

# CN2004

*CN2004*

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**Customer documentation**



**Tecnologie e Prodotti per l'Automazione**

## **Document data**

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**INDEX**

<b>1</b>	<b>DESCRIPTION .....</b>	<b>5</b>
<b>2</b>	<b>TECHNICAL DATA.....</b>	<b>6</b>
2.1	Electrical characteristics .....	7
2.1.1	Absolute maximum ratings.....	7
2.1.2	Operating parameters.....	7
2.2	Warnings .....	8
2.3	Prescriptions.....	8
2.4	Description of the board interfaces .....	9
2.4.1	Ax connectors .....	9
2.4.2	Connector and GreenBus indicators .....	9
2.4.3	LAN Connector .....	10
2.4.4	Digital I/O terminal boards and indicators .....	11
2.4.5	Terminal board of analog I/O .....	11
2.4.6	Terminal board of power supply and indicators .....	12
2.4.7	+12 V out terminal board.....	12
2.4.8	Other indicators .....	12
<b>3</b>	<b>WIRING MAPS.....</b>	<b>14</b>
<b>4</b>	<b>AXIS CABLE WITH ANALOG EXPANSION (ALBENT).....</b>	<b>16</b>
<b>5</b>	<b>AX1 MULTIAX CABLE WITH DIGITAL EXPANSION (ALBSLM).....</b>	<b>17</b>
<b>6</b>	<b>AX2, AX3, AX4 CABLE WITH DIGITAL EXPANSION (ALBSLM).....</b>	<b>18</b>
<b>7</b>	<b>FREQUENCY-DIRECTION AX4 CABLE (DIGITAL ALBSLM EXPANSION ).....</b>	<b>19</b>
<b>8</b>	<b>FIELD CONNECTIONS .....</b>	<b>20</b>
<b>9</b>	<b>DIMENSIONS .....</b>	<b>27</b>

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***REVISIONS***

Revision number	Date	Protocol	Modifications and/or modified paragraphs
Rev.0	23/11/2006		First release
Rev.1	01/03/2010		Update to R5

## **1 DESCRIPTION**

- **Axis and I/O control unit**
- **Connection with PC supervisor through Ethernet 100 Mb/s**
- **Configuration up to 4 analog or digital axes**
- **Configuration of 32 digital I/O, 2 analog inputs and 1 analog output**
- **Management of up to 32 remote modules on GreenBus v. 3.0**
- **Assembly on DIN rails type EN50022 and EN50035**

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## 2 TECHNICAL DATA

- Power supply +24Vdc +/-10%, 2A
- Control and led signalling of power supply
- CPU 32 bit, 64MHz, 512 Kbyte Flash and 64 Kbyte RAM and non-volatile 16 Kbyte RAM
- Ethernet 100 Base-T connection, 100Mbit/s with UDP/IP real time protocol.
- Analogue version: 4 input channels differential encoders with 0 position reference. Frequency 1 Mhz max. 4 16 bit, +/- 10V analogue outputs
- Digital version: 4 DRIVELINK channels to control the axes, +24V - 0.7A external power supply
- 4 inputs, managed in interrupt, for home position, detection of the positions, limit switch
- +5V - 0.2A external power supply
- GreenBus modules control channel.
- Power supply of the GreenBus modules + external 12V - 0.7A

### I/O

- Input threshold levels: 0 = from 0V to 10V / 1 = from 14V to 24V
- Max. Output power supply: 0.5 A
- Max. power supply for each group of 8 Outputs: 3 A
- Output protection against short circuit, overload, overvoltage (40V)
- Re-reading of the OUTPUTS (SW diagnostic)
- 3 free terminals for each INPUT (0 V, +24 V, signal)
- 2 free terminals for each OUTPUT (0 V, signal)
- Connections to AWG 24, 12
- Field power supply completely isolated from the power supply of logic circuits and GreenBus I/F

### Analog I/O

- 2 +/- 10V analog inputs - 10 bit conversion (H" 20mV resolution)
- 1 +/- 10V analog output - 16 bit conversion (H" 0.3mV resolution) – lowest current of the outputs +/- 5mA – security output on short circuit toward GND
- +12V - 0.5A external power supply

## 2.1 Electrical characteristics

### 2.1.1 Absolute maximum ratings

Parameter	Condition	Min	Type	Max	Unit
V <sub>cc</sub> , Power Supply		18		30	V
Max. current on Output	VO = 24 Volt DC			1	A
Max. current on Greenbus	V <sub>green</sub> = 12V			1	A
Max. analog output current	w/o short circuit or clamping			15	mA
+12 V max. ext. current				0.5	A
+ 5V max. ext. current				0.35	A
VO Output Power Supply	by external power supply	18		30	V
I <sub>cc</sub> , Power Supply current max	by external power supply			3	A
Temperature		0		65	°C

### 2.1.2 Operating parameters

Parameter	Condition	Min	Type	Max	Unit
V <sub>cc</sub> , Power Supply		22.2	24	26.6	V
I <sub>q</sub> , Quiescent Current	all off, V <sub>cc</sub> =24V		180		mA
I <sub>p</sub> , Operating Current	all active outputs, V <sub>cc</sub> =24V			500	mA
V +12V ext		12.4	12.6	12.8	V
On +12V ext current				0.5	A
V +5V ext		4.5	5	5.2	V
On + 5V ext current				0.2	A
On Output Current	VO = 24 Volt DC, single output on			0.5	A

	VO = 24 Volt DC, 8 output on in same bank			3	A
VO Output Power Supply		18	24	30	V
Vih, input high state voltage	VO = 24V	14			V
Vil, input low state voltage	VO = 24V			10	V
Vgreen	without load	12.4	12.6	12.8	V
On Greenbus Current	Vgreen = 12V			0.7	A
Operative Temperature		0		45	°C
Baud Rate	Ethernet		100		Mb/s
	GreenBus		1		Mb/s

## 2.2 Warnings

CN2004 can be installed in an electrical switchboard or in any case in areas where dedicated electric power, secondary surge protection and moderate industrial interference coupling, i.e according to the most common conditions in industrial environment.

To allow the proper functioning of CN2004 it is mandatory to comply with all requirements laid down here.

CN2004 is a computerized numeric control for general use in the environment of the light industry. This is a class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

## 2.3 Prescriptions

In general it is mandatory, that power supply, temperature and humidity do not exceed the values as indicated in the previous paragraph.

It is mandatory to connect CN2004 (via DIN) to the grounding

We suggest to install CN2004 in an electrical cabinet or electric switchboard.

It is mandatory to interface the board using cables/terminals and everything else, as laid down in the following chapters.



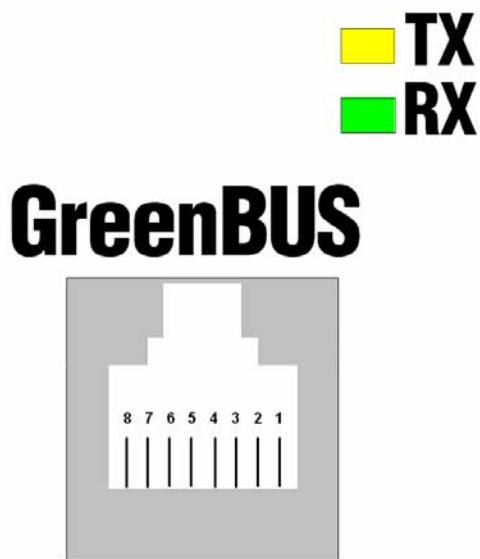
Terminal blocks for digital and analog I/O cabling and for power supply must be inserted, although they are not cabled.

