



USER'S MANUAL

GPRS Module

SMS interface for MasterBus



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1 GENERAL INFORMATION

1.1 Use of this manual

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This manual serves as a guideline for the safe and effective operation of the GPRS Module.

Keep this manual at a secure place!

1.2 Guarantee specifications

Mastervolt guarantees that this product was built according to the legally applicable standards and stipulations. If you fail to act in accordance with the regulations, instructions and stipulations in this user's manual, damage can occur and/or the product will not fulfil the specifications. This may mean that the guarantee will become null and void.

IMPORTANT: Additional warranty agreements, like "Mastervolt system warranty" may contain restrictions which forbid resetting of historical data. The standard guarantee period is two years after date of purchase.

1.3 Liability

Mastervolt can accept no liability for:

- consequential damage due to use of the GPRS Module;
- possible errors in the manuals and the results thereof;
- Use that is inconsistent with the purpose of the product.



CAUTION!

Never remove the identification label.

2 OPERATION

2.1 MasterBus functions

The Mastervolt GPRS Module enables remote monitoring and operation of devices on the MasterBus network by sending and receiving SMS messages. For information about MasterBus, see

www.mastervolt.com. The table below shows the interface functions. The GPRS Module can be configured using MasterAdjust or the MasterView Easy products.

Monitoring	Description	Range
<i>General</i>		
State	Module status, see below.	Standby, Connecting, On, Config fault
Connecting...	Module connecting to GSM network	
PIN code error	PIN code not accepted	
Config fault	General configuration error	
Standby	See "Enable SMS's"	
Signal strength	GPRS signal strength	No signal, Poor, Average, Good, Excellent
Enable	Yes: GPRS Module On. Sending / receiving of SMS's is possible. No: GPRS module Standby, no transmission of SMS's	On/Standby
<i>History</i>		
History	Description	Range
<i>Message Counters</i>		
Sent messages	Number of sent SMS messages	0-65535
Received messages	Number of received SMS messages	0-65535
Clear history	Option to clear the number of sent and received messages.	

Configuration	Description	Range
<i>General</i>		
Language	Set the GPRS Module menu language	See specifications
Device name	Any name you wish with 12 characters max, default INT MB GPRS	12 characters max
<i>Network config</i>		
No SIM	SIM card not detected	
SIM Pin code	See section 2.2, default 0000	Any four figures
Show credits	Check box to show your SIM credits under each message.	
<i>Safe Numbers</i>		
Number 1	Maximum three numbers can be defined to be safe. The module will only respond to these numbers (this number). Refer to section 2.3.	Maximum 3 safe numbers
Number 2	Refer to Number 1	
Number 3	Refer to Number 1	
Allow Numbers	Pass filter to accept the Safe Numbers and all numbers <i>starting with the figures in this field</i> . For example +31 will accept all Dutch numbers. If you do not fill in this field, only the Safe Numbers will be accepted. Refer to section 2.3.	Maximum 12 digits, see also section 2.3
<i>Alarms</i>		
Transmit alarms	Yes: send messages at the priority alarms (where the MasterView Easy shows a pop up). No: send no messages at alarms.	
Telephone nr	Phone number to send the alarm messages to.	One 12 digit number, see section 2.3
<i>Shortcuts</i>		
Shortcut x	Name of shortcut x, (x = 1-8). Refer to section 2.4	Maximum 16 characters
<i>Message on event</i>		
Message x	Message to be sent (x = 1-6). Refer to section 2.5	Maximum 16 characters
Message x tel.	Phone number of message x, (x = 1-6). If "Filter numbers" is enabled, a safe number must be selected.	One 12 digit number, see section 2.3

2.2 SIM PIN Code

PIN Code. Note that if the pin code is not the default 0000 then the correct PIN code must be entered before enabling SMS messages in the monitoring tab. If an incorrect PIN code has been entered the module must be reset before the new PIN code can be used.

2.3 Safe Numbers

Up to three safe telephone numbers can be entered. Besides, the Allow Numbers filter enables selecting a larger group of numbers. The module will only respond to these numbers. The numbers are also used for alarms and events (irrespective as to whether filtering is enabled).

Note that telephone numbers must be entered in the international number format and without spaces or brackets. For example, the Dutch country code is 0031 so the mobile telephone number 0698765432 should be entered as +31698765432. Please test every entered number to ensure correct operation.



If Safe Numbers and Allowed Numbers are both not filled in, the GPRS Module will not communicate! It will transmit no alarms or events!

2.4 Shortcuts

In the GPRS Module event configuration, shortcuts are used as the event sources. You can name the shortcuts after their application. If you sms this name to the module, the event will take place.

2.5 Message on event

At the event configuration of a connected MasterBus device, you can put up to 6 messages in the Command field. The GPRS module features a menu to rename the messages and choose a telephone number to sms the message to.

2.6 Messages sent by the user

The GPRS Module can be operated by sending text messages to it, see the next table.

