Introduction

Module

Further information

ESD guidelines

List of abbreviations

Monitoring Devices

SENTRON

GSM alarm module

System Manual
Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

<table>
<thead>
<tr>
<th>DANGER</th>
<th>indicates that death or severe personal injury will result if proper precautions are not taken.</th>
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<tbody>
<tr>
<td>WARNING</td>
<td>indicates that death or severe personal injury may result if proper precautions are not taken.</td>
</tr>
<tr>
<td>CAUTION</td>
<td>indicates that minor personal injury can result if proper precautions are not taken.</td>
</tr>
<tr>
<td>NOTICE</td>
<td>indicates that property damage can result if proper precautions are not taken.</td>
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</table>

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by personnel qualified for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

| WARNING             | Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed. |

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.
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Introduction

1.1 Overview

The GSM alarm module is a compact, distributed control and signaling system. All the inputs and outputs (I/Os) of the module are monitored by SMS text messages and email, and are controlled by SMS communication through the GSM network.

The module is configured by means of configuration software. Every input and output can be modified by means of user-defined parameter names and messages. A selected group of users can be chosen from the phonebook to configure and operate the module ("active users"), or only to receive messages ("users").

GSM alarm module features:

- 4 digital outputs (DO), relay outputs, changeover contacts, 250 V/5 A
- 8 universal inputs (UI), which can be set by means of configuration software:
  - Analog input (AI), 0 to 10 V
  - Digital input (DI)

The module sends a previously defined message to selected persons with every defined change of state (rising or falling flank in the case of digital inputs or reaching a level in the case of analog inputs).

The outputs are switched whenever an active user sends a previously defined SMS to the GSM alarm module.

For testing purposes, the GSM alarm module can send a text message (SMS) on a regular basis, i.e. at a user-defined time. In the event of a power failure, the module still has enough energy to send an SMS message to all active users to inform them of the power failure. It also sends an SMS message once the power supply has been restored.

1.2 Safety instructions

- The GSM alarm module must NOT be used to monitor sensitive or time-critical processes. A power supply interruption or a GSM network failure can prevent uninterrupted monitoring.
- ESD precautions must be taken when opening the module.
- This module requires a GSM data connection. You can obtain information about the costs from your GSM service provider.
1.3 Software

Download the latest configuration software from the Internet.

System requirements

The following are required for correct functioning:

- Windows XP (SP3), Vista, WIN 7, WIN 8
- Monitor with a minimum resolution of 1024 x 768 pixels
- 100 MB free hard disk capacity
- 256 MB RAM
- USB interface

Software installation

Certain hardware drivers must be installed on your system for the program to function. Therefore, make sure you have administrator rights during installation.

Run the GSM_Alarm_Module_setup.exe file to install the software. The Setup wizard guides you through the installation procedure.

See also

Update (Page 35)
2.1 Connecting

Inserting the SIM card

**Note**
ESD precautions must be taken when opening the module.
To avoid damaging the module, make sure you are not statically charged when opening it and inserting the SIM card.

Place a SIM card in the SIM card holder to obtain access to the GSM network:

- Use a small flat screwdriver to raise the lid.

![Figure 2-1 Opening the top lid](image1)

- Place the SIM card in the SIM card holder.

![Figure 2-2 Inserting the SIM card in the GSM alarm module](image2)

- Then put the lid on again.
2.1 Connecting

Connecting the antenna

Connect the antenna to the antenna terminal on the top of the module.

![Screwing on the included GSM antenna](image)

Figure 2-3  Screwing on the included GSM antenna

Connecting the power supply

Connect the 24 V and 0 V terminals to a 24 V DC power supply unit (recommended). You can also use a 10 to 30 V DC power supply unit (power supply connection), however.

![Connecting the power supply](image)

Figure 2-4  Connecting the power supply
Connecting to a PC

Connect a USB cable to the module’s mini-USB socket and connect the other end to the PC’s USB interface.

