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Manuals and configuration software are available at website: www.seneca.it/products/z-gprs3

Technical support: support@seneca.it

Product informations: sales@seneca.it



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1 PRELIMINARY WARNINGS



Before performing any operation, it is mandatory to read and understand in full the contents of this installation manual. The module may only be used by qualified and skilled technicians in the field of electric installations. Specific documentation is available at website: www.seneca.it



Only the Manufacturer is authorized to repair the module or to replace damaged parts. The product is susceptible to electrostatic discharge, take appropriate countermeasures during any operation.



The user must comply of the safety instructions in this installation manual, the country-specific installation standards and all prevailing safety regulations and accident prevention rules. No warranty is guaranteed in connection with faults resulting from improper use, from modifications or repairs carried out by Manufacturer-unauthorized personnel on the device, or if the content of this user Manual is not followed.

2 DESCRIPTION AND CHARACTERISTICS

2.1 Module description

The Z-GPRS3 is a multiprotocol GSM/GPRS device with high performance integrated I/O for data acquisition and storage and wireless transceiving of commands, measurements and alarms.

2.2 General characteristics

- Internal UPS with two rechargeable NiMh batteries AAA 1.2 V, battery runtime Max. 1h
- Modem GSM / GPRS Quad-Band
- Insulation 1500 V \sim between power supply and other circuits
- Easy power supply and serial communication wiring through Seneca IEC EN 60715 DIN rail bus
- LEDs signaling: digital inputs, digital outputs, Ethernet activity and GSM activity
- 2 analog inputs at 16 bit configurables for voltage or current.
- 4 digital inputs and 2 digital outputs (free contacts relay)
- Ethernet RJ45 socket on frontal panel 10/100 Mbps
- 1 RS485 port, 1 RS485 / RS232 port and 1 microUSB type B port
- 4 32bit totalizers and 4 32bit resettable counters with max. frequency= 250 Hz
- Supported System Protocols:
FTP client, SMTP client, http, ModBUS TCP Server / client, ModBUS RTU
- Memoria RAM 256 kB
- Micro SD additional storage memory up to 32 GB
- Memoria FLASH 1MB + 8 MB (log)
- ARM Processor 120 MHz, 32 bit
- Real Time multitasking O.S
- Webserver

3 TECHNICAL SPECIFICATIONS

3.1 Digital inputs

Number of channels	4
Input type	PNP, NPN configurable
Input voltage	OFF < 4V, ON > 8V (max. 24 V $\overline{\text{m}}$)
Input current	20 mA
Maximum frequency	30 Hz
Input absorbed current	3mA @ 12 V $\overline{\text{m}}$ 10mA @ 24 V $\overline{\text{m}}$

3.2 Digital outputs

Numero di canali	2
Output type	SPDT Relays (free contacts)
Voltage	250 V \sim
Maximum Current	2 A

3.3 Analog inputs

Number of channels	2
Input type	mA / V \approx configurable
Voltage input	0 – 30 V accuracy 0,1% of the full scale
Current input	0 – 20 mA accuracy 0,1% of the full scale
Inputs protection	40V 25mA
Resolution	16 bit

3.4 Communication ports

RS485	COM1 IDC10 rear port
RS485 / RS232	COM2 M10, 11, 12 removable screw terminal port
Ethernet	Ethernet 10/100 Base-T RJ45 frontal port with autoswitch
USB micro B	Micro USB side port

3.5 Storage Unit

Micro SD	microSD or microSDHC, max. = 32 GB
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3.6 Power supply

Voltage	11 – 40 V \approx or 19 – 28 V \sim 50 – 60 Hz
Power consumption	6,5 W max.

3.7 Environmental conditions

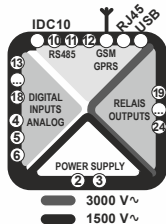
Temperature	From -10 to + 50°C / (From -10 to +40°C with internal UPS use)
Humidity	30 – 90% not condensing
Storage temperature	From -20 to +65°C / (From -20 to +45°C < 6 months with internal UPS)
Protection degree	IP20

3.8 Box Specifications

Dimensions and Weight	L: 100 mm; H: 111 mm; W: 35 mm / 280 gr.
Material	PA6, black

3.9 Insulation 1500 V \sim

3.10 Standards



The instrument complies with the following standards:

EN61000-6-4 Electromagnetic emission, industrial environment.

EN61000-6-2 Electromagnetic immunity, industrial environment.

EN301 511 Harmonized standard for mobile stations in the GSM 900 and 1800 bands.

EN301 489-1 ElectroMagnetic Compatibility standard for radio equipment and services.

EN301 489-7 Specific (EMC) conditions for mobile radio equipment (GSM 900 and 1800).

EN60950 Safety of information Technology Equipment.

4 MODULE SHUT DOWN PROCEDURE

The Z-GPRS3 module has an integrated UPS that allows it to remain turned ON even without external power supply.

To turn off the module after removing the external power supply you can press the button PS1 on the right side of the module for at least 10 seconds. When you release the button the PWR LED turns OFF in order to signal that the module is switched off.

5 PRELIMINARY INSTRUCTIONS FOR USE



It is forbidden to place anything that could obstruct the ventilation slits.
It is forbidden to install the module near heat sources.



Severe operating conditions» are defined as follows:
-high power supply voltage: exceed 30 V $\overline{=}$ or exceed 26 V \sim ;
-the module power the input sensor.

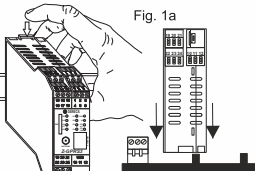


If the modules are installed side by side, **Separate them by at least 5 mm** in the following cases:
- The operating temperature exceed 40°C and at least one of the severe operating conditions exist;
- The operating temperature exceed 35°C and at least two of the severe operating conditions exist.

5.1 Installation on and removal from IEC EN 60715 DIN rail

The module has been designed for vertical installation on an IEC EN 60715 DIN rail.

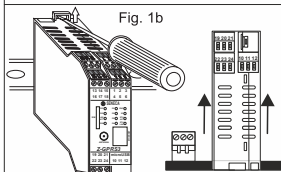
Fig. 1a



Insertion into the IEC EN 60715 DIN rail:

- 1) Move the two hooks on the back of the module outwards as illustrated in fig. 1b.
- 2) Rest the module on the IEC EN 60715 DIN guide.
- 3) To secure the module to the IEC EN 60715 DIN rail, tighten the two hooks on the side of the IDC10 rear connector as shown in fig. 1a.

Fig. 1b



Removal from the IEC EN 60715 DIN rail:

As shown in figure 1b:

- 1) Move outwards the two hooks on the side of the module, with the help of a screwdriver.
- 2) Extract the module from the guide.

5.2 Use of Z-PC-DINAL 1-35 accessory

Please control that the module isn't upside down and do not force insertion of the IDC10 connector on the Z-PC-DIN bus. The IDC10 connector located on the rear of the module will be inserted on a free slot of Z-PC-DIN accessory. In the figure you can see the meaning of the IDC10 connector pins if you want to provide signals through them. The pictures Fig. 1 c and Fig.1 d show how to connect the power supply and the RS485 COM1 port to the rear IDC10 connector.

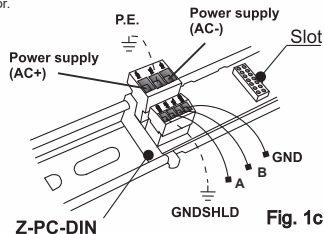


Fig. 1c

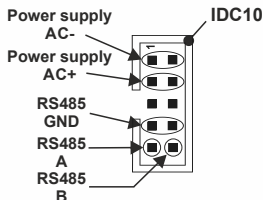


Fig. 1d

6 ELECTRICAL CONNECTIONS



Power off the module, with the PS1 button, before connecting the inputs and outputs.

In order to satisfy the electromagnetic compliance requirements:

- Use shielded cables for the signals transmission;
- Connect the shield to a preferential ground for devices;
- Space the shielded cables from other cables used for power installations (transformers, inverters, motors, induction ovens, etc...);

6.1 Power supply

19 – 28VA 50 – 60 Hz

11 – 40V \approx 6.5W

Power supply

Power supply

Auxiliary voltage

[+12VC@ 40 mA]



The power supply must be connected to terminals 2 and 3.

The supply voltage must be between:

11 and 40V \approx (any polarity), or between 19 and 28 V \approx .

The upper limits must not be exceeded in order to avoid serious damage to the module. The power supply source must be protected from any malfunctions of the module through appropriately sized safety fuse.

Warning: When you turn On the Z-GPRS3 for the first time, the device must be supplied without any interruptions for at least 72 hours in order to charge the internal batteries.

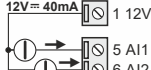
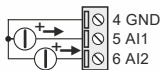
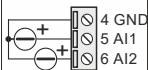
6.2 Analog inputs 1 and 2

Voltage

Current active sensor (4 wires)

Current passive sensor (2 wires)

The Z-miniRTU module has two software voltage or current configurable analog inputs. For the configuration software you can read the user manual.

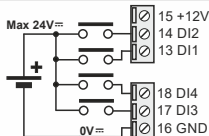
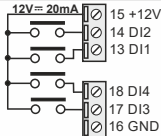
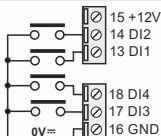


6.3 Digital inputs 1, 2, 3 and 4

Internal power supply NPN

Internal power supply PNP

External power supply PNP

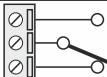


6.4 Digital outputs 1 and 2

N.O.1=19

C.1=20

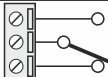
N.C.1=21



N.O.2=22

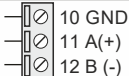
C.2=23

N.C.2=24



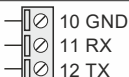
The Z-miniRTU module has two **digital outputs with free contacts**. The figures show the internal relay contacts available.

6.5 COM2 - RS485 Serial port (SW2=OFF)



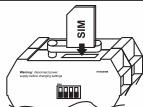
Z-miniRTU has a serial port configurable through the SW2 Switch. If the switch SW2 is set to OFF position, then the RS485 serial port (COM2) is available to terminals 10-11-12. The picture shows how to make the connection.

6.6 COM2 - RS232 Serial port (SW2=ON)

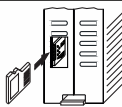


Z-miniRTU has a serial port configurable through the SW2 Switch. If the switch SW2 is set to ON position, then the RS232 serial port (COM2) is available to terminals 10-11-12. The picture shows how to make the connection.

6.7 Inserting the SIM card and the SD card

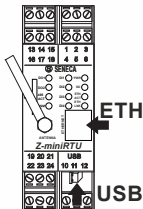


Inserting the SIM card into the frontal slot.
If the SIM card is properly inserted then protrudes from the frontal panel of about 4.5mm.



Inserting the MicroSD or the microSHDC, into the side slot. MAX 32 GB. Push-push connector for insertion and removal.

6.8 RJ45 ETHERNET and USB connections



Z-GPRS3 module has a RJ45 socket on frontal panel.

Note: Inserting the RJ45 10/100 Base T Ethernet plug make sure that the connector is securely latched, or before inserting the cable into the RJ45 connector, remove the protective rubber.

The picture shows how to insert the RJ45 connector.
For further information, refer to the USER MANUAL.

Z-GPRS3 module has a serial USB micro port on the lower side.

The picture shows how to insert the micro USB plug into the micro USB side socket.
For further information, refer to the USER MANUAL.

7 CONFIGURATIONS

7.1 DIP-SWITCHES table

SW1

All the DIP-Switches to OFF position.
For further informations please see: USER MANUAL.

SW2

RS232 or RS485 configuration
on terminals 10-11-12 (serial port COM 2)

RS232

ON



RS485

OFF



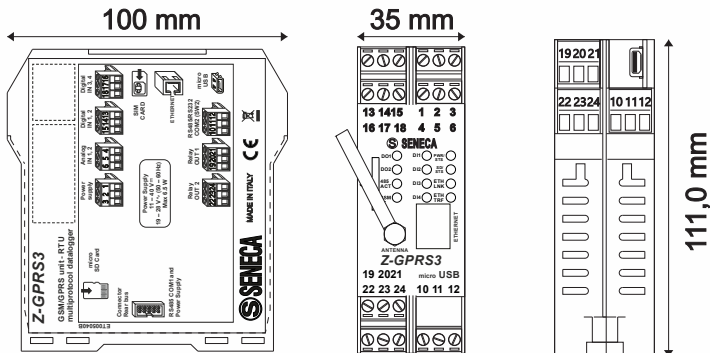
7.2 LED signaling on the frontal panel

LED	Color	Status	LEDs Meaning
DO1	Red	ON	Digital output 1, relay energized
		OFF	Digital output 1, relay de-energized
DO2	Red	ON	Digital output 2, relay energized
		OFF	Digital output 2, relay de-energized
485 ACT	Green	Slow blinking 2.8 sec ON ■ 0.4 sec OFF □	■■■■■■■■■■■■■■■■■■■■ RS485 activity or RS232 activity
		OFF □	RS485 or RS232 serial interface not used
		Fast blinking 0.2 sec ON ■ 0.2 sec OFF □	■□■□■□■□■□■□■□■□ Timeout on RS485 or RS232 communication
GSM	Yellow	OFF □	Modem GPRS OFF
		Slow blinking	Connected to the GSM network
		Medium blinking	Searching the GSM or GPRS network
		Fast blinking	Connected to the GPRS network
DI1	Red	ON (NPN)	Digital Input 1: Energized (closed contact to GND)
		ON (PNP)	Digital Input 1: Energized (closed contact to +12V)
		OFF	Digital Input 1: De-energized (open contact)
DI2	Red	ON (NPN)	Digital Input 2: Energized (closed contact to GND)
		ON (PNP)	Digital Input 2: Energized (closed contact to +12V)
		OFF	Digital Input 2: De-energized (open contact)
DI3	Red	ON (NPN)	Digital Input 3: Energized (closed contact to GND)
		ON (PNP)	Digital Input 3: Energized (closed contact to +12V)
		OFF	Digital Input 3: De-energized (open contact)
DI4	Red	ON (NPN)	Digital Input 4: Energized (closed contact to GND)
		ON (PNP)	Digital Input 4: Energized (closed contact to +12V)
		OFF	Digital Input 4: De-energized (open contact)
PWR/STS	Green	ON ■	Z-GPRS3 ON inactive log (status=ready)
		OFF □	Z-GPRS3 OFF
		Slow blinking 2.8 sec ON ■ 0.4 sec OFF □	■■■■■■■■■■■■■■■■■■■■ Z-GPRS3 active log (status=normal)
		Slow blinking 1.6 sec ON ■ 1.6 sec OFF □	■■■■■■■■■□□□□□□□□□□ Battery powered inactive log (status=battery backup)
		Medium blinking 0.8 sec ON ■ 0.8 sec OFF □	■■■■□□□□■■■■□□□□□□ Low battery warning
		Fast blinking 0.2 sec ON ■ 0.2 sec OFF □	■□■□■□■□■□■□■□■□ Z-GPRS3 initializing or shutdown
SD/STS	Red	ON ■	SD card mounted in the right way
		OFF □	SD card not present
		Medium blinking 0.8 sec ON ■ 0.8 sec OFF □	■■■■□□□□■■■■□□□□□□ SD card activity
		Fast blinking 0.2 sec ON ■ 0.2 sec OFF □	■□■□■□■□■□■□■□■□ SD card error
ETH LNK	Green	Blinking	RJ45 connection activated
ETH TRF	Yellow	Blinking	Traffic on Ethernet port

8 ACCESSORIES

CODE	DESCRIPTION
Z-GPRS3	GSM/GPRS Unit - RTU multiprotocol datalogger
Z-PC-DINAL1-	DIN rail support with screw terminals P= 35 mm
Z-PC-DIN1-35	DIN rail with one slot support for rear connector P= 35 mm
A-GSM	External GSM antenna dual band adhesive, cable 3,2 m
FD01	Photodetector for pulse counter, MAX frequency 10 Hz

9 MODULE LAYOUT



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 authorized recycling center 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 center or product dealer