

Cn2128 SE

Numeric Control

Documentation

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REVISIONS

Revision number	Date	Protocol	Changes and/or changed paragraphs
Rev 0	10/10/2018		Pre-series version
Rev 1	15/01/2019		First release

CONTENTS

This document describes the CN2128SE numeric control.



1 DESCRIPTION

CN2128SE is an embedded computer with PCI and PCIe buses.

CN2128SE is a device that can be installed into an electric cabinet.

CN2128SE can be configured by the user and can house TPA homologated PCI and PCIe boards.

According to the set of boards inserted into the CN2128SE it is possible to obtain a field bus configuration.

2 FUNCTIONAL SPECIFICATIONS

2.1 General requirements

Essential requirements of the device are as follows:

- The system is based on an embedded PC architecture. However, the system can be assembled by inserting boards according to the control requirements.
- Wall mounting (in vertical or horizontal position)
- Connection between boards is based on PCI and standard PCIe buses; the system enables the mechanic and electric integration with any TPA homologated PCI or PCIe.
- The modularity of the system consists of 5 PCI expansion slots, 1 PCIe slot x16, 1 PCIe slot x4. Each board in use must have standard dimensions in accordance with the PCI and/or PCIe specifications.
- CN2128SE can be connected to a supervisor PC through 10/100/1000 Mb/s Ethernet network.
- Each expansion board includes a little standard front shield.
- The power supply is integrated and checked.

2.2 Device composition

The modules that make up the CN2128SE device are as follows:

- MPU board.
- Power supply unit supplying power both for MPU and for internal expansion boards.
- Expansion boards (max 4 PCI units+ 2 PCIe).
- Fastening elements.
- Storage Memory Unit located into a SATA SSD 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.
- 'ATX Standard' Format MPU board, equipped with PCI and PCIe connection.
- The system is supplied with ventilation.

- Wall fastening in several directions (horizontal and vertical).
- All the connections are displayed on the front side.

2.2.2 MPU board specifications

- 'ATX standard' format.
- Processor compatible with LGA1150 slot, compatible with Intel Q87 chipset and power lower than 60W.
- RAM DDR3 1333 2GB
- Storage drive SATA SSD 32 GB (or higher)
- No. 1 RS485 serial (COM1)
- No. 1 RS232 serial (COM2)
- No. 2 LAN Ethernet 10/100/1000 Mb/s.
- No. 2 USB 2.0
- No. 4 USB 3.0.
- No. 4 PCI slots.
- No. 1 PCIe slot x16.
- No. 1 PCIe slot x4.

2.2.3 PCI expansion board specifications

- Standard PCI format (32bits, 33MHz).
- Standard front shield.
- Front Connectors.
- Expansion board TPA homologation.

2.2.4 PCIe expansion board specifications

- Standard (x1, x2, x4, x16) PCIe format.
- Standard front shield.
- Front connectors.
- Expansion board TPA homologation.

2.2.5 Power supply unit specifications

- The power required for the MPU board and the expansion boards is provided through ATX 24 pole-connectors and 4 poles for the power supply of the processor (12 V).

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

3 TECHNICAL SPECIFICATIONS

3.1 System

Processor	Intel Pentium G3420 or equivalent (LGA1150 socket)
RAM	DDR3 1333 2 GB (or higher)
Disk	SATA SSD 32 GB (or higher)
Expansions	4 PCI slots 1 PCIe slot x16 1 PCIe slot x4
Operating system	Windows7 embedded 32 bits + Kernel RTX
Operating temperature	0° - 45° C
Storage temperature	NA
Humidity	10 - 95% relative humidity, without condensation
Power supply	115/230Vac \pm 10%, 6.3A max. @115Vac ;3A max. @230Vac
Dimensions	150x325x280 mm
Mounting	Wall mounting (vertically or horizontally)