## 2.4 Description of the board interfaces

### 2.4.1 Ax connectors

See wire maps

### 2.4.2 Connector and GreenBus indicators

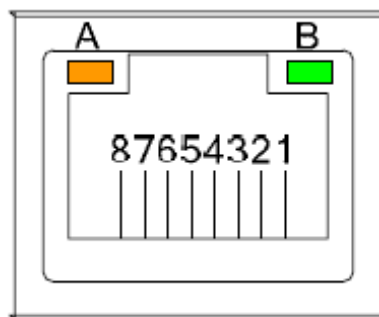


Pin	Description
1	GND
2	+12V
3	GND
4	TX+
5	TX-
6	+12V
7	RX+
8	RX-
Shield	EARTH

- TX: transmission indicating led
- RX: reception indicating led

Use ethernet cable - CAT5 shielded with RJ45 sockets

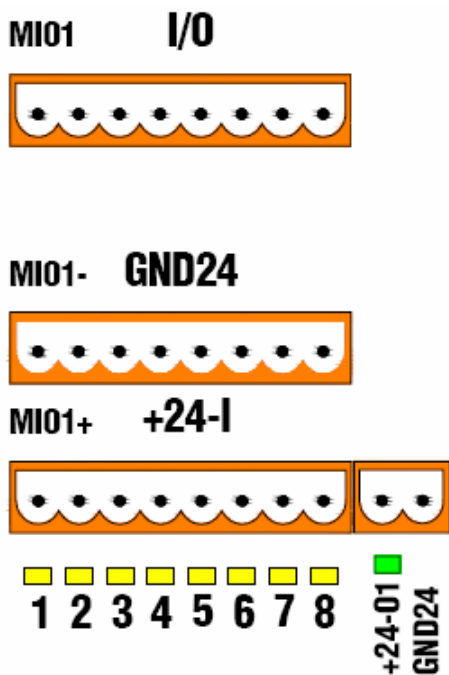
### 2.4.3 LAN Connector



Pin	Description
1	Tx-
2	Tx+
3	Txc
4	n.c.
5	n.c.
6	Rxc
7	Rx+
8	Rx-
A	Active LED
B	100/1000 LAN LED

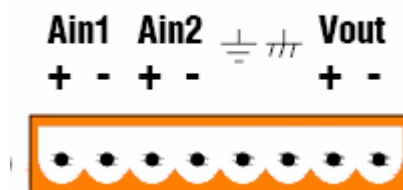
It is used for connection to PC supervisor. Use a patch LAN cable, CAT 5, in conformity with IEEE 802.3 and 802.3 U.

**2.4.4 Digital I/O terminal boards and indicators**



- MIO<sub>n</sub>: nth terminal board of the IO group
- MIO<sub>n</sub>-: terminal board GND24 of the nth IO group
- MIO<sub>n</sub>+: terminal board +24V of the nth IO group
- 1..8 led indication of active IO <sub>n</sub>
- +24-On/GND24 : Power supply connector of the nth IO group with indication of the polarity and associated signal led.

**2.4.5 Terminal board of analog I/O**



- Ain1: analog input 1 with polarity indication
- Ain2: analog input 2 with polarity indication
- V out: analog output

Connection to analog I/O must be made using a shielded cable. The shield must be connected to the ground point of the terminal board. The analog ground act as a reference (zero) for inputs and analog output.

#### 2.4.6 Terminal board of power supply and indicators



- 3 A led showing a broken fuse
- +Vdc/GND: Main power supply connector with polarity indication

#### 2.4.7 +12 V out terminal board

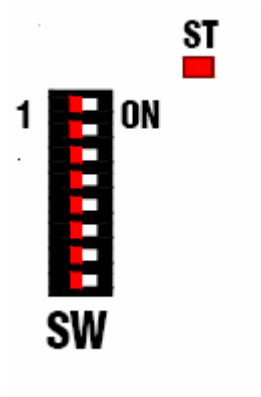


- +12Vext/GND: Connector for power supply + 12 Vext. external supply and polarity indication

#### 2.4.8 Other indicators

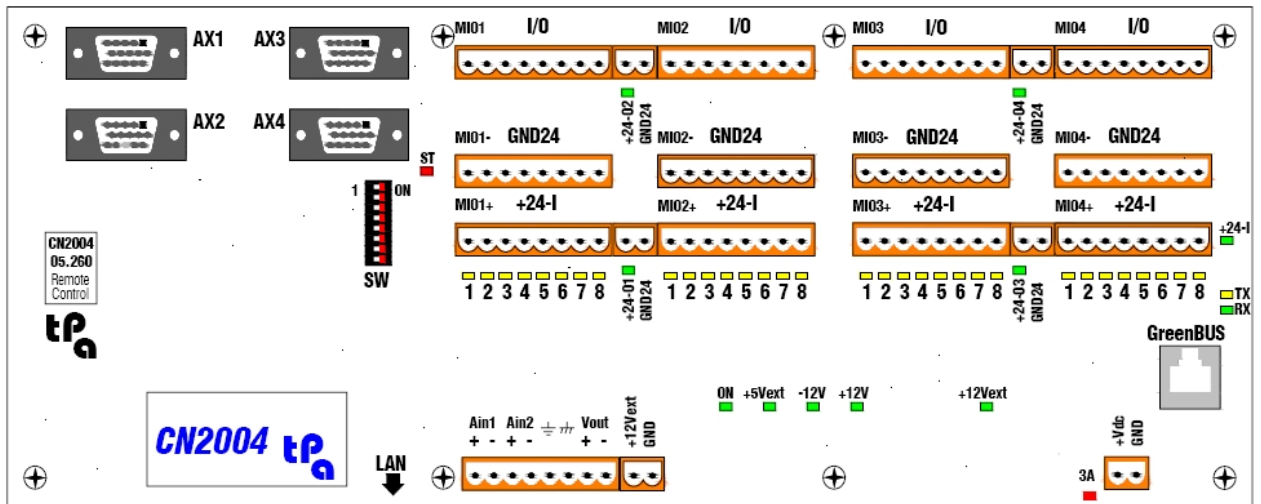


- ON: led signalling the main power supply
- +5Vext: led signalling 5Vext power supply
- +12V led signalling analog 12V power supply
- -12V led signalling analog -12V power supply
- +12Vext: led signalling +12Vext power supply



- ST: Status led
- SW Dip-switch for bench diagnostic and other functions For normal functioning switches must be all in the switched - OFF position

### 3 WIRING MAPS



MAA terminal board		
1	+Vdc	
2	GND	

MioA terminal board		
1	AIN1+	
2	AIN1-	
3	AIN2+	
4	AIN2-	
5	GND	
6	EARTH	
7	VOUT+	
8	VOUT-	

