

CN2008

CN2008
Documentation



Tecnologie e Prodotti per l'Automazione

Document data

Date 25/02/2013
Revision 5
File Name eCN2008.pdf
Protocol
Type Documentation
By T.P.A. S.p.A.
Group name
Notes

This documentation is property of T.P.A. S.p.A.
Any unauthorized duplication is forbidden.
The Company reserves the right to modify the content of the document at any time.

INDEX

CONTENTS.....	6
1 DESCRIPTION.....	7
2 FUNCTIONAL SPECIFICATION	8
2.1 General requirements	8
2.2 Device composition	8
2.2.1 Mechanical features.....	8
2.2.2 MPU board technical data	9
2.2.3 PC104 specific expansion boards	9
2.2.4 Specification of power supply board	9
3 TECHNICAL SPECIFICATIONS.....	11
3.1 System.....	11
3.2 I/O	11
3.3 Configurations.....	11
3.3.1 MPU boards.....	11
3.3.2 SBC84710.....	11
3.3.3 SBC84620.....	12
3.3.4 Expansion Slot.....	12
3.4 Optional	13
3.5 Dimensions	13
4 DESCRIPTION OF THE INTERFACES	17
4.1 Power supply connector and led	17
4.2 Connector RS-232 (COM2).....	17
4.3 RS-485 (COM1) Connector	17
4.4 Keyboard and Mouse PS/2 Connector	18
4.5 CRT video out connector	18
4.6 LAN Connector.....	18
4.7 Compact Flash Connector	19
4.8 USB connector	20
5 SPECIFICATIONS.....	25
5.1 Operating temperature	25
5.2 Power Supply	25
5.3 Expansion.....	25

REVISIONS

Revision No.	Date	Protocol	Changes and/or changed paragraphs
Rev 0	26/02/2009		First release
Rev 1	16/06/2010		Update
Rev 2	17/02/2011		COM1 and COM2 Updating
Rev 3	12/07/2011		Updating technical data and reference documents
Rev 4	12/10/2011		Update of the dimension
Rev 5	25/02/2013		Technical data update for expansion boards

Reference documents

Ref.	File Name	Revision	Date	Title
[1]	eAlbmechr1_v4.pdf	Rev. 3	15.03.2011	Albmech Module – Documentation
[2]	Co_cd.pdf			CANOpen – instruction for the Installation (for CIF 104-COM)
[3]	eTMSBus.pdf	Rev. 4	07.06.2011	TmsBus module – Documentation

CONTENTS

Description of CN 2008 numeric control



1 DESCRIPTION

CN2008 is basically a computer embedded with PC104 bus. CN2008 is a little device, that can be installed in an electric cabinet, with mounted DIN rail (omega rail) or wall mounting.

CN2008 presents many advantages:

- reduced dimensions;
- allocation of PC104 boards, approved by TPA;
- configuration by the user;
- modularity.

CN2008 philosophy is to bring the connections back to the field by means of a set of buses. A field bus can be configured, depending on the set of boards in the CN2008.

2 FUNCTIONAL SPECIFICATION

2.1 General requirements

General requirements of the device are as follows:

- the system is based on a embedded PC architecture of small sizes. At any rate, the system can be assembled by inserting boards according to the control needs.
- Mounting on DIN Rail (both with high and low profile It is not provided for C rail or wall mounting.
- Connection between the boards is based on the PC104 standard connector. Electric communication is compatible with 16bit PC104/ISA bus.
- This system allows electrical and mechanical integration to every PC104 board, approved by TPA.
- System modularity includes max. 2 expansion boards. Standard dimensions of each board should be in accordance to the PC104 specifications.
- Connection with PC supervisor through Ethernet 100 Mb/s.
- Windows CE Operating System
- Each expansion board includes a dedicated
- Serigraphics indications
- Power supply is integrated and controlled.

2.2 Device composition

The modules making up the CN2008 device are

- MPU Board
- Power supply board (TMS Power) supplying power for both MPU and internal expansion boards.
- Expansion boards (max 2 units PC104)
- Wall assembly elements or DIN Rail
- Storage Memory Unit. Basically identified in a Compact Flash device. The user should preview a simple replacement.

2.2.1 Mechanical features:

- Rectangular metal box

- Following items should be located into the box: power supply board; max 2 PC104 boards; memory support.
- MPU board format 'Capa Board 3.5"'. equipped with PC104 connection.
- System is fanless; however, an external fan can be assembled
- DIN Rail assembly with more directions (horizontal and vertical). Wall fastening
- All the connection are displayed on the front side.

2.2.2 MPU board technical data

- 'Capa Board 3.5" Format
- Processor from 500MHz or 1GHz
- RAM DDR266 SoDIMM 256Mbyte (until 1Gbyte).
- Storage drive: COMPACT FLASH 128Mbyte (or more) removable.
- Fanless Board
- n°.1 CRT output for monitor.
- n°.1 PS/2 I/F for mouse + keyboard.
- n°.2 serials (1xRS232, 1xRS485).
- n°.1 LAN Ethernet 100BaseT.
- n°.1 PC104 ISA bus connector.

2.2.3 PC104 specific expansion boards

- PC104 standard format
- Dedicated panel
- Front side connectors
- TPA's approval of expansion board.

2.2.4 Specification of power supply board

- The power supply for the MPU Board and the expansion boards is given through PC104 connectors and or through dedicated connectors.
- Connection to MPU board through PC104
- Connection to expansion boards through PC 104.
- 1 unit height
- Mounting into the first slot available of the CN2008.
- Signal led of internal powers.
- Power supply in wide range input +24V, from +20V to 30V approx.