Sent by user	Description	Received message example
?	Request System Overview	System Info: INT SMS Status: Excellent signal DIS Easy Language: English
[Device] ?	Request Device Overview Request all monitoring parameters of the device. Any active alarm messages will be included.	INT Easy Language: English Backlight: Auto State: On
Easy ?	Example: Device = MasterView Easy.	
[Device] options ?	Request Device Options A list of all devices options controllable by text message. Any active alarm messages will be included. Note: Not all devices have options that can be set. In such case the GPRS Module returns the message 'No options'.	INT Easy State: On Backlight: On Lock: On
Easy options?	Example: Device = MasterView Easy.	
[Device][option]on/off	Set a Device option to on or off.	
Easy backlight on	Example: Device = MasterView Easy, option = backlight, setting = on.	INT Easy Backlight is now set to On

2.7 Messages sent by GPRS Module

Text messages can be sent by the GPRS Module to alert the user to changes on the MasterBus system.

Sent by module	Description	Message example
Alarm message	The GPRS Module can be set up to forward alarm messages from the MasterBus network, refer to section 2.1.	Battery pre low (from MasterShunt)
Message on event	The GPRS Module can be set up to sms MasterBus Event messages, refer to section 2.5.	Backlight on (from MasterView Easy)
Error message	If a message is not understood or the targeted device is not present, the GPRS Module will return an error message with a list of message options, see section 2.4 for explanation. NOTE: spaces between the message words are not understood.	Command not understood. Options: ? – Request system overview <Device>? – Request device overview <Device> options? – Request device options <Device> <Option> <on/off> - Set device option

3 INSTALLATION

3.1 Installation steps

1. Open the enclosure.
 (a) unlock the SIM holder
 (b) Fold up the holder and insert the SIM card
 (c) Fold down the holder and lock the SIM holder

2 Close cover and attach included GPRS antenna
 3 Connect external power supply (the SMS Module requires an external power supply that is able to deliver 1 ampere at between 8 and 30 volts)
 4 Attach SMS Module to the MasterBus network using MasterBus cables

WARNING
 Always install the antenna before connecting the power supply! Otherwise serious damage to the GPRS module will occur.

Installation of the SMS Module

3.2 Antenna specifications

The antenna provided in your package meets the specifications. If you want to use a different antenna (for instance on the roof of your metal ship), it must comply with the next demands:

- The frequency supported is 900/1800 MHz (European band and most of the world) or 850/1900 MHz (US band).
- The antenna has a male SMA connector.

3.3 American regulations

To comply with the FCC's RF exposure rules and regulations (see chapter 6) the installation must meet next conditions:

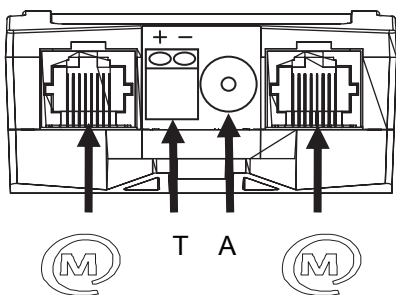
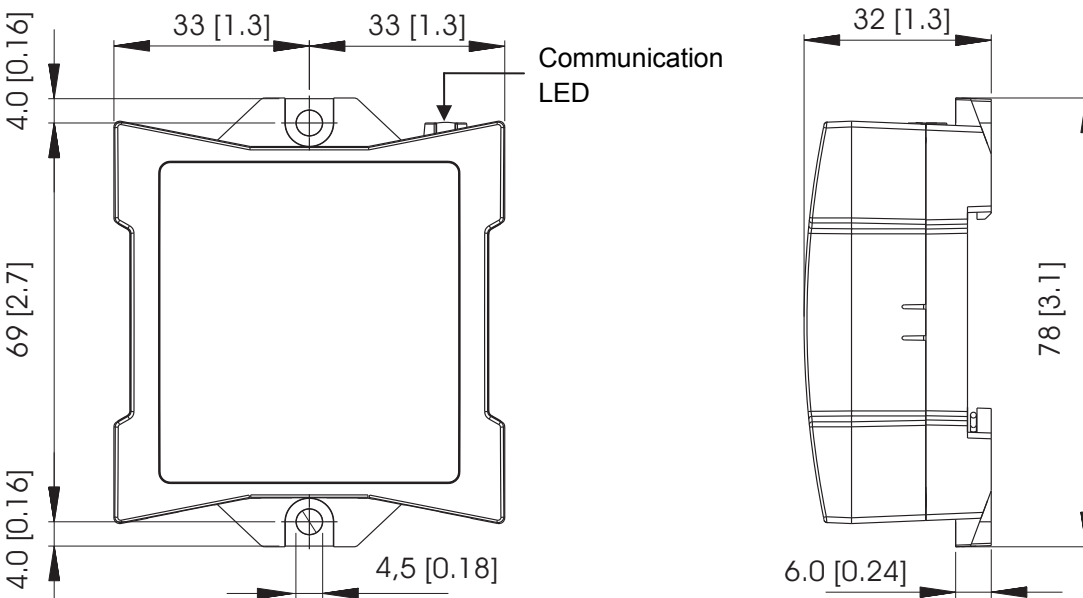
- The system antenna(s) used for this transmitter must be installed providing a distance of at least 20 cm from all the persons and must not be co-located or operating in conjunction with any other antenna or transmitter.
- The system antenna(s) used for this module must not exceed 3 dBi for mobile and/ or fixed operating configurations.
- Users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

