

GateGPRS 3.1

Meter data collector for BrunataNet installations

User guide use and installation

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Brunata is a Danish owned company which ensures a fair and individual allocation of energy costs with Danish metering solutions. We have almost 100 years of experience within developing and producing meters, heat cost allocators, consumption accounts and meter services. Today meters are often remotely read with access to data via the Internet. Brunata has a quality control system fulfilling DS/EN ISO 9001 and 14001.

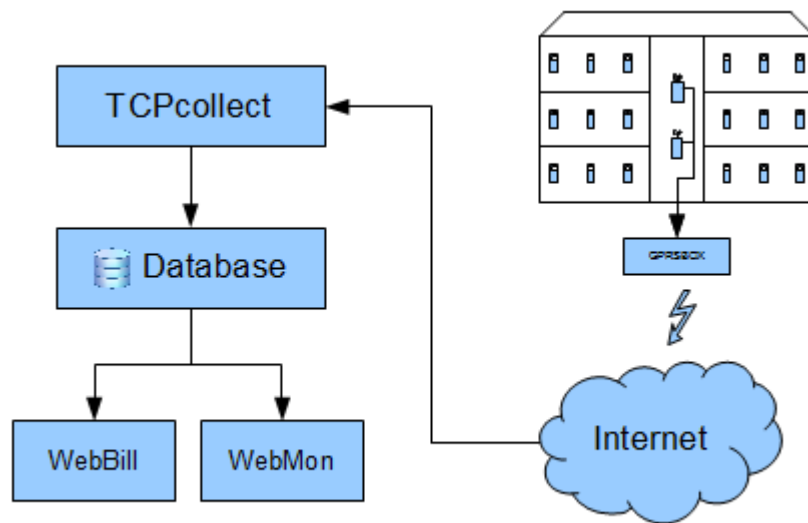
Brunata

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1. Introduction

The GateGPRS is used for retrieving and forwarding data collected by the GateReceivers to the database servers at Brunata. The GateGPRS collects data from one or more connected GateReceivers over an RS485 cable network and forwards the readings to Brunata's database server over a GSM-network. The GateGPRS can be deployed where stable GSM-network coverage supporting GPRS and SMS is available.



2. Components in a Brunata RS485 Network

This chapter describes the most common components that are required to build a BrunataNet data collection network based on a GateGPRS unit.

- GateGPRS-box with a GateReceiver attached
- Power Source – either a power supply or a battery
- Additional GateReceivers (optional, in case a larger area needs to be covered)
- Brunata RS-485 cabling (optional, if more than one receiver is connected)
- Connection Boxes (optional, in case the cable needs to be elongated or split)

2.2 Compatibility Matrix

This section summarizes the compatibility of the two recent versions of GateGPRS units with the most commonly employed Brunata network components.

	GateGPRS V2	GateGPRS V3
GateReceiver V1	<i>Compatible</i>	<i>Compatible</i>
GateReceiver V2	<i>Compatible</i>	<i>Compatible</i>
GateReceiver V3	NOT Compatible	<i>Compatible</i>
Futura⁺ Series V1	<i>Compatible</i>	<i>Compatible</i>
Futura⁺ Series V2	<i>Compatible</i>	<i>Compatible</i>
Futura⁺ Series V3	<i>Compatible</i>	<i>Compatible</i>
Select WMBus meters	NOT Compatible	<i>Compatible</i>

This list is not exhaustive, please contact your nearest Brunata office for more information.

2.3 Component List

It is important that the service technician carrying out the installation completes the component list at the back of this installation guide. Please include ID numbers and addresses and forward the list to Brunata as this list is used for registering the components in WebBill.

3. Installation

This chapter describes the installation procedures for GateGPRS units.

3.1 Requirements to the SIM card

The SIM card must uphold the GSM, GPRS and SMS standards.
The PIN code must be switched off.