MAN terminal board		
1	+12Vext	
2	GND	

MA1 terminal board		
1	+24-O1	
2	GND24	

Mio1 terminal board		
1	I/O 1	
2	I/O 2	
3	I/O 3	
4	I/O 4	
5	I/O 5	
6	I/O 6	
7	I/O 7	
8	I/O 8	

MA2 terminal board		
1	+24-O2	
2	GND24	

Mio2 terminal board		
1	I/O 1	
2	I/O 2	
3	I/O 3	
4	I/O 4	
5	I/O 5	
6	I/O 6	
7	I/O 7	
8	I/O 8	

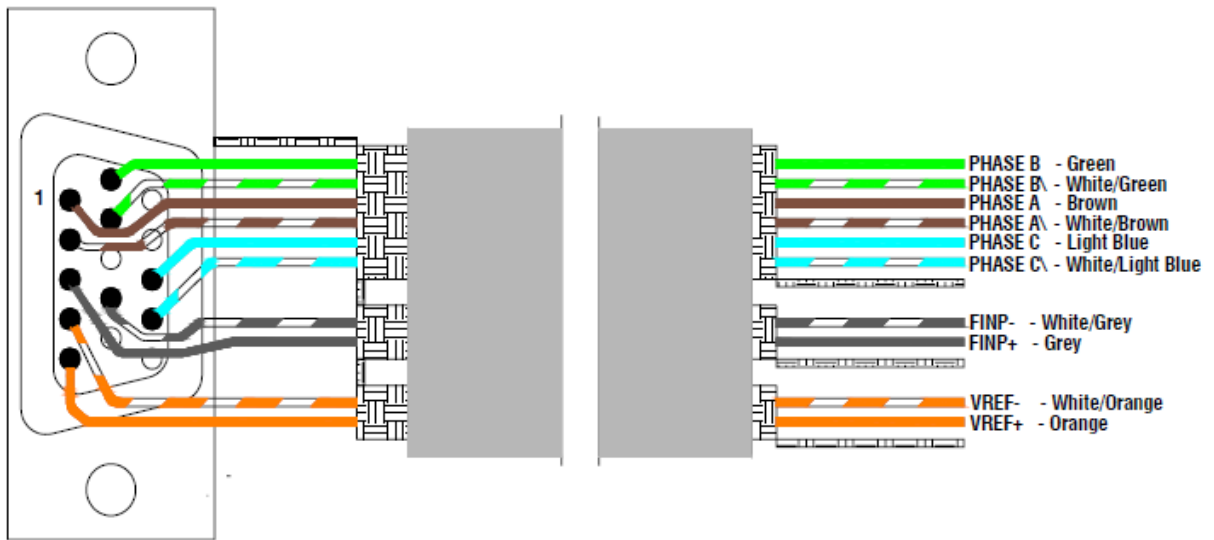
MA3 terminal board		
1	+24-O3	
2	GND24	

Mio3 terminal board		
1	I/O 1	
2	I/O 2	
3	I/O 3	
4	I/O 4	
5	I/O 5	
6	I/O 6	
7	I/O 7	
8	I/O 8	

MA4 terminal board		
1	+24-O4	
2	GND24	

Mio4 terminal board		
1	I/O 1	
2	I/O 2	
3	I/O 3	
4	I/O 4	
5	I/O 5	
6	I/O 6	
7	I/O 7	
8	I/O 8	

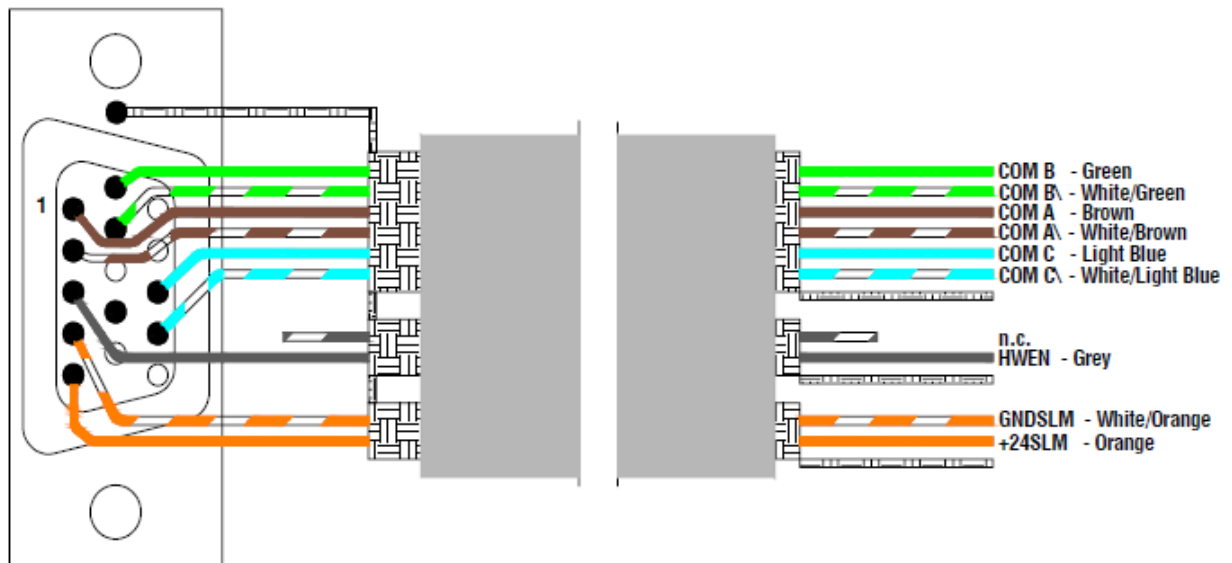
#### 4 AXIS CABLE WITH ANALOG EXPANSION (ALBENT)



1	PHASE A	
2	PHASE A\	
3	FINP+	
4	VREF-	
5	VERF+	
6	PHASE B	
7	PHASE B\	
8	+12Vcc	
9	FINP-	
10	I/O B	
11	+5Vcc	
12	I/O A	
13	PHASE C	
14	PHASE C\	
15	GND	

