SENECA

Z-PC Line

EN

Z-TWS5

Advanced Multifunction Control unit
IEC 61131 Codesys embedded

Installation Manual

Contents:

- General specifications
- Technical features
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For manuals and configuration software, please see www.seneca.it

CSQ IQNet
azienda con sistema di gestione per la qualità certificato
ISO 9001:2008

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General Specifications

- CPU ARM Cortex A8 600 MHz.
- Flash memory: 128 Mbytes
- RAM memory: 256 Mbytes DDR2
- Ferroelectric RAM Memory (FeRAM) 64 Kbytes
- Two Ethernet ports on front panel (internal Hub switch)
- One CAN communication port
- Three RS485 ports
- One RS232 port (as an alternative to an RS485 port)
- One USB On The Go port
- One USB HOST port
- One slot for Micro SD card, max 32 GB
- Real Time Clock with backup battery
- 1500 V∿ isolation between power supply and other low voltage circuits
- Easy wiring of power supply and serial communication port through Seneca bus for DIN rail IEC EN 60715.
- Removable screw terminals with section of 2.5 mm^2

Technical Features

Communication ports	
RS232 e RS485 Switchable	Maximum Baud rate 115 k COM 1 (mini B 4 pin connector)
RS485	Maximum Baud rate 115 k COM2 (screw terminals 1-2-3 or IDC10 connector) COM3 (screw terminals 10-11-12) isolated COM 4 (screw terminals 4-5-6)
CAN	CANopen bus port COM0 (IDC10 connector as an alternative of RS485 terminals 1-2-3)
Ethernet 1 e Ethernet 2	Fast Ethernet 10/100 Mbps, Communication port: On frontal from RJ45 Maximum connection length 100 m
USB #1 HOST	Plug-in: USB type A
USB #2 OnTheGo	Plug-in: micro USB

CPU & memory	
CPU	CPU ARM Cortex A8 600 MHz
Memory Plug-in for external memory	256 MBytes RAM 128 MBytes FLASH Micro SD card: max. 32 Gbyte

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Power supply

Supply voltage	10 – 40 V⎓; 19 – 28 V∿ 50 – 60 Hz
Power consumption	Typical: 4 W @ 24V⎓, Max: 6 W

Environmental conditions

Temperature	-0 – +55°C
Humidity	30 – 90% a 40°C not condensing
Altitude	Fino a 2000 m a.s.l.
Storage Temperature	-20 – +85°C
Protection degree	IP20

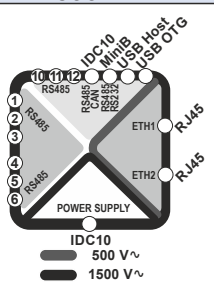
Connections

Removable 3-way screw terminals, 5 mm pitch
Rear IDC10 connector for DIN IEC EN 60715 rail
5 pin connector type miniB, two RJ45 connectors, USB and micro USB connectors
Slot for micro SD card

Box / Dimensions

Dimensions	L: 100 mm; H: 112 mm; W: 35 mm
Box	PA6, Black color

Isolation 1500 V∿



Standards

The module complies with the following standards:

CE

EN61000-6-4 (electromagnetic emission, industrial environment).

EN61000-6-2 (electromagnetic immunity, industrial environment).

EN61010-1 (safety).

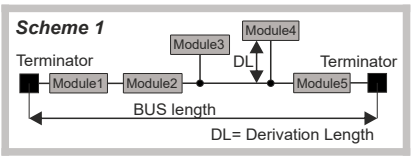
ADDITIONAL NOTES :
You must install a fuse from at least 1 A, delayed, on the power supply line, near the module.

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MODBUS and CANOPEN connection standards

1) Install the module into the DIN rail.
2) Please use a cable with a suitable length to connect the remote modules.
   The following table show the cables length.
- Bus Length: Modbus network maximum length as a function of the Baud rate.
  This is the length of the cables which connect the two bus terminators modules.
- Derivation Length: Derivation line Maximum length as a function of the Baud Rate (see Scheme 1).

	BUS Length	Derivation Length	Baud rate
Modbus	1200 m	2 m	115 kbps
CAN	2500 m	150 m	20 kbps
	1000 m	60 m	50 kbps
	500 m	5 m	125 kbps
	250 m	5 m	250 kbps
	100 m	5 m	500 kbps
	50 m	3 m	800 kbps
	25 m	0.3 m	1 Mbps



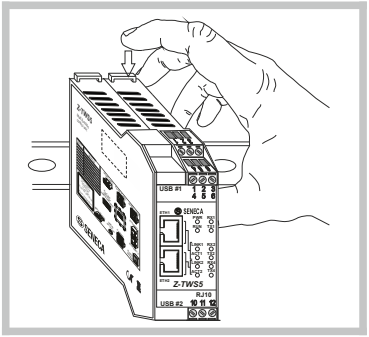
In order to obtain maximum performances it's recommended to use a specific shielded cable, as an example BELDEN 9841.