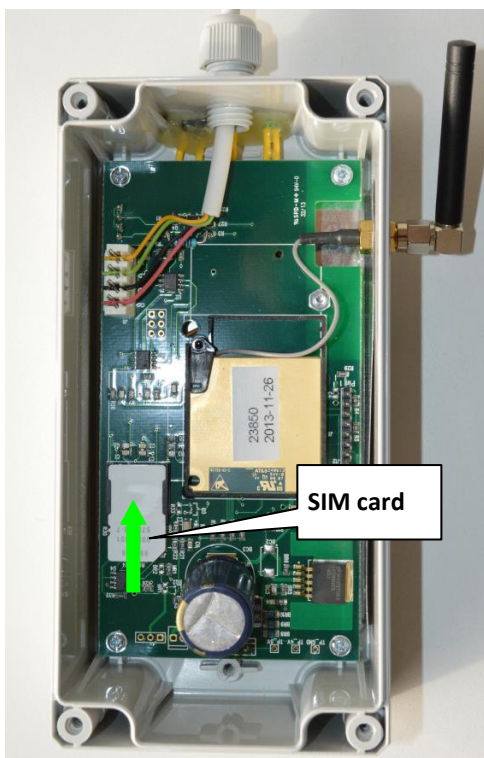
For certain countries GateGPRS units can be ordered with the SIM card installed. Please consult Brunata's Technical Support (PSI) if in doubt and confirm if the card is installed in any case.

Disclaimer: Brunata cannot be held responsible for theft and/or abuse of the SIM card.

Important: If using a Danish SIM card abroad, you must make sure that the telephone operator of the country in which the GateGPRS is installed supports GPRS roaming.

Inserting the SIM card

If the unit is delivered without a SIM card, the SIM card must be installed before the unit is connected to AC power. The box can be opened by removing the four screws on the lid and then simply lifting the lid off. The SIM card is then installed with the “cut-off” corner in the upper left-hand side and the chip facing down towards the print. When the SIM card is installed and the cover of the GateGPRS is closed, the power can be turned on.



GateGPRS is used for transferring meter readings to the Brunata servers. For GateGPRS to work the APN, log-in and password options are to be set to the values provided by your operator who issued the SIM card. This is done by sending a text message to the GateGPRS. Below an example is shown for the standard Brunata Telenor Connexion SIM card:

Text message command:
dokfaw gprs_apn webasp.cxn

Important: Send only one command in each text message!

In case your operator requires the use of a username:
dokfaw gprs_username [yourUsername]

In case your operator requires the use of a password:
dokfaw gprs_password [yourPassword]

The box will confirm every message you send.

For more information about sending text message configuration commands to the GateGPRS please see chapter “Text Message Commands”.

3.2 Cabling

Cabling is an essential part of every Brunata RS-485 network. Optimal functionality can only be reached if the cabling is satisfactory.

Cable Type

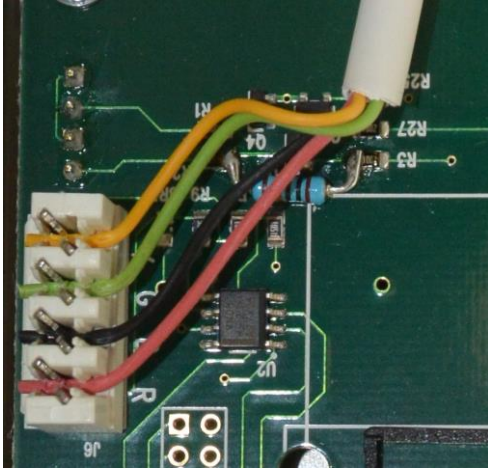
Brunata supplies a tested and approved RS-485 cable that matches the color codes on the connectors thus making installation and error finding straight forward. Furthermore the cable has the optimum resistance and capacitance for Brunata RS-485 networks. The use of the standard cable is a must.

Insertion tool

The recommended tool for cable insertion is the Krone LSA-Plus.

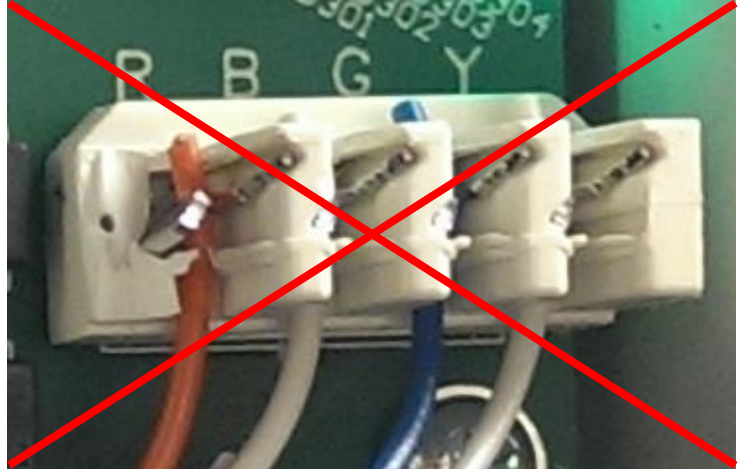


Cabling Examples



Example of good cabling

This example depicts good cabling that ensures the reliability of the connection between the components of the network.