- Input protected and filtered.
- Outputs +5V 5A, +12V 2.5A.
- Adaptability to other boards of the MPU group.

3 TECHNICAL SPECIFICATIONS

3.1 System

Processor:	VIA V4 Eden/C7 500MHz or VIA V4 Eden/C7 1GHz or AMD LX800 500MHz
Memory	DDR SODIMM 256 Mb (or greater)
SSD	Compact Flash Type II Socket 128Mb (or greater)
Expansions	2 slots PC104/ISA 16 bits
Operating system	Windows CE 4.2
Operating temperature	5 - 45° C 5 - 60° C with optional fan
Storage temp.	NA
Moisture	10 - 95% relative moisture, without condensation
Power Supply	24 V dc \pm 10%, 4 A
Dimensions	193 x 128 mm max, h = 84mm
Weight	830 g max 1000 g max with 2 expansions installed
Assembly	DIN rail DIN EN50022 and EN50035 or wall assembly

3.2 I/O

I/O Module	1 serial RS485 half-duplex 1 serial RS232 1 PS/2 for keyboard and mouse (for debug only)
Ethernet	n°.1 LAN Ethernet 100BaseT.
CRT	1 out video for monitor (for debug only)
USB	1 USB 2.0 (for debug only)

3.3 Configurations

3.3.1 MPU boards

SBC84710	Embedded Industrial Computer Capa Board 3.5" format, SBC84710VEA-500 or SBC84710VEA -1GE model
SBC84620	Embedded Industrial Computer Capa Board 3.5" format, SBC84620VEA-500 model

3.3.2 SBC84710

- Board: SBC84710VEA-500 or SBC84710VEA-1GE
- Processor: VIA V4 C7 EDEN 500 MHz o 1GHz
- Chipset VIA CX700 + ITE8888G
- Bus clock rate: 500 MHz or 1 GHz
- Main storage: 1 x 200 pin DDR SO-DIMM socket

- Expansion slot PC104 for ISA bus
- Serial port: 1 RS-232 and 1 RS-485
- SSD Compact Flash Type II socket
- Dimensions: ‘Capa Board 3.5’’
- Operation temperature: 0 °C - 60 °C
- Relative moisture content: 10% - 90% not condensed
- Ethernet Realtek RTL8139DL

3.3.3 SBC84620

- Board: SBC84620VEA-500
- Processor: AMD LX800
- Chipset: AMD LX + CS5536 + ITE8888G
- Bus clock rate: 500 Mhz
- Main storage: 1 x 200 pin DDR SO-DIMM socket
- Expansion slot PC104 for ISA bus
- Serial port: 1 RS-232 and 1 RS-485
- SSD Compact Flash Type II socket
- Dimensions: ‘Capa Board 3.5’’
- Operation temperature: 0 °C - 60 °C
- Relative moisture content: 10% - 95% not condensed
- Ethernet: Realtek RTL8139DL

3.3.4 Expansion Board

AlbMech	Control of no more than 8 digital Mechatrolink II ® axes (at 1 ms) GreenBus 3.0 field Bus Possible Feedrate
AlbMech-e	Control up to 8 digital Mechatrolink II ® axes (at 1 ms) Can be used with only AlbMech expansion
CIF 104-COM	CANOpen ® node management in PDO/SDO mode (7KB process image).
TMSbus	CANBUS Management: can be configured on request GreenBus 4.0 bus field Possible Feedrate

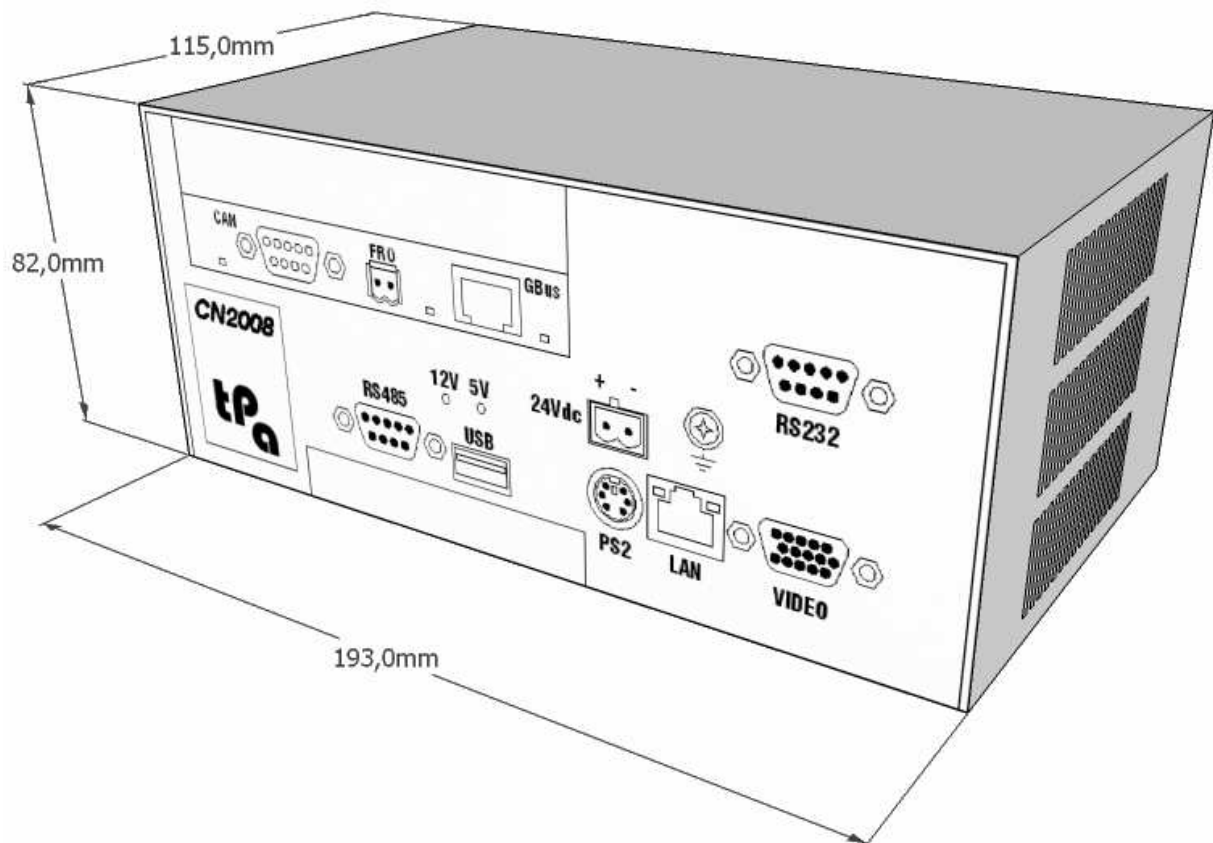
Any combination of expansion boards as above can be used unless exceptions and/or constraints expressly stated.

