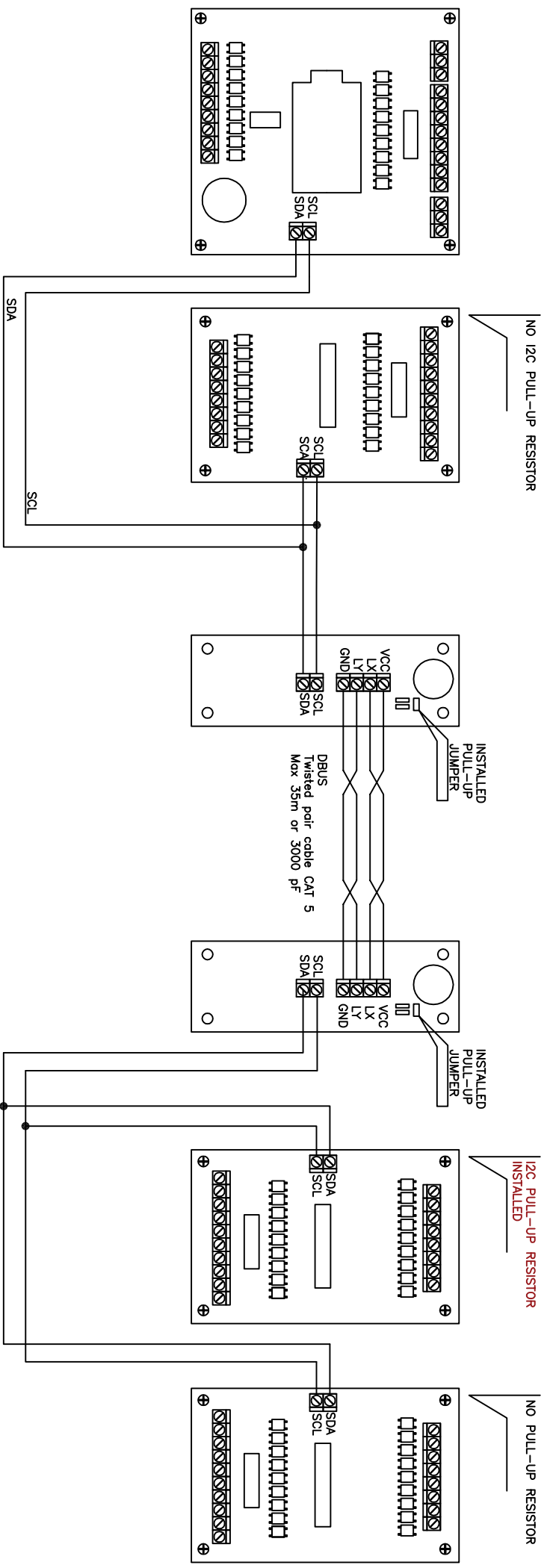
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**ExControl System**  
 I2C EXTENDER  
 N° DOCUMENTO: 000-00-00-00

I2C EXTENDER  
 BASIC POINT TO POINT

FOLIO 001	ANT.	POST. 002
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1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39



DIBUJADO:	RCC
VERIFICADO:	RCC
FECHA:	06-07-18
REV.	
FECHA	
MODIFICACION	
VERIFIC.	

**ExControl System**  
I2C EXTENDER

N° DOCUMENTO: 000-00-00-00

I2C EXTENDER  
ADVANCED POINT TO POINT

FOLIO 002

ANT. 001

POST. 003



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REV.	
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MODIFICACION	
VERIFIC.	