3.2 I/O

I/O module	1 serial COM1: RS485 (configurable) 1 serial COM2: RS232 1 PS/2 for keyboard and mouse (for debug only)
Ethernet	2 Lan Ethernet 1 Gb/s
CRT	1 HDMI (for debug purpose only)
USB	2 USB 2.0, 4 USB 3.0

3.3 Configurations

3.3.1 TPA Expansion boards

DualMech	2 Mechatrolink II ® digital control channels
DualMechMono	1 Mechatrolink II ® digital control channel
TMSBus+	CANBUS Control GreenBus 4.0 Field bus Feedrate Input Control of non-volatile memory
TMSCAN+	CANBUS Control Feedrate Input Control of non-volatile memory

Warning! Any configuration of CN2128 among the admitted ones always includes one TMSBus+ or a TMSCAN+ board at least, that must be housed in the PCI slot 1.

3.3.2 Configurations with EtherCAT® bus

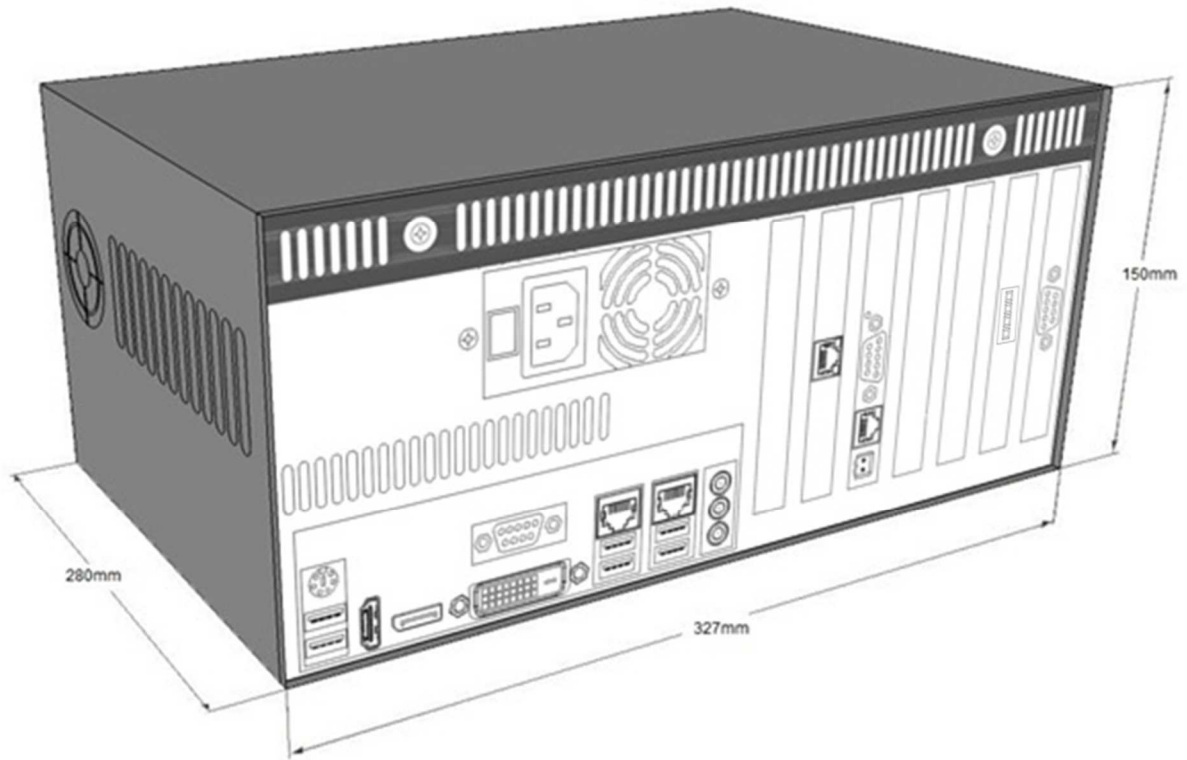
When CN2128SE is a bus master with EtherCAT®, the EtherCAT® network must be activated on an additional INTEL-type Gigabit CT Desktop EXPI9301CT LAN board housed in PCIe slot x4.