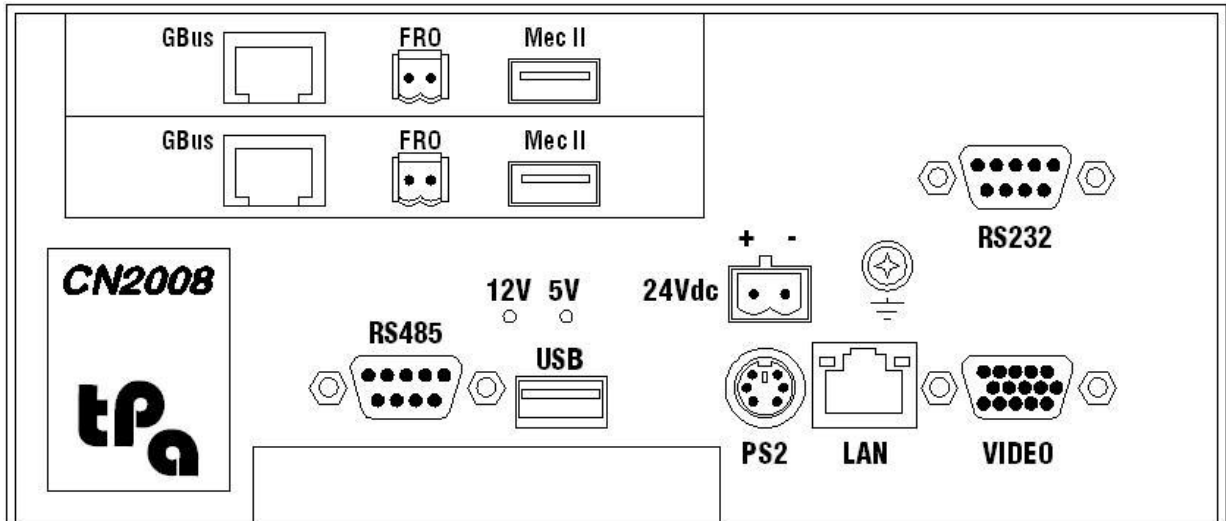
Technical data: see relative documents

3.4 Optional

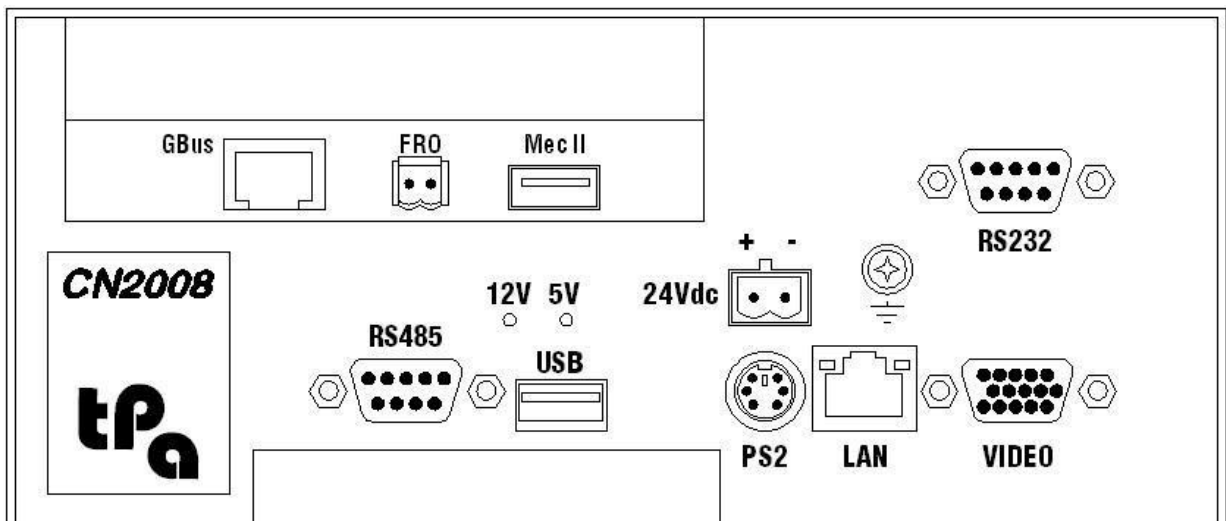
- Fan CN2008, Vdc 24V \pm 10%, 200mA max, arranged for fixing to the CN2008.

