

PRODUCT MANUAL

Product name: GSM / GPRS Module

June, 2017

I. Description

The **Industruino GSM / GPRS expansion module adds remote internet connectivity and SMS control to any Industruino IND.I/O or Industruino PROTO.**

The features include:

- Connect to the internet via GPRS
- Send/Receive SMS messages
- Micro-SD card slot (up to 2GB)
- RS-232 port + 14P IDC port
- DIN-rail mountable
- Fully enclosed

The module supports three installation modes:

- Power+Data via IDC connector. Primary UART connected to GSM functions, secondary UART connected to RS232 interface.
- Power+Data via IDC connector. Secondary UART connected to GSM functions, primary UART connected to RS232 interface.
- Power via external 2-pin connector, data via RS232 interface. In this mode the module functions as a standard GSM/GPRS modem, allowing you to test commands via a PC.

II. Operation instructions

Before using the Industruino kit, please read the manual carefully and pay full attention to safety to handle the product correctly.

For the latest instructions regarding installation, usage and operation of the Industruino kit please visit:

www.industruino.com/support

Safety Instructions

WARNINGS:

- Do not connect any part of the device to voltages higher than 32V.
- Always switch off power before you connect or disconnect an external device or accessory.
- Avoid circuit or wire exposure. Do not touch exposed connections or components when the device is powered on or when devices connected to it are powered on.
- Use only with cables and accessories that are approved or recommended by Industruino.
- Do not operate with suspected failures. If suspected damage occurs with the device, have it inspected by qualified service personnel before further operations.
- Do not operate in an explosive atmosphere.

- Do not use in wet/damp conditions.
- Keep device surfaces clean and dry.
- Use only for applications described in the catalog and the manual, and only with third party devices or components if they have been approved or recommended by Industruino.
- The device can only function correctly and safely if it is transported, stored, set up, and installed correctly, and operated and maintained as recommended.
- The device must be installed and wired by a trained technician following the applicable local safety standards and regulations.

Conditions of use

(1) Industruino GSM / GPRS module ("the PRODUCT") shall be used in conditions;

- where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
- where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.

ES GEAR LTD. OR ITS DISTRIBUTORS SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN ES GEAR LTD. OR ITS DISTRIBUTORS' USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.

("Prohibited Application")

Prohibited Applications include, but not limited to, the use of the PRODUCT in;

Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.

Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.

Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

Notwithstanding the above, restrictions ES Gear Ltd. may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by ES Gear Ltd. and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTS are required. For details, please contact an ES Gear Ltd. representative.

III. Regulatory CE Compliance

This product meets the essential requirements of applicable European Directives as follows:

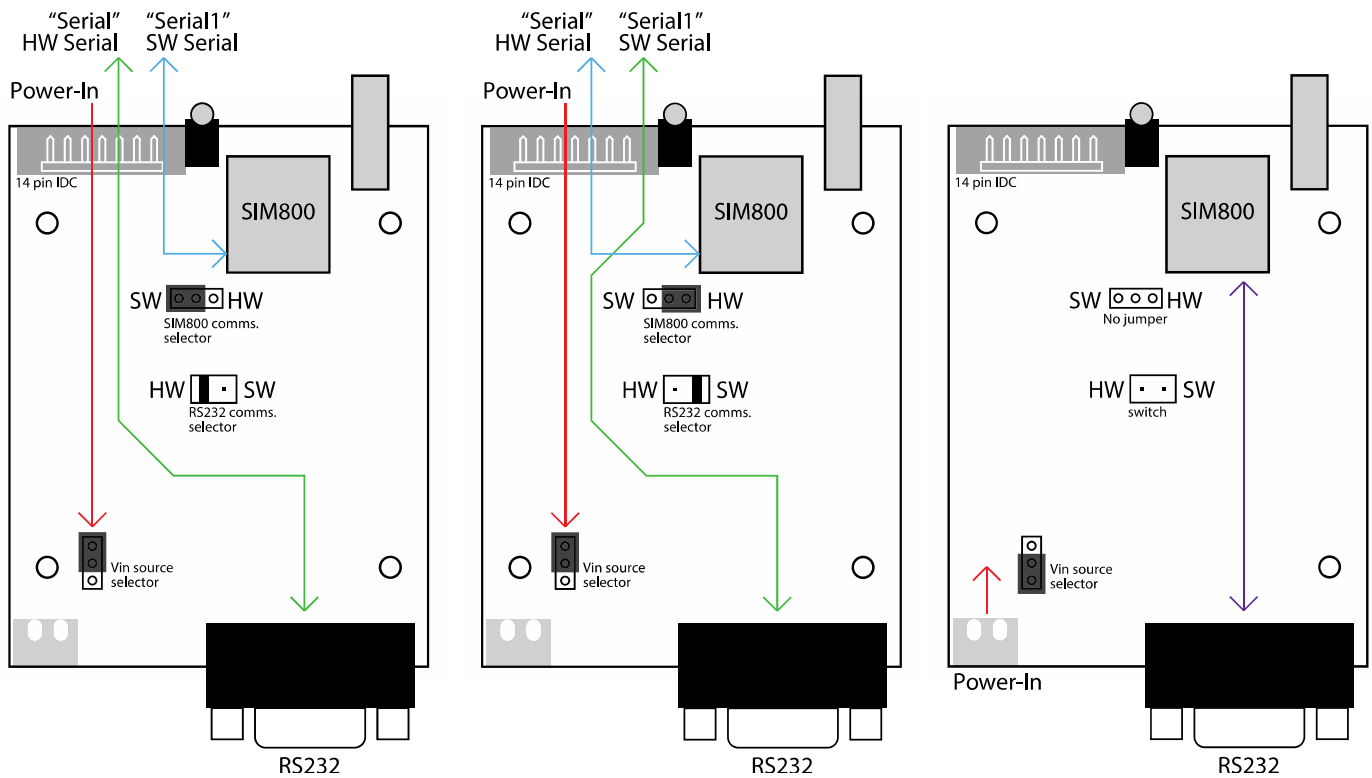
Directive 2014/53/EU; Radio Equipment Directive (RED)
2011/65/EU; Restriction of Hazardous Substances Directive (RoHS).

