

GAM - GSM Alarm Modem

Introduction

The GAM is a GSM alarm modem which is easy to install and to use. It is suitable for low-cost remote control in industrial and private facilities management, e.g. in order to monitor heating and air conditioning and cooling systems, lifts and escalators. It is also possible to control machines and various types of devices.

Using the GAM, it is possible to monitor two digital inputs and switch a relay by means of a normal mobile phone.

Up to 5 further telephone numbers can be stored in the GAM by means of the Administrator. These numbers receive an SMS message from the GAM if a fault occurs or if the inputs are activated.

The device can be configured and commissioned simply and without any software tools or programming knowledge.

Apart from the GAM you only need an activated SIM card from any network operator (e.g.: T-Mobile D1, Vodafone D2, E-Plus, O2).

Types of device

This documentation contains the operating instructions and technical information with regard to device types GAM 1 and GAM 2.

GAM 2 contains an internal NiMH rechargeable battery as an addition. This means that the GAM 2 is able to send an SMS if the power supply fails or to report a power supply failure.

Warning: The internal rechargeable battery of the GAM 2 is empty when it is delivered to the customer. Connect the GAM 2 to the power supply for charging for 24 hours when you first receive it.

Chapters and notes which only apply to the GAM 2 are identified accordingly.

Use for the intended purpose

The use for which the device is intended is remote inquiry of the inputs and generation of SMS messages following activation of the inputs. It is also possible to switch the GAM relay contact on and off by remote control via the GSM network. Any other uses than those just described are not permissible and are not for the intended purpose.

Do not use the GAM for safety-relevant control functions.

Connections and LED displays

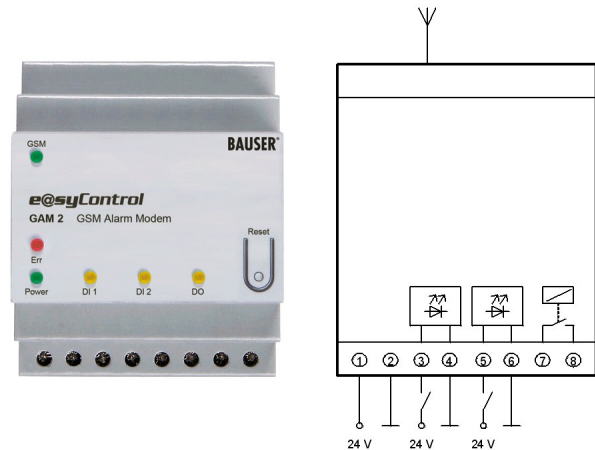


Fig. 1

Connections

As can be seen in Fig. 1 the GAM has 4 pairs of screw-type terminals:

Occupancy	Clamp	
Power	1, 2	Power supply connection
DI1	3, 4	Opto-decoupled digital input 1
DI2	5, 6	Opto-decoupled digital input 2
DO	7, 8	Relay contact

The GSM antenna is inserted in the antenna socket (MMCX/m connector).

LED Display

If the device is connected to the mains power supply, the LED "Power" lights up. As soon as the module is logged into the GSM network, the LED "GSM" will wink every 2 seconds.

The LEDs "DI1" and "DI2" signal the state of the digital inputs.

The LED "DO" lights up if the relay is activated.

Meaning of the LED "Err":

On	Booting or error
Blinks 1 second on / 1 second off	No AN yet (see page 3 configuration)
2 x short on	No SIM card inserted, device not locked into GSM or PIN of the SIM card deactivated.
3 x short on	Wrong PIN
Off	GAM ready

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Initial Use

Instructions

These operating instructions contain important information on the initial use and handling of the GAM.

Please read them carefully before using the GAM!
If damage arises which is caused by not complying with the operating instructions, no claim shall be accepted under the warranty!
We do not accept liability for any consequential damages which may result.

We will not accept any liability if damage is caused to property or injury to persons because of inappropriate handling or disregarding the safety instructions. No claim under the warranty whatsoever shall be accepted in such cases.

The GAM is fitted with highly integrated modules. These electronic components are very sensitive to discharges of static electricity because of their technology.

Please ensure that you are earthed when inserting the SIM card if possible. Avoid touching the pins of components on the printed circuit board.

While the GAM is operating, depending on the application, GSM text messages (SMS) can be sent automatically, as a consequence of which you may incur charges – depending on your GSM network operator.