Any configuration with EtherCAT® Bus requires the use of at least 1 TMSBus+ or TMSCAN+ board to be housed in the PCI SLOT1.

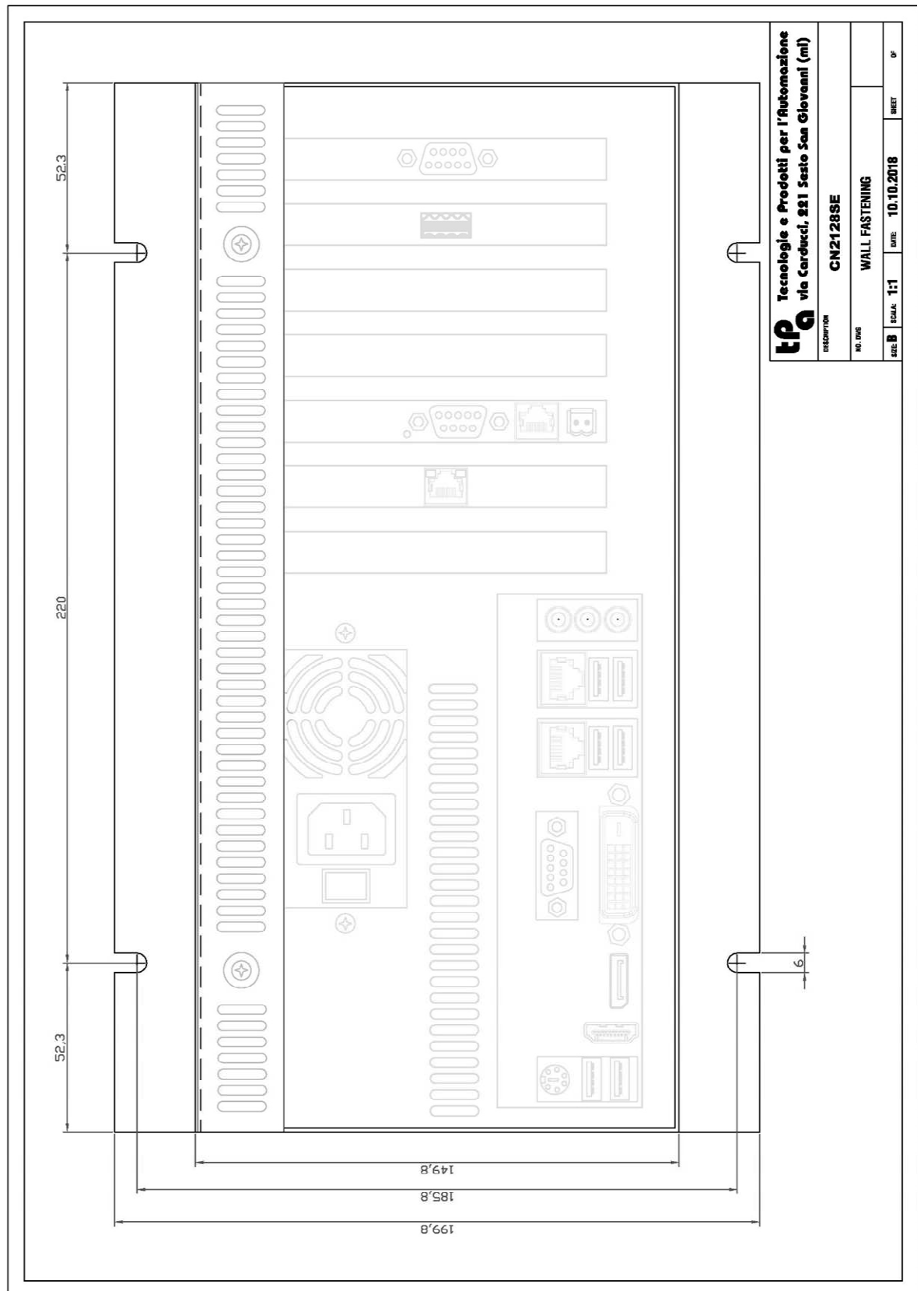
3.3.3 Configurations with TPA boards only

Any combination of TMSBus+, TMSCAN+, DualMech and DualMechMono TPA boards is allowed, up to a maximum of 4 boards, provided that the board in the PCI SLOT1 is either a TMSBus+ or a TMSCAN+.