Example of wrong cabling

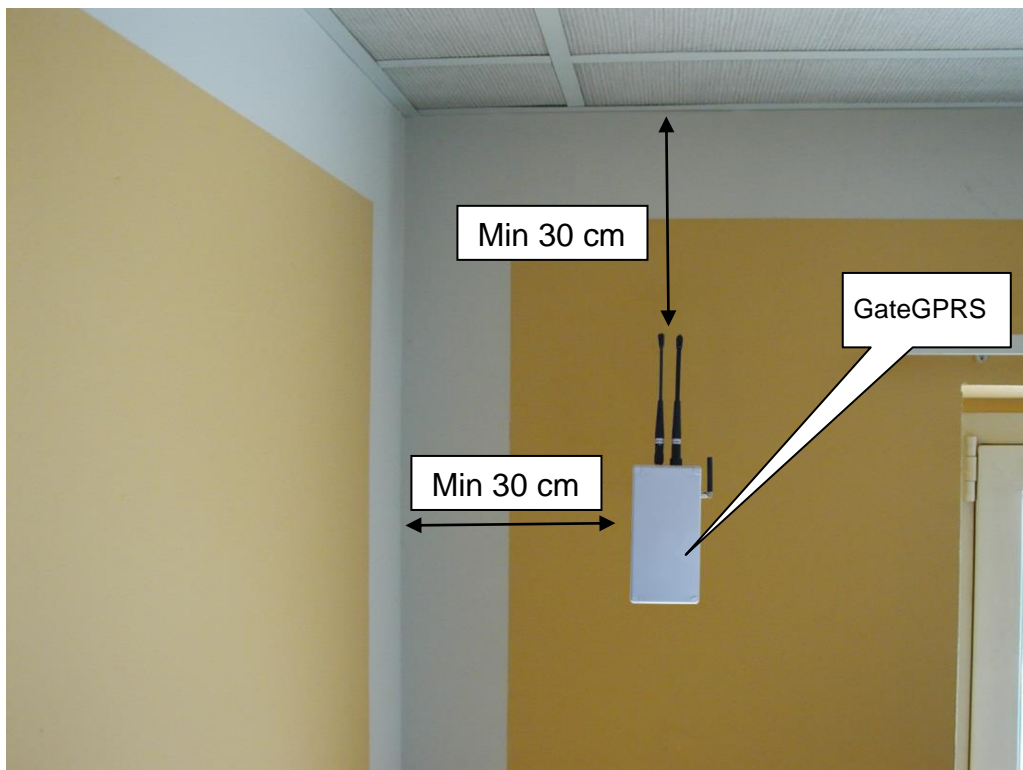
This example depicts wrong cabling. It was taken during the error finding of a non-functional installation. The result of using incorrect colors (by the installer) was that the ground and signal wires were swapped at one of the receivers thus the entire network was disabled. Furthermore the installer omitted the use of the insertion tool and broke the connector, resulting in unreliable power flow.

Important: Cabling is an essential part of every BrunataNet installation; its integrity is of utmost importance!