Installation Rules

The module is designed to be installed, in vertical position, on DIN IEC EN 60715 rail. In order to ensure optimum performance and a longest working life, the module(s) must be provided with adequate ventilation and no raceways or other objects that obstruct the ventilation slots. **Never install the modules near heat sources**.
We recommend installation in the lower part of the control panel.

Inserting on the DIN rail

As the picture shows:
1) Insert the module rear IDC10 connector on a DIN rail free slot (there's only one way to insert the module because of polarized connector).
2) Push the two locks placed at the sides of the rear IDC10 connector to fix the module.



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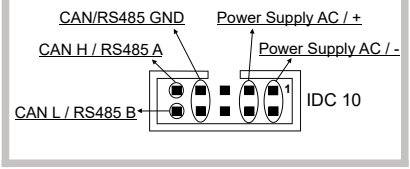
Electrical Connections

Power supply, MODBUS and CAN interface

Power Supply and Modbus interface are available by using the bus for the Seneca DIN rail, by the rear IDC10 connector or by Z-PC-DINAL1-35 accessory.

Rear IDC10 Connector

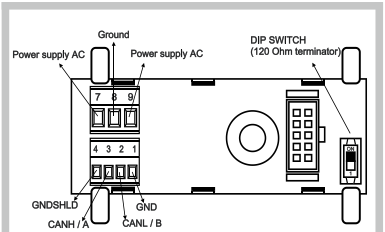
The picture shows the meaning of the IDC10 connector pins. **Power supply is available only from rear connector.**



Z-PC-DINAL 1-35 Possible Use

If Z-PC-DINAL1-35 accessory is used, the power supply signals and communication signals may be provided by the terminals block into the DIN rail support. The figure shows the meaning and the position of the terminal blocks. The DIP-switch that set the 120 Ω terminator is used only for CAN communication.

GNDSHLD: Shield to protect the connection cables against interference (recommended).

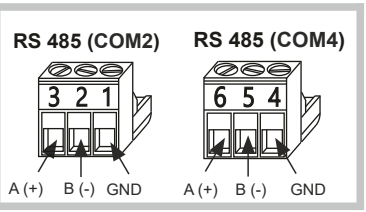


RS485 COM 2 and RS485 COM 4 Ports

The Z-TWS5 has two serial ports RS 485: COM2 and COM4.

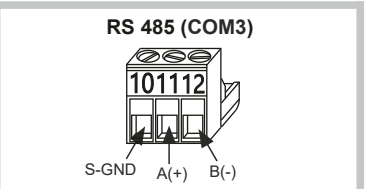
The RS485 COM2 port can be connected through corresponding screw terminals or by IDC10 connector.

To select RS 485 on the IDC10 connector, switch the SW1 to OFF position.



CANopen Port

The Z-TWS5 has a RS485 COM3 isolated port available at screw terminals 10-11-12.

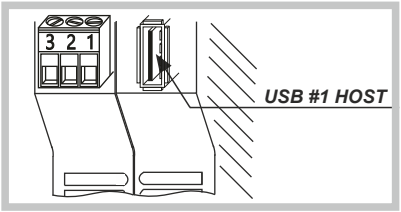


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Other Z-TWS5 Ports

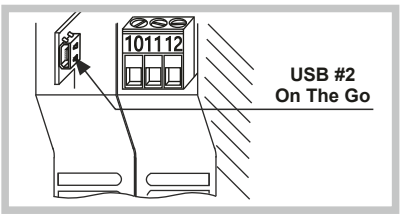
USB #1 HOST Port

The Z-TWS5 has a USB HOST type A connector, that can be used as additional serial port (using a Seneca S117P1, for example) or to connect an external USB memory.



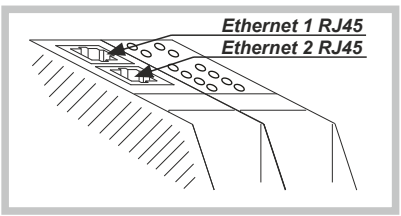
USB #2 On The Go Port

The Z-TWS5 has a USB On The Go connector, with micro-USB plug-in, that can be used as Ethernet connection for Samba (through a driver before installed on PC). The MAC ID of this port is different than the MAC ID of the two Ethernet ports on the front panel.