3.5 Dimensions

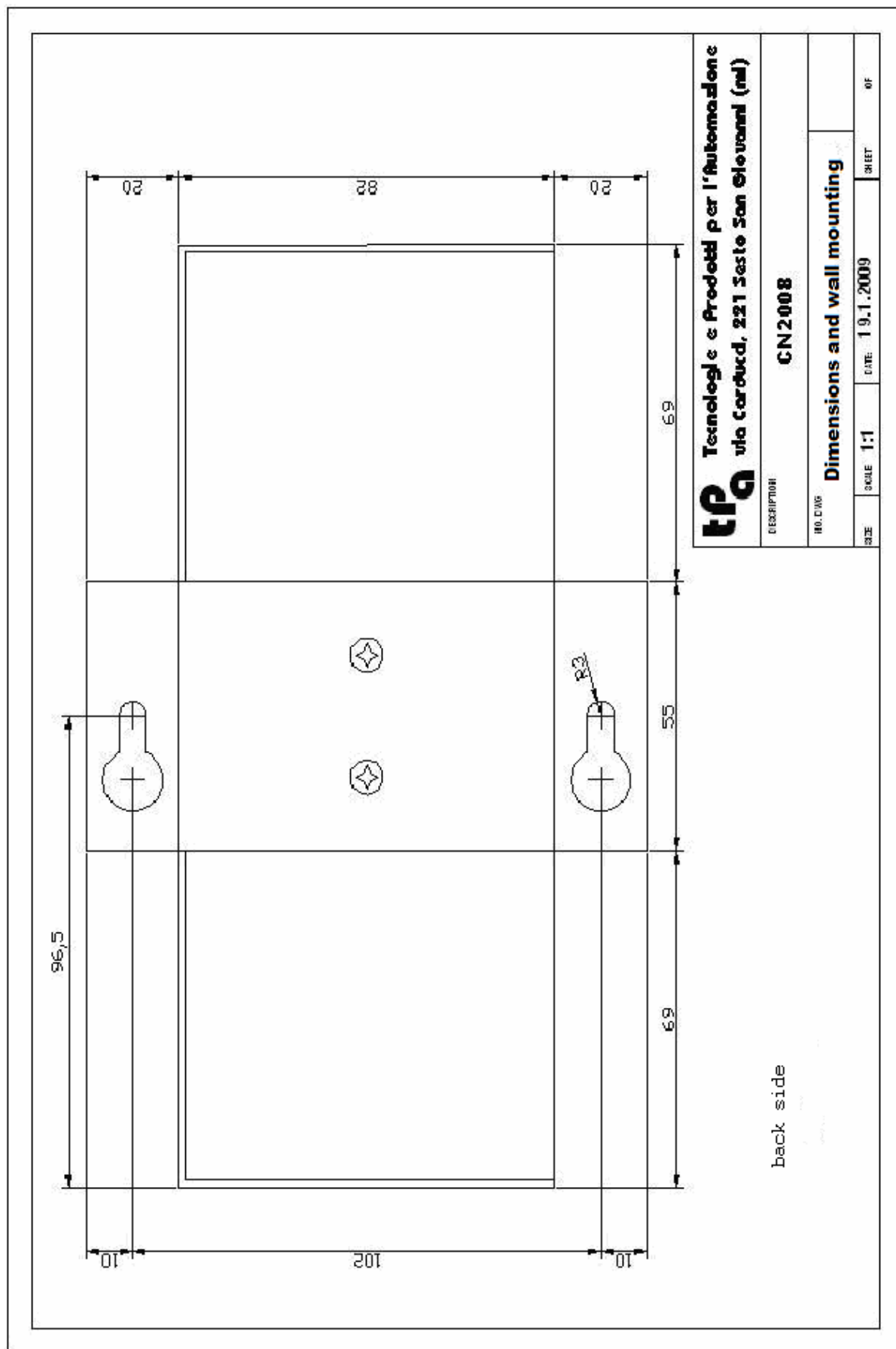


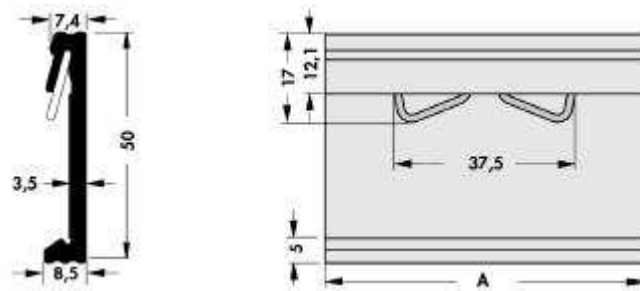


Device with 2 expansion boards



Device with 1 expansion board

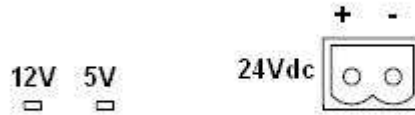




Fixing flange CN2008 on DIN Rail EN50022 and EN50035

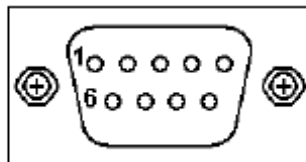
4 DESCRIPTION OF THE INTERFACES

4.1 Power supply connector and led



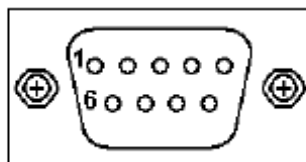
- 12V: internal 12V power led
- 5V: internal 5V power led
- 24Vdc: power connector with polarization serigraphy