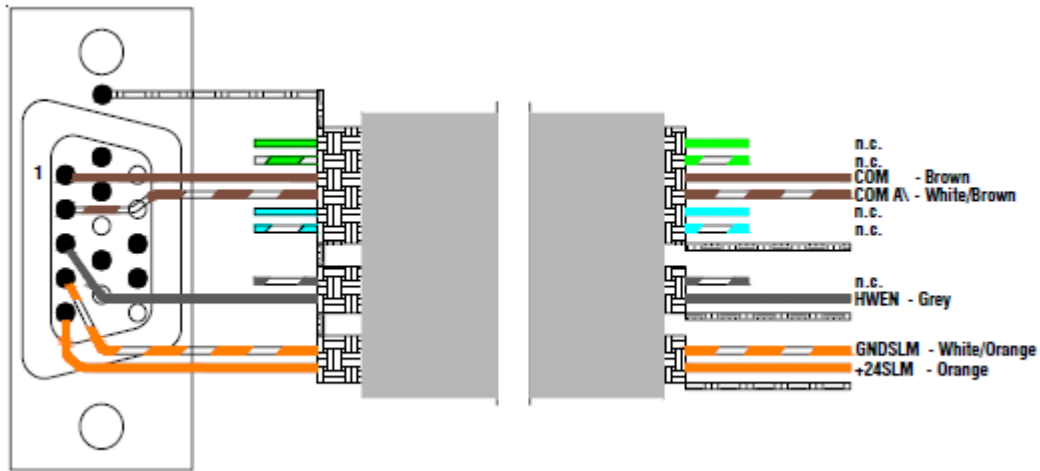


**5 AXI MULTIAX CABLE WITH DIGITAL EXPANSION (ALBSLM)**



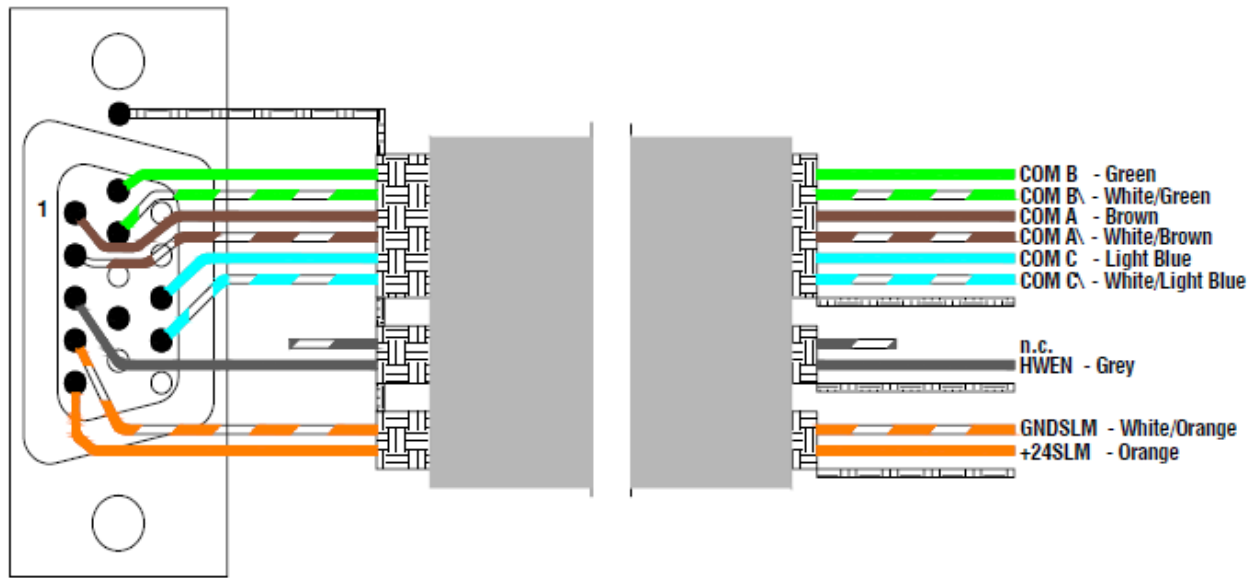
1	COM A		
2	COM A\		
3	HWEN		
4	GNDSL M		
5	+24SLM		
6	COM B		
7	COM B\		
8	+12Vcc		
9	nc		
10	I/O B		
11	+5Vcc		
12	I/O A		
13	COM C		
14	COM C\		
15	GND		

**6 AX2, AX3, AX4 CABLE WITH DIGITAL EXPANSION (ALBSLM)**



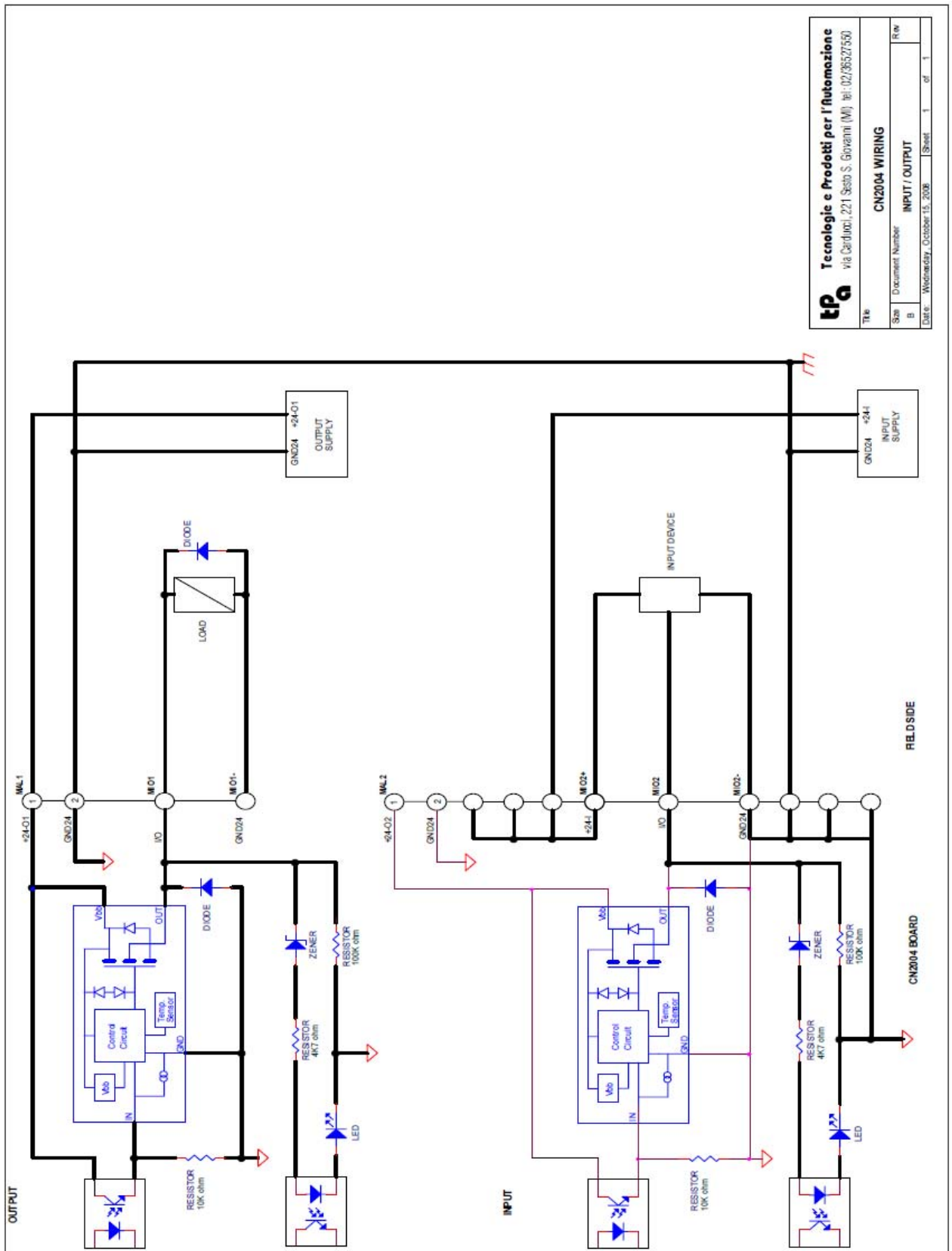
1	COM		
2	COM\		
3	HWEN		
4	GNDSLML		
5	+24SLM		
6	nc		
7	nc		
8	+12Vcc		
9	nc		
10	I/O B		
11	+5Vcc		
12	I/O A		
13	nc		
14	nc		
15	GND		