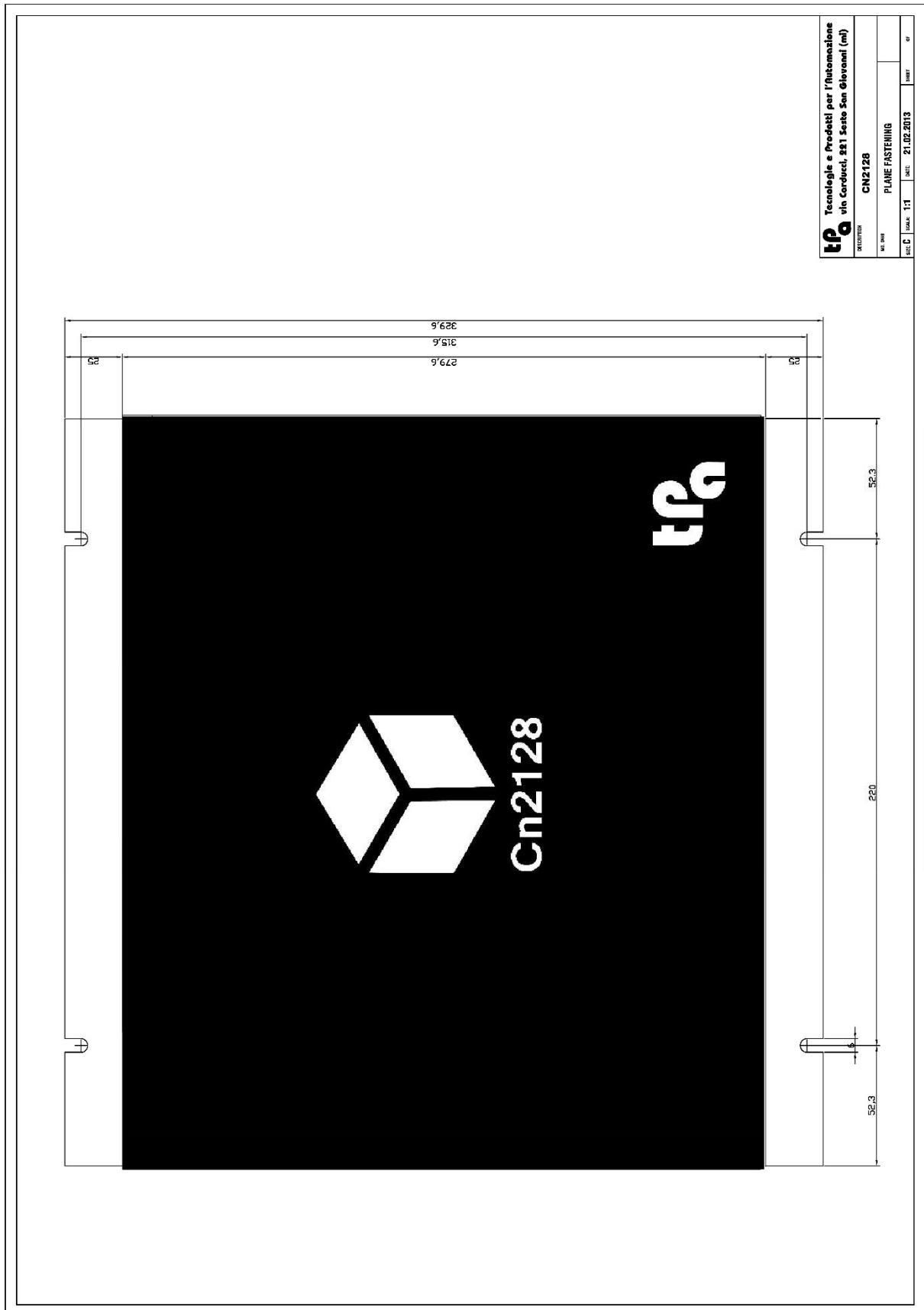
3.4 Dimensions



3.5 Wall fastening

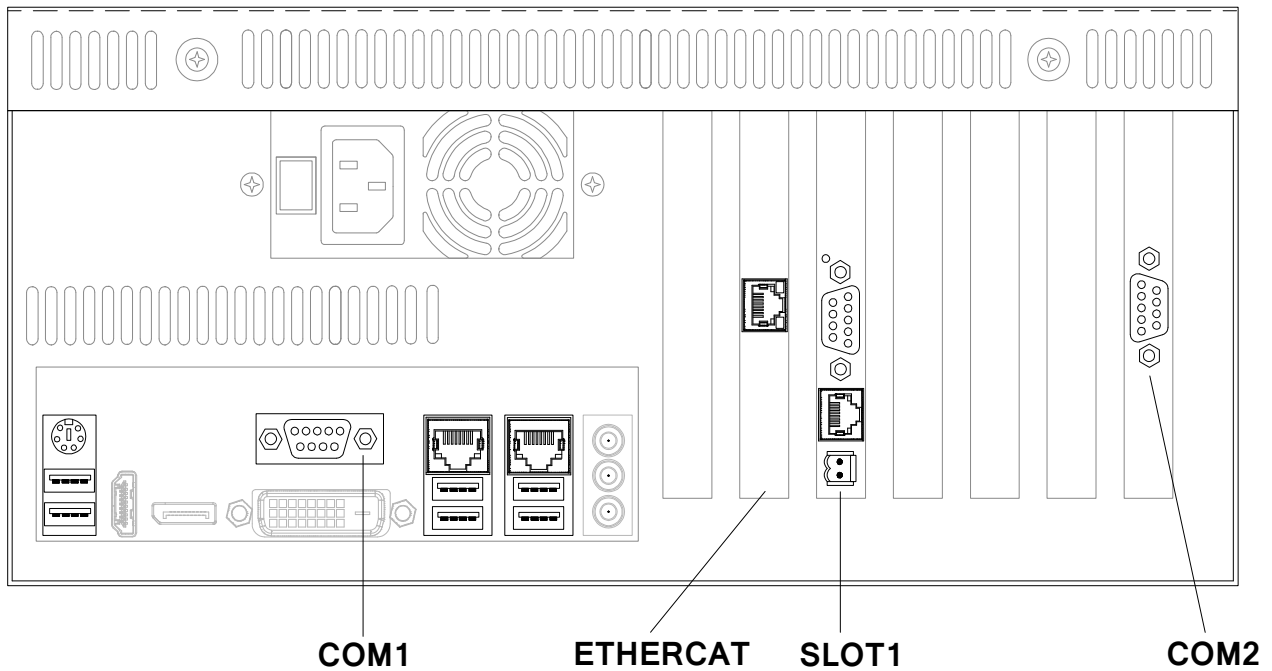


3.6 Plane fastening

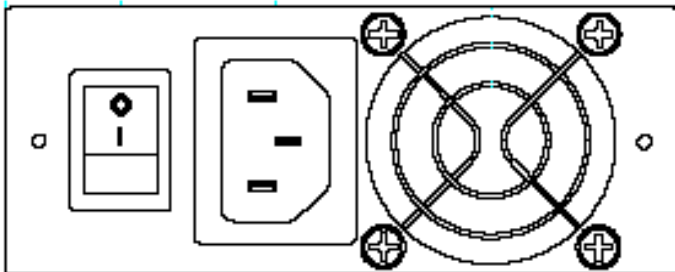


4 INTERFACE DESCRIPTION

4.1 Layout

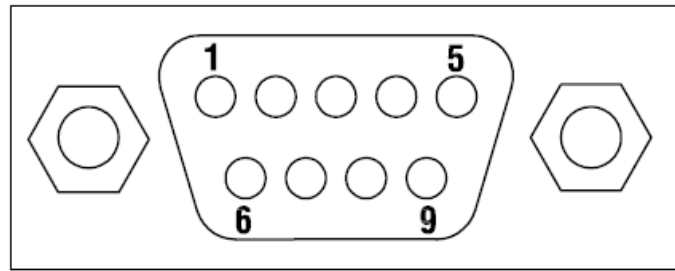


4.2 Power supply connector



4.3 COM1 and COM2 serial ports