4.2 Connector RS-232 (COM2)



Pin	Description
1	DCD
2	RXD
3	TXD
4	DTR
5	Gnd
6	DSR
7	RTS
8	CTS
9	Ring

4.3 Connector RS-485 (COM1)

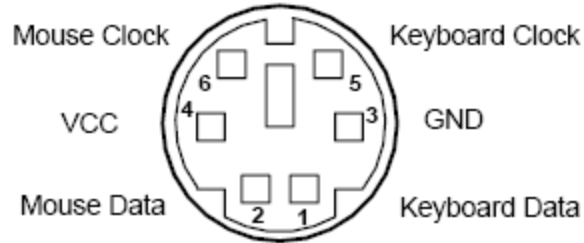


Pin	Description
1	Data -
2	Data +
3	nc
4	nc
5	Gnd
6	nc
7	nc

8	nc
9	nc :

4.4 Keyboard and Mouse PS/2 Connector

Interface is used for debug purpose only

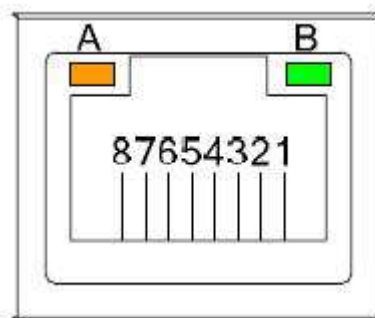


4.5 CRT video out connector

It is a standard VGA connector. The Interface is used for debug purpose only

Pin	Description
1	Red
2	Green
3	Blue
4	nc
5	Gnd
6	AGnd
7	AGnd
8	AGnd
9	nc
10	Gnd
11	nc
12	DDC dat
13	HSync
14	VSync
15	DDC Clk

4.6 LAN Connector

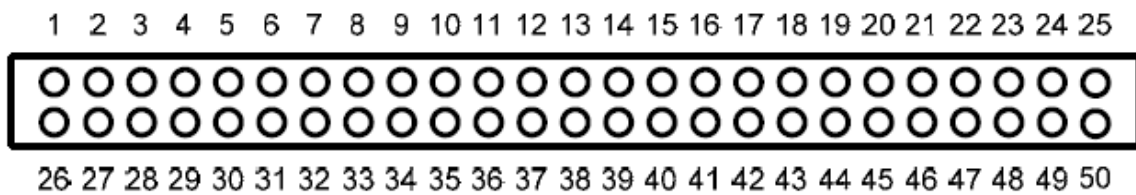


Pin	Description
1	Tx+

2	Tx-
3	Rx+
4	RJ-1 (for 100BaseT only)
5	RJ-1 (for 100BaseT only)
6	Rx-
7	RJ-1 (for 100BaseT only)
8	RJ-1 (for 100BaseT only)
A	Active LED
B	100/1000 LAN LED

It is used for connection to PC supervisor. Use the specified cables later.