**7 FREQUENCY-DIRECTION AX4 CABLE (DIGITAL ALBSLM EXPANSION )**

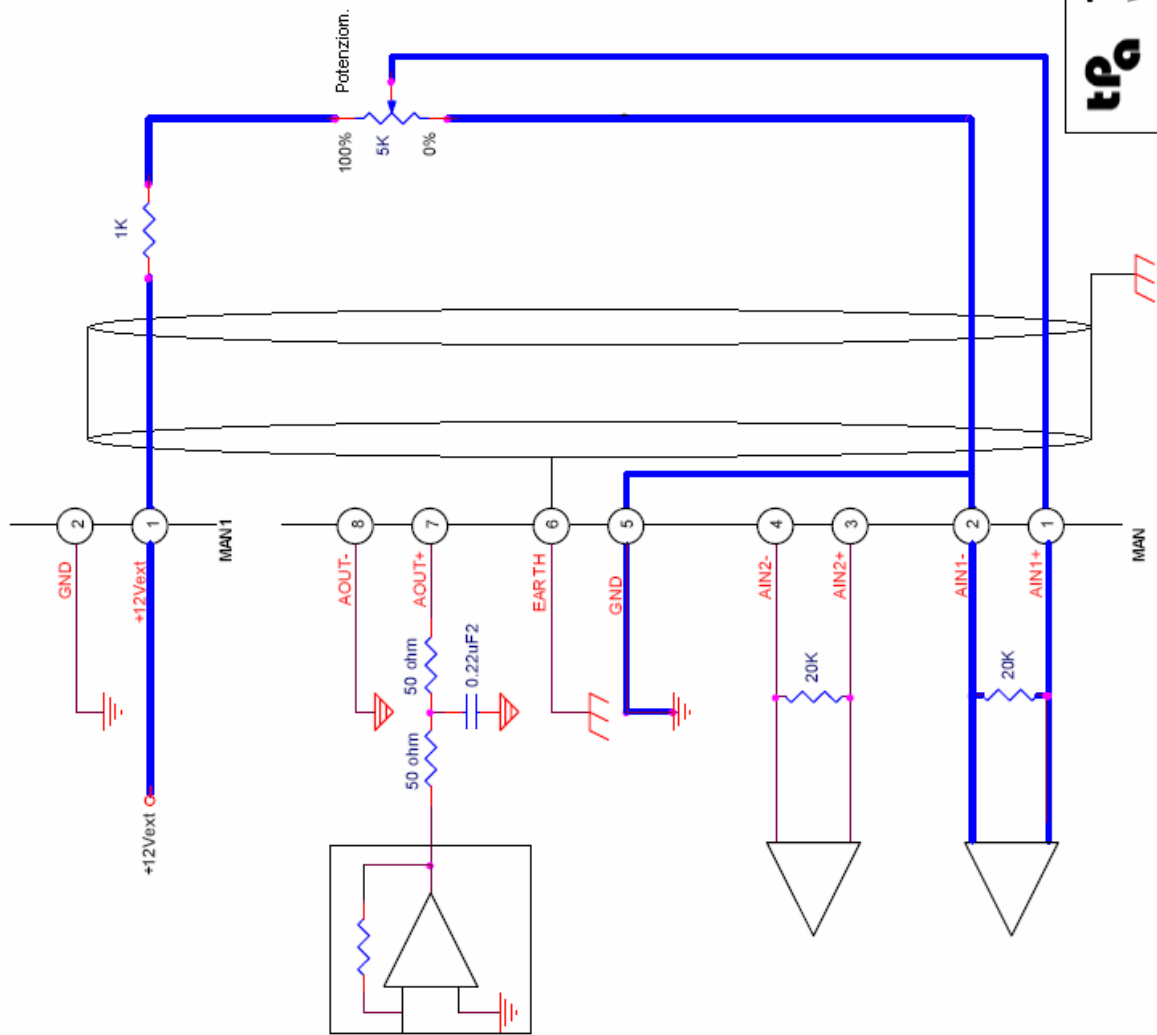


1	PHASE A		
2	PHASE A\		
3	DIR		
4	FREQ\		
5	FREQ		
6	PHASE B		
7	PHASE B\		
8	+12Vcc		
9	DIR\		
10	I/O B		
11	+5Vcc		
12	I/O A		
13	PHASE C		
14	PHASE C\		
15	GND		

# 8 FIELD CONNECTIONS



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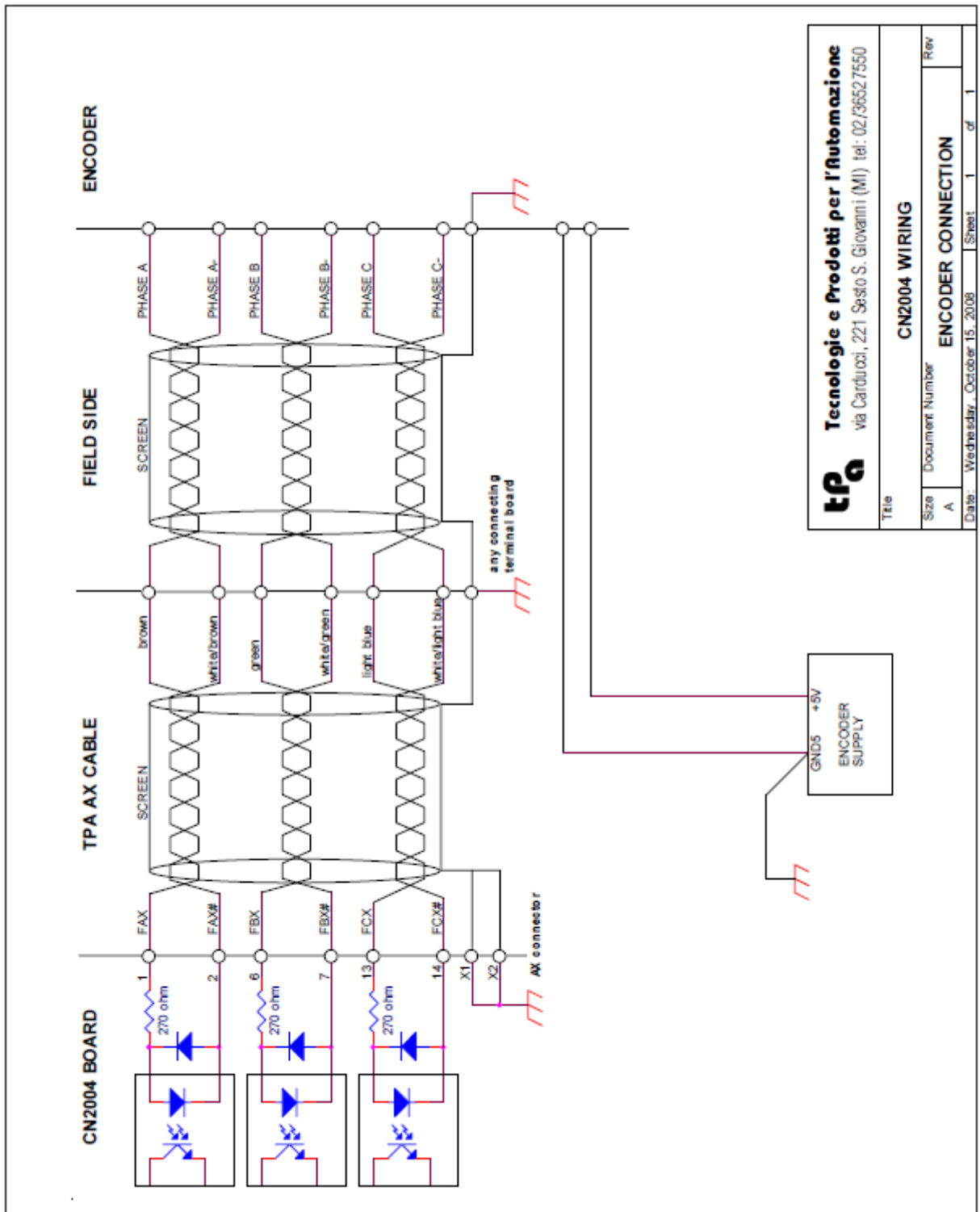


