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

Numeric Control

CN2128

Documentation

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REVISIONS

Revisions number	Date	Protocol	Changes and/or changed paragraphs
Rev 0	10/01/2013		Preliminary version
Rev 1	25/03/2013		First official release

CONTENTS

Description of CN 2008 numeric control

1 DESCRIPTION

CN2128 in an embedded computer with PCI and PCIe bus.

CN2128 is a device that can be installed in an electric cabinet.

CN2128 can be configured by the user and house TPA homologated PCI and PCIe boards.

According to the set of boards in the CN2128 the user can configure a field bus.

2 FUNCTIONAL SPECIFICATIONS

2.1 General requirements

- General requirements of the device are as follows:
- the system is based on a embedded PC architecture. At any rate the system can be assembled by inserting boards according to the control needs.
- Wall mounting (vertically or horizontally).
- Connection between boards is based on PCI buses and standard PCIe; the system allows the mechanic and electric integration to any TPA homologated CPI or PCIe.
- The modularity of the system consists of 4 PCI expansion slots, 1 PClex16 slot, 1 PCIe x 4 slot. Standard dimensions of each used board must comply with PCI and/or PCIe specifications.
- CN2128 must be connected to a PC supervisor through an 10/100/1000 Mb/s Ethernet network.
- Each expansion board includes a little standard front shield.
- Power is integrated and checked.

2.2 Device composition

The modules making up the CN2008 device are:

- MPU Board
- Power supply unit supplying power for both MPU and internal expansion boards.
- Expansion boards (max 4 PC units+ 2 Pcle).
- Fastening elements.
- Storage Memory Unit, located in a SATA DOM device.

2.2.1 Mechanical features:

- Rectangular metal box
- The box houses the MPU board, the power supply unit, max 6 PCI/PCIe boards and the memory support.
- Format of MPU board, 'ATX Standard', equipped with the PCI and PCIe connection.

- The system is supplied with ventilation.
- Wall fastening with more directions (horizontal and vertical).
- All the connection are displayed on the front side.

2.2.2 MPU board technical data

'ATX standard‘ format.

2 GHz.Intel Core2 Duo processor

RAM DDR3 800/1066 2GB

Storage drive SATA DOM 512 Mb (or greater)

no.1 serial RS485

no.1 serial RS232

no.2 LAN Ethernet 10/100/1000 Mb/s.

no.4 USB 2.0

no.4 PCI slots

no.1 PCIe x16 slot

no.1 PCIe x4 slot

2.2.3 PC104 specific expansion boards

- Standard PCI format (32bit, 33MHz).
- Standard front shield
- Front connectors.
- TPA's approval on expansion board..

2.2.4 PCIe specific expansion board

- Standard (x1, x2, x4, x16) PCLe format
- Standard front shield
- Front connectors.
- TPA's homologation of the expansion board.

2.2.5 Specification of power supply unit

- The power for the MPU board and the expansion boards if provided through the ATX - 24 poles - connectors and the 4 poles for the power of the microprocessor (12 V).
- Height 1 unit.

- Mounting in its appointed seat with fan hole and power input from the network available from the front side.
- Input power 110/230VAC self-switch with PFC
- Filtered input protected by internal fuse.
- +5V 16A, +12V1 16A, +12V2 16A, +3.3V 14A, -12V 0,5A, +5Vsb 3A outputs.

3 TECHNICAL DATA

3.1 System

Processor	LGA775 Intel Core2 Duo 2 GHz
Memory	DDR3 800/1066 2GB
D.O.M.	FSD SATA DOM 512 MB (or greater)
Espansions	4 slot PCI 1 slot PCIe x16 1 slot PCIe x4
Operating system	Windows CE 6.0
Operating temperature	0 - 45° C
Storage temp.	NA
Moisture	10 - 95% relative moisture, without condensation
Power Supply	115/230Vac ± 10%, 6.3A max.@115Vac ;3A max.@230Vac
Dimensions	150x325x280 mm
Kind of mounting	Wall mounting (vertically or horizontally))

3.2 I/O

Module I/O	1 serial COM1: RS485 (RS232/ RS422) 1 serial COM2 RS232 2 PS/2 for keyboard and mouse (for debug only)
Ethernet	2 Lan Ethernet 1 Gb/s
CRT	1 VGA out per monitor (solo per debug)
USB	4 USB 2.0

3.3 Configurazions

3.3.1 TPA expansion board

DualMech	2 Mechatrolink II ® digital control channels
DualMechMono	1 Mechatrolink II ® digital control channel
TMSBus+	CANBUS control GreenBus 4.0 field Bus Federate input Control of non-volatile memory
TMSCAN+	CANBUS control Federate input Control of non-volatile memory

WARNING! : Any configuration of CN2128, from the allowed ones, always includes a TMSBus+ or a TMSCAN+ board, that must be housed in the PCI, slot 1.

