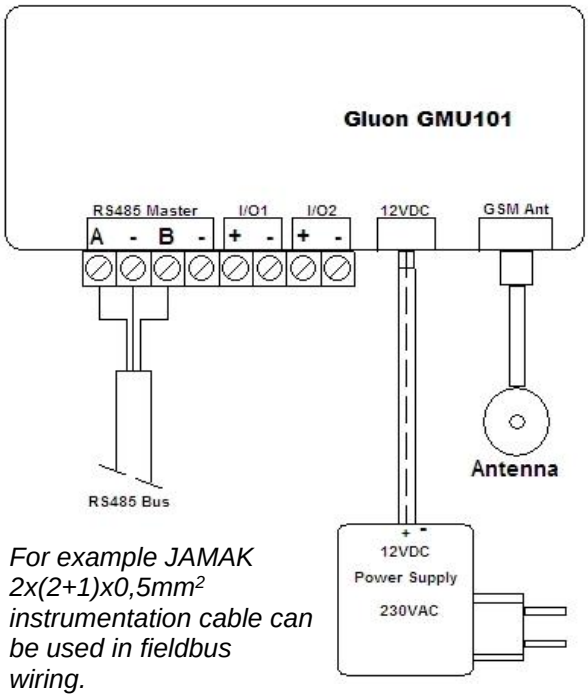
Quick Guide

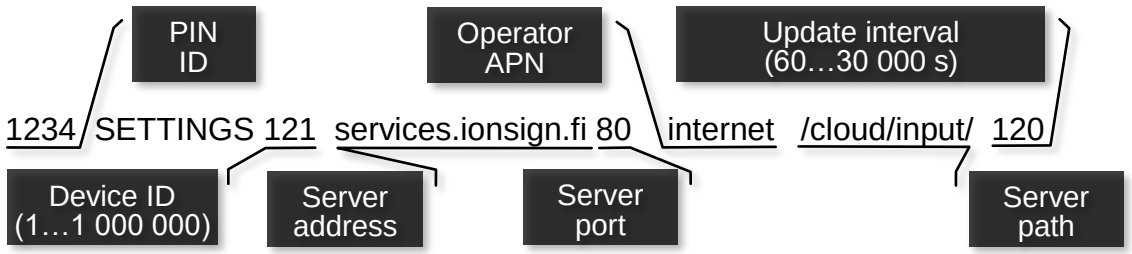
Gluon GMU101 Smart Gateway

Commissioning the GMU101:

1. Insert the SIM card to its slot. Disable PIN query with a mobile phone, if enabled.
2. Connect antenna, power supply and necessary Modbus device(s).
3. When powered up PWR led turns ON, STA led flashes once and then STA and STB leds flashes once simultaneously.
4. The GSM led blinks twice when a 2G/3G network is being looked for. GSM blinks once when a network is available.
5. Send the Settings command SMS to the SIM card's subscriber number. STA led indicates that server connection is established.
6. Modbus master reading is configured on the server application (e.g. ionSign Cloud)
7. Data collection and transfer has started.



For example JAMAK 2x(2+1)x0,5mm² instrumentation cable can be used in fieldbus wiring.



*The example command sets device **121** to collect and transfer data with two-minute intervals (**120**s) to server **services.ionsign.fi**, path **/cloud/input/** and port **80**, using **internet** as APN. The device specific PIN code **1234** precedes the actual command.*

Always establish your specific SETTINGS parameters from your reseller. Operator APN is usually found in their web site: Search for "[your operator] APN settings".

- The device only accepts messages with a correct PIN. Required for all commands.
- Server Addresses are accepted in either IP or DNS format. Protocol may be appended to the address.
- The device replies to all SMS commands, e.g. to SETTINGS: "Settings saved".
- To all commands given without parameters, the reply SMS states the current status or active settings. "<PIN>␣COMMAND"

Operating Instructions

Gluon GMU101 Smart Gateway

1 General

The Gluon GMU101 Smart Gateway is designed to collect and transmit data via 2G/3G network from Modbus fieldbus devices. After commissioning, the device collects and transmits data spontaneously, without separate queries. Device management may be separated to a different server from the data server. The device supports the HTTPS protocol and Basic HTTP authentication.