3.3 Placement

The GateGPRS must be installed at a place with undistorted connection to the GSM and Brunata wireless networks. Therefore please follow the following guidelines:

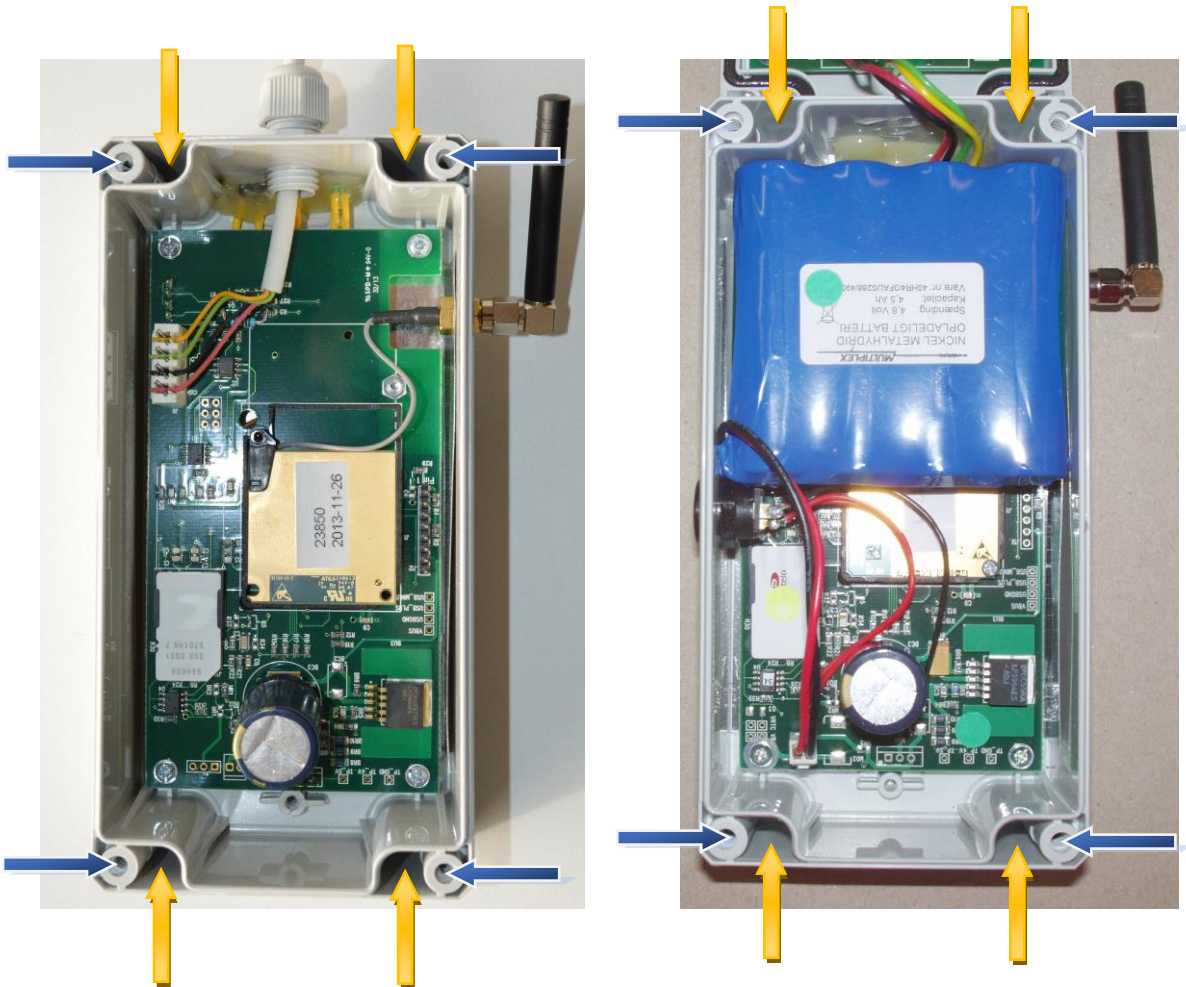
- GateGPRS should always be placed as far away from a corner as possible and never closer than 30 centimetres. If the GateGPRS is moved from 30 cm to 50 cm away from the corner, there will be a significant improvement in reception conditions. If moved further than 50 centimetres away, the improvement in reception will not be notably better.
- Always install the GateGPRS as high up as possible.
- Never place the GateGPRS in a metal cabinet, as this will degrade meter and GPRS reception.
- The GateGPRS should never be placed next to a refrigerator or other cabinets with large metal surfaces, which can block the radio telegrams from the allocators.
- The GateGPRS should not be placed closer than two metres to an allocator. If the GateGPRS is installed closer than two meters to a transmitting meter, check that the GateGPRS is receiving signals from the meter.



