



User Manual For Vector Generator



Date	Revision	Software version	Part number
Jan 2014	V2.0	GaugerGSM 2.3+	GaugerGSM

Notices

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- GaugerGSM must be installed, connected and operated in accordance with the instructions of the User Manual of GaugerGSM and with the GaugerGSM certifications. Specific local regulations may also apply.

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1. What is GaugerGSM?

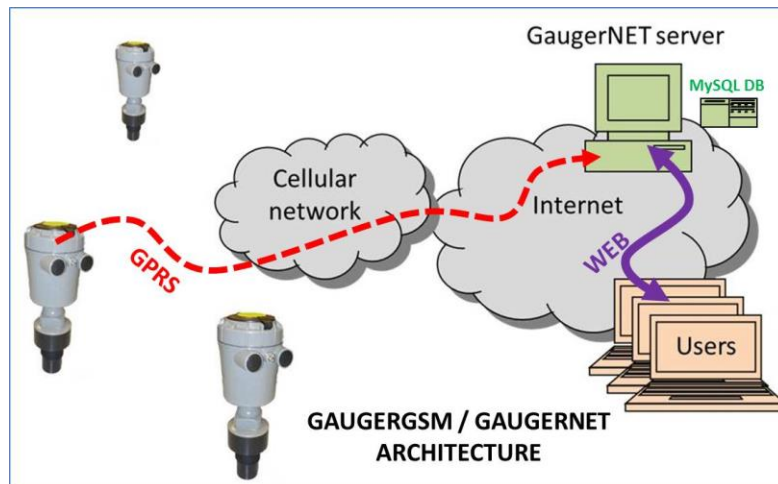
GaugerGSM is a level sensor integrated with a GSM cellular modem transmitter. Measurement is based on ultrasonic technology and is continuous and non-contact.

GaugerGSM measures level and temperature in tanks, channels, rivers, sewers, grain silos and similar applications. In tank applications volume may be computed. In river, channel and sewer applications, flow may be calculated. GaugerGSM detects events such as full level, sudden drop in level (“theft”), level crossings, refill, overflow and more.

GaugerGSM transmits data to a predefined destination. The information is transmitted by SMS or GPRS messages over a GSM cellular network. Supported GSM frequencies are 850/900/1800/1900MHz. Each message contains details of one measurement result. A short logger mode is also supported.

SMS may be transmitted to a cell-phone or to PC equipped with cellular modem. SMS will not be further discussed in this manual. GPRS messages from fielded GaugerGSM systems are transmitted to an IP address (and port number). Messages are received by an Internet Server and may be displayed to the users with a web-based monitoring software application.

GPRS architecture is presented in the following figure:

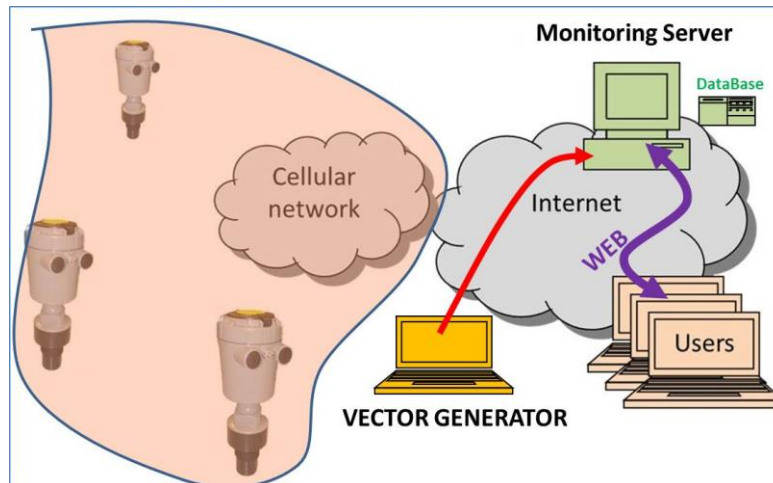


SolidAT provides GaugerNET, a monitoring web-based service for users of GaugerGSM. Alternatively, SolidAT provides free-of-charge information and tools for third-party developers of monitoring software for GaugerGSM.

GaugerGPS is similar to GaugerGSM with the addition of internal GPS receiver for reporting geographic coordinates.

2. What is Vector Generator?

Vector Generator is a PC software application that simulates GaugerGSM transmissions. Data is transmitted directly into the internet, circumventing the cellular network. Vector Generator is intended for developers of third party monitoring server for GaugerGSM systems. Developers can test their server by running the vector generator instead of running actual fielded GaugerGSM systems.



Developers are encouraged to use the vector generator during the development phase and make a final test using actual GaugerGSM systems.

The reader of this manual should be competent with IT concepts and preferably holds basic instrumentation knowledge. For in-depth understanding of GaugerGSM refer to the web page and user manual of GaugerGSM (Browse to <http://www.solidat.com> → **Products** → **GaugerGSM**). Any questions regarding this manual and GaugerGSM in general may be addressed to info@solidat.com.