2 Indication lights

PWR is ON	The device has power.
GSM double blinks	The device is looking for 2G/3G service.
GSM blinks	The device has 2G/3G service.
GSM is ON	The device is communicating to the server.
STA is ON	The device has settings and server connection.
STA blinks	Factory settings are being restored.
STA is OFF	Factory settings have been restored.
STB is ON	All Modbus devices are responding.
STB blinks	At least one Modbus device is not responding.
STB is OFF	None of the Modbus devices are responding or Modbus master reading has not been configured.

3 Commands

The GMU101 is configured with SMS messages sent to the SIM card's subscriber number. All commands start with a device specific PIN code (not SIM card's PIN). The command and its parameters are separated with a space. The command is not case sensitive.

Maintenance command configures the settings used for device management communications, e.g. for configuring Modbus reading and for updating firmware. With no command given, the data server settings are used, given with the **Settings** command.

<PIN>␣MAINTENANCE␣<Address>␣<Port>␣<Path>␣<Interval>

<PIN>	Device specific ID. Default PIN is 1234.
<Address>	Device management server address, may be given as an IP or DNS format and can contain the protocol used.
<Port>	Port number of the server.
<Path>	Input script path of the server.
<Interval>	The number of minutes between device management communications. Value range is 1…60 min.

Init command initialises the device and restores factory settings. All data and settings are erased. The default PIN is restored (1234).

<PIN>␣INIT

PIN command changes the device specific PIN code. Note! Device initialization is only possible with a valid PIN code.

<PIN>␣PIN␣<New PIN> (0000-9999, no spaces)

Interval changes the interval of consecutive readings without having to resend the **Settings** command. If the interval is between 10…60 minutes, and 60 is divisible by the interval, transmission is synchronized to the next full hour. Also, if the interval is over 60 minutes, and divisible by 30, transmission is synchronized to the next full hour.

<PIN>␣INTERVAL␣<Interval> (5 - 30 000 s)

Update interval, s	Update interval, h:min	Example of transmit scheduling, when the settings are made at 11:55 o'clock.
60	0h 1m	12:00 12:01 12:02 12:03 …
720	0h 12m	12:00 12:12 12:24 12:36 …
900	0h 15m	12:00 12:15 12:30 12:45 …
1800	0h 30m	12:00 12:30 13:00 13:30 …

Status command replies with the device ID and information of the mobile data and server connections.

<PIN>␣STATUS

Operator command chooses the mobile data operator to be used. Given without parameters, **Operator** chooses the default operator.

<PIN>␣OPERATOR␣<MNC> (operator MNC code, 00000-99999)

User command can be used to set user credentials for the APN, if the operator requires them. Command without parameters replies with current settings. 'Clear' parameter erases user settings.

<PIN>␣USER␣<Username>␣<Password> / <PIN>␣USER␣clear

MPORT command sets the Modbus master port communication settings (RS485). Without parameters, the reply lists active settings. Modbus reading is configured in the device management server (ionSign Cloud).

<PIN>␣MPORT␣<Baudrate>␣8␣<Parity>␣<Stopbits>

<Baudrate>	Baud rate (9600 / 19200 / 38600).
8	Number of data bits (not modifiable).
<Parity>	Parity ('N'-None or 'E'-Even).
<Stopbits>	Number of stop bits (1 or 2).

Auth command sets the Base64 encoded string for Basic HTTP authentication. Without a parameter, authentication is disabled.

<PIN>␣AUTH␣<String> (50 characters at maximum)

Datalimit command limits the number of data sets sent in one HTTP GET message. Default is 20.