3.3.2 Configurations with EtherCAT bus®

If CN2128 is a muster bus with EtherCAT® , the EtherCAT® network is activated on LAN2.

The acceptable configurations are

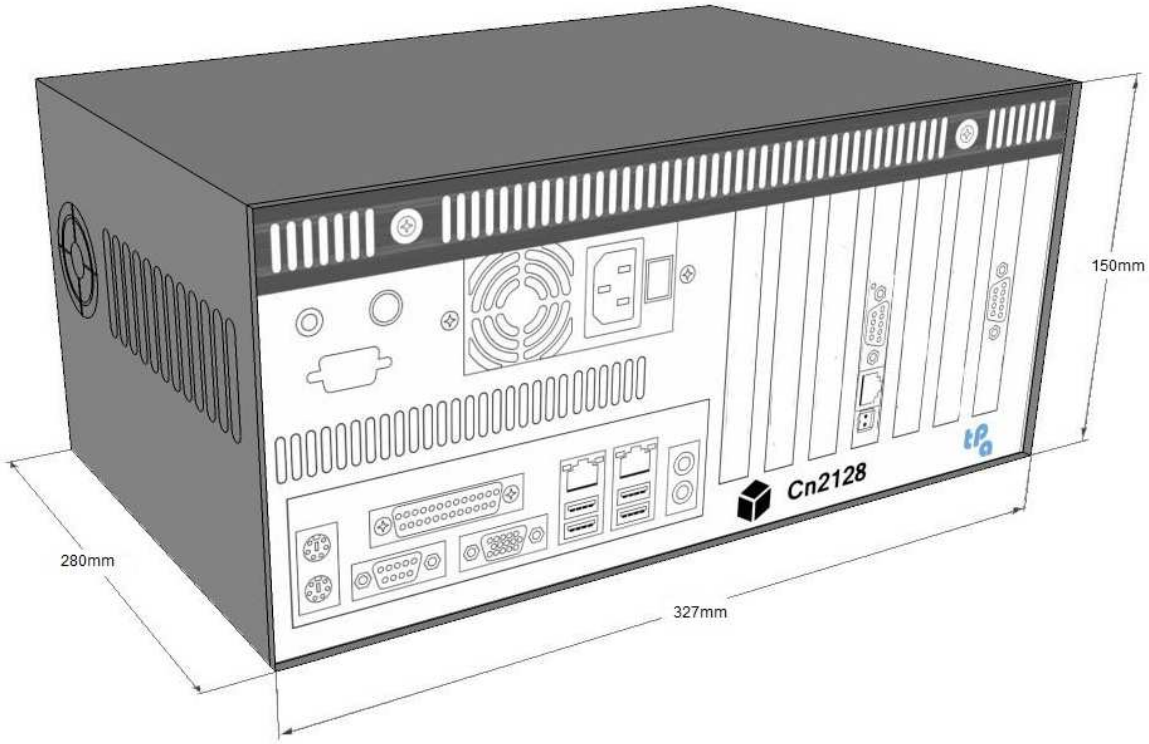
- Bus EtherCAT®, with a TMSBus+ board.
- Bus EtherCAT®, with a TMSCAN+ board.
- Bus EtherCAT®, with one ore more (up to 3 max.) boards according to preferences between TMSBus+ and/or TMSCAN+.

WARNING! Configurations with EtherCAT® bus and DualMech and/or DualMechMono boards are not accepted.