3.4 Mounting

Under the lid of GateGPRS 4 mounting holes enable the GateGPRS to be installed on a wall. These holes are marked with yellow arrows.

The holes used for fixing the lid are marked with blue arrows.

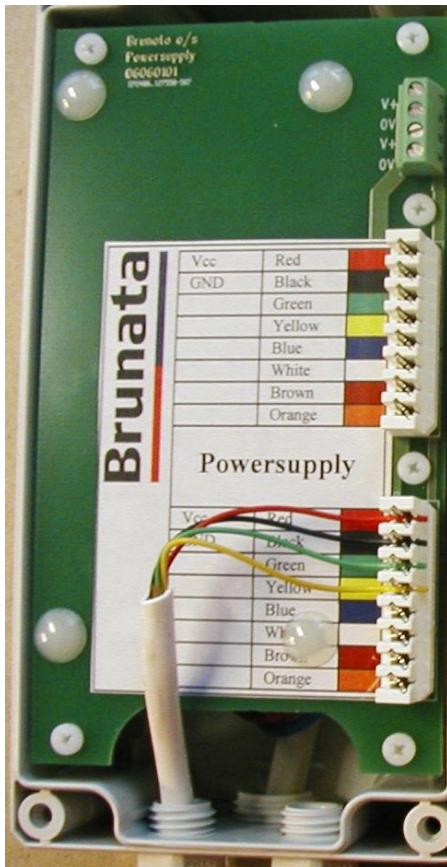


3.5 Connecting to Power

There are two different GateGPRS versions available. One that can be powered from 230 volts AC mains, and one that can be powered from a battery. These are two distinct versions and are built with different hardware components. Please identify the type of unit you are about to install and follow the appropriate instructions. Please contact PSI if in doubt!

Connecting to 230V AC mains

The GateGPRS requires a 230V AC to 24V DC power supply. This power supply must be purchased separately from Brunata. The power supply was designed to be inserted in the network in series, much the same way GateReceivers are connected.



When power is turned on, the GateGPRS will automatically start up.

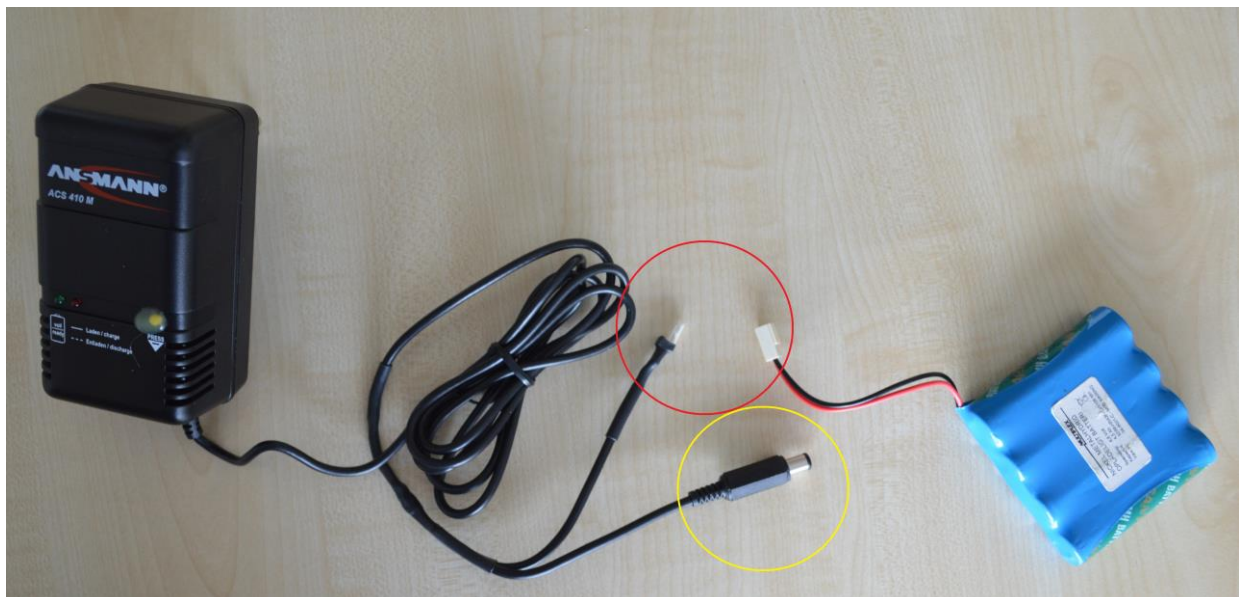
Battery Connection

GateGPRS is powered by a 4.8 volts Nickel Metal-Hybrid battery pack that is placed inside GateGPRS box and connected via a 2 pin Molex header. The Molex connectors are marked with a yellow ellipse.