**Note**

Install the configuration software first before you connect the module to the PC.

---

Figure 2-5  Connecting the USB cable to the mini-USB terminal
2.2 Description of the LEDs

Module status displays

After the operating voltage has been connected, the first LED lights up after about 10 seconds.

The ‘Run’ LED indicates functioning of the module:

- Flashing = module is starting up (takes about 90 seconds)
- ON = module is ready (flashing every 10 seconds)
- OFF = no supply voltage

The ‘Com’ LED indicates network activity by the module. This LED has a two-part structure. If both parts light up green, everything is alright and the connection to the GSM network has been established. If the left part is green and the right part is red, the connection to the GSM network has been established, but the time has not yet been synchronized.

- Flashing green = roaming in the GSM network
- Green OFF = no connection to the GSM network

The ‘Busy’ LED indicates module activity:

- ON = module is currently active

The module restarts automatically after every data transfer between the PC and the module. All UI LEDs light up during restarting.

I/O displays

- The LEDs pertaining to the universal inputs (UI) light up when:
  - Set as a digital input: the input is active (status 1)
  - Set as an analog input: a high or low threshold is reached
- For each of the digital outputs (DO), an LED lights up when the relay is activated.
2.3 Connecting to the GSM alarm module

Preferably connect the GSM alarm module to a 24 V DC power supply and then connect the module to the USB interface of a PC using a USB cable. Wait until the module has started up and then start the configuration software.

**Note**
It takes the module roughly 90 seconds to start up completely. After the operating voltage has been connected, the first LED lights up after about 10 seconds.

When the software is started, it searches through all COM interfaces of the PC for a connected GSM alarm module. If a module is found, the software downloads the module’s data and asks whether you wish to load the module’s settings in the configuration software.

- Yes: all set values are displayed in the configuration software and can be edited.
- No: the configuration software's fields are not filled.

**Note**
The "Upload settings to module" function overwrites all values in the module with the ones specified in the configuration software. Empty fields are also transferred to the module.

If no module is found during starting, although a module is connected, click on the "Connect" button on the top right of the window

or select "Connect to module" on the "Synchronize" tab.

The text 'Connected' appears in the bottom left corner if the module has been found.
2.4 Managing settings

2.4.1 Importing/exporting settings

The following button offers you diverse options for importing and exporting settings:

1. **Import settings**
   Imports saved settings (*.ccf files) from the PC.

2. **Export settings**
   Exports settings (*.ccf files) to the PC to be able to reuse them later for other GSM alarm modules, for example.

3. **Interface default settings**
   Restores the default settings.

4. **Print settings**
   Prints the settings entered in the configuration software.
2.4.2 Data exchange

Click on the "Data exchange" button to exchange data with the module.

1. **Upload settings to module**
   Loads the current values set in the configuration software to the module.

   **Note**
   When settings are uploaded into the module, all the current settings in the module are overwritten. This is why you should first download and save the module's settings before loading new settings into the module.

2. **Download from module**
   Loads all the module's settings into the configuration software.

3. **Reset module to default**
   Resets all the module's settings to the factory defaults.

4. **Sync. date/time**
   The module's date and time are synchronized with the PC's system time.

5. **Restart device**
   Due to the capacitor installed in the module, it is not possible to trigger a fast restart by interrupting the operating voltage.
   Click on this command to restart the device by the software.

6. **Connect to module**
   The module is connected to the PC via the US connection.
2.5 Configuring

2.5.1 Settings

Setting the language

You can choose the language via the "Edit" -> "Language" menu.

Basic settings

You define the module's basic functions on the 'Setting's tab:

---

**Note**

All settings defined in the configuration software must be actively loaded into the module.