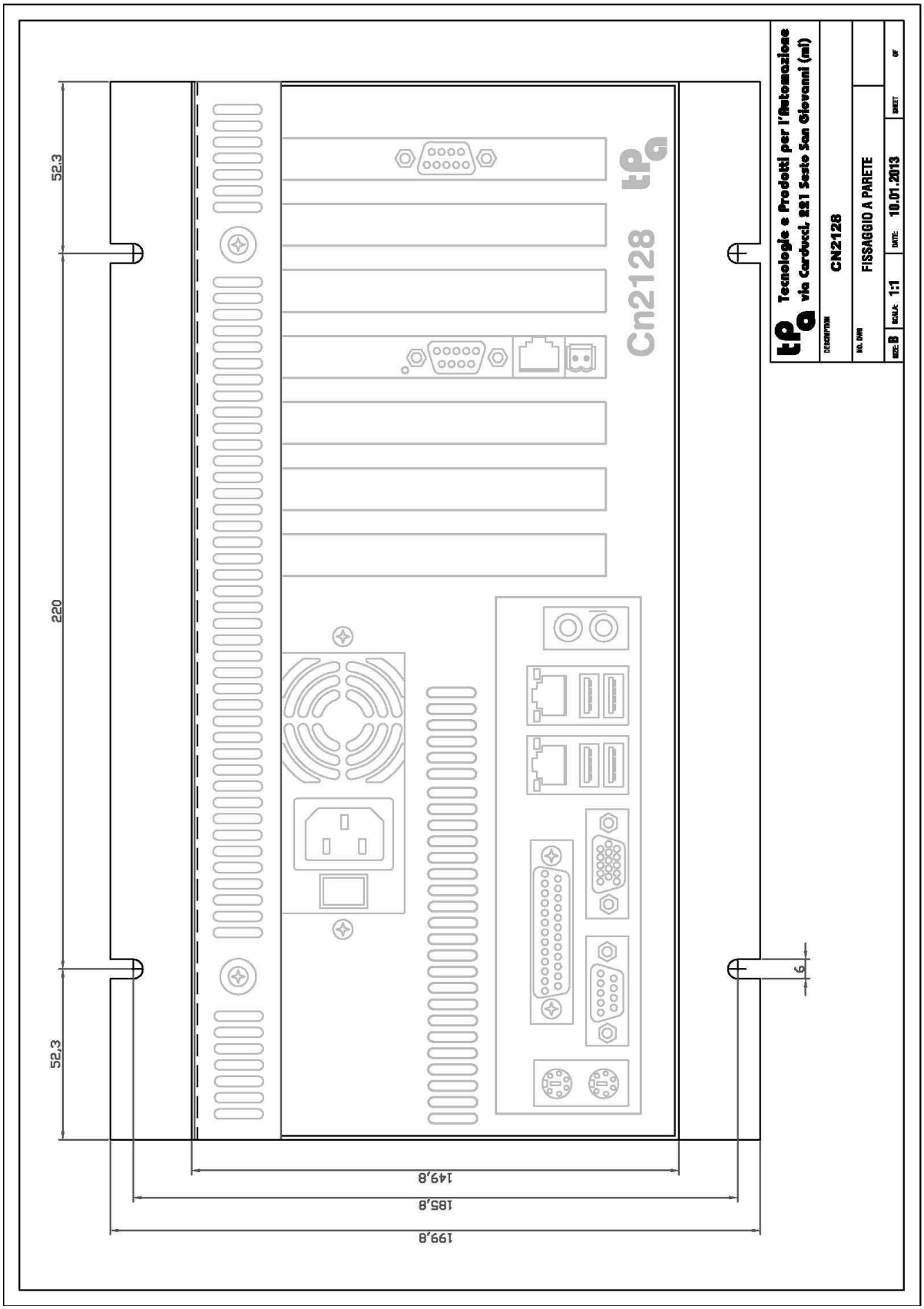
3.3.3 Configurations with TPA boards only

Any combination of TMSBus+, TMSCAN+, DualMech and DualMechMono (max. 4 boards) TPA boards is possible, on condition that the board in the PCI slot 1 is a TMSBus+ or a TMSCAN+.