Inserting the SIM card

You need an enabled SIM card from a GSM network operator to use the GAM. **The PIN must be set to "1234"**. Use a normal mobile phone in order to set the PIN. Please see the operating instructions of your mobile phone on how to change the PIN.

Before you insert the SIM card to the GAM, please check whether you can send and receive SMS with a normal mobile phone.

If you have any problems to send or receive SMS, please contact your provider for this issue.

If you have inserted a SIM card with a different PIN than "1234", the GAM will use a "wrong" PIN each time it switches on, which means that your PIN will be blocked after three attempts.

If this happens, you must assign a new PIN to your SIM card using the Super-PIN (PUK). Please read the relevant section of your mobile phone operating instructions for setting the PIN or for resetting a blocked PIN with the PUK.

Before opening the front cover ensure that all wires have zero-potential! Pay attention on safety instructions!

Open the front cover with a screwdriver. Then lay the SIM card into the SIM card holder of the GAM (see Fig. 2).

Push the cover of the SIM card holder slightly and open it up. Push the SIM card into the cover, hinge it shut and slide to lock. Please comply with the orientation of the SIM card, especially the position of the angled corner.

Close the front cover of the GAM, noting the installation direction.

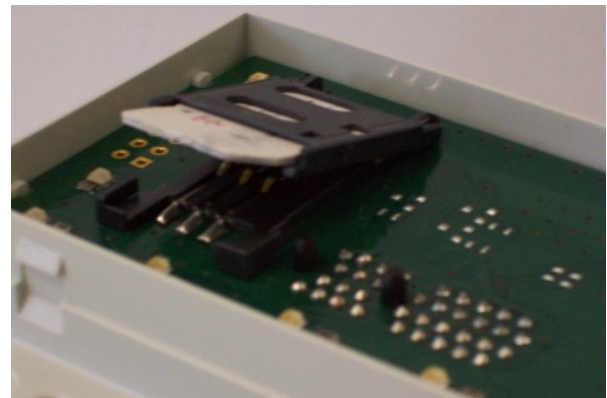


Fig. 2

Antenna connection

Insert the GSM antenna in the MMCX antenna socket. Position the antenna at a location where you have a good GSM connection.

Tip: You can check the quality of the connection with a normal mobile phone. The phone SIM card must be from the same network provider.

After initiation the system with the start-up SMS you can also check the signal strength with the command "**?SIG;**" (see page 7).

Power supply

Connect the device to the power supply. The LED "GSM" lights up permanently afterwards. The GAM will now automatically try to log into the GSM network. As soon as the GAM is logged into the GSM, the LED "GSM" winks around every 2 seconds.

The LED "Err" blinks every second.

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Configuring the GAM

Notation

Meaning of the different text styles:

Normal	:	Explanatory text.
<i>Bold italics</i>	:	Text to be used to the GAM in a SMS.
Bold	:	Response of GAM, received by SMS.
	:	Important information.

¹ Please note :

All commands to the GAM must be ended with a semicolon (;)!

Configuration SMS

On delivery the GAM is configured by the configuration SMS after connecting up the power supply. The GAM stores the SMS call number automatically and sends future events to this number.

The entire GAM is therefore configured for simple applications with a single SMS during which it makes a note of the call number. You do not need any additional software, computer or programming knowledge!

Sent the following SMS to the GAM: **AN;**
The LED "Err" stops blinking and turns off permanently.
The GAM responds with the current status:
GAM 1 DI1:0 DI2:0 DO:0 (GAM 2 DI1:....)
You can now operate the GAM by SMS from the "known" mobile phone.

The **AN;** command can only be executed again after Resetting to factory default (see page 4 and 5).
None of the commands are "case sensitive", i.e. all commands can be sent in upper or lower case.

Tip: We recommend that you store the call number of the GAM in the telephone book of your mobile phone.

Please note: The "incognito" function on your telephone must be switched off, so that the GAM can identify the correct number.

Setting the output

Send the following SMS in order to set the DO digital output: **DO:1;**
The DO output is switched on and the LED "DO" lights up.

Send the following SMS in order to reset the DO digital output: **DO:0;**
The DO output is reset and the LED "DO" goes off.

Please note the difference between the letter "O" and the number "0".