COM1 serial port has a default value of RS485 but can also be configured as RS232/422 by modifying the BIOS. COM2 is always a RS232.



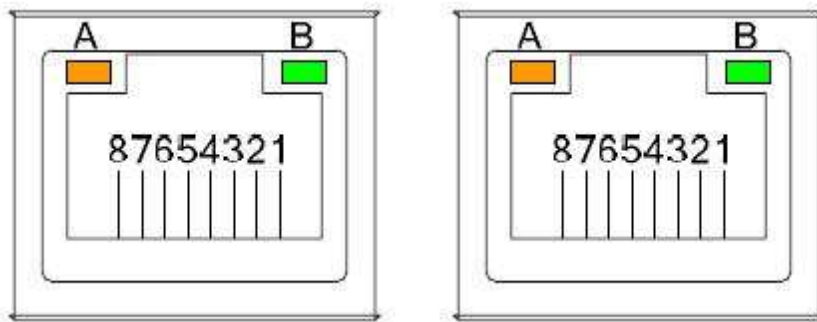
Pin	RS232 Configuration	RS485 Configuration	RS422 Configuration
1	DCD, Data carrier detect	Data -	TXD-
2	RXD, Receive data	nc	RXD+
3	TXD, Transmit data	Data +	TXD+
4	DTR, Data terminal ready	nc	RXD-
5	GND, Ground	GND, Ground	GND, Ground
6	DSR, Data set ready	nc	nc
7	RTS, Request to send	nc	nc
8	CTS, Clear to send	nc	nc
9	RI, Ring indicator	nc	nc

Warning! The pinout of COM1 in RS485 mode (default) differs from the one of CN2128 control.