4 TROUBLE SHOOTING

Malfunction	Description/ possible cause	What to do
Module can not start up, Status indicates No SIM. Communication LED blinks red.		Check that SIM card is not damaged and has been inserted correctly.
Module can not connect, Status indicates PIN code error. Communication LED blinks red.	Refer to section 2.2	Check PIN code in configuration tab.
Status indicates Config. error (configuration error). SIM status tells No Sim. Communication LED blinks red.	A wrong phone number has been entered.	Check that all numbers in the 'Safe Numbers' tab comply with the international numbering format.
	An incorrect PIN code was entered three times and the SIM card has become locked.	Remove the SIM card from the GPRS Module and unlock it with the PUK code, using a mobile phone for example.
Status indicates no or poor signal.	The antenna has not been connected correctly.	Check if the antenna is fixed to the module tightly. If not, disconnect the power supply and fix the antenna. Then reconnect the power supply.
	The <i>GPRS module</i> uses the land based GSM network and will therefore not operate in remote locations.	Make sure that the <i>GPRS module</i> is placed in a location with sufficient reception. This can be checked using a regular mobile telephone.
Status indicates Standby.	The GPRS module will not send or receive text messages while in standby.	Set the function <i>Enable SMS's</i> to On.
Status indicates "connecting", nothing further happens.	The GPRS module uses the land based GSM network and it will not connect in remote locations. It will not connect either if the SIM card provider does not cover the region.	
Status indicates average/good/excellent signal but still no responses.	The telephone number used is wrong.	Ensure that text messages are being sent to the correct telephone number. This may require an international number format when abroad.
	At least one of the Safe numbers is wrong.	If 'Filter numbers' has been selected then ensure that the entered 'Safe numbers' are correct. To bypass the Safe numbers, clear the 'Filter numbers' checkbox and send a message to the GPRS module. It then responses to the incoming number rather than using the safe numbers.
Still no response.	The SIM card or the GPRS transmitter/ receiver may fail.	Remove SIM card from GPRS module and test SMS communication using a mobile telephone. If communication is OK now, the SIM card seems all right.
Slow communication	SMS delivery times vary considerably and may not even be guaranteed depending on the provider, location and time.	Allow sufficient time for delivery.

5 SPECIFICATIONS

Model:	GPRS Module
Article number:	77031000
Delivery also includes:	GPRS antenna, MasterBus cable, MasterBus terminating device, User's manual
Function of instrument:	Exchanging SMS's with MasterBus devices to enable remote monitoring and operation
Languages available:	English, Nederlands, Deutsch, Français, Castellano, Italiano, Norsk, Svenska, Suomi, Dansk, American
Current consumption:	200 mA in normal mode, 1000 mA while transmitting and receiving
MasterBus Powering:	No
Din rail mounting:	Yes, Din rail 30 mm [1.2 inch]
Protection degree:	IP 21
Dimensions:	66 x 78 x 32 mm [2.6 x 3.1 x 1.3 inch]; see drawing below
Weight:	Approx. 80 gr [0.18 lb]



- (M) = MasterBus connector
- T = DC terminal
- A = Female SMA connector

Dimensions in mm (inch) and connectors

6 EC DECLARATION OF CONFORMITY

We,
Manufacturer Mastervolt
Address Snijdersbergweg 93
1105 AN Amsterdam
The Netherlands

CE 0168

Declare under our sole responsibility that

Product: GPRS Module
Order number: 77031000

Is in conformity with the provisions of the following EC directives:

2006/95/EC (Safety directive); the following harmonized standards have been applied:

- EN 60950-1:2001+ A11:2004 (LVD)

2004/108/EC (EMC directive); the following harmonized standards have been applied:

- EN 61000-6-3: 2007 Emission hold equipment
- EN 61000-6-2: 2005 Immunity industrial
- IEC 61000-4-2: 2009 ESD immunity
- IEC 61000-4-4: 2010 Burst and Surge
- 2011/65/EU RoHs Directive

R&TTE directive 1999/5/EC (Radio Equipment & Telecommunications Terminal Equipments) with the following standards:

- EN 301 511 and 3GPP 51.010-1 GSM (Radio Spectrum)
- EN 301 489-1 and EN 301 489-7; EMC (Electromagnetic Compatibility).

US Directives; with the following standard:

- FCC 47 Part 24 (GSM 1900) Use of RF Spectrum.
- FCC47 Part 15 EMC (Electromagnetic Compatibility).

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