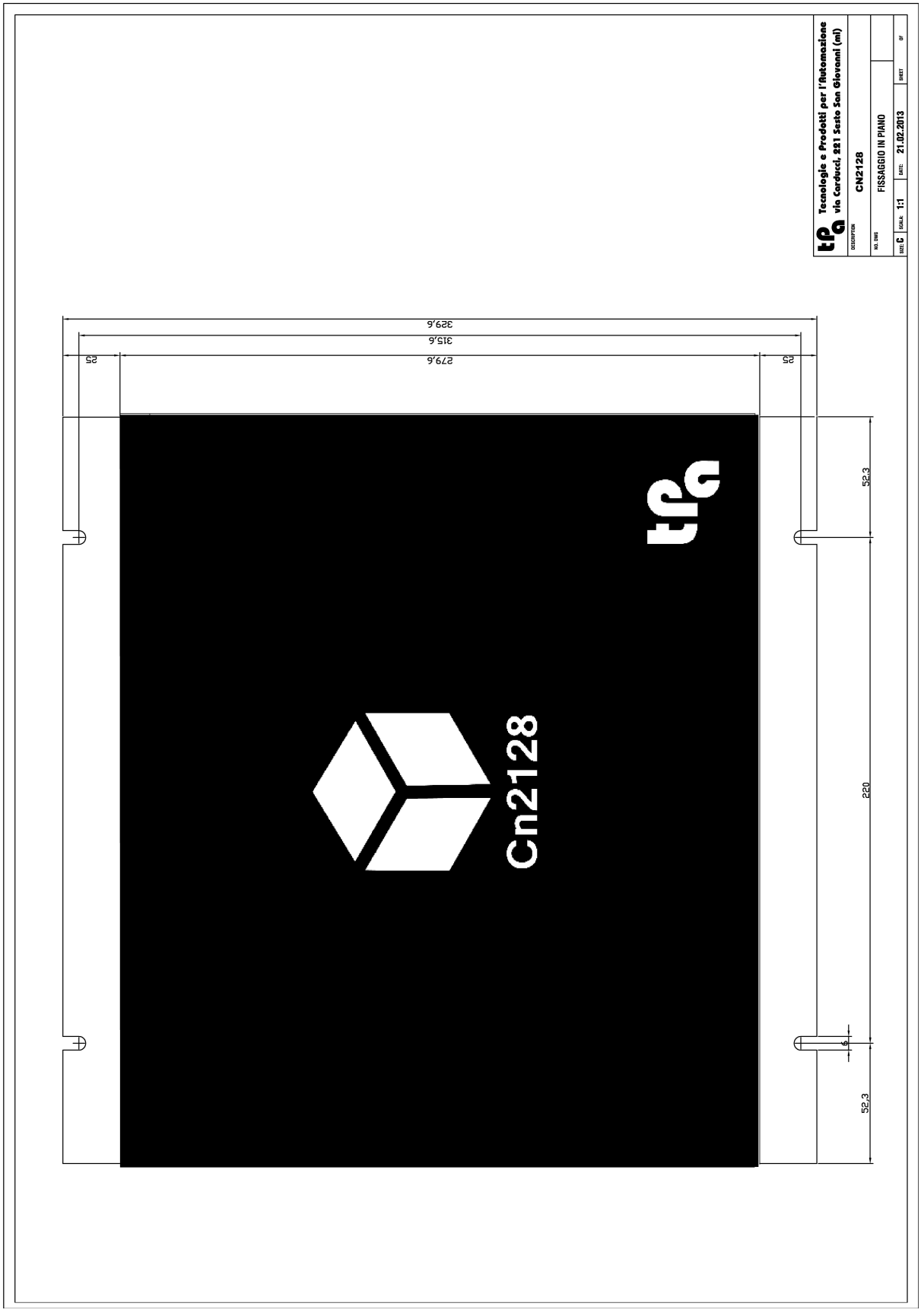
3.4 Dimensions



3.5 Wall fastening

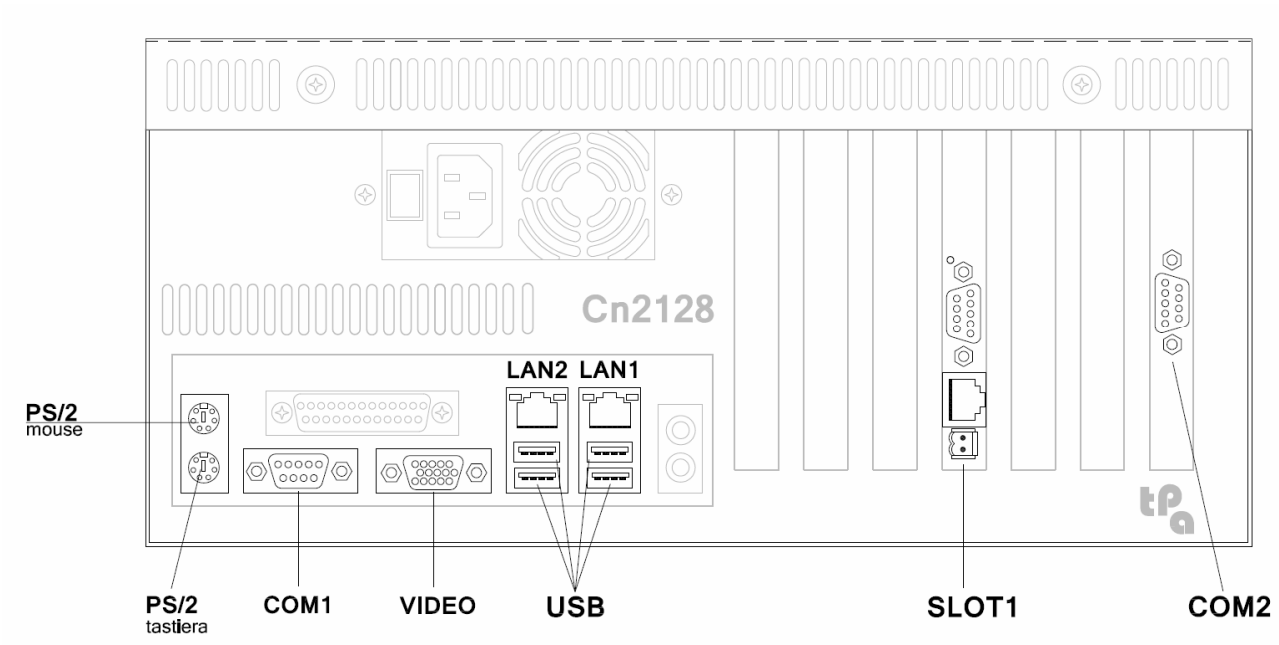


3.6 Plane fastening

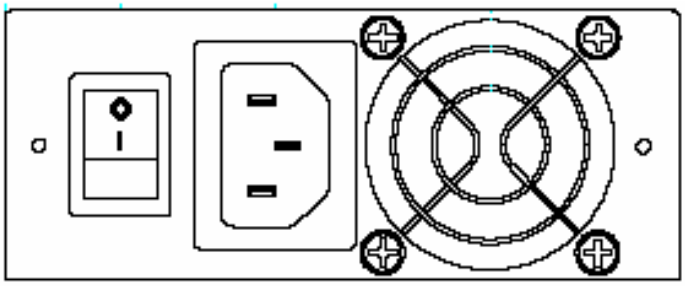


4 DESCRIPTION OF THE INTERFACES

4.1 Layout

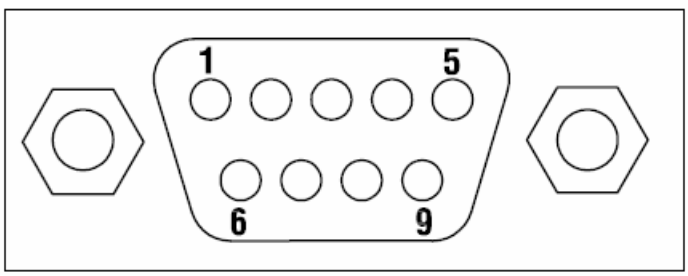


4.2 Supply connector



4.3 COM1 and COM2 serial ports

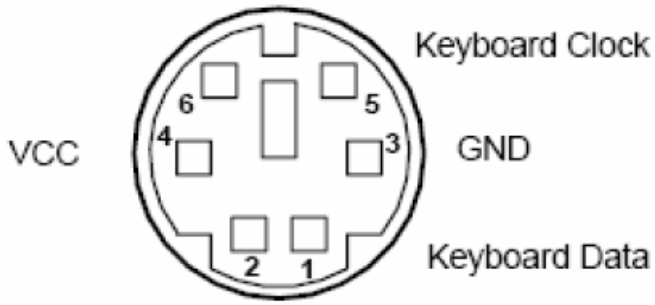
La porta seriale COM1 è di default RS485, ma puo' essere configurata anche in RS232/422 spostando dei jumper sulla scheda madre. La COM2 è sempre una RS232.



