

Manual language	ENGLISH
Series	Z-PC
Product	Z-KEY
Description	Modbus Ethernet Serial Gateway and Serial Device Server

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Manufacturer



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FOR FURTHER INFORMATION, PLEASE SEE THE USER MANUAL.

Programming tools, manuals, templates, examples, etc. for the product can be downloaded free of charged at www.seneca.it in the Z-KEY section.

1 PRELIMINARY WARNINGS



The full content of this manual must be read before performing any operation. The module must only be used by qualified electricians. Specific documentation is available at www.seneca.it



The module must be repaired and damaged parts replaced by the Manufacturer. The product is sensitive to electrostatic discharges. Take appropriate measures during any operation.



The warranty is null and void in the event the module or devices supplied by the Manufacturer, necessary for correct operations, are improperly used or tampered with and, in any case, if the instructions contained in this manual were not followed.

2 PRELIMINARY USE INSTRUCTIONS



Obstructing ventilation slots with any object is prohibited.
Installing the module next to devices that generate heat is prohibited.

3 GENERAL SPECIFICATIONS

CPU ARM 32 bit

Possibility of configuration via Web-server.

Micro SD card slot, Max 32 GB (Optional) for custom webserver and FTP server pages.

One Ethernet 10-100 Mbits/s port

One RS485 port.

One RS485/RS232 commutable port.

One USB port.

1500 V~ power insulation with respect to the remaining low voltage circuits.

Facilitated power and serial line cabling via Seneca bus that can be housed in the IEC EN 60715 omega guide.

Pull-out terminals, section 2.5 mm².

Power indication, RS485/RS232 Rx and Tx, ETHERNET connection and activity on SD card via LED on front panel.

Modbus Gateway from Modbus TCP to Modbus RTU: Ethernet / RS485 communication to remotely control modules connected to the Modbus RTU ports with the possibility of setting RS485 ports in Modbus master, Modbus slave mode.

Modbus TCP-IP / Modbus RTU bridge in real time.

Remote serial port (COM port) transparent to protocol.

Baud rate for Modbus RTU settable from 1200 to 115200 baud.

Firmware update via Web Server/ FTP Server / microSD card.

POSSIBLE CONFIGURATIONS

- BRIDGE FROM MODBUS TCP-IP TO MODBUS RTU
- GATEWAY FROM MODBUS TCP-IP TO MODBUS RTU (PORT 1 AND PORT 2 MODBUS MASTER)
- GATEWAY FROM MODBUS TCP-IP TO MODBUS RTU (1 PORT MASTER AND 1 PORT SLAVE)
- GATEWAY FROM MODBUS TCP-IP TO MODBUS RTU (2 PORT SLAVES)
- REMOTE SERIAL COM PORT

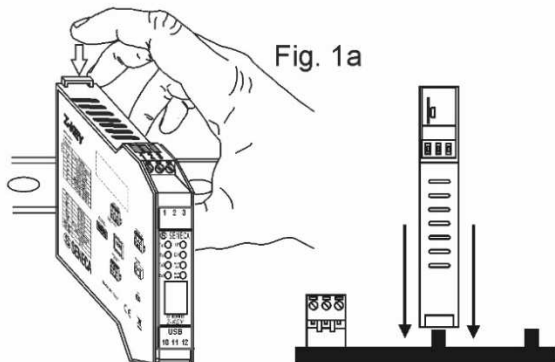
4 TECHNICAL SPECIFICATIONS

<i>Insulation</i>		<i>Standards</i>	
		<p>The instrument complies with the following standards:</p>	
			<p>EN61000-6-4 (electromagnetic emission, industrial environment) EN61000-6-2 (electromagnetic immunity, industrial environment) EN60950-1 (safety).</p>
		<p>SUPPLEMENTARY NOTES ON USE: A 1 A, time-delay, fuse must be installed in series on the power connection, near the module.</p>	
<i>Communication ports</i>			
Commutable RS232 or RS485 Pull-out terminal (10 - 11 - 12)		Maximum Baud rate 115k, Maximum cable length RS232 < 3 m Modbus RTU master / Modbus RTU slave protocol	
RS485 IDC10 rear connector		Maximum Baud rate 115k, Modbus RTU master / Modbus RTU slave protocol	
RJ45 Ethernet connector on front		10/100 Mbit/s, Max distance 100 m with auto switch.	
USB		Plug-in: lateral micro USB	
<i>Power supply</i>			
Voltage		11 – 40 V $\overline{\text{=}}$; 19 – 28 V \sim 50 – 60 Hz	
Consumption		Typical: 1.5W @ 24 V $\overline{\text{=}}$ Max.: 2 W @ 24 V \sim	
<i>Operating conditions</i>			
Temperature		-10 °C – +50 °C	
Humidity		30 – 90% to 40°C non condensing	
Altitude		up to 2000 m above sea level	
Storage temperature		-20 °C – +85 °C	
Protection rating		IP20	
<i>Connections</i>			
3-way removable screw terminals, pitch 5 mm			
IDC10 rear connector for IEC EN 60715 bar			
RJ45 front connector			
Micro USB lateral connector			
Micro SD card slot			
<i>Overall dimensions / Enclosure</i>			
Dimensions/Weight		L: 100 mm; H: 111 mm; W: 17.5 mm / 104 gr.	
Case		PA6, black	