4.7 Compact Flash Connector



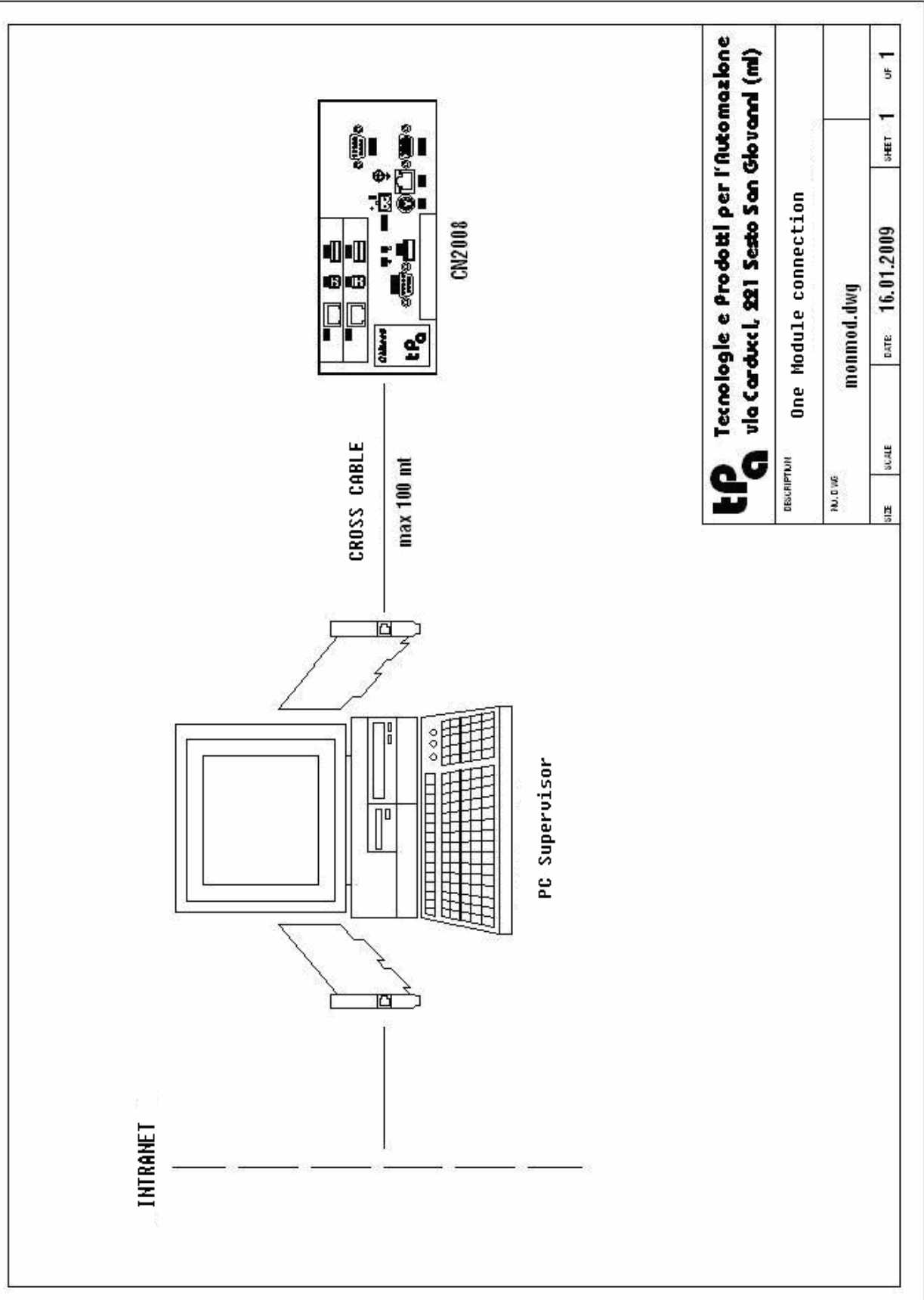
Pin	Description	Pin	Description
1	GND	26	
2	Data3	27	Data11
3	Data4	28	Data12
4	Data5	29	Data13
5	Data6	30	Data14
6	Data7	31	Data15
7	CS0#	32	CS1#
8	Address10	33	VS1#
9	ATASEL	34	IORD #
10	Address9	35	IOWR#
11	Address8	36	WE#
12	Address7	37	INTR
13	VCC	38	VCC
14	Address6	39	CSEL#
15	Address5	40	VS2#
16	Address4	41	RESET#
17	Address3	42	IORDY#
18	Address2	43	DMAREQ
19	Address1	44	DMAACK-
20	Address0	45	DASP#
21	Data0	46	PDIAG#
22	Data1	47	Data8
23	Data2	48	Data9
24	IOCS16#	49	Data10
25	CD2#	50	GND

4.8 USB connector

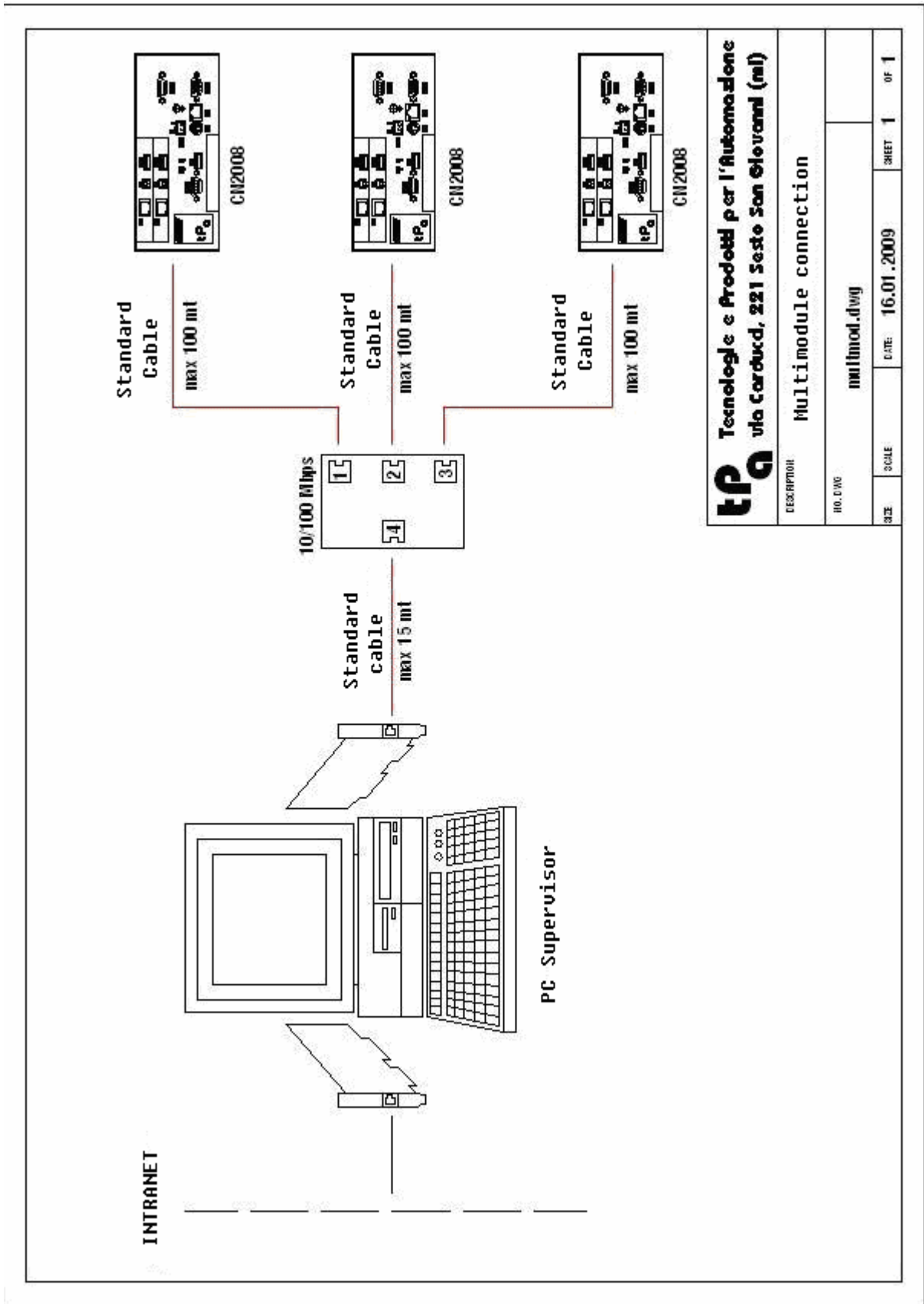
USB interface is normally disabled; in any case it is used for debug purpose only