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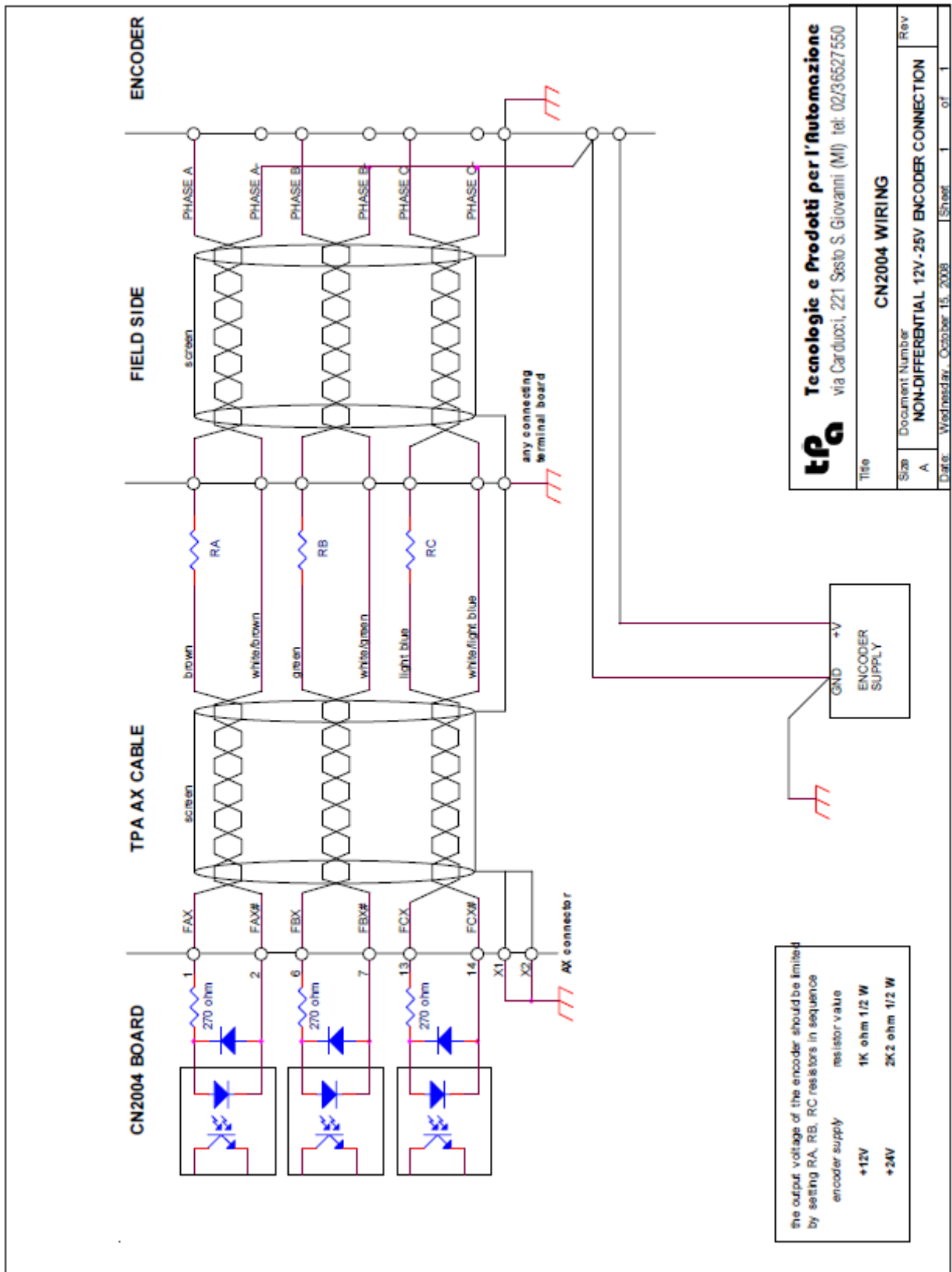
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BOARD CN2004

Any metal box of the potentiometer must be adjusted at zero potential.