Receiving Alarm SMS

Connect digital input DI1 (DI2) to a 24V power supply for at least one second.

Please follow the connection diagram, Fig. 1 on Page 1! Following this, GAM sends an Alarm SMS to your mobile phone.

Receipt: **GAM 1 DI1:1 Alarm Input 1 (GAM2 DI1:....)**

Please note that it takes around 6 seconds to send an SMS.

Time delay between triggering of the event and receipt of the SMS is due to the GSM network.

Status inquiries

Send the following SMS to the GAM: **ST;**
The GSM alarm module responds with the current status: **GAM 1 DI1:0 DI2:0 DO:0 (GAM 2 DI1:....)**

Power Lost Message

The Power Lost message is only sent with the GAM 2!

Disconnect the GAM 2 from the power supply. The GAM 2 has a rechargeable battery which powers the device if the external power supply fails (e.g. in case of a power cut). As soon as the GAM 2 recognises such a condition it begins to send a Power Lost message.

You will receive the following message to your mobile phone¹: **GAM 2 Power Lost**
The GAM 2 switches off after sending the SMS.

Power On Message

After this, reconnect it to the power supply. You will receive the following message to your mobile phone¹:
GAM 1 Power On DI1:0 DI2:0 DO:0 (GAM 2 Power...)

Resetting to factory default

Disconnect the GAM from the power supply. Press the RESET button, keep it pressed down and reconnect the power supply. Keep the RESET button pressed down for at least 18 seconds.

When the reset is triggered the LED "Err" lights up for around 6 seconds.

¹ The Power On/Lost Message will be sent to each phone number listed in the device (AN, TN1..TN5 compare page 6)

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The GAM returns to the basic settings. The LED "Err" starts blinking once per second. The GAM can be newly configured by sending the configuration SMS.

Pressing the RESET button during operation does not trigger a reset to factory default!

Extended configurations

The GAM can be configured very flexibly via SMS for more complex tasks, e.g. configuration of several authorised users for sending and receiving messages, changing standard texts, setting password protection and a whole series of further parameters.

All commands are described in detail, along with examples, in the SMS Command Table.

None of the commands are "case sensitive", i.e. all commands can be sent in upper or lower case. All commands are given in upper case in the examples. Each command must be ended with the semicolon (;).

Several commands can also be sent in one SMS. Please note that not more than 160 characters can be sent in one SMS and that no spaces are allowed between the semicolon and the (following) parameter.

Extended example:

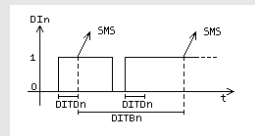
DVTXT:myGAM;HB:60;POTXT:activated;

Effect: Sets the device name to "myGAM"; the heartbeat to 60 min and the Power On Text to "activated". The GAM will issue the message "myGAM activated DI1:x DI2:x DO:x" when it is powered on and will send a status message every 60 minutes. (see chapter SMS-Commands)

SMS-Commands

Command Table

Command Syntax	Text	Description	Basic settings
AN;	Administrator Number	Configuration command after switching on for the first time. The GAM stores the telephone number which is calling once as an Administrator number and sends back the current status. Other participants can only be established using this telephone number. The same applies to changing of the basic settings. It is only possible to delete this number with the RESET ; command (page 6) or by operating the RESET button (compare page 4) after switching on the GAM.	-

Command Syntax	Text	Description	Basic settings
		Example: AN; Response: GAM 1 DI1:0 DI2:0 DO:0 (GAM 2 DI1:...)	
DITDn:xxxx;	Digital In Time Delay (n = 1 2) (xxxx = 1...3600 s)	Time delay of the digital input until an Alarm SMS is sent. Example: DITD1:10; Alarm SMS is sent if the digital input is activated for 10 seconds	xxxx = 1
			