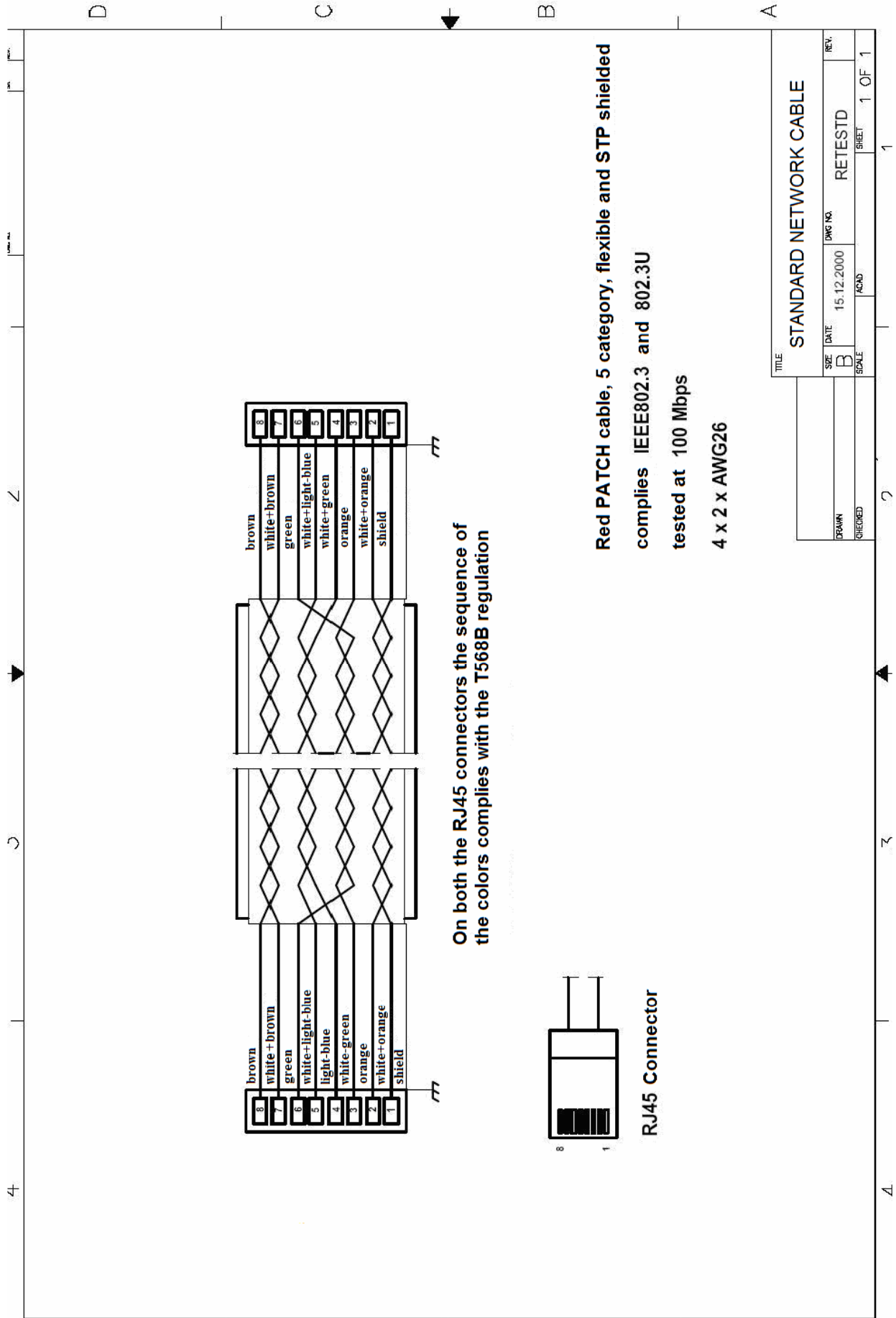
Pin	Description
1	USB Vcc
2	USB -
3	USB +
4	USB Gnd