**ExControl System**  
I2C EXTENDER

Nº DOCUMENTO: 000-00-00-00

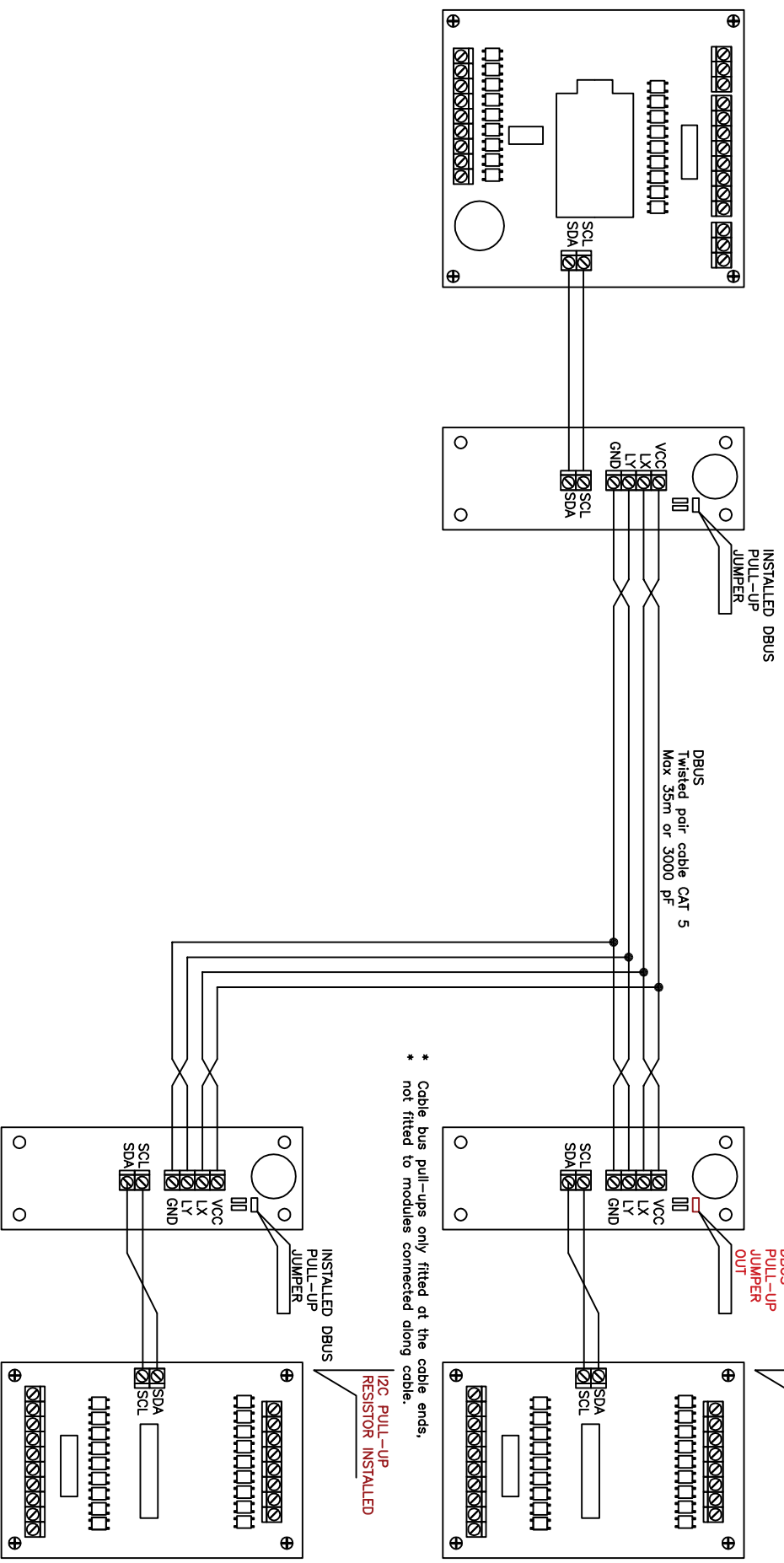
I2C EXTENDER  
MULTIDROP BUS

FOLIO 003

ANT. 002

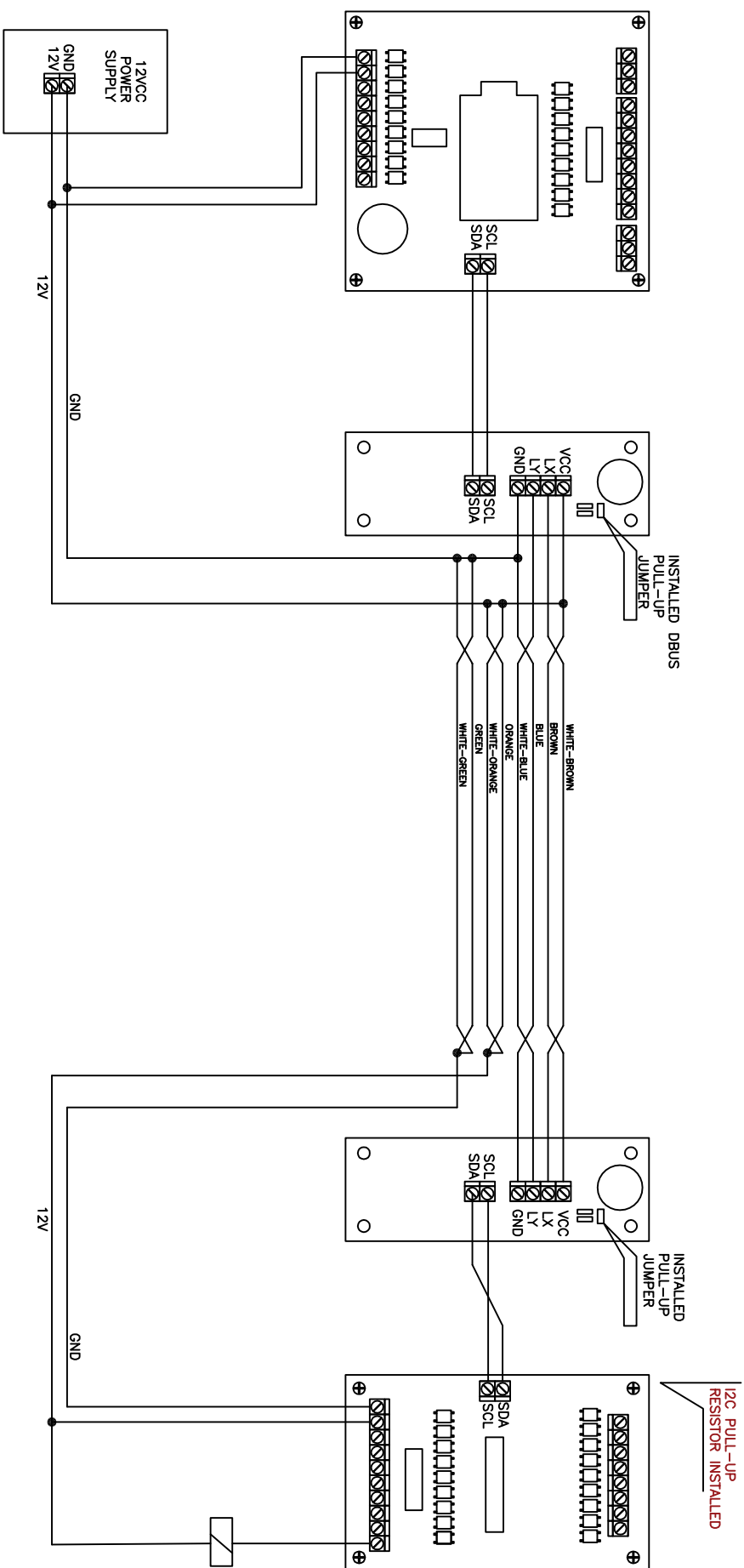
POST. 004

1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39



FOLIO	003
ANT.	002
POST.	004

1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39



DIBUJADO:		RCC			
VERIFICADO:		RCC			
FECHA:		06-07-18	REV.		
			FECHA		
			MODIFICACION		
			VERIFIC.		

**ExControl System**  
12C EXTENDER  
N° DOCUMENTO: 000-00-00-00

12C EXTENDER  
POWER IN WIRE BUS

FOLIO	004
ANT.	003
POST.	005