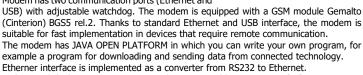# GSM-BGS5-EEN

## 1. Introduction

Modem in an industrial metal aluminum case which is suitable for installation into a control cabinet. Modem has two communication ports (Ethernet and USB) with adjustable watchdog. The modem is equipped with a GSM module Gemalto (Cinterion) BGS5 rel.2. Thanks to standard Ethernet and USB interface, the modem is suitable for fast implementation in devices that require remote communication.

The modem has JAVA OPEN PLATFORM in which you can write your own program, for example a program for downloading and sending data from connected technology. Ethorner interface is implemented as a converter from RS232 to Ethernet.

In factory default, DHCP sever assigns dynamic IP address, name: **admin** , password: **admin** .

## 2. Package Content

1pc GSM modem
1pc 2-pin connector 3,5mm

## 3. Recommended Accessories

### 3.1 Antenna

| | |
|---|---|
| GSM-ANT11K | 2dB, Whip jointed antenna, without cable |
| GSM-ANT01S | 5dB, magnetic, cable 3m |
| GSM-ANT51S | 9dB, magnetic, cable 3m |
| GSM-ANT07S | 9,5dB log–per, cable 10m |

### 3.2 Power Supply

| | |
|---|---|
| GSM-PWR12 | Power supply adapter into socket 230V$_{AC}$ / 12V$_{DC}$, 1A |
| GSM-PWR1 | DIN rail mounted supply module  230VAC / 12VDC, 1.25A |

Note: for DIN rail mounting inside of a cabinet suitable:

| | |
|---|---|
| GSM-75-DIN | Plastic DIN rail holder      or |
| GSM-ZIP50 | Industrial 3M Dual-Lock ZIP 25x50mm for wall mounting |

### 3.3 Cables

| | |
|---|---|
| HW-11.99.8752 | USB 2.0 AB (micro USB to a modem), length 1.8m |

## 4. Technical Specification

| Parametr | | Symbol | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|
| **Power Supply (PWR)** | Voltage DC | | 7 V$_{DC}$ | 8 to 30 | 33 V | V$_{DC}$ |
| | Standby power. consumption | connected to GSM network (call o GPRS) | 0,84 (70mA for 12 V$_{DC}$) | | | W |
| | Max. power. consumption | | 2.1 | | | W |
| **POWER supply conn.** | 2-pin removable screw terminal block, pitch 3.5 mm (PWR), or micro USB connector | | | | | |
| **Power supply via  USB \*\*** | Voltage | | | 5 | | V |
| | Current | | | 300 | 500 | mA |
| **Ingress Protection** | IP | | | 40 | | |
| **Temperature** | Storage | tSTG | -40 | | +85 | °C |
| | Operating | tA | -30 | | +65 | °C |
| **Humidity** | Operating | | | | 95 | % R.V. |
| **Dimensions** | Width | W | | 54 | | mm |
| | Height | H | | 24 | | mm |
| | Length | L | | 82 | | mm |
| **Weight** | | | | 0.103 | | kg |

Note: If the power supply and USB connectors are connected at the same time, current goes only from power supply connector PWR.
\*\* As the power consumption from USB is higher than 500mA, it is sometimes needed to reserve the current or use powered USB hub.

## 5. Modem Parameters

| Parameter | Description |
|---|---|
| **GSM , GPRS 12** | 850/900/1800/1900 MHz (GPRS 85.6 kbps DL, 85.6 kbps UL) |
| **Antenna connector** | Device -  SMA (F), 50 Ohm |
| **Internet services** | TCP/UDP server/client, DNS, Ping, FTP client, HTTP client |
| **JAVA** | 2 MB RAM and 4 MB Flash File System |
| **USB 2.0** | Micro USB; USB2.0 |
| **Ethernet** | Connector RJ45 |
| **HW watchdog** | See the chapter Watchdog setting |

## 6. Documentation

For **USB driver**, a list of **AT commands** and other information, visit the www.seapraha.cz , type "GSM-BGS5-EEN" into the search box.
In the Name field, enter the text **sea**. In the Password box, type **siemens**.

If you are using WIN10 and you will use only control via AT commands, do not download the driver, WIN10 will install its own driver automatically.

## 7. Hardware

### 7.1 Power supply and indication LEDs

Supply voltage is connected to terminals PWR and must be in the range of 7-33 V$_{DC}$. The device is protected against overvoltage and has a built-in refundable SMD fuse. If the external fuse is needed, use 1.25 A fuse at V$_{CC}$ line. As the power consumption from USB is higher than 500mA, it is sometimes needed to reserve the current or use powered USB hub.

The modem can be powered directly from the USB connector. If the power supply and USB connectors are connected at the same time, current goes only from power supply connector PWR.

LED PWR is located on the bottom-right side of PWR connector, LED ETH is located bottom-left side of Ethernet connector.

| LED | COLOR | MEANING |
|---|---|---|
| **PWR** | green | *dark* … device is not supplied, or internal power convertor is out of order<br>*light* … device in operation state |
| **RS232** | yellow | *Blinking*     … communication from the GSM module into Ethernet module |

### 7.2 NANO SIM card reader and GSM state indication

Insert the nano SIM card into the holder (cut corner first, contacts up - towards the inscription SIM). The correct insertion is indicated by mechanical click noise. Push gently and release to remove the SIM card.