<PIN>␣DATALIMIT␣<Datalimit> (1-20)

4 Modbus master reading

The device can be set to collect data from meters connected to its Modbus master port. Collected data is sent to the server. Modbus master reading settings can be given with a server application.

5 Failure Recovery

The device has no built-in backup power, so data is not collected nor sent during power failures. When power supply resumes however, the device assumes all prior settings and starts collecting and sending data without any need for user intervention.

For mobile data network failures, the device has a built-in local buffer for keeping collected data stored for later transmission. The buffer capacity is 3250 data series, each consisting of 250 Modbus registers. With a 15 min update interval, the buffer can store up to one month's data. When the GSM network resumes service, all buffered data is sent to the server without any need for user intervention.

6 Gluon GMU101 Technical Specifications

- 1 RS485 connection (Modbus master).
- Current consumption: 70 mA (momentary maximum 250 mA).
- Operating voltage: 11…13 VDC. 2,5mm DC socket.
- Real-time clock: 4 days backup.
- Size: WxHxD 125 x 51 x 25 mm (flanged ABS plastic enclosure).
- Protection class: IP20.
- Operating temperature: -25 °C...+55 °C.
- RH: 5 % - 95 % non-condensing.
- Local data storage capacity: 3250 data series (250 Modbus registers each). One month's data with 15 min update interval.
- Data communication: Integrated GSM/GPRS module. Conforming the following directives and standards:
  - R&TTE Directive 1999/5/EC (Radio Equipment & Telecommunications terminal Equipment)
  - Low Voltage Directive 73/23/EEC and product safety Directive 89/336/EEC for conformity for EMC
  - GSM (Radio Spectrum). Standard: EN 301 511 and 3GPP 51.010-1
  - EMC (Electromagnetic Compatibility). Standards: EN 301 489-1 and EN 301 489-7
  - LVD (Low Voltage Directive) Standards: EN 60 950
- Antenna: external, SMA connector.

7 Warranty

ionSign grants a warranty of two (2) years for all delivered devices and software services. The warranty starts on the date of the delivery and it covers material and manufacturing defects. The warranty does not cover defects caused by improper use or installation nor does it cover defects caused by factors out of ionSign's control. These would be for instance grid malfunction or service changes of network operators services. ionSign delivers a new device to replace the defected one, without cost. Alternatively, ionSign may repair the defected device. The defected device must be returned to ionSign, if required, at ionSign's cost. The warranty does not cover dismantling, installation, and introduction costs and the like. ionSign warrants that the provided software essentially manage with their designed tasks, at the time of delivery. All significant software defects are covered by the warranty. The defects will be resolved without unnecessary delay. The resolution may be an instruction to circumvent the defect. If the delivery includes third party products or services, these are only covered by the applicable warranty provided by that third party. Title to the delivered goods transfers to the client, when the invoiced price is paid in full. All immaterial rights related to devices and services remain the property of ionSign. If the service was a design assignment, the client assumes the right to use and further develop the assignment results. ionSign is eligible to use the client's name as a reference in its marketing. ionSign is not eligible to disclose the order details without prior consent. In case of a force majeure, preventing to act according to the purchase agreement, the affected party will start immediate negotiations to assess the effects of the obstacle on the scope and schedule of the purchase agreement. ionSign appropriately backs up client's data residing on its servers. In spite of this, ionSign assumes no responsibility of possible damage due to loss of data. ionSign assumes no responsibility of direct or indirect damage to property or people, nor work or travel expenses, caused by using its services or devices, unless due to gross negligence. ionSign's financial liability is always limited to the value of the delivered goods and services, unless otherwise inflicted by the Finnish law.

ionSign Oy
PL 246 | Paananvahe 4 | 26100 Rauma
ionsign.fi | ionsign@ionsign.fi | p. 02 822 0097
Y-tunnus 2117449-9 | VAT FI21174499

CE