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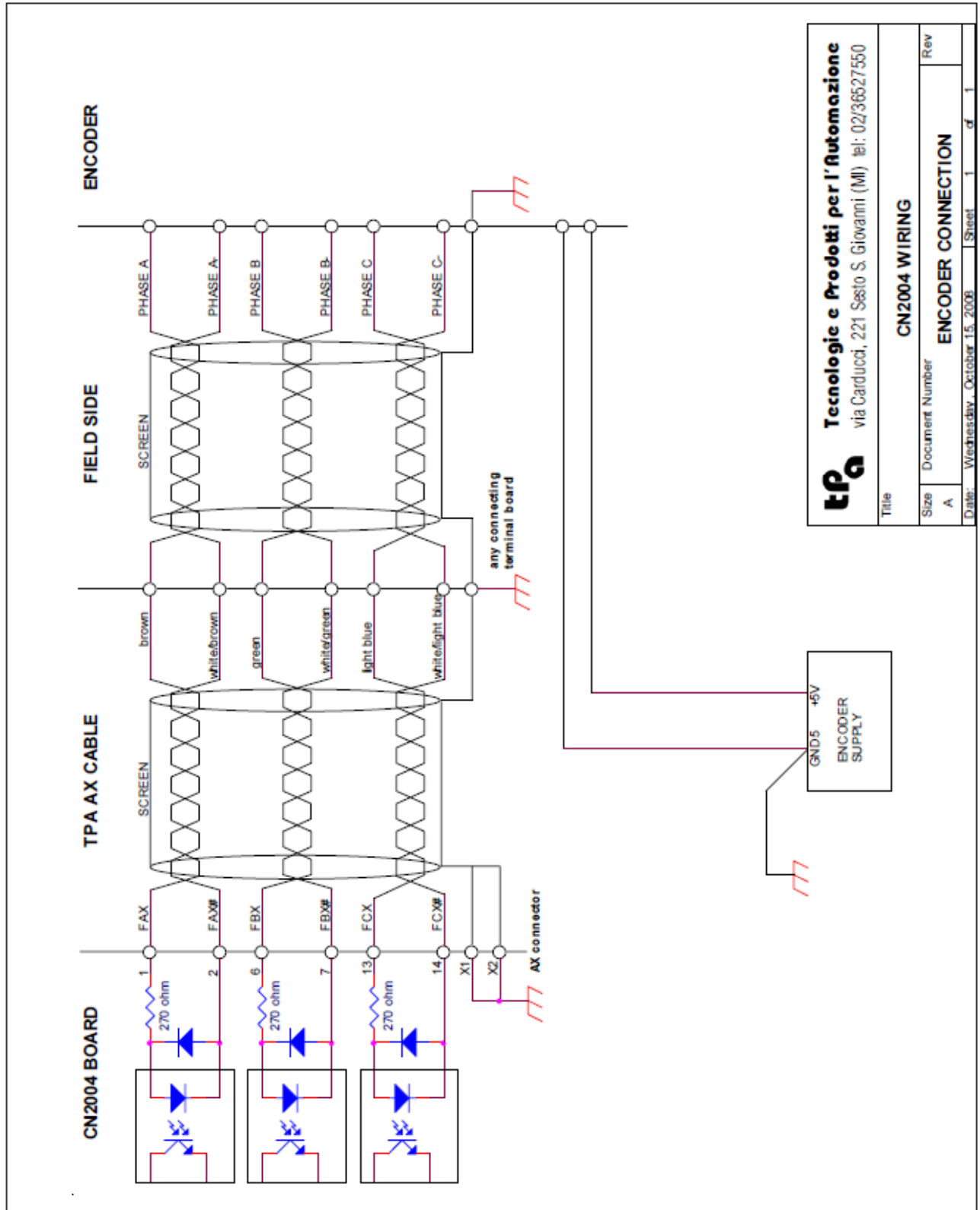


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Title: **CN2004 WIRING**

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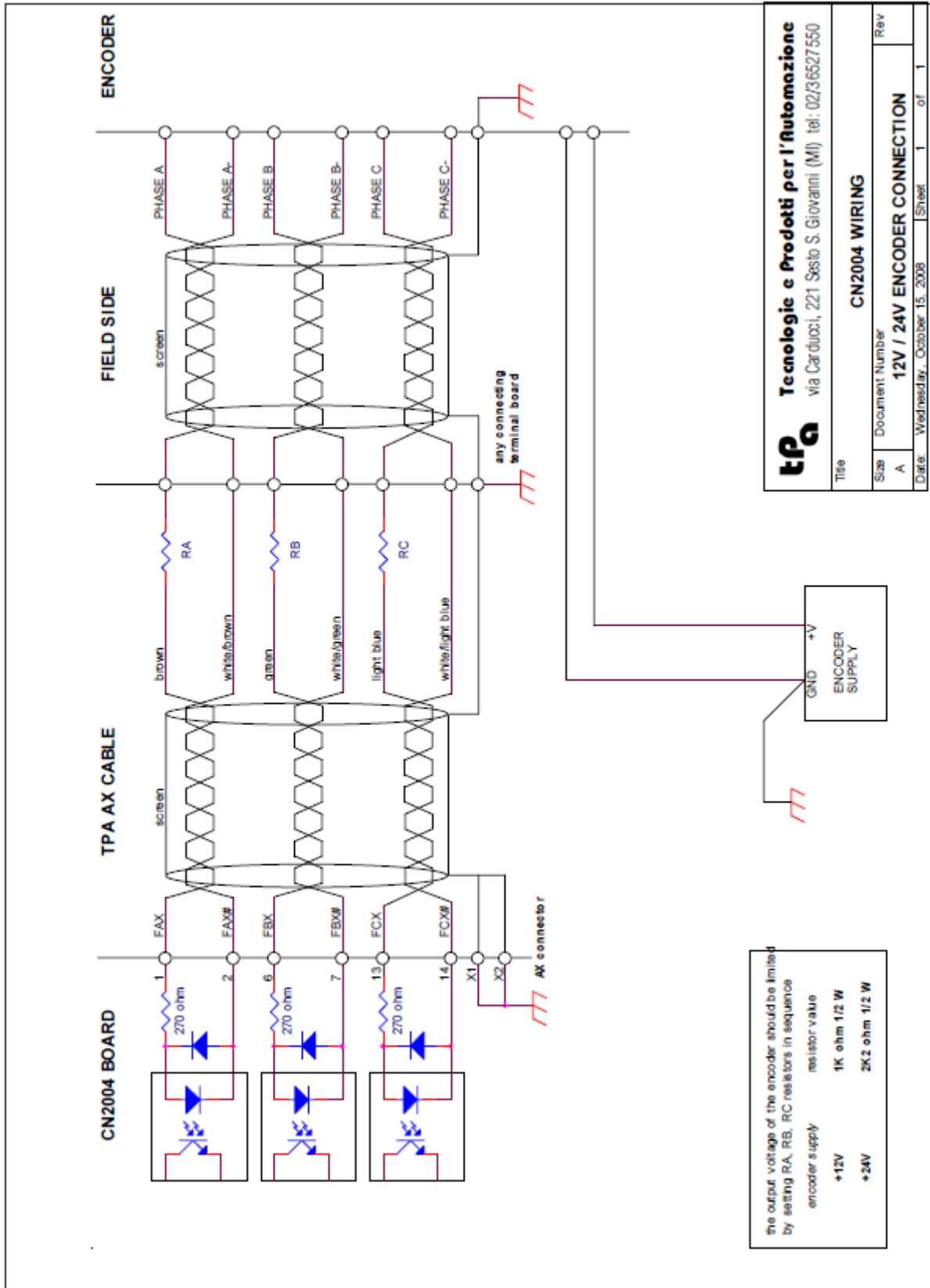
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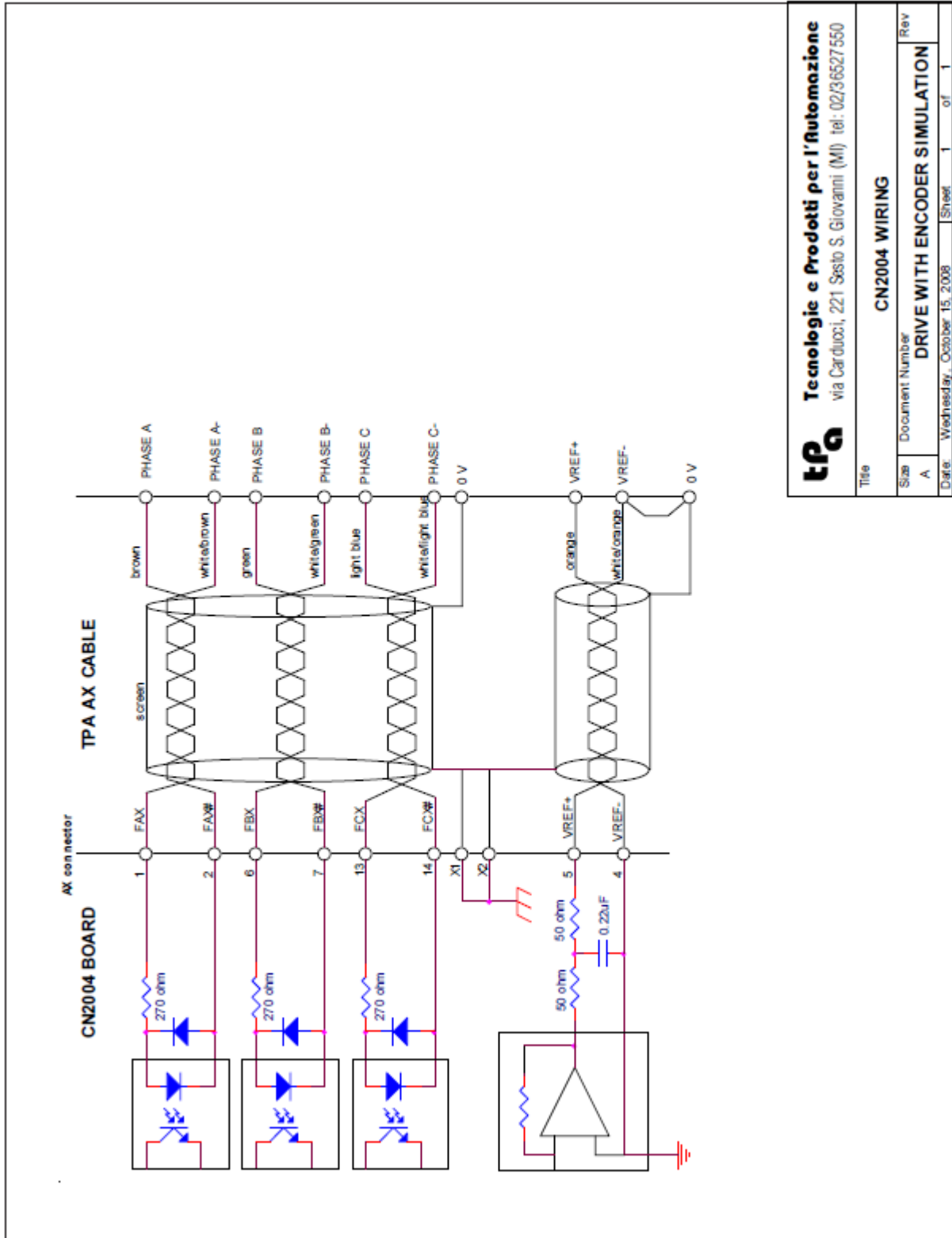


