M2M Modbus RS485 IO ® - Quick Installation Guide

OPERATION PARAMETERS

- Power Supply: 12V 1A (10-32V DC, 8-24V AC), battery (12V or 16V)
- Current: stand-by: 20mA @ 12V, max.: 150mA
- Gemalto® MC55i-W GSM/GPRS modem (850/900/1800/1900MHz), 86kbps DL / 43.2 kbps UL, Class 4 EGSM850 and EGSM900 Class 1 GSM1800, GSM1900, GPRS Multislot 10 class (4+2), GPRS Mobilestation B class, Coding Schema: CS1, CS2, CS3, CS4, PPP-Stack, SMA (50 Ohm) antenna connection
- Input high signal level: 5-24V, low signal level: 0-1V
- Input operation mode*: 12V Voltage or Pulse (max. 12V), Contact (sensing short/wire cut) – **depending on Modem Plus version*
- Current in active status: 5-7 mA, switchable voltage: 2A 120VAC, 1A 24VDC
- Industrial aluminum case, C-rail mountable, Dimensions: 150x100x40 mm, Weight: 480gr, IP51 protection, Operation temperature: -40°C..+85°C, storage temperature: -40°C..+85°C

MAIN FEATURES

Data communication / Connection	IO (4- or more* inputs, 2 outputs) +RS232 (DB9) or S485
Transparent communication	GPRS data sending
Automatic mobile network reconnection	YES
Readout of Modbus registers (Function Code 3)	YES
PLC / Data concentrator connect.	YES
Modbus Gateway (incoming Modbus TCP message from GPRS and forwarded to serial port in Modbus RTU format for a PLC)	YES
Pulse signal counting	YES
Voltage/Contact input	YES
Relay output switch	OPTIONAL
Modbus TCP client connection possibility (industrial standard)	YES
Modbus TCP server connection (Scada, AVReporter)	OPTIONAL
Sabotage sensing	OPTIONAL
2MB flash memory for storage of programs, data	OPTIONAL, with Ftp usage
Watchdog, monitoring, log	YES
Firmware updates (ftp server)	YES
Configuration with software	RS232 or RS485

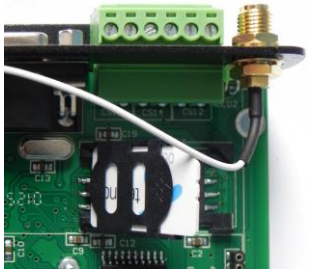
** In case of M2M IO/RS485 CONCENTRATOR connection, further 32 inputs are available. The inputs can be increased by connecting further data concentrators.*

CONNECTORS

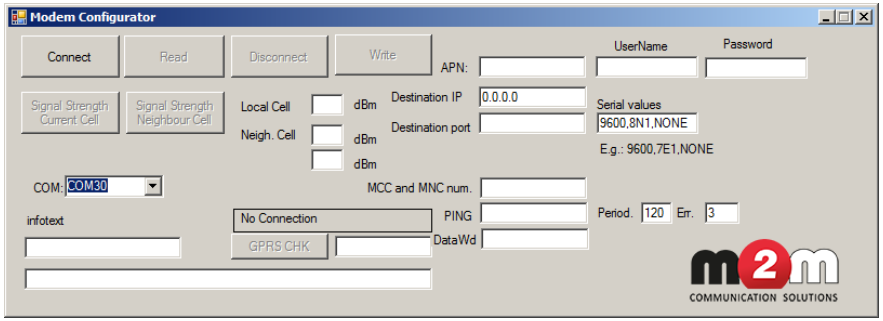
1 - SMA antenna connector (50 Ohm)
2 - RS485 port connection (in case of RS232 version cannot be used!)
3 - RS232 (Dsub9) serial port (DCE)
4 - GSM/GPRS status LED
5 - AC/DC power (-/+)
6 – Battery connection (-/+)
7 – 4pcs earth independent input (Input1..Input4 -/+)
8 – 2pcs relay output (Out1 -/+, Out2 -/+)
9 - Custom LED (optional)

