# INSTALLATION MANUAL

# Z-GPRS3 HW2

GSM/GPRS datalogger with built-in I/Os,
telecontrol functions and advanced programming language

EN

CE




SENECA

ISO 9001:2008

**SENECA s.r.l.**
**Headquarters: Via Austria, 26 – 35127 – PADOVA – ITALY**
**Phone +39.049.8705355 - 8705359 - Fax +39.049.8706287**

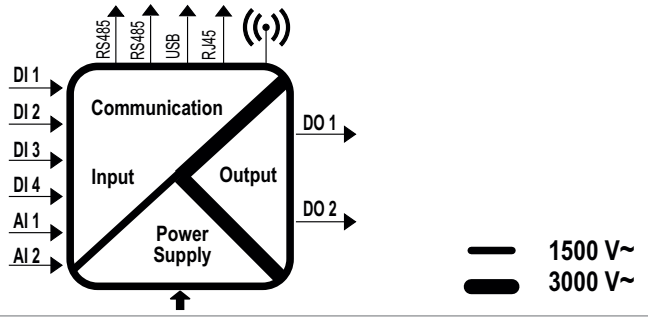
Manuals and configuration software are available at website: www.seneca.it/products/z-gprs3

**This document is property of SENECA Srl. Duplication and reproduction are forbidden, if not authorized. Contents of the present documentation refers to products and technologies described in it. This informations may be modified or integrated for technical and / or commercial requirements.**



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

## TECHNICAL SPECIFICATIONS

| | |
|---|---|
| **STANDARDS** | **EN61000-6-4** Electromagnetic emission, industrial environment<br>**EN61000-6-2**.Electromagnetic immunity, industrial environment.<br>**EN301 511** Harmonized standard for mobile stations.<br>**EN301 489-1** ElectroMagnetic Compatibility for radio equipment.<br>**EN301 489-7** Specific (EMC) conditions for mobile radio equipment.<br>**EN60950** Safety of information Technology Equipment. |
| **INSULATION** |  |
| **ENVIRONMENTAL CONDITIONS**<br>*Temperature*<br>*Humidity*<br>*Storage temperature*<br>*Protection rating* | <br>-10 ÷ +50 °C / (-10 ÷ +40 °C with internal UPS use).<br>30% – 90% not condensing.<br>-20 – + 65°C / (-20 – + 45°C < 6 months with internal UPS use).<br>IP20. |
| **MOUNTING** | 35mm IEC EN60715 DIN Rail. |
| **INTERNAL UPS** | Backup rechargeable batteries, NiMH |
| **CONNECTIONS** | Removable three pole screw terminal pitch 5mm, for cable up to 2.5 $mm^2$, rear IDC10, front RJ45, Micro USB and Antenna SMA. |
| **POWERSUPPLY**<br>*Voltage*<br>*Power absorbed* | 11 – 40 V⎓ or 19 – 28 V∿ 50 – 60 Hz. P. max < 6.5W. If the voltage is lower than 12 V, the internal UPS battery can' t be recharged. |
| **DIGITAL INPUTS** | Number of channels 4. PNP or NPN configurable.<br>Input voltage OFF<4V ON>8V (Max. 24V⎓). Input current 20mA.<br>Max. frequency 30Hz. Absorbed Current 3mA @ 12V⎓ 10mA @ 24V⎓. |
| **TOTALIZERS** | Four 32 bit totalizers on non-volatile memory. |
| **COUNTERS** | Four 32 bit resettable counters on non-volatile memory. |
| **DIGITAL OUTPUTS** | Number of channels 2. SPDT Relays with free contacts.<br>Max. Voltage 250V∿. Max. Current 2A. |
| **ANALOG INPUTS** | Number of channels 2. mA⎓ or V⎓ configurable.<br>Voltage input 0 – 30V. accuracy 0.1% of the Full Scale, impedance 200 kohm.<br>Current input 0 – 20mA accuracy 0.1% of the Full Scale, mpedance < 60 ohm<br>Inputs protection 40V / 25mA. Resolution 16 bit. |
| **COMMUNICATION PORTS** | Rear RS485 COM1 port. RS485 or RS232 M10-M11-M12 COM2 screw terminals port. Ethernet 100 baseT RJ45 frontal port.<br>MicroUSB side port. |