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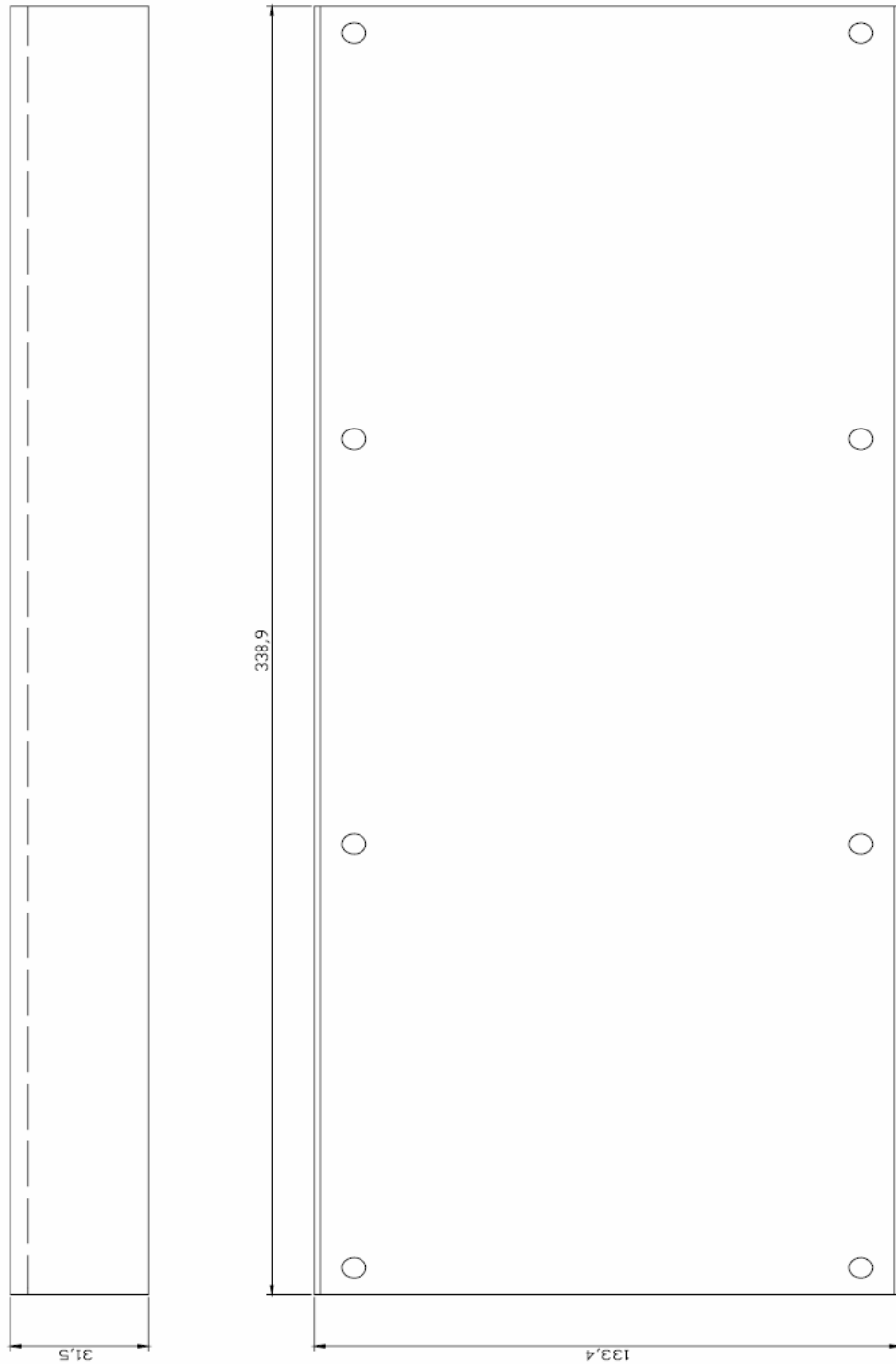






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## 9 DIMENSIONS



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**Tecnologie e Prodotti per l'Automazione**

via Carducci 221  
I - 20099 Sesto San Giovanni (MI)  
Tel. +39.023.652.7550  
Fax. +39.022.448.1008  
[www.tpaspa.it](http://www.tpaspa.it)