- Module name
- SIM PIN No., which is the PIN number for access to the SIM card.
Module

2.5 Configuring

Figure 2-6 "Settings" tab
Module

2.5 Configuring

Auto messages/periodical message

The GSM alarm module can send a message regularly, i.e. at user-defined times:

Daily: set the time (hh:mm)
Weekly: set the day and the time (hh:mm)
Monthly: set the day of the month (1 to 29) and the time (hh:mm)

All active users receive this message.

The actual status of all I/Os can be added to the message ("periodical message followed by IO status message").

Startup/power cycle message

Each time it is started, the GSM alarm module can send a message so that users are informed about the fact that the operating voltage has been activated again.

Power down message

In the event of a power failure, the module still has enough energy to send an SMS message to active users. The GSM alarm module registers a power failure whenever the voltage drops below 8 V and switches on again at a voltage over 10 V.

Note

The module tries to send the SMS message to all active users, but only sending of the SMS to the first 5 active users is guaranteed.

Active users

Active users are those who have full access to the module and who receive automatic messages. The order of notification is determined by the order of the chosen users (No. 1 to 10).

You can only choose active users from the phonebook.

Deactivate the checkbox next to the relevant active user if that user is to be permitted to access the GSM alarm module, but is not to receive messages from the module.

When you click on the "Copy users to I/Os" button, you copy the selected active users to all I/O pages.
2.5 Configuring

2.5.2 Phonebook

The configuration software features a phonebook in which all contacts are listed ("Phonebook" tab).
All changes you make in the phonebook are saved automatically on completion.
You must add all users to the phonebook who are to have access to or information about the module.

Adding contacts

To add a contact to the phonebook click on the next empty row and enter the person's name and telephone number or their name and email address.

Note
Notification by email requires an Internet connection.

Note
The international prefix must be placed before the telephone number, e.g.

- United Kingdom +44
- Germany +49
- France +33
- Netherlands +31
- Italy +39
- Spain +34
- Poland +48

Deleting contacts

To delete a contact, click on one or more rows you wish to delete and then on the 'Delete' button.

Importing/exporting the phonebook

You can import the phonebook from a file or you can export it to a file (cpf file).

1. Import phonebook
2. Export phonebook
2.5.3 Diagnostics

The 'Diagnostics' tab is filled out after connection with the module has been established. The following information is displayed on the page:

- The GSM network in use or a connection error ("not registered")
- Signal strength as a percentage and signal quality
- The module's date and time
- The module's firmware version
- The module's IMEI number
- Error messages such as:
  - SIM PIN code required
  - SIM PUK code required
  - No SIM card
  - Date/time not set
  - No user selected
  - No connection to GSM network

You can update the 'Diagnostics' tab by clicking on the 'Diagnostic check' button.

Send the "status" SMS to the module to query the values by SMS.

Click on the 'Check data connection' button to check whether the module is able to establish a GPRS (Internet) connection. You can find further information on setting up an Internet connection in chapter "Network" [Page 37].

Signal strength

The signal strength information is determined in compliance with GSM network specifications. You will find an overview in the appendix of this manual.

Send the "csq" SMS to the module to query the signal strength and quality of the connection by SMS.

2.5.4 I/O configuration and messaging

The module responds to read and write commands by SMS. Commands are preceded by an 'r' for read or 'w' for write actions.

SMS commands can be written in both upper and lower case.
2.5.4.1 Universal inputs

The GSM alarm module has eight universal inputs, which can be individually configured as follows:

- Analog input Al (0 to 10 V, cf. "Analog inputs (Page 22")
- Digital input DI (cf. "Digital inputs (Page 25")

Reading from multiple universal inputs

Send "rmui" in an SMS to the module to read out the status of all universal inputs. The module then sends a message on the status of the individual inputs: In the message, "read UI1=xxxx, UI2=xxxx, …. UI8=xxxx"

UI is replaced by the respectively configured input type, namely AI (for Analog) or DI (for Digital).

Selected recipients

Recipients receive the messages of the universal input (UI) in which they are entered as recipients ("Send report to"). The sequence of notification is determined by the order of selected recipients (No. 1 to 10).