Ethernet RJ45 ports (frontal panel)

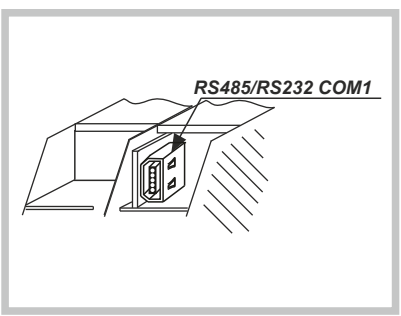
The Z-TWS5 has two ethernet ports, with RJ45 connector, on front panel, for easy PC connection.
The two ports are internally connected in HUB/SWITCH modality.
The two ports have the same MAC ID.



RS232 or RS485 COM1 Port

The Z-TWS5 on miniB connector, has a serial RS232 COM1 port or, as an alternative, has a third RS485 COM1 port.
In order to select the RS232 port or the RS485 port you can use the Z-TWS5 configuration software.

The cable length for the RS232 interface must be less than 3 meters.

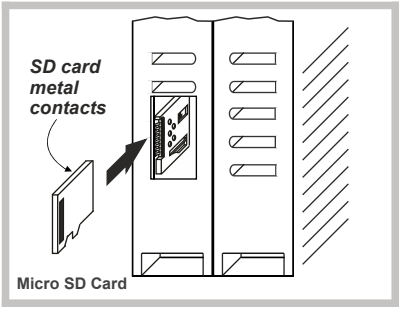


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Plug-in Connector for Micro SD Card

Micro SD card

The Z-TWS5 has a slot for micro SD card placed on the side of the case
Before pushing the SD card in this slot, please be sure that the SD card metal contacts are facing towards left (Please see the figure on side).



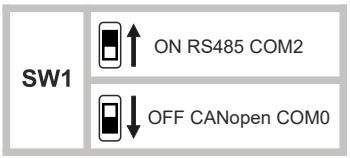
LED Signallings

LED	STATE	*Meaning of LEDs*
PWR Green	On	The module is power on
Stop/Run	On	The module is ready for use
Fault Red	On	O.S. boot loading
Run1-2 Yellow	Blinking	There is data activity (Ethernet 1-2)
Lnk1-2 Green	On	Ethernet 1-2 connection detected
TX1-2-3 Red	Blinking	Signaling Data Transmitting (COM 1-2-3)
RX1-2-3 Red	Blinking	Signaling Data Receiving (COM 1-2-3)
TX1-2-3 Red	On	Verify the connection (COM 1-2-3)
RX1-2-3 Red	On	Verify the connection (COM 1-2-3)

Default Conditions

Module factory settings parameters:	
SW1 Switch position	ON↑

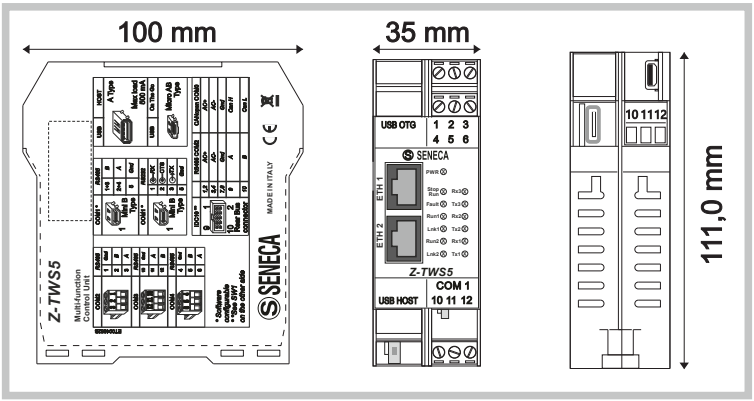
DIP-Switch SW1



On the module side there are one switch. With this switch you can choose between RS485 or CANopen serial interfaces, from screw terminals 1-2-3 or from the rear side 10 pin connector. **We suggest to turn off the module before setting the switches.**

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Module layout



Accessories	
CODE	**DESCRIPTION**
Z-PC-DINAL1-35	DIN rail support with screw terminals 1 slot pitch=35 mm
Z-PC-DIN1-35	DIN rail support: 1 slot for rear connector pitch=35 mm
Z-PC-DIN4-35	DIN rail support: 4 slot for rear connector pitch=35 mm
CS-DB9M-MICROB	Communication serial cable RS232 miniB
CS-TIP-MICROB	Communication serial cable RS485 miniB

Decommissioning and Disposal



Disposal of Electrical & Electronic Equipment (Applicable throughout the European Union and other European countries with separate collections programs). This symbol, found on your producr or on its packaging, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead, it should be handed over to an applicable collection point for the recycling of electrical & electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product. The recycling of materials will help to conserve natural resources. For more detailed information about the recycling of the product, please contact your local city office, waste disposal service of the retail store where you purchased this product.

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