DITBn:xxxxx;	Digital In Time Blocked (n = 1 2) (xxxxx = 5...65535s)	Time delay of the digital input until a new alarm SMS is sent. The number of alarm SMS can be limited with this command, for example if the input is unstable. Example: DITB1:3600; Alarm SMS are sent a maximum of every 3,600 seconds.	xxxxx = 120
DITXTn:<text>;	Digital In Text (n = 1 2) <text> = max. 32 characters	Setting the alarm text of the digital inputs. Example: DITXT1:Open front gate; From now on the GAM will respond with: GAM 1 DI1:1 Open front gate (GAM 2 DI1:...) when digital input 1 is switched on.	<text> = Alarm Input n
DIS1:x;	Digital In1 SMS enable (x = 0 1)	Switch in order to deactivate automatic transmission of an SMS when there is an input on Digital In 1. This means that the pure inquiry function can be used. Example: DIS1:0; Switches automatic SMS transmission off when DI1 is activated. DIS1:1; Switches automatic SMS transmission on when DI1 is activated.	x = 1
DIS2:x;	Digital In2 SMS enable (x = 0 1)	Switch in order to deactivate automatic transmission of an SMS when there is an input on Digital In 2. This means that the pure inquiry function can be used. Example: DIS2:0; Switches automatic SMS transmission off when DI2 is activated. DIS2:1; Switches automatic SMS transmission on for when DI2 is activated.	x = 1
DO:x;	Digital Out (x = 0 1)	Sets relay output. Example: DO:1; Closes the relay contact. The LED "DO" goes on. DO:0; Opens the relay contact The LED "DO" goes off.	-

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Command Syntax	Text	Description	Basic settings
DOP:x;	<u>D</u> igital <u>O</u> ut <u>P</u> olarity (x = 0 1)	Defines the standard polarity of the digital output. (relay contact) 0 = output relay contact is open after switching on the GAM (LED "DO" off). The relay contact is closed, for example, by command DO:1; (LED "DO" on). If a time was set with the DOT command, the relay contact is opened again after this time. 1 = Output relay contact is closed after switching on the GAM (LED "DO" on). The relay contact is opened, for example by command DO:0; (LED "DO" off). If a time was set with the DOT command, the relay contact is closed again after this time.	x = 0
DOT:xxxx;	<u>D</u> igital <u>O</u> ut <u>T</u> ime (xxxx = 0...65535 s)	Setting possibility for automatic reset of the output after xxxx seconds (Monoflop functionality). If xxxx = 0 the output remains permanently set and is only reset after the device has been switched on again or with the DO:0; command. Example: DOT:10; If the output is switched with DO:1; (at DOP:0) it is automatically reset after 10 seconds. Note: If one of the inputs is activated during the output is switched on, an alert is sent via SMS. This sending of the SMS can enlarge the DOT time (to up to 6 seconds).	xxxx = 0
HB:xxxx;	<u>H</u> eart <u>B</u> eat (xxxx = 0...10080 min [= 7days])	Automatic cyclic transmission of a Status SMS. The Heartbeat is switched off at xxxx = 0. Example: HB:60; The GAM sends a Status SMS to all the numbers entered in the telephone list (AN, TN1, ... TN5) every 60 <u>minutes</u> .	xxxx = 0
DOTXT0:<text>;	<u>D</u> igital <u>O</u> ut <u>T</u> ext DO:0 <text> = max. 16 characters	Alternative text in order to switch the output to 0. (relay open) The effect of the command is equivalent to DO:0; Here you can define a command yourself. Configuration example: DOTXT0:close gate; Application example: CLOSE GATE; (*) *upper or lower case can both be used. Do not forget the (;)! Effect: DO output of the GSM alarm module is switched off. The relay is opened. Warning: Make sure that you do not use any text which has already been allocated. For example, "AN;" is already allocated to an SMS command.	<text> = OFF