Pin	RS232 Configuration	RS485 Configuration
1	DCD, Data carrier detect	Data -
2	RXD, Receive data	Data +
3	TXD, Transmit data	nc
4	DTR, Data terminal ready	nc
5	GND, Ground	GND, Ground
6	DSR, Data set ready	nc
7	RTS, Request to send	nc
8	CTS, Clear to send	nc
9	RI, Ring indicator	nc

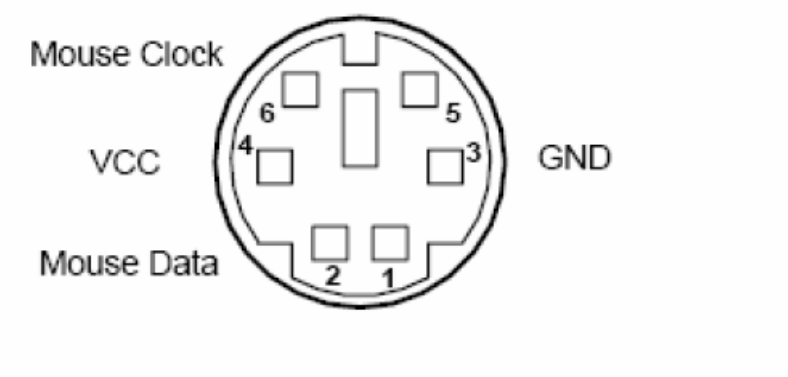
4.4 Connector PS/2 Keyboard

For debug purpose only



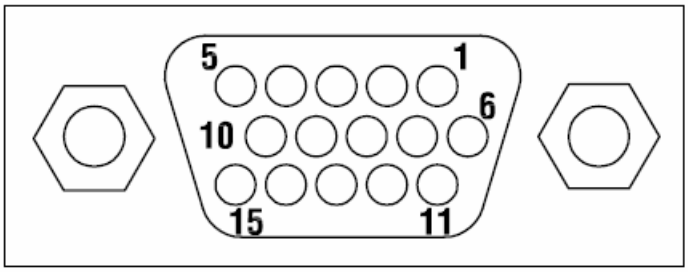
4.5 Connector PS/2 Mouse

For debug purpose only



4.6 CRT Video out connector

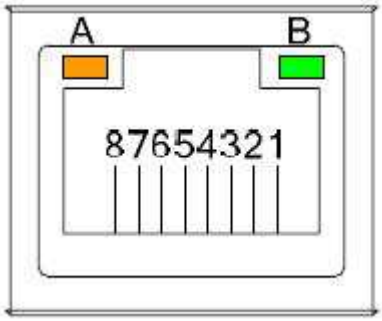
Standard VGA connector Interface is used for debug purpose only



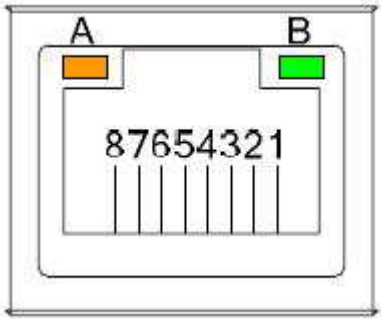
Pin	Description	Pin	Description	Pin	Description
1	Red	2	Green	3	Blue
4	N/A	5	GND	6	GND
7	GND	8	GND	9	Vcc
10	GND	11	N/A	12	DDC Data
13	Horizontal Sync	14	Vertical Sync	15	DDC Clock