Charging

GateGPRS requires a special charger that can be ordered from Brunata. This charger is capable of charging the GateGPRS directly or a spare battery pack. The connector for charging the GateGPRS is marked by a yellow ellipse while the connector for charging a spare battery pack is marked with a red ellipse.



The battery is recharged by attaching the charger to the plug at the side of the GPRS-box.

The following images depict the correct connection of GateGPRS to a spare battery pack and direct charging of GateGPRS.



Please note that the GateGPRS is NOT functional while charging!

Durability

With a fully charged, fresh battery pack GateGPRS can run for about 1-2 days before the battery is depleted.

Post configuration of the installation

Important: Send only one command in each text message!

After finishing an installation the configuration settings of the GateGPRS must be confirmed. It must be confirmed that the operator APN, username and passwords are set correctly, that the GateGPRS has the correct data collection interval and that the GateGPRS can contact all connected GateReceivers. The following commands can be used respectively:

```
dokfaw gprs_apn  
dokfaw gprs_username  
dokfaw gprs_password  
dokfaw transfer_delay  
dokfaw units
```

4. Testing an installation

After the Brunata collection network has been installed, it MUST be tested and verified. The verification process consists of the following steps:

- Confirm that the GateGPRS can connect to the GSM/GPRS network
- Confirm that the GateGPRS can see all connected GateReceivers
- Confirm that the GateGPRS can send data to Brunata's database

4.1 Confirming that GateGPRS can connect to the GSM/GPRS network

Send the following message to GateGPRS after approx. 5 minutes of operation:
dokfaw signal

The answer will contain the current RSSI value, the GPRS status and the operator. The GPRS status should be “Connected”

4.2 Confirming that GateGPRS can see all connected GateReceivers

By sending the following text message command to the GateGPRS, you can check whether all GateReceivers are found:

dokfaw units

The answer will contain all GateReceiver units the GateGPRS could find. You should wait at least 5 minutes after power up before you query for the receivers, otherwise it is likely that the list will be incomplete. If you cannot see all of the receivers, you can try to force a data upload by sending dokfaw uploadnow. A few minutes later you should send dokfaw units again and see all your receivers.

4.3 Confirming that GateGPRS can send data to Brunata’s database

By sending the following text message command to the GateGPRS, you can make sure that data can be uploaded to Brunata’s database:

dokfaw uploadnow

The answer will be at first “attempting upload, result follows”. After the data collection cycle is complete, GateGPRS will report back with O.K. or Failure. This can take several minutes depending on the number of GateReceivers you have connected.

5. Problem Solving

Before contacting technical support please follow these steps to resolve your problems:

Power cycle the unit by disconnecting the unit from the AC mains and then reconnect it. Check GateGPRS-status diodes, verify that they are flashing in the correct order as shown in paragraphs 1.3 and 1.4.

If the yellow status diode is flashing, GateGPRS could not deliver its meter telegrams to Brunata’s database server. This could either be caused by faulty GateGPRS connection or that

no receivers are visible to GateGPRS. Please make sure that the SIM card is inserted correctly and that the GPRS APN, password and username are configured correctly! Afterwards query the box and make sure that it can see the connected GateReceivers. If the problem persists, please contact the Brunata, PSI!

5. Registration of components in the network

It is very important to record all the components in the network. In the attached form, “BrunataNet Component List”, the ID numbers of the GateGPRS, Brunata GateReceivers as well as their location in the building must be noted. If necessary, the layout of the network can be drawn on the back of the form.

Please hand in the form to Brunata, and make sure that the component data is entered into WebMon.

6. Text message commands

Important: Send only one command in each text message!

There are several text message commands available which can be used to configure or query the GateGPRS for its status or settings.