5 INSTALLATION PROCEDURE

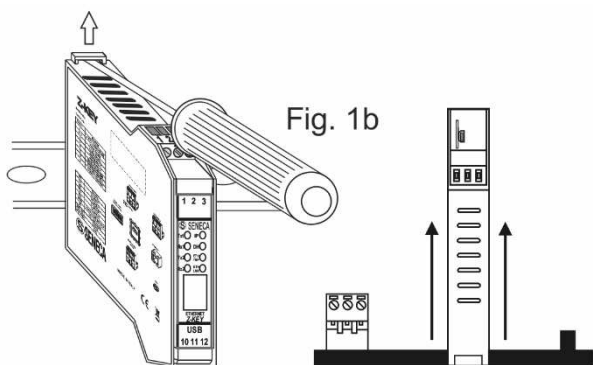
The module has been designed for vertical installation on a IEC EN 60715 DIN rail. For optimal operation and long life, adequate ventilation must be provided. Avoid positioning cable ducts or other objects that obstruct the ventilation slots. Avoid mounting modules over equipment that generate heat. Installation in the bottom part of the switchboard is recommended.

OMEGA IEC EN 60715 guide installation and removal.



Insertion on IEC EN 60715 guide:

- 1) Move the two hooks on the back of the module outward as illustrated in fig. 1b.
- 2) Put the module on the OMEGA guide.
- 3) To secure the module to the OMEGA guide, tighten the two hooks on the side of the IDC10 rear connector as illustrated in fig. 1a.

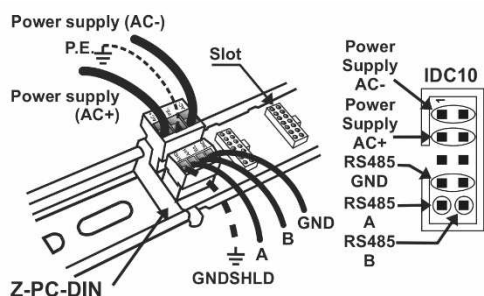


Removal from IEC EN 60715 DIN guide:

- As illustrated in figure 1b:
- 1) Move the two side hooks outward from the module, assisted by a screwdriver.
 - 2) Extract the module from the guide.

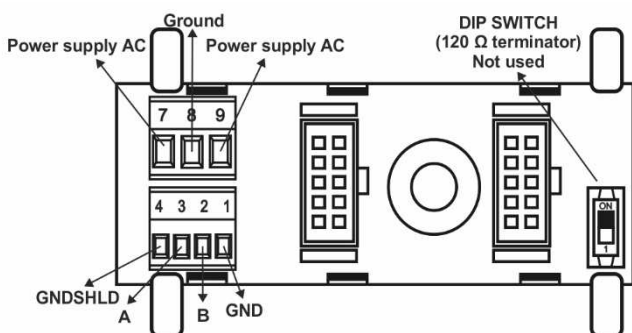
6 ELECTRICAL CONNECTIONS

IDC10 rear connector (POWER AND PORT 1)



The illustration indicates the meanings of the various IDC10 connector pins if signals are to be directly sent via them. Module power is available from the rear connector or via terminals 2 and 3.

Potential Z-PC-DINAL2-17.5 use



If the Z-PC-DINAL1-17.5 accessory is used, signals can be sent via terminal board. The illustration shows the meaning of the various terminals and DIP-switch position, found in all Seneca supports for DIN IEC EN 60715 guide, not used for the Modbus network. GNDSHLD: Connection cable signal protection shield (recommended).

Power supply

19 – 28V \sim 3
50 – 60 Hz 2
11 – 40V \equiv
2W Max

Electrical power connections are available from terminals 2 and 3 and using the Seneca DIN IEC EN 60715 guide bus.
Power voltage must be between 11 and 40V \equiv (any polarity) or between 19 and 28 V \sim . **The upper limits must not be exceeded in order to avoid serious risk to the module.**
The power supply source must be protected from the malfunctions of the module through appropriately-sized safety fuses.