Above the SIM card holder is located the LED which indicates status of GSM.

| LED | COLOR | MEANING |
|---|---|---|
| **Located above SIM card holder SIM** | blue | Device state indication.<br>*Dark* … device failure; Device was switched of using AT command<br>*blinking 1:1* … device starting up<br>*1 short blink per 4 seconds* … device operational |

### 7.3 Antenna

The antenna is connected via SMA connector. The device is fitted with SMA female. The connected antenna must have SMA male. The impedance is 50 Ω.

### 7.4 Communication ports (Ethernet and micro-USB)

To communicate with the modem (AT commands) is designed interface Ethernet and USB. The device includes a connector Ethernet RJ45 and micro-USB.

Ethernet module you can set via webserver which is included in Ethernet module (In factory default, DHCP sever automatically assigns dynamic IP address, name: **admin** , password: **admin** .

Ethernet module is internally  connected to GSM module instead of RS232 interface.

Baud rate for USB is not needed to set.

You will see two COM ports in WIN Control panel. For sending AT commands you must use the port, which you find in Device Manager „Modems" (Parameters/Modem). Other port is determined for JAVA application´s development.

### 7.5 DIN rail mounting

If you need to place the device into the switchboard on DIN rail, screw the plastic holder GSM-75-DIN drilled hole in the side of the modem.

## 8. Warranty

General warranty period is 24 months after purchase, when eventual malfunction device will be repaired free of charge in SEA spol. s r.o. while shipping to SEA is paid by customer and SEA pays for shipping back to customer.

The warranty does not cover any damage caused by wrong use which does not comply the technical specifications and user instructions and any accidental damage (e.g. by water, lightening etc.).

SEA spol. s r.o. has NO RESPONSIBILITY for any damage, lost, costs and any other problems direct or inducted, caused by device malfunction from any reason.

In case of incompleteness or any damage in the packaging it is necessary to inform SEA spol. s r.o. immediately (within five days).

# 9. Watchdog setting



## 9.1 GSM module

The device contains a built-in watchdog which checks whether the modem answers (if there are changes in the internal line RxD between GSM module and Ethernet module). If it is no change on the line for specified time period, the modem is considered broken and is cut off from the power supply for 15 seconds. After that the modem and monitoring process starts again.

Time, which is still not considered an error of modem is configured using commands via serial interface Ethernet. USB port is not possible to use for Watchdog setting!

Notes:

- Before each command must be a time of 1 second when there are no characters sent!
- Characters '-' and '+' in the following examples are sent. '-' … mean Data are sent to the device, '+' means data are sent by the device.
- '<#0D>' is a placeholder for ENTER (13d, 0x0D).

### Command ECHO

Display current Watchdog setting

- GSMWDG<#0D>
+ WDG: OK 123456 D2251D v1.0

or

- GSMWDG?<#0D>
+ WDG: OK 123456 D2251D v1.0

| Part | Description |
|---|---|
| WDG: | Watchdog respond identification |
| OK | Command accepted OK |
| 123456 | Actual Watchdog setting value in seconds (HEX code): 123456 HEX = 1 193 046 seconds ~ 13,8 day 000000 HEX = Watchdog function disabled (default setting) 00003C HEX = 60 seconds ~ 1 minute 000E10 HEX = 3 600 seconds ~ 1 hour 008CA0 HEX = 36 000 seconds ~ 10 hours 015180 HEX = 86 400 seconds ~ 1 day |
| D2251D | Device Identification |
| V1.0 | Device version |

### Command SET

Watchdog setting

- GSMWDG 112233<#0D>
+ WDG: OK 112233 D2251D v1.0

The parameter '112233' means seconds (coded in HEX). See the table for command ECHO. Exactly 6 HEX numbers has to be entered, including leading zeroes.

Value '000000' disables Watchdog function = modem is never restarted by Watchdog.

Example: Disable Watchdog
- GSMWDG 000000<#0D>
+ WDG: OK 000000 D2251D v1.0

Example: set Watchdog for 1 hour
- GSMWDG 000E10<#0D>
+ WDG: OK 000E10 D2251D v1.0

Example: set Watchdog for 10 hours
- GSMWDG 008CA0<#0D>
+ WDG: OK 008CA0 D2251D v1.0

Example: set Watchdog for 1 day
- GSMWDG 015180<#0D>
+ WDG: OK 015180 D2251D v1.0

### Command RESET

Immediate modem reset

- GSMWDG RESET<#0D>
+ WDG: OK RESET D2251D v1.0

## 9.2 Ethernet module

Ethernet module has its own watchdog. Ethernet module automatically restarts after certain time if no data goes though the modem and there is no TCP connection. The factory default is 600s. This behavior is possible to forbid and could be set in menu COMMUNICATION SETTINGS after connection to its webserver.
It is possible to se following modes:

- **TCP Server** – listen on TCP port for a connection, accept it and connect to ASC0 port of GSM modem.
- **TCP Client** – continuously try to set a TCP connection with IP address and port. After succeeding, connect it to ASC0 port of GSM modem. If the connection is interrupted, it tries again to connect it.
- **UDP Server** – listen on UDP port. If obtains data, send them via ASC0 port to GSM modem and the answer send to IP address and UDP port of sender.
- **UDP Client** – send data from modem to IP address and UDP port.
- **Http, Telnetd, WebSocket, MQTT, Ali IOT**

# 10. Frequently Asked Question

## 10.1 Command for Watchdog setting does not respond

- GSMWDG 52<#0D>
+ <nothing>

The problem is in the assignment of the time "52". It is required to enter the exactly 6-HEX digits. The correct command is this:

- GSMWDG 000052<#0D>
+ WDG: OK 000052 D2251D v1.0