Command Syntax	Text	Description	Basic settings
DOTXT1:<text>;	<u>D</u> igital <u>O</u> ut <u>T</u> ext DO:1 <text> = max. 16 characters	Alternative text in order to switch the output to 1. (relay closed) The effect of the command is equivalent to DO:1; Here you can define a command yourself. Configuration example: DOTXT1:Open gate; Application example: OPEN GATE; (*) *upper or lower case can both be used. Do not forget the (;)! Effect: DO output of the GSM alarm module is switched on. The relay is closed. Warning: Make sure that you do not use any text which has already been allocated. For example, "AN;" is already allocated to an SMS command.	<text> = ON
DVTXT:<text>;	<u>D</u> evice <u>T</u> ext <text> = max. 16 characters	Setting of device name. This command is useful if you use several GAM devices and want to differentiate between them. Example: DVTXT:myGAM; sets device to "myGAM".	<text> = GAM 1 (GAM 2)
FCM:x;	<u>F</u> ree <u>C</u> all <u>M</u> ode (x = 0 1 2 3)	The GAM offers the opportunity to trigger an action through calling up the inserted SIM alone. Because the GAM does not pick up and no actual connection is established, this procedure does not cost you anything. Please make sure that the answering machine is deactivated in the SIM inserted in the GSM alarm module, or do not let it ring long enough until it is answered, as otherwise your network operator will charge you for the call. Please note, that the telephone which is calling up has to communicate its call number. After recognizing a Free Call the GAM will hang up the phone immediately. You will only hear one ringtone if Free Call is successful. 0 = Freecall switched off 1 = Freecall activates the output. This behaves depending on how DOP and DOT are set. For example, if DOT = 2sec., the output returns to its original state 2 seconds after activation. If DOP = 1, the output is negated. 2 = Freecall toggles the output. If it is 0, it is switched to 1 and vice versa. If DOT was configured, the output returns to its original state after this time. If DOP = 1, the output is negated. 3 = equivalent to ST; . A status SMS is requested. Warning: The telephone which is calling must be able to receive the Status SMS. Landline numbers can also be used in conjunction with Freecall. These must be entered into the telephone book by means of TN1..TN5. You	x = 0

Operating instructions GAM

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Command Syntax	Text	Description	Basic settings
		can discover the correct number by calling a device which can show the incoming call number from the desired landline telephone. Normally <Dialling code> <Telephone number> It can happen with some telephone systems that a leading "0" is displayed. Please leave this out. Example, landline number: TN1:074851810; Example, mobile phone number: TN1:+4916012345678;	
PIN:xxxx;	<u>P</u> IN Change (xxxx = 0000...9999) 4 digits	Changing the SIM card PIN number. Warning: After resetting the GAM to factory default by operating the RESET button or by means of the RESET; command, the GAM expects a SIM card with the PIN number "1234". If a different PIN than "1234" is set, the GAM will use a "wrong" PIN each time it is switched on, which means that your PIN will be blocked after three attempts! Example: PIN:9876; Sets the PIN number to 9876	x = 1234
PFE:x;	<u>P</u> ower <u>F</u> ail <u>E</u> nable (x = 0 1)	Activation or deactivation of Power Fail SMS. Example: PFE:0; Deactivation of Power Fail SMS PFE:1; Activation of Power Fail SMS	x = 1
PFTXT:<text>;	<u>P</u> ower <u>F</u> ail <u>T</u> ext <text> = max. 32 characters	Setting of Power Fail Text. This text is sent when the GAM 2 is switched off, if the Power Fail SMS (PFE) is activated. Example: PFTXT:deactivated;	<text> = Power Lost
POE:x;	<u>P</u> ower <u>O</u> n <u>E</u> nable (x = 0 1)	Activation or deactivation of Power On SMS. Example: POE:0; Deactivation of Power On SMS POE:1; Activation of Power On SMS	x = 1
POTXT:<text>;	<u>P</u> ower <u>O</u> n <u>T</u> ext <text> = max. 32 characters	Setting of Power On Text. This text is sent when the GAM is switched on, if the Power on SMS (POE) is activated. Example: POTXT:activated;	<text> = Power On
PW:<text>;	<u>P</u> ass <u>w</u> ord <text> = 4 characters	Changing the password. Warning: Make sure that you do not forget the password which has been set! If PWE=1, commands can only be given if the password is entered! If you have forgotten the password, the only solution is to reset with the RESET button! (page 4) Example: PW:Dcba; Password is converted to DCBA. upper or lower case can both be used. The password can consist of any combination of characters and digits. For details how to use it see Pa-	<text>=ABCD