4.7 LAN Connectors

LAN2 - INTEL 82574L



LAN1- INTEL 82567LM



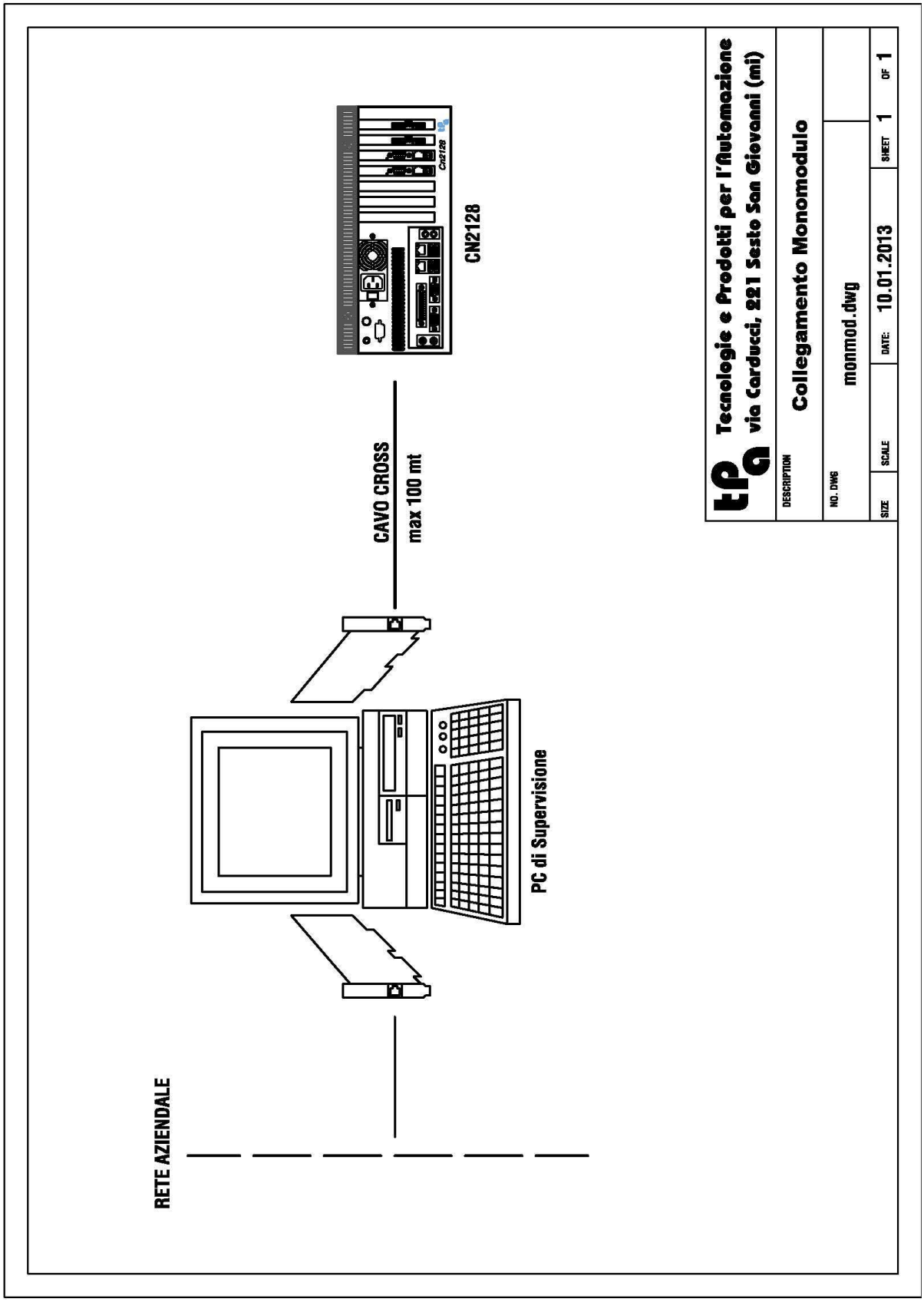
Pin	Description
1	Tx+
2	Tx-
3	Rx+
4	RJ-1 (for 100BaseT only)
5	RJ-1 (for 100BaseT only)
6	Rx-
7	RJ-1 (for 100BaseT only)
8	RJ-1 (for 100BaseT only)
A	Active LED
B	100/1000 LAN LED