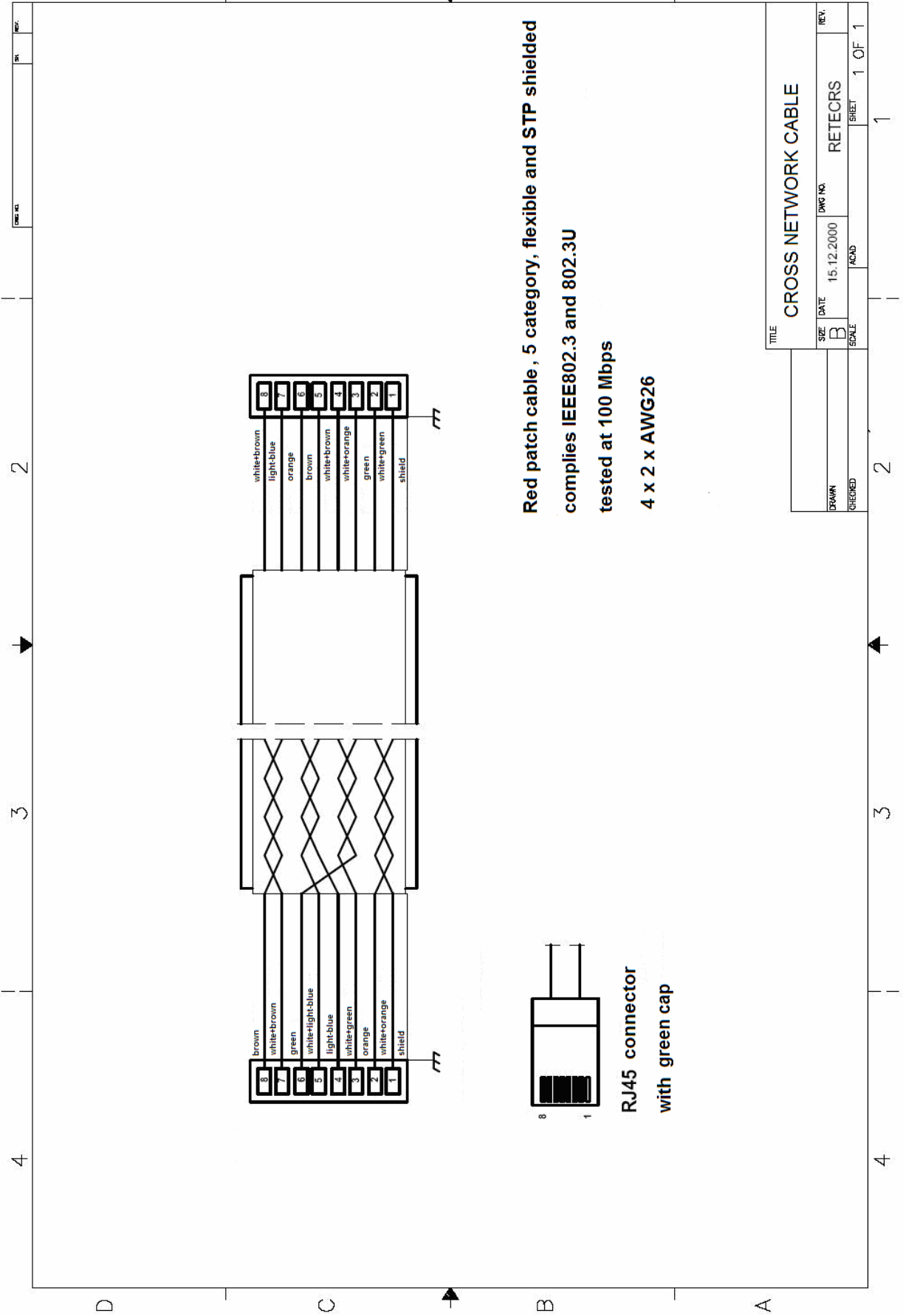


tPa Tecnologie e Prodotti per l'Automazione via Carducci, 221 Sesto San Giovanni (mi)			
DESCRIPTION	One Module connection		
FILE NAME	monmod.dwg		
SIZE	SCALE	DATE	SHEET 1 OF 1
		16.01.2009	



tp Tecnologie e Prodotti per l'Automazione via Carducci, 221 Sesto San Giovanni (mi)	
DESCRIPTION	Multimodule connection
FIG. DWG	multimod.dwg
SIZE	SCALE
	DATE: 16.01.2009
	SHEET 1 OF 1





5 SPECIFICATIONS

Generally, power supply, temperature and moisture must not exceed the values as in chapter 3.

CN2008 must be connected (by means of a special screw) to the earthing.

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

CN2004 is a computerized numeric control for general purposes in the environment of the light industry.

This is a class A product. In a domestic environment this product may cause radio interference: in this case the user may be required to take the due precautions .

5.1 Operating temperature

Temperature in the operational environment of the basic version : from 5°C to 45 ° C.

Using the fan CN2008, the environmental temperature rises from 5°C to 60°C.

5.2 Power Supply

To use CN 2008 we suggest Mean-Well DR120-24.(ac/dc converter) power supply.

However, you can also use a power supply unit (ad/dc converter) with the following technical features: $V_{out} = 24V$ d.c. $\pm 10\%$, $I_{out} = 4$ A, so that CN2008 functions can be guaranteed in all configurations, (see paragraph 3.3).

5.3 Expansion

Depending on the expansion(s) used, please make reference to the documentation for the rules concerning installation and cabling.



T.P.A. S.p.A. Tecnologie e Prodotti per l'Automazione
Via Carducci, 221 - 20099 Sesto S. Giovanni
Tel. +390236527550 – fax: +39022481008
e-mail: marketing@tpaspa.it - www.tpaspa.it
P.I.: IT02016240968 C.F.: 06658040156