Command Syntax	Text	Description	Basic settings
		parameter PWE!	
PWE:x;	<u>P</u> ass <u>w</u> ord <u>E</u> nable (x = 0 1)	Activation and deactivation of password protection. Warning: Make sure that you know the password which has been set when you activate password protection. Further commands can only be given if the password is entered! The password must stand at the start of every further SMS, followed by a semicolon. If you have forgotten the password, the only solution is to reset with the RESET button! (page 4) Example: PWE:1; Activation of password protection PWE:0; Deactivation of password protection Example: Set DO if PWE=1 and PW=ABCD: ABCD;DO:1;	x = 0
ST;	<u>S</u> tatus	Inquires the status of GAM. Example: ST; Response: GAM 1 DI1:0 DI2:0 DO:0 (GAM 2 DI1:...)	-
RESET;	RESET	Resets the GAM to factory default. (same effect as operating the RESET button, see page 4, and compare the right-hand column of this Table) Example: RESET; Warning: Resetting with RESET (Button or SMS) does not reset the PIN of the SIM! Extended example: PIN:1234;RESET;AN; Effect: Sets the current PIN (including that of the SIM) to 1234 (=Default), loads the default data and registers the transmitting (mobile) telephone as Administrator number.	-
TNn:<number>;	<u>T</u> elephone <u>N</u> umber n (n = 1...5)	Sets a telephone number in the telephone number list. It is possible to establish 5 additional telephone numbers. In parallel to the Administrator number these telephone numbers receive a status message from the GAM when an input DI1 or DI2 is activated, or can inquire the status by means of ST; . In addition, it is possible to set the DO output and use the preconfigured FCM. However, the configuration <u>cannot</u> be changed. (read only function). (compare Rights page 7) Example, mobile phone number: TN1:+4916012345678; A mobile number must start + and the country code and may have a maximum 16 digits.	-

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Command Syntax	Text	Description	Basic settings
TNCn;	Telephone Number Clear (n = 1...5)	Deleting a telephone number from the telephone list. Example: TNC1; Deletes telephone number 1 from the telephone number list.	-

Remark: The saving of the parameters of the GAM takes about 5 seconds. Do not cut power lines during that time!

Inquiry commands

As the GAM can be configured in a very individual way, there is a possibility of inquiring with regard to settings. Send one of the following commands and the GAM responds with an SMS with the content stated below in the "Response" column.
It is **not** possible to inquire the **PW** and **PIN** settings for reasons of security.

Command Syntax	Text	Description	Response SMS
?TN;	Inquiry Telephone Numbers	Inquires for all telephone numbers. The GAM responds with the complete contents of the "telephone book".	AN:....;TN1:....;TN2:....;TN5:....;
?DI;	Inquiry Digital Inputs	The GAM responds with all settings which affect the digital inputs.	DIS1:....;DIS2:....;DITD1:....;DITD2:....;DITB1:....;DITB2:....;DITXT1:....;DITXT2:....;
?DO;	Inquiry Digital Outputs	The GAM responds with all settings which affect the digital outputs.	DOT:....;DOP:....;DOTXT0:....;DOTXT1:....;
?SIG;	Inquiry Signal Strength	The GSM alarm module responds with the signals strength. The first number indicates a value between 0..31. (31 = max. signal strength)	Signal:....;
?CONF;	Inquiry CON-Figuration	Returns all usual configuration values to the GSM alarm module.	DVTXT:....;FCM:....;HB:....;PFE:....;PFTXT:....;POE:....;POTXT:....;PWE:....;

¹The PFE and PFTXT parameters only exist for GAM 2.

Rights

The Administrator (AN) on the GAM can operate all settings and make all inquiries. Non-Administrators (TN1 – TN5) can only use the commands **ST;**, **DO:x;** and the commands given under DOTXT0 / DOTXT1, as well as the Free Call Mode (FCM) which is currently set.

Troubleshooting ¹

Error	Possible cause	Possible solution
LED "Power" remains dark	No supply voltage	Connect to power supply
LED "GSM" blinks cyclically 2x from the beginning ¹	No SIM card No contact with SIM card PIN of SIM card deactivated	Insert SIM card Clean surface of SIM card Activate PIN of SIM card with a mobile phone
LED "GSM" blinks cyclically 3x from the beginning ¹	PIN not "1234"	Reset GAM to factory default (see page 4) and set the PIN of the SIM card to "1234" with a mobile phone.
LED "GSM" on permanently	No GSM network available no antenna connected	Change antenna position Connect antenna
LED "Err" blinks ¹ every second	No configuration SMS has yet been sent. (factory default)	Send configuration SMS See page 3 Configuration SMS
GAM does not react to a Configuration-SMS	Wrong number AN already registered No (;) given	Check number SET button, reset configuration. (see page 4) Please see page 3 (Configuration).