Serial port 2 - RS485 SW2=OFF

10 GND
11 A(+)
12 B (-)

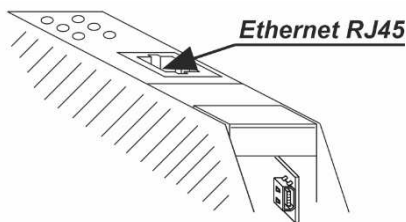
Z-KEY has a serial port that can be set with the SW2 switch. If the SW2 switch is OFF then terminals:
10-11-12 have the RS485 COM 2 available.
The illustration shows how to complete connections.
Note: the indication of the RS485 connection polarity is not standardised and in some devices may be inverted.

Serial port 2 - RS485 SW2=ON

10 GND
11 RX
12 TX

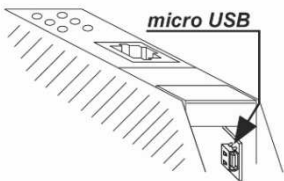
Z-KEY has a serial port that can be set with the SW2 switch. If the SW2 switch is ON then terminals:
10-11-12 have the RS232 COM 2 available.
The illustration shows how to complete connections.
The RS232 interface is fully settable.

RJ45 Ethernet connector (on front)



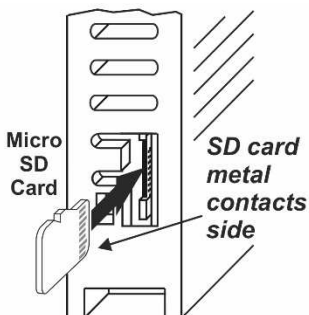
Z-KEY has an Ethernet 10/100 port with RJ45 connector on the module front.

Micro USB port



Z-KEY has a micro USB connector that can be used as a configuration port via Easy Setup software.

Micro SD card slot



Z-KEY has a micro SD card slot on the side of the case.
To insert the SD card in the corresponding slot, make sure the metal contacts are facing right (with reference to the illustration).
The SD card can be of any capacity.

PS1 key

The PS1 key is not used in this module.

Factor IP address

The default module IP address is static: 192.168.90.101

Web Server

To access the maintenance Web Server with 192.168.90.101 factory IP address
(Default user: admin; Default password: admin) <http://192.168.90.101/maintenance/index.html>
To access the custom Web Server on SD card with 192.168.90.101 default IP address
<http://192.168.90.101/index.html>

SW1 DIP-switch settings to upload factory settings

This procedure restores the IP address to factory settings: 192.168.90.101 and Webserver/FTP server user login credentials: admin and password: admin.	KEY	
Turn off the Z-KEY module and set all eight SW1 DIP-switches ON .	ON	☑↑
Turn on the Z-KEY module and wait 10 seconds.		
Turn off the Z-KEY module and set all eight SW1 DIP-switches OFF .	OFF	☑↓

SW2 DIP-switch settings

RS232 or RS485 settings on terminals 10-11-12 (serial port 2)	KEY	
RS232	ON	☑↑
RS485	OFF	☑↓