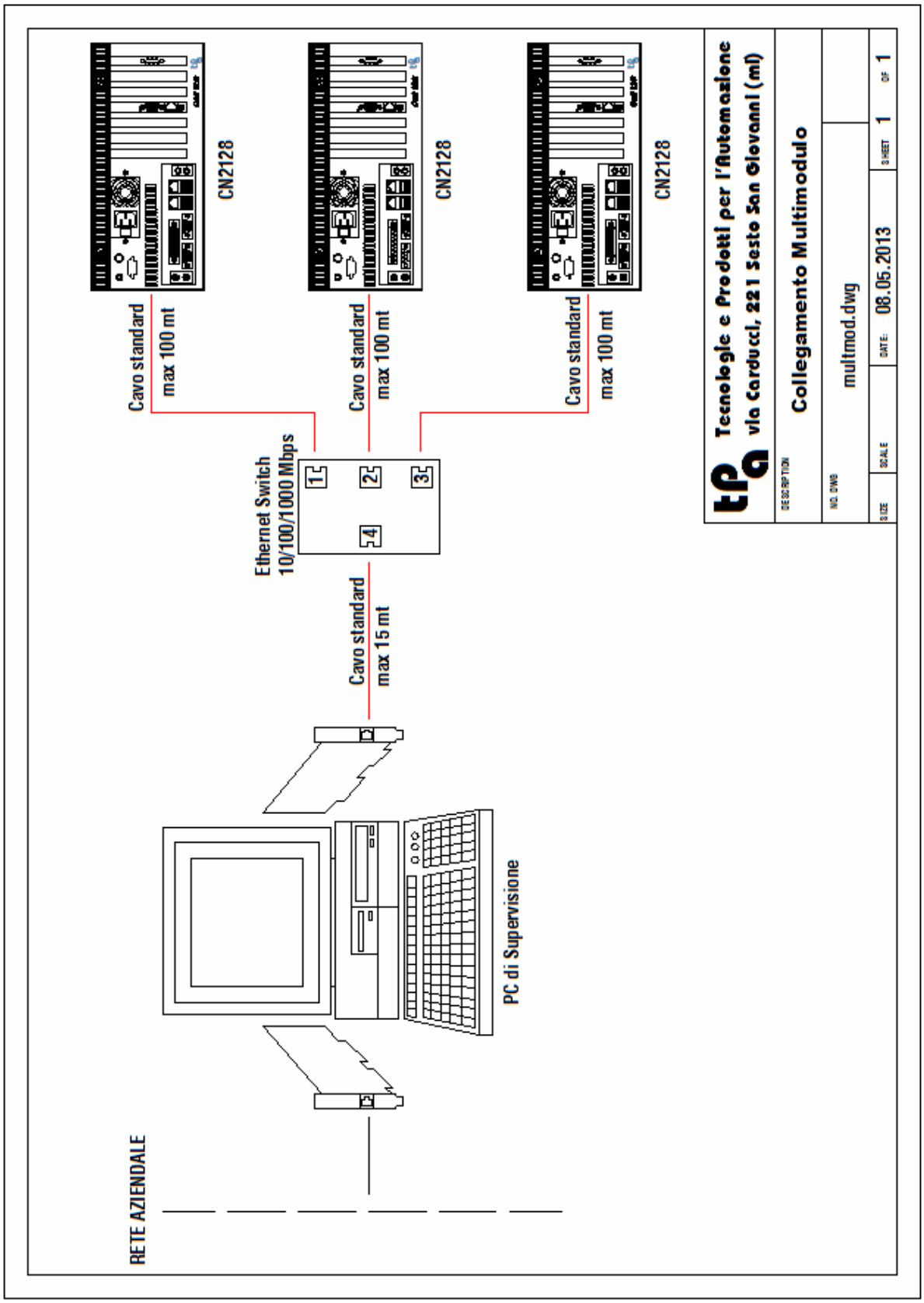
In case of connection to EtherCat®, please use LAN2

4.8 USB Connector

This device has four normally enabled USB ports.

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


RETE AZIENDALE
PC di Supervisione
CAVO CROSS
max 100 mt
CN2128
tpa
Tecnologie e Prodotti per l'Automazione
via Carducci, 221 Sesto San Giovanni (mi)
DESCRIPTION
Collegamento Monomodulo
NO. DWG
monmod.dwg
SIZE
SCALE
DATE: 10.01.2013
SHEET 1 OF 1


CN2128
CN2128
CN2128
Cavo standard
max 100 mt
Cavo standard
max 100 mt
Cavo standard
max 100 mt
Ethernet Switch
10/100/1000 Mbps
1
2
3
4
Cavo standard
max 15 mt
PC di Supervisione
RETE AZIENDALE
Tecnologie e Prodotti per l'Automazione
via Carducci, 221 Sesto San Giovanni (mi)
Collegamento Multimodulo
multmod.dwg
08.05.2013

5 SPECIFICATIONS

Generally, power supply, temperature and moisture must not exceed the values shown in chapter TECHNICAL DATA.

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

CN2128 is a computerized numeric control for general use within the light industry environment.

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 .

T.P.A S.p.A. does not assume any responsibility in case of failures, malfunctions or defects resulting from the failure to apply the instruction described.

5.1 Operating temperature

Temperature in the operational environment of the basic version : from 0 °C to 45 ° C.

5.2 Power Supply

To use the CN21288 you need a 115/240Vac power line, that guarantees CN2128 functionality in all the configurations as in the paragraph

5.3 Expandibility

According to the expansion(s) used, please make reference to the suitable documentation for the installation and cabling rules. For the accepted configurations, please read chapter Configurazion.

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