For configuring the GateGPRS, the text message must consist of the following 3 parameters separated by spaces:

[Password] [Text message command] [value]

For querying the GateGPRS for its current setting, the text message must consist of the following 2 parameters separated by a space:

[Password] [Text message command]

The password is currently **dokfaw**.

A complete list of the available commands can be found in the following table:

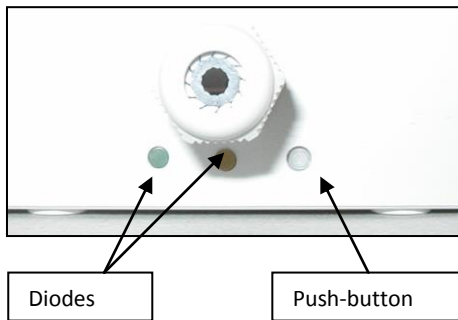
Text message command	Accepts an argument	Description
uploadnow	No	GateGPRS immediately begins to collect new data from the GateReceivers and afterwards sends data to Brunata WebMon via GPRS
transfer_delay	Yes	Setup parameter that determines how often the GateGPRS collects data from the connected GateReceivers and sends the readings to WebMon. The argument is given in seconds therefore the parameter is 43200 for the standard twice a day upload. Please only use lower values if bound by a customer contract as lower values put higher strain on WebMon
reboot	No	Reboots GateGPRS
uptime	No	Return the number of minutes since system startup
units	No	Returns a list of GateReceivers which the GateGPRS has found
meters	No	*** deprecated *** Use WebMon instead
gprs_apn	Yes	Setup parameter determining which APN the GateGPRS uses when accessing the GPRS network
gprs_username	Yes	Setup parameter determining which username the GateGPRS uses when accessing the GPRS network
gprs_password	Yes	Setup parameter determining which password the GateGPRS uses when accessing the GPRS network
signal	No	Returns the RSSI value of the GSM connection, the connection status of GPRS and the Operator

Important: RSSI values are always negative therefore the lower the value, the better the reception is. RSSI values above 80 are normally considered unstable and most installations should aim for an RSSI value around 60 or lower.

Example: If one wants to query GateGPRS for its current operator APN setting, the “dokfaw gprs_apn” command can be used. The box then will return its current setting. In case the APN needs to be changed to Brunata’s standard setting for Telenor Connexion SIM cards “dokfaw gprs_apn websp.cxn” command can be used. The box will confirm the new setting.

7. Status diodes and power button

There are two status LEDs located on the top side of the GateGPRS, which indicate the current status of the GateGPRS. A small push-button can be found next to the LEDs. A sharp object, such as a pencil, can be used to depress the push button.



Status diodes	Button pressed	Expected Behavior
Turned off	Short press	The green LED will start flashing if the GateGPRS is in sleep mode Nothing will happen if the GateGPRS is powered off
	Long press	Turns on the GateGPRS
On	Long press	Turns off the GateGPRS

Green status diode	Description	Yellow status-diode	Description
Flashing 	Indicates that the GateGPRS is searching for the GSM-net	Turned on 	Data is sent to the Brunata database server
Single short flash 	Indicates that GateGPRS has found the GSM-net	Turned off 	The module is either turned off, in sleep mode or waiting for the next program run
Short double flashes 	Indicates that an active GPRS data connection is open	Flashing 	Has not found any GateReceiver, or it has not been possible to send data to the Brunata database server
Turned off 	The module is either turned off or in sleep mode		

After a few minutes GateGPRS will turn off the status LEDs to save power and to avoid drawing attention to the box. With a short, less than one second, push you can reactivate the diodes, and the status of the GateGPRS will be shown again. The LEDs will turn off again after a few minutes.

In case the status LEDs do not react to a short push, the GateGPRS is turned off or power is not applied.

GateGPRS starts up automatically when power is applied.

Please note that for 3.xx software versions the power button may not function as expected. The GateGPRS will only power off if the long pushbutton press is applied while the GateGPRS is in sleep mode. If a long pushbutton press is applied during collection, the LED interface will be disabled until reboot. This can be most inconvenient for Battery operated units and therefore it is advised that whenever the GateGPRS is to be powered off, the battery connector is removed or the battery charger is connected to cut power.