WEEE Compliance

All Industruino products that are subject to the WEEE directive shipped from September 1, 2014 are compliant with the WEEE marking requirement.

Such products are marked with the “crossed-out wheelie bin” WEEE symbol (shown, above) in accordance with European Standard EN50419.

IV. Mode Guidance



IDC mode 1:

- SIM800 module connected to second UART (“Serial1” on D21G, Software serial D5/D10 on 32u4).
- SIM800 power on/off controlled using pin “D6”.
- SIM800 “ring indicator” connected to pin “D7”.
- RS232 interface connected to first UART (“Serial” on D21G, “Serial1” on 32u4/1286).
- Module powered from IDC connector.

IDC mode 2:

- SIM800 module connected to first UART (“Serial” on D21G, “Serial1” on 32u4/1286).
- SIM800 power on/off controlled using pin “D6”.
- SIM800 “ring indicator” connected to pin “D7”.
- RS232 interface connected to second UART (“Serial1” on D21G, Software serial D5/D10 on 32u4).
- Module powered from IDC connector.

External mode:

- RS232 interface connector to SIM800.
- SIM800 power on/off controlled using RS232 “RTS” line.
- SIM800 “ring indicator” connected to RS232 “RI” line.
- Module powered from external power supply.

V. Programming Guide

This GSM/GPRS module is based on the SIMCOM SIM800H module, and is controlled with AT commands.

The AT commands can be issued via the RS-232 port or via the TTL UART ports on the 14pin IDC connector.

For an overview of supported AT commands please download the “SIM800 Series_AT Command Manual_V1.10” from the SIMCOM website: <http://simcomm2m.com/En/module/detail.aspx?id=75>

For ease of use below is a list of Arduino libraries which wrap all AT commands in easy to use function:

- TinyGSM library
- Adafruit FONA library
- Freematics SIM800 library

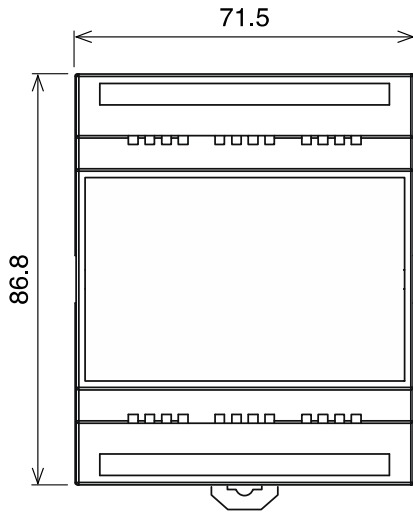
VI. Packing List

The product comes with a cable to connect to Industruino control. Power is supplied either from 14 pin IDC cable or separately as external Vin.

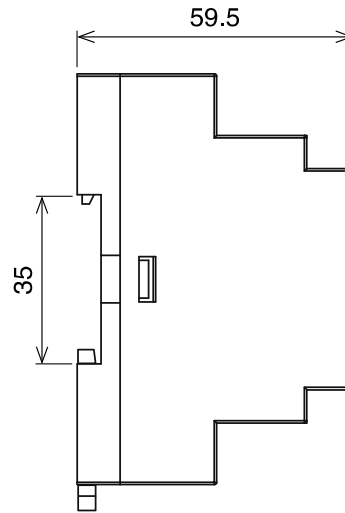
Micro SD and SIM card holders are accessed by opening the top shell of the enclosure.

Dimensions Drawing

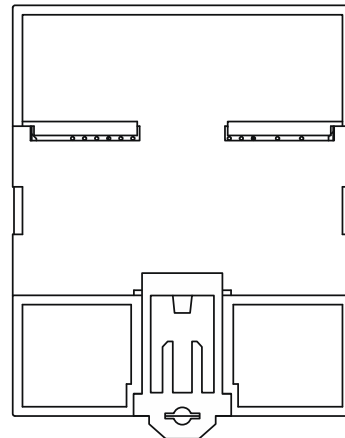
Front View



Side View



Back View



Warning Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.