Note

Selected UI recipients cannot send any commands to the module.

Confirmation function

When the confirmation function is activated, the module sends the message one by one to the selected recipients with an adjustable time delay.

Example: the sequence starts with sending of the message to the first telephone number. If the set delay time is exceeded, the message is sent to the next telephone number on the list and so on until the last telephone number on the list has been addressed.

This is repeated until the defined number of repetitions has been reached.

If the list of recipients contains one or more email addresses, these only receive a message (email) once at the beginning of the sequence.

All recipients who receive the message can stop the confirmation sequence before the delay time has expired. To do this, they send the defined text, which can be chosen freely (and can also be left blank) to the module.

The module responds with: "Confirmation ended <timestamp>"

Note

If the UI assumes a new state, a new repeat sequence is started and the previous sequence, which is possibly still running, is stopped automatically.
Analog inputs

Every analog input (AI) represents a scaled value from 0 to 10 V. Threshold values can be set within this scale.

Figure 2-7 Tabs for configuring the analog inputs (AIs)
Configuration

You can define the following settings for the analog inputs:

- **Name**: this name must be unique and cannot be used with any other input or output. The factory defaults are AI1 to AI8.
- **The unit for input feedback**, e.g. liter (l) or kilogram (kg).
- **Log this AI at a preset interval** [Interval settings (Page 25)] Hotspot-Text. The min. value corresponds to the scaled value for 0 V. The max. value corresponds to the scaled value for 10V.
- **Lower limit**.
- **Upper limit**.
- **Min. change (hysteresis)**.
- **If you activate "Send only user defined text", the module only sends the text defined in the message box (no module name, IO name or timestamp)**.
- The analog inputs can send messages with values and units if:
  - the upper + hysteresis limit is reached
  - the lower - hysteresis limit is reached
  - the status returns to a range between the upper and lower +/- hysteresis limits ("Message when level recovers to normal")

**Note**

Min./max. and threshold/hysteresis values are limited to 5 digits with a maximum of 2 decimal places.

For every AI, a delay can be set (in the "Delay" box) with which it responds to status changes. The UI LED flashes during the delay. A change is ignored if the input signal's status changes back again before expiry of the set time.
Set the value 0 if you wish to deactivate this function.

Reading from an analog input

To query the status of an analog input, send the "ruin" SMS to the module, where 'n' is the number of the requested input.

The module responds with: **status AI\n=xxxx**

If an input is assigned a special name, this input can be addressed by putting the name between asterisks.
For example, the status of an input called 'Water tank' can be queried by sending the SMS text "\r*water tank\*".
The module responds with: **status water tank=xxxx**
Wiring example

In this example, AI1 and AI2 are connected to an analog source.

Figure 2-8  Connecting the analog inputs AI1 and AI2 to an analog source
Digital inputs

Configuration

You can define the following settings for the digital inputs:

Figure 2-9 Tabs for configuring the digital inputs (DIs)
• Name (this name must be unique and cannot be used with any other input or output. The factory defaults are DI1 to DI8.)

• The digital inputs can generate messages if:
  – a rising flank is detected: the status changes from 0 to 1.
  – a falling flank is detected: the status changes from 1 to 0.

For every DI, a delay can be set with which it responds to status changes. The UI LED flashes during the delay. A change is ignored if the input signal's status changes back again before expiry of the set time.

Set the value 0 if you wish to deactivate this function.

Reading from a digital input

To query the status of a digital input, send the "ruin" SMS to the module, where 'n' is the number of the requested input.

The module responds with: "status DIn=x"

If the digital input has been assigned a special name, this input can be addressed by putting the name between asterisks.

For example, the status of an input called 'Door' can be queried by sending an SMS with the text "r*door*". The module responds with "status door=x".

Out terminal

The Out terminals offer a voltage source that can be used to power the digital inputs.