Scope of delivery

The following items are included in the delivery :

- GSM Alarm Modem GAM 1 or GAM 2
- Operating instructions

Accessories :

- GSM/GPRS antenna (MMCX/m Connector)
 - Magnetic mount antenna or
 - Stickable patch antenna
- Power pack, 230VAC / 24VDC

¹ Following connection of the supply voltage, GSM Alarm Modem needs approximately 30-40 seconds in order to start the GSM module. Following this, the LED "Err" is lit up for about 5 seconds, turns off and than on for another 20-30 seconds. Now the error check takes place.

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Safety Instructions

When handling products which come into contact with electrical voltage, the currently valid VDE stipulations must be observed, especially VDE 0100, VDE 0550/0551, VDE 0700, VDE 0711 and VDE 0860.

Before opening the device, always disconnect the device from the main power supply and ensure that all connected wires have zero-potential.

Tools may only be used on devices, components or assemblies if it has been ensured that the devices are disconnected from the supply voltage and that electrical charges, which are stored in the components contained in the device, have been discharged beforehand.

Cables or leads which carry voltage, to which the device, the component or the assembly is connected, must always be investigated for insulation faults or breaks. If a fault is found in the supply line, the device must be taken out of commission immediately until the defective line has been replaced.

When using components or assemblies, users must always be reminded to adhere strictly to the characteristic data for electric magnitudes stated in the relevant description.

If it is not clear to a non-commercial end-user from an existing description, which electrical characteristic data apply to a component or a module, how external wiring is to be undertaken and which external components or additional devices may be connected and which connection values these external components may have, always contact a technical expert for information.

Before commissioning a device, a general check should be made as to whether this device is fundamentally suitable for the application for which it is to be used !
If there are any doubts, it is essential to contact trained engineers or technical experts on the devices used !

Please note that operating errors and connection faults lie outside our sphere of influence.
Understandably, we cannot accept any liability whatsoever for damage/injuries arising as a consequence.

Devices which are operated using a voltage > 35 Volt, may only be connected by a trained engineer.

Operating Conditions

- Where devices have an operating voltage >35 Volt, final assembly may only be undertaken by an expert and it must comply with VDE-stipulations !
- When installing the device, ensure that the connection cables have an adequate cable cross-section.
- If condensate forms, it is necessary to wait for an acclimatisation period of up to 2 hours.
- Liquids, chemicals etc. must be kept away from the device.
- The device is intended for use in dry, clean rooms.
- Protect the device from moisture, sprayed water and the effects of heat.
- Do not expose the device to strong vibrations.
- Do not use the device in an environment where there is an impermissible level of electromagnetic force.
- Do not operate the device in an environment in which combustible gases, vapours or dust are present or could be present.
- The device may only be repaired by an expert.
- If the device has to be repaired, only original spares may be used. Use of any other than the original spares can lead to serious injury to persons or damage to property.
- GAM 2: At the end of life time, the battery has to be disposed separately according directive 2006/66/EG (WEEE). For replacement please open the disconnected device from the bottom side. Put a screwdriver into the four lateral recesses between side plate and bottom plate to unlock the snap-in hooks. Disconnect the battery and remove it. The device will be destroyed thereby.

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Technical Data

		GAM 1	GAM 2
Power supply U_e	DC V	10 ... 30 10V: ripple < 1% 30V: ripple < 10%	
Power consumption P_s *	W	3,5	4,5
Digital inputs		2x digital inputs 2 wire connection, galvanically isolated	
Signal voltage „0“ for inputs	DC V	-2 ... 2	
Signal voltage „1“ for inputs	DC V	8 ... 30	
Max. contact load (cos φ = 1)	AC V/A	250/5	
Max. contact load	DC V/A	30/5	
EMC acc. EN 61000-6-2 and EN 61000-6-3		observed	
Ambient temperature	°C	-30 to +75	-20 to +50
Storage temperature	°C	-40 to +85	-20 to +50
Wave band		GSM 850/900/1800/1900 MHz	
Power Class		GSM 850/900: 4 (2W) / GSM 1800/1900: 1 (1W)	
Terminals		+/-	
Screws		Pozidriv size1	
Conductor cross sections	rigid mm ²	min. 1,5	max. 4
	flexibel with sleeve mm ²	min. 1	max. 2,5
Humidity, 40 °C	%	0 to 95	

* During power up the device and during sending a SMS message, the currency can reach a short term peak of up to 1 A.