4.4 LAN Connectors

LAN2 - INTEL I217LM

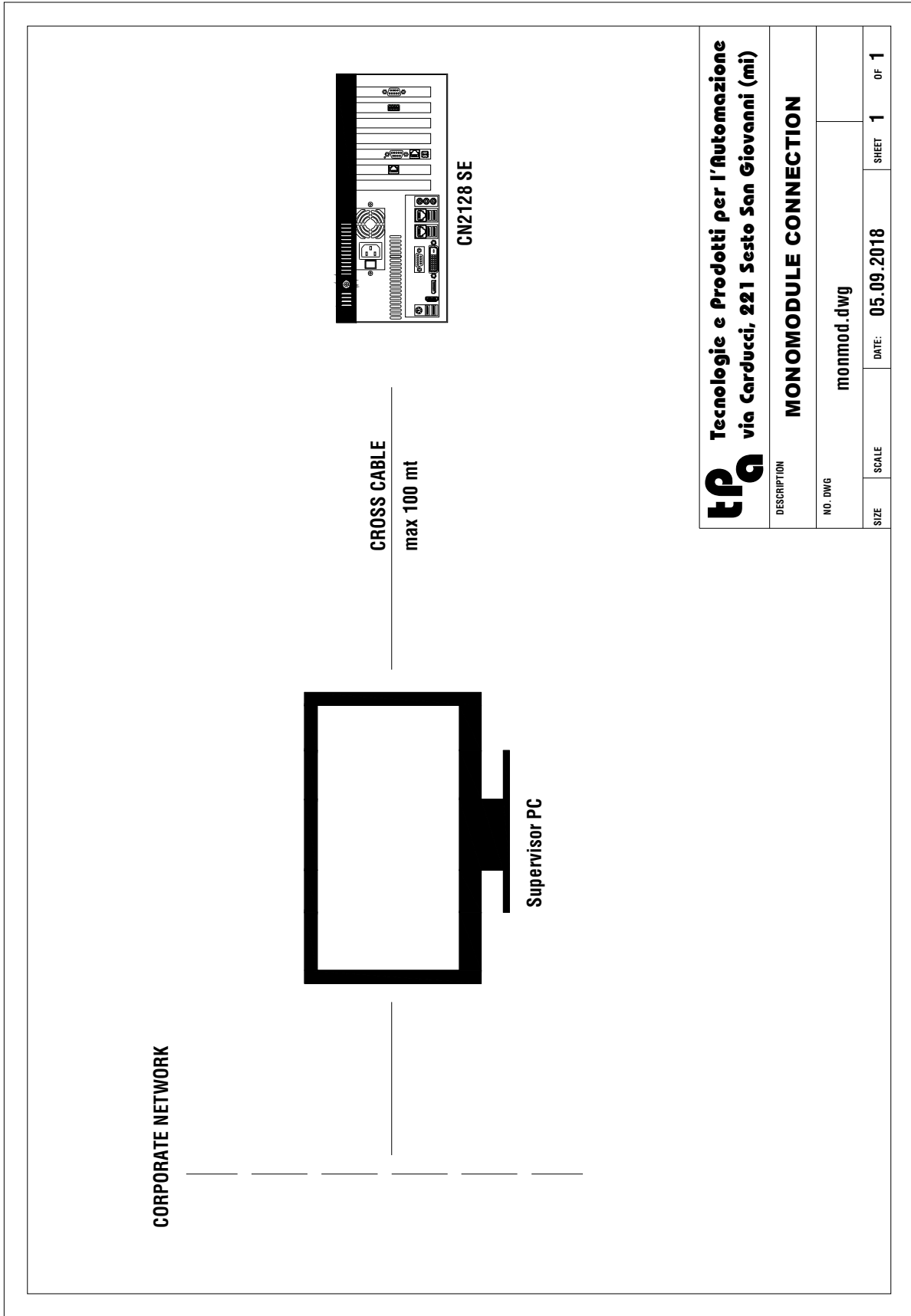
LAN1- I210AT



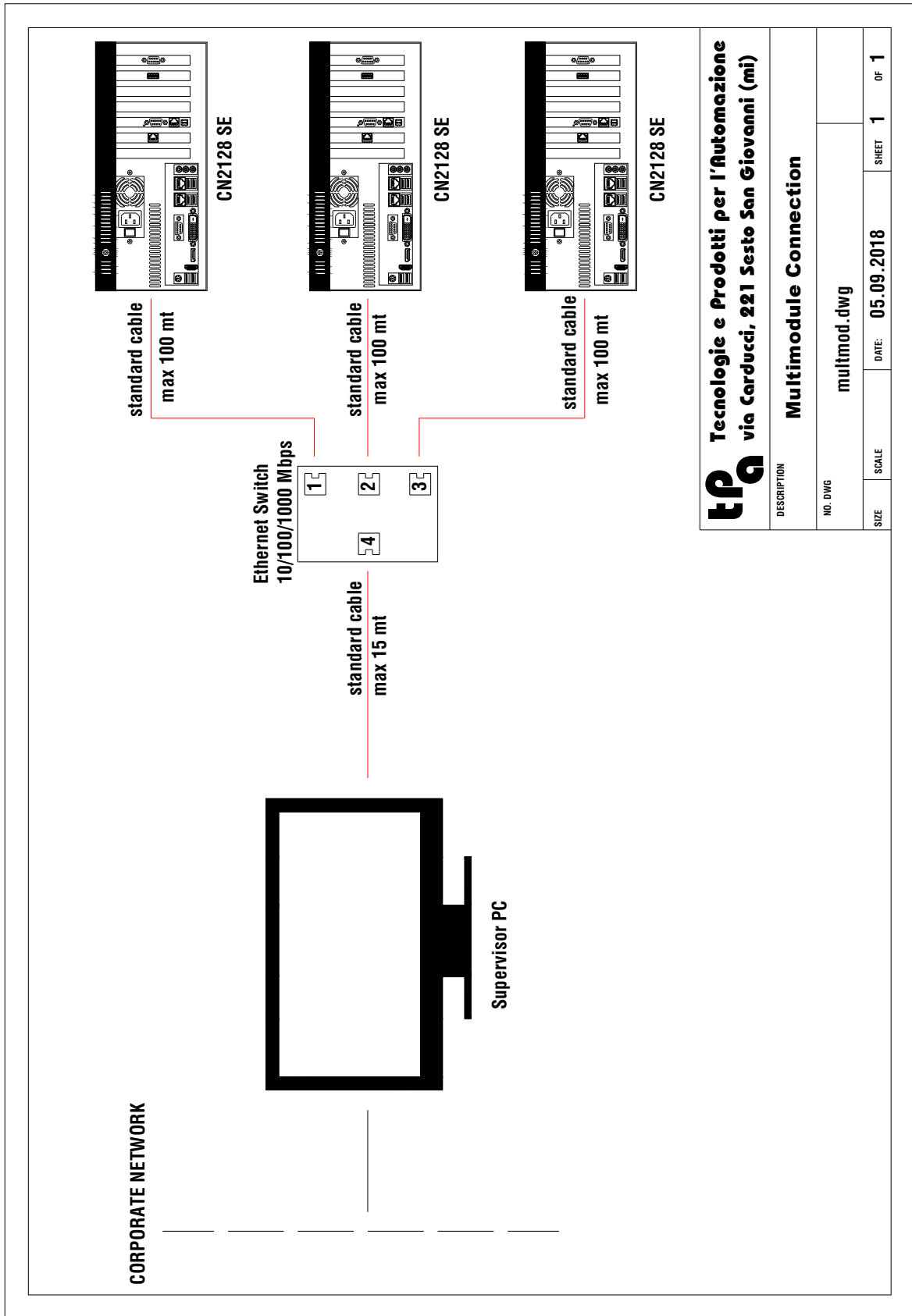
In case of connection with EtherCAT®, an additional INTEL-type Gigabit CT Desktop EXPI9301CT LAN board housed in the PCIe slot x4 is required.

4.5 USB Connectors

The device is equipped with 2 USB 2.0 ports and 4 USB 3.0 ports which are normally enabled.



tpa Tecnologie e Prodotti per l'Automazione via Carducci, 221 Sesto San Giovanni (mi)			
DESCRIPTION MONOMODULE CONNECTION			
NO. DWG monmod.dwg			
SIZE	SCALE	DATE: 05.09.2018	SHEET 1 OF 1



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via Carducci, 221 Sesto San Giovanni (mi)

DESCRIPTION	Multimodule Connection		
NO. DWG	multmod.dwg		
SIZE	SCALE	DATE: 05.09.2018	SHEET 1 OF 1

5 SPECIFICATIONS

The instructions given in the chapter 3 must be generally observed.

The installation of CN2128SE in an electric cabinet/switchboard is recommended.

CN2128SE is a computerized numeric control for general use in light industry environment.

It is a class A product. In a domestic environment this product may cause electromagnetic interferences. Therefore, the final user must take all the necessary precautions.

TPA shall accept no responsibility for failures, malfunctions or defects resulting from the non-application of the specifications described herein.

5.1 Operating temperature

The ambient operating temperature in the basic version is 0 °C to 45 °C.

5.2 Power supply

To use the CN2128SE, a 115/240Vac, 6 A power line is required to guarantee the functionality of the CN2128 in all the configurations described in the chapter 3.3.

5.3 Expandability

Depending on the expansion(s) used, please refer to the appropriate documentation for installation and cabling standards. The configurations allowed are those indicated in the chapter 3.3.



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