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

## TECHNICAL SPECIFICATIONS

| | |
|---|---|
| **MODEM** | GSM / GPRS Quad-Band: 850/900/1800/1900 Mhz<br>Coding scheme CS-1, CS-2, CS-3, CS-4<br>Class 4 (2W) at GSM 850 and EGSM 900<br>Class 2 (1W) at DCS 1800 and PCS 190 |
| **SUPPORTED SYSTEM PROTOCOLS** | FTP client, SMTP client, http rest (SSL), MQTT (SSL),<br>ModBUS TCP server, ModBUS TCP client,<br>ModBUS RTU master, ModBUS RTU slave.<br>For more information, please refer to the **User Manual.** |
| **STORAGE UNIT** | microSD and microSDHC Max. 32GB. |
| **SIM SLOT** | Standard SIM 15x25 mm |
| **PROCESSOR** | ARM 32bit |
| **OPERATING SYSTEM** | Real Time Multitasking |
| **CHARACTERISTICS** | Embedded Webserver and microSD Webserver |

## MODULE SHUT DOWN PROCEDURE

**The module has an internal 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.**

## PRELIMINARY WARNINGS

The symbol ⚠ with the word **WARNING** identifies conditions and actions that pose hazard(s) to the user. The symbol ⚠ with the word **CAUTION** identifies conditions andactions that may damage the device or the equipements connected.

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.

| | |
|---|---|
|  | **WARNING: Before performing any operation is mandatory to read the full contents of this manual.** The module may only be used by qualified and skilled technicians in the field of electric installation. Specific documentation is available for download at website: www.seneca.it/products/z-gprs3. |
|  | 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. |
|  | **CAUTION: It is forbidden to place anything that could obstruct the ventilation slits. It is forbidden to install the module near heat sources.** |
|  | **CAUTION: When you turn On the module for the first time, the device must be supplied without any interruptions for at least 72 hours in order to charge the internal batteries.** |
|  | Disposal of electrical & electronic equipment (applicable throughout the EU and other countries with separate collection programs). The symbol found on this product or on its packaging, indicates that this product it must be handed over to an applicable collection point for **the recycling of electrical and electronic equipments.** |



Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

## INSTALLATION ON AND REMOVAL FROM IEC EN 60715 DIN RAIL

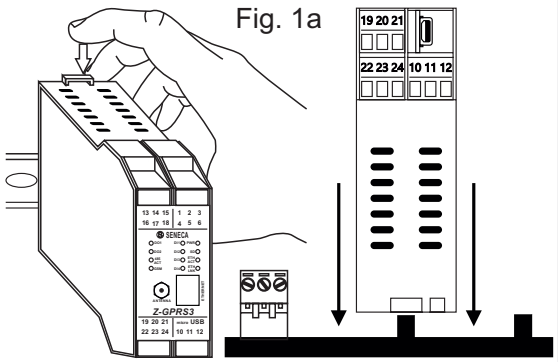


Fig. 1a

**Insertion on the IEC EN 60715 DIN rail:**
1) Move the two hooks on the back of the module outwards as illustrated in fig. 1b.
2) Insert the module rear IDC10 connector into a free slot of DIN rail accessory as you can see in fig 1a. (the insertion is one way only because the connectors are polarized).
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.

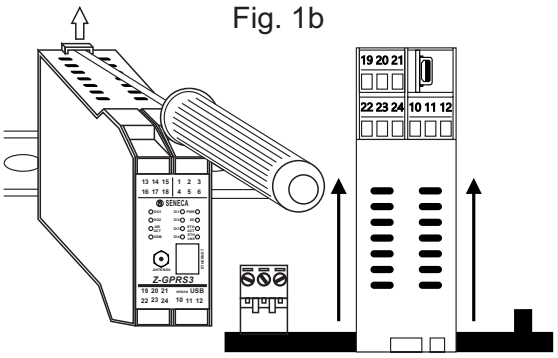


Fig. 1b

**Removal from IEC EN 60715 DIN rail:**
As shown in fig. 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 IEC EN 60715 DIN rail.

## USE OF Z-PC-DINAL ACCESSORY

**Don't turn upside down** the module and **don't force the insertion** of the IDC10 connector into 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 various pins of the rear IDC10 connector if you want to provide the signals directly through this connector. The pictures **Fig. 1 c** and **Fig.1 d** show how to connect powersupply and RS485 COM1 port to the rear IDC10 connector.