Vector Generator is free software that may be downloaded here:

<http://www.solidat.com> → **SUPPORT** → **SOFTWARE DOWNLOAD** → **VECTOR GENERATOR**

GaugerGSM data format is described in GaugerGSM User Manual:

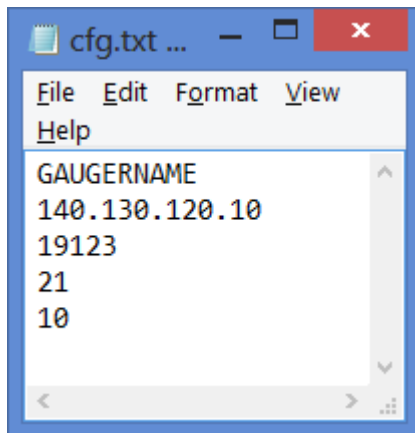
<http://www.solidat.com/objects/UM/UM-GaugerGSM-485.pdf>

See Chapter IX, sections “GPRS Message Format” and “Equipment Status Report”.

3. Installation and setup of Vector Generator

3.1 Unzip vector.zip and copy the vector directory into a PC directory of your choice. You should see three files: This user manual, configuration file cfg.txt and application genvec.exe .

3.2 Edit cfg.txt as follows:



Line	Description
1	Name of the Gauger. Should also be defined in the monitoring software as an authorized transmitter. Avoid spaces (blanks) and keep length under 30 characters. In real GaugerGSM, this would be a unique name assigned to each Gauger.
2	IP address of the server running the monitoring software. If your monitoring application is running on the same PC as Vector Generator, you can use self-address: 127.0.0.1. If your monitoring application is running on a same private network as Vector Generator, you can use the local private IP address (e.g. 192.168.10.5). Otherwise, use any legal IP address and make sure your PC is linked to the Internet.
3	Port number used by the monitoring software under test. If your monitoring software is running on the Internet, make sure you open this outgoing port number in the Firewall protecting your PC. Also make sure to open this incoming port number in the Firewall protecting your monitoring software. Usually, Firewall default state is to block any non-standard port number!

4	<table border="1"> <tr> <td data-bbox="280 394 381 514">10</td><td data-bbox="381 394 1372 514">Short message. Always connected socket. In always connected state, end of individual message is indicated by \r\n.</td></tr> <tr> <td data-bbox="280 514 381 640">11</td><td data-bbox="381 514 1372 640">Short message. Socket is closed after each message. This condition also simulates a socket closed due to external conditions.</td></tr> <tr> <td data-bbox="280 640 381 850">20</td><td data-bbox="381 640 1372 850">Long message. Always connected socket. Long message includes two additional fields: voltage of power supply (in volts) and Cellular Received Signal Strength (RSSI). RSSI is a whole number between 2 (very low cellular coverage) and 32 (excellent cellular coverage).</td></tr> <tr> <td data-bbox="280 850 381 1060">21</td><td data-bbox="381 850 1372 1060">Long message. Socket is closed after each message. Long message includes two additional fields: voltage of power supply (in volts) and Cellular Received Signal Strength (RSSI). RSSI is a whole number between 2 (very low cellular coverage) and 32 (excellent cellular coverage).</td></tr> <tr> <td data-bbox="280 1060 381 1186">30</td><td data-bbox="381 1060 1372 1186">Long GPS message Always connected socket. GPS message includes data as in 20 and 21 plus GPS related data.</td></tr> <tr> <td data-bbox="280 1186 381 1312">31</td><td data-bbox="381 1186 1372 1312">Long GPS message Socket is closed after each message. GPS message includes data as in 20 and 21 plus GPS related data.</td></tr> </table> <u>Note:</u> 10 and 11 are included for backward compatibility. New developments should focus on 21/21/30/31.	10	Short message. Always connected socket. In always connected state, end of individual message is indicated by \r\n.	11	Short message. Socket is closed after each message. This condition also simulates a socket closed due to external conditions.	20	Long message. Always connected socket. Long message includes two additional fields: voltage of power supply (in volts) and Cellular Received Signal Strength (RSSI). RSSI is a whole number between 2 (very low cellular coverage) and 32 (excellent cellular coverage).	21	Long message. Socket is closed after each message. Long message includes two additional fields: voltage of power supply (in volts) and Cellular Received Signal Strength (RSSI). RSSI is a whole number between 2 (very low cellular coverage) and 32 (excellent cellular coverage).	30	Long GPS message Always connected socket. GPS message includes data as in 20 and 21 plus GPS related data.	31	Long GPS message Socket is closed after each message. GPS message includes data as in 20 and 21 plus GPS related data.
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5	Time interval between transmitted messages in seconds. Any interval less than 3 seconds will be converted to 3 seconds.												

4. Benefits to the developer of monitoring software

While final testing of the monitoring software should be performed with real GaugerGSM/ GaugerGPS sensors, using software simulators is encouraged at the development phase. The following checks are recommended;

4.1 Several entities of the Vector Generator may be executed simultaneously – thereby checking the monitoring software under stressed conditions. Preferably, each entity should run from a different directory and use an independent cfg.txt file.

4.2 Running mixed versions in parallel. Each will test a different feature of the monitoring software (handling always-on sockets, handling disrupted sockets, handling short or long or GPS messages as applicable).

4.3 The application may be shut off and turned on again – checking the behavior of the monitoring software to interruptible conditions.

4.4 Interval between messages may be modified from 3 seconds and up to 60,000 seconds.