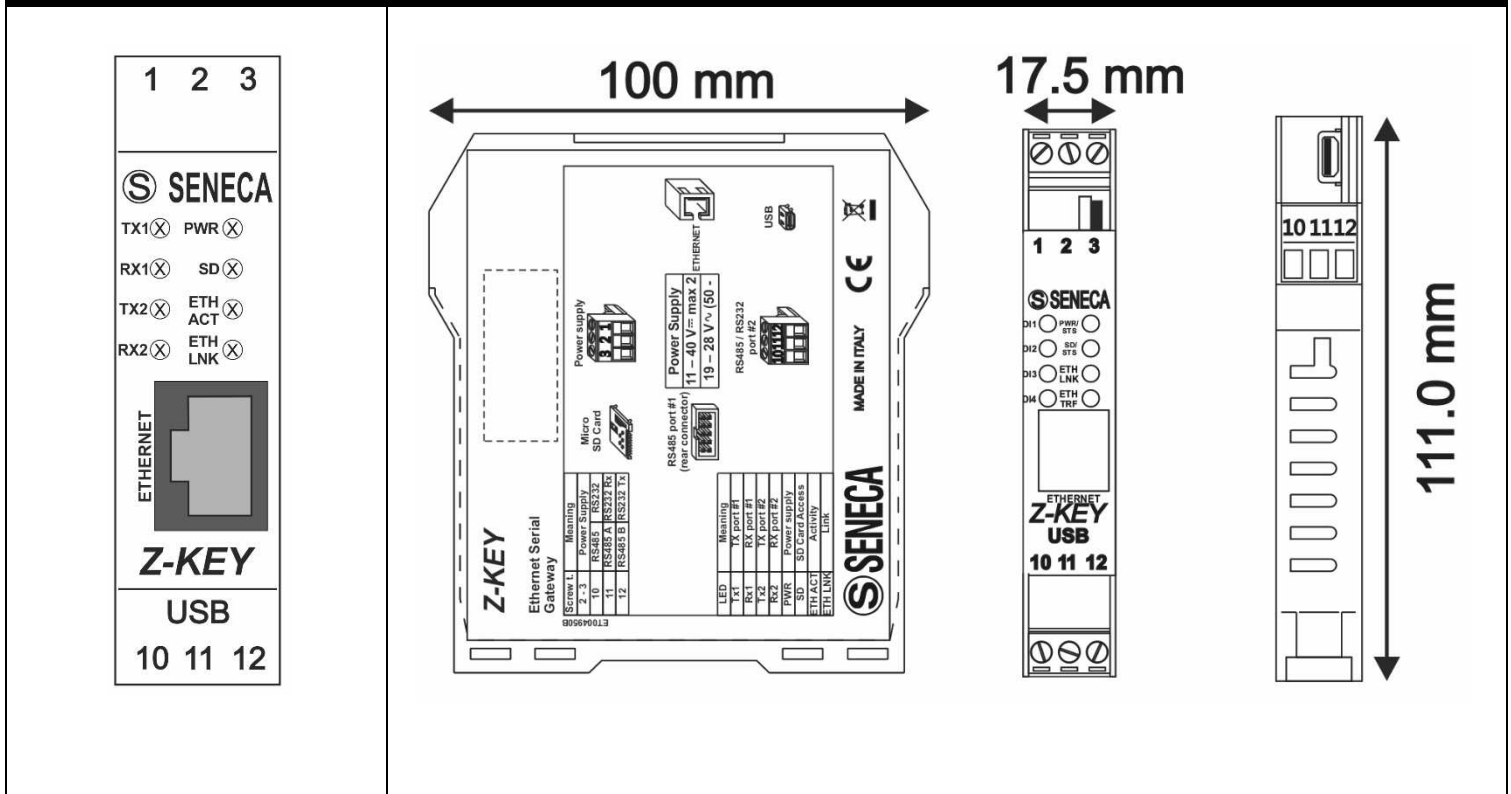
7 INDICATIONS VIA LED ON FRONT PANEL

LED	STATUS	LED meaning
TX1 (Red)	Flashing	Data transmission on port #1 RS485
RX1 (Red)	Flashing	Data receipt on port #1 RS485
TX2 (Red)	Flashing	Data transmission on port #2 RS485
RX2 (Red)	Flashing	Data receipt on port #2 RS485
PWR (Green)	On	Device powered
SD (Red)	Flashing	Access to micro SD card.
ETH ACT (Green)	Flashing	Packet transmission on Ethernet port
ETH ACT (Green)	On	No activity on Ethernet port
ETH LNK (Yellow)	On	Ethernet port connected
ETH LNK (Yellow)	Off	No Ethernet connection

8 ACCESSORIES

CODE	DESCRIPTION
Z-PC-DINAL2-17.5	Support with power terminal 2 slots pitch 0 1705 mm
Z-PC-DIN1-35	1 slot support for rear connector pitch = 35 mm
Z-PC-DIN4-35	4 slot support for rear connector pitch = 35 mm
CE-RJ45-RJ45-R	1.5 m Ethernet cable
CS-DB9M-MEF-1012	Z-KEY / RS232-DB9 serial connection cable
KIT-USB	Programming KIT (USB + CD cable)
MICRO-SD 4GB-MP	4GN Micro-SD Flash card

9 FRONT PANEL/MODULE LAYOUT



Z-KEY can be fully set up via integrated web server.

Product programming tools can be downloaded free of charge at www.seneca.it, in the Z-KEY section.

To access settings, open the maintenance page in a browser at the Z-KEY IP address, for example:

<http://192.168.90.101/maintenance/index.html>

and enter the following credential when required: Username: admin Password: admin.

For further information, see the USER MANUAL available for free download at www.seneca.it in the Z-KEY section.

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10 DECOMMISSIONING AND DISPOSAL



Electrical and electronic waste disposal (applicable in the European Union and other countries with recycling). The symbol on the product or packaging indicates that the product cannot be discarded as domestic waste. It should be taken to an authorised recycling centre for electrical and electronic waste. Ensuring that the product is suitably discarded will avoid potential negative impacts on the environment and human health, that could be caused by non compliant product disposal. Material recycling will contribute to the preservation of natural resources. To receive further information, please contact your local waste disposal service centre or product dealer.