INSTALLATION / CONFIGURATION

1. Unplug the power cable (**5** or **6**) from the modem – if it was connected to the power – then the **Status LED** will not light further.
2. Remove the two screws from front-plate and slide the PCB from the antenna connector side, while the SIM-card holder will appear.
3. Push the SIM-holder fixation lag to the **OPEN** position, open up and insert the SIM card in the right direction into the SIM-holder. Then close it and push it back to the **LOCK** position.
4. When the modem will connect on the RS232 interface, then remove the RS485 additional expansion PCB from the mainboard. (When you will use the modem through RS485 then not necessary to change the boards).
5. Assemble the mainboard into the case and fix the front-plate with the screws.
6. Connect and mount a GSM/GPRS antenna (50 Ohm) to the SMA connector (**1**).
7. Connect a RS232 serial cable to the DB9 (**3**) port, and the PC to the other side of cable (when the PC has only USB port, you also have to use a RS232-USB converter and its driver must be installed to the PC).
8. Download the ***Modem Configurator*** from the product webpage from our website, here: http://www.m2mserver.com/en/product/m2m-modbus-rs485-io/
9. Uncompress the file and execute the **ModemCfg2.exe** file on a *Windows* system.
10. Choose the proper serial port number at the **COM** field (drop-down the list and choose). Then push the **Connect** button.
11. Turn on the modem (give the power supply to the **5 6** (or **6** if battery will be used)).
12. Wait until you will receive the ***Modem Connection OK*** message (ca. 30-40 seconds) in the framed message box.
13. Push the **Read** button and wait until the ***Modem Connection OK*** message will appear again – wait for another 30-40 seconds.
14. Modify the settings (for details, see above), then push the **Write** button and wait for the ***Modem Connection OK*** message.



15. When you have finished, push the **Disconnect** button and disconnect the RS232/RS485 cable (**2** or **3**).



16. Restart the modem – by unplug and connect the power supply. Then the modem will operating regarding the new configuration settings.
17. <u>In case of error/fault</u>: You will found the CommLine.txt file in the program directory. In case of the support line, you have to send this log file.

<u>Parameter settings:</u>
GPRS settings:
- **APN**: APN network name by the mobile operator, for using the internet zone
- **UserName**: given by the mobile operator, for using the internet zone
- **Password**: given by the mobile operator, for using the internet zone

Server settings:
- **Destination IP:** Server IP where you will send the data. (The IP must be accessible on the mobile network (format as 123.123.123.123)
- **Destination Port:** Server access port number where the data will be sent

MCC+MNC: GSM service code (5 digit number, ask your mobile operator)
Serial Values (serial port parameters) – in sequence with comma separated (without space character), e.g.: 9600,8N1,NONE
- **Speed:** 1200 / 2400 / 4800 / 9600 / 19200 / 38400 /115200
- **Data bits:** 7 / 8, **Parity: N (none) /** E **(even)/** O **(odd)**
- **Stop bits:** 1 / 2, **Hardware control :** NONE / HW

<u>Checking:</u>
- **GPRS signal strength** by the **Signal Strength Current Cell** button (value at the **Local Cell**). It must be between 30 and 85. When the value is different, then change the antenna position or its location. When you get 0 or -99 value it means a fault or no antenna attached.
- **Mobile Internet connection** test to the GPRS network with the **GPRS CHK** button.
- **Server IP** availability with the **PING** (server IP), the **Period** (in seconds), **Err** (ping retry).

USING THE MODEM

1. The RS232 and RS485 ports cannot be used in the same time! You have to choose the RS232 OR the RS485 connection.
2. When the Modem Plus RS485 device will be used with RS232 serial interface, first of all the internal RS485 expansion board must be removed!
3. The M2M Modem Plus versions will be uploaded by factory default with the especial and proper communication protocol software by the Customer requirements. The modems are shipped with the proper software version.
4. Turn off the device then connect the wires of the input line(s) (**7 - IN1..IN4**). and the output wire(s) (**8 - OUT1..OUT2**) – to the terminal blocks. **In case of using voltage input line(s), take care about the polarity when wiring!**
5. Setup the input operation mode at the input lines – see figure at nr. **10** (jumper in upper position: 12V Voltage polarity, or max. 12V pulse signal (for pulse counting), in low position: Contact (short/wire cut detection)
6. When you will turn on the modem, the internal LED signals will be operating according the wiring. IO LEDs (**11**) and power LED (**12**) will sign the operation.
7. Connect the RS232 cable (**3**) or the RS485 (**2**) connector, due to the terminal block (use only one of them in the same time!)
8. Turn on the modem by adding the power supply at the AC/DC (**5**) port or/and add an external battery (**6**). The battery can be used together with the PSU as well – as a spare supply (in this case the battery will be charged from the power source).
9. Check the **GSM/GPRS** LED signals (**4**) and wait while the modem connects to the GPRS network. Use the device according to the uploaded software.

GSM/GPRS LED SIGNALS

Not lights	the modem is turned off or in stand-by operation mode
Blinks in every 0.5 second	no SIM-card/ bad PIN code / searching the GPRS network / connection in progress
1 short blinking in every 3 seconds	connection to the GPRS network was successful / GPRS data connection is active
Blinking in every 0.5 seconds	GPRS data transmitting/receiving, sending data
Lights	initiating the data connection/disconnection , transmitting parameters

PACKAGE CONTENT: M2M Modem Plus version, Quick Installation Guide. **ACCESSORIES BY ORDER:** Antenna, power supply, external battery, RS232 cable, DIN fixation unit, I/O expander, RS485 expansion board.

The product has the CE marking according to the European declarations, and it fully accomplishes with the related R&TTE 99/5/CE standards and directives.