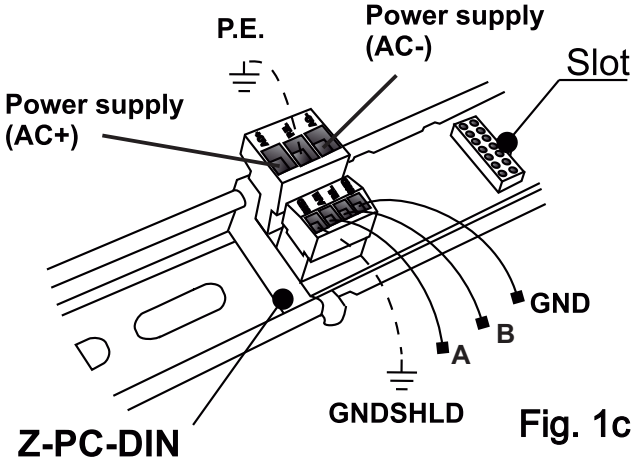


Fig. 1c

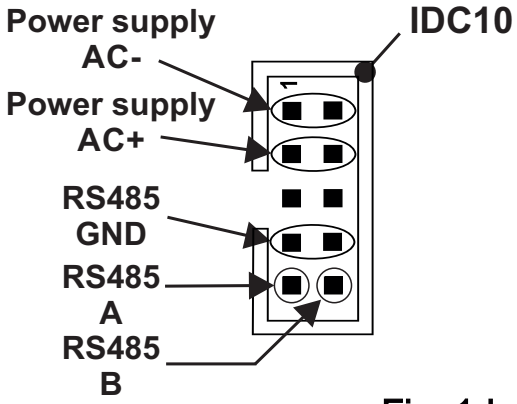


Fig. 1d



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

# ELECTRICAL CONNECTIONS

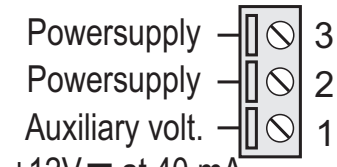
**Warning: The powersupply upper limits must not be exceeded in order to avoid serious damage to the module.**

**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...);

## • POWERSUPPLY

19 – 28V∿ 50 – 60 Hz
11 – 40V⎓ 6.5W

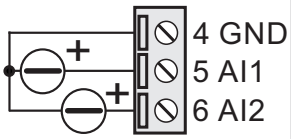



+12V⎓ at 40 mA

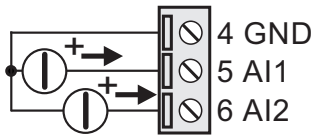
The power supply must be connected to terminals 2 and 3.
The supply voltage must be between:
11 and 40V⎓ (any polarity), or between 19 and 28 V∿.
The power supply source must be protected from any malfunctions of the module through appropriately sized safety fuse.

## • ANALOG INPUTS

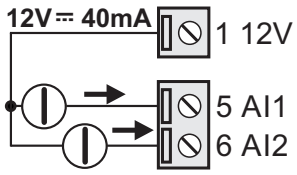
Voltage




Current active sensor (4 fili)



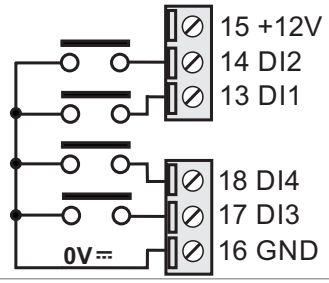

Current passive sensor (2 fili)



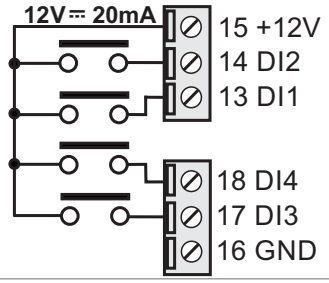

The module has two software voltage or current configurable analog inputs.
For the configuration software you can read the user manual.

## • DIGITAL INPUTS

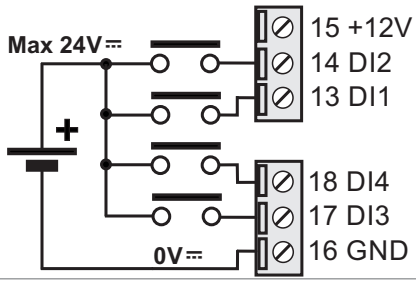
Internal power supply NPN



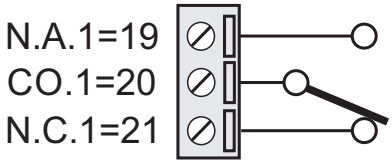

Internal power supply PNP

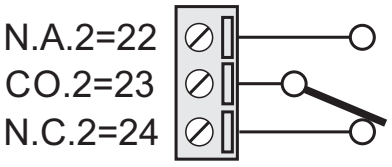



External power supply PNP



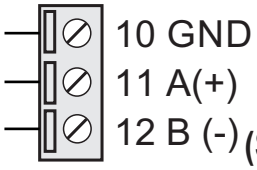

## • DIGITAL OUTPUTS



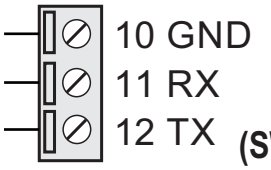




The module has two **digital outputs with free contacts.**
The figures show the internal relay contacts available.

## • COM2 SERIAL PORT




**RS485 SERIAL PORT (SW2=OFF↓)**



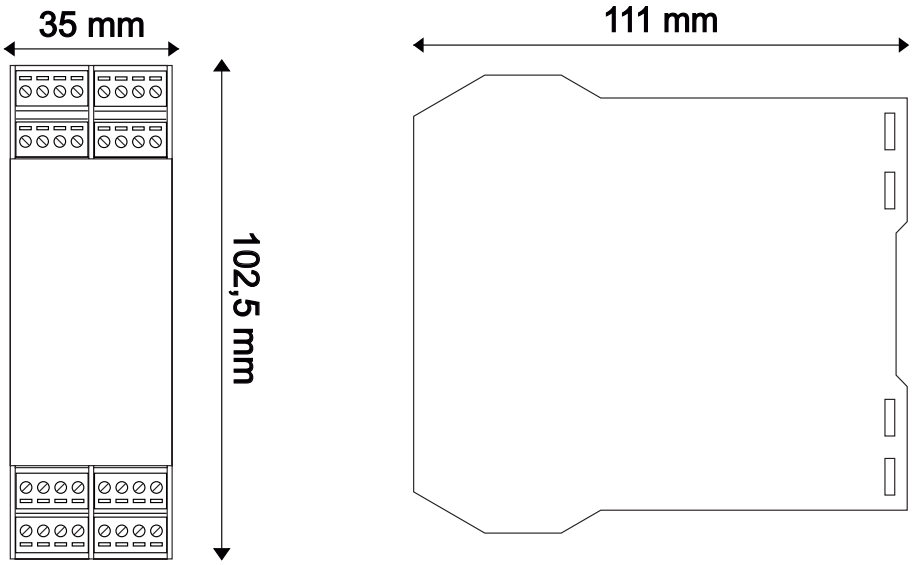

**RS232 SERIAL PORT (SW2=ON↑)**

The module has a serial port available to terminals 10-11-12
You can configure this port through SW2 switch.



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

## MODULE LAYOUT




| | |
|---|---|
| **Dimensions (L×H×W)** | 35 x 102,5 x 111 mm (with terminals). |
| **Weight** | 250 g. |
| **Case** | Material PA6, black color. |

## LED SIGNALING ON FRONT PANEL

| LED | Status | LED's 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<br>2.8s ON ■ 0.4s OFF □ | ■■■■■■■■■■■■■□□<br>RS485 activity or RS232 activity |
| | OFF□ | RS485 or RS232 serial interface not used |
| | Fast Blinking<br>0.2s ON ■ 0.2s OFF□ | ■□■□■□■□■□■□■□■□<br>RS485 or RS232 communication Timeout |
| GSM (Yellow) | Blinking<br>64ms ON ■ 3s OFF □ | ■□□□□□□□□□□□□□□□□□□□□□□□□<br>Connected to the GSM network |
| | Blinking<br>64ms ON ■ 0.8s OFF □ | ■□□□□□□□□□□□□□<br>Searching the GSM or GPRS network |
| | Fast Blinking<br>64ms ON ■ 0.3s OFF □ | ■□□□□□<br>Connected to the GPRS network |
| | OFF□ | Modem is not running |



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

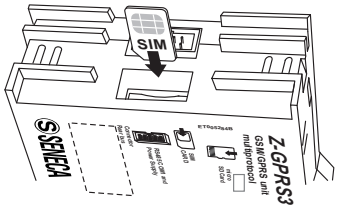
## LED SIGNALING ON FRONT PANEL

| LED | Status | LED's meaning |
|---|---|---|
| DI1 (Red) | ON (NPN) | Digital Input 1: Energized (GND closed contact) |
| | ON (PNP) | Digital Input 1: Energized (+12V closed contact) |
| | OFF | Digital Input 1: De-energized (open contact) |
| DI2 (Red) | ON (NPN) | Digital Input 2: Energized (GND closed contact) |
| | ON (PNP) | Digital Input 2: Energized (+12V closed contact) |
| | OFF | Digital Input 2: De-energized (open contact) |
| DI3 (Red) | ON (NPN) | Digital Input 3: Energized (GND closed contact) |
| | ON (PNP) | Digital Input 3: Energized (+12V closed contact) |
| | OFF | Digital Input 3: De-energized (open contact) |
| DI4 (Red) | ON (NPN) | Digital Input 4: Energized (GND closed contact) |
| | ON (PNP) | Digital Input 4: Energized (+12V closed contact) |
| | OFF | Digital Input 4: De-energized (open contact) |
| PWR/STS (Green) | ON ■ | Z-GPRS3 ON inactive log (status=ready) |
| | Slow Blinking<br>2.8 sec ON 0.4 sec OFF | ■■■■■■■■■■■■■□□<br>Z-GPRS3 active log (status=normal) |
| | Slow Blinking<br>1.6 sec ON 1.6 sec OFF | ■■■■■■■□□□□□□□□<br>Battery powered inactive log (status=battery backup) |
| | Medium Blinking<br>0.8 sec ON 0.8 sec OFF | ■■■■□□□□■■■■□□□□<br>Low battery warning |
| | Fast Blinking<br>0.2 sec ON 0.2 sec OFF | ■□■□■□■□■□■□■□■□<br>Z-GPRS3 initializing or shutdown |
| | Fast Blinking<br>0.6 sec ■□■ 1 sec OFF | ■□■□□□□□■□■□□□□□<br>Error, please refer to the diagnostic |
| | OFF □ | Z-GPRS3 OFF |
| SD/STS (Red) | ON ■ | SD card mounted in the right way |
| | Medium Blinking<br>0.8 sec ON 0.8 sec OFF | ■■■■□□□□■■■■□□□□<br>SD card activity |
| | Fast Blinking<br>0.2 sec ON 0.2 sec OFF | ■□■□■□■□■□■□■□■□<br>SD card error |
| | OFF □ | SD card not present |
| ETH LNK (Green) | Blinking | RJ45 connection activated |
| ETH TRF (Yellow) | Blinking | Traffic on Ethernet port |

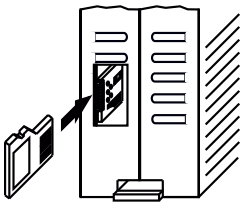


LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

## SIM-CARD AND SD-CARD INSERTING

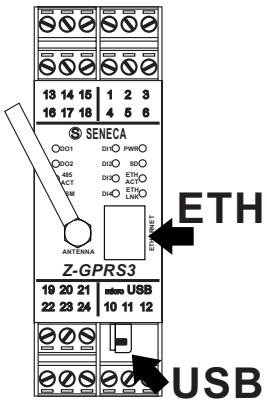



Inserting the SIM card into the rear slot on the side of IDC10 connector.



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

## RJ45 ETHERNET AND USB CONNECTIONS




The module has a RJ45 socket on frontal panel.
The picture shows how to Insert the RJ45 connector.
For further information, refer to the **USER MANUAL**.

The 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**.

## CONFIGURATIONS

**DIP-SWITCHES**

| | | | |
|---|---|---|---|
| **SW1** | All the DIP-Switches to OFF position ↓. For further informations please refer to: **USER MANUAL** | | |
| **SW2** | RS232 or RS485 configuration on terminals 10-11-12 (serial port COM2) | | |
| | **RS232** | **ON** | ↑ |
| | **RS485** | **OFF** | ↓ |

## ACCESSORIES

| Code | Description |
|---|---|
| Z-PC-DINAL1-35 | 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. |
| EXTERNAL GSM ANTENNA | For information on models of GSM and GPRS satellite antennas, access the website: www.seneca.it/products/z-gprs3 to the accessories section |
| FD01 | Photodetector for pulse counter, MAX frequency 10 Hz |

## CONTACTS

| | | | |
|---|---|---|---|
| Technical support | support@seneca.it | Product Informations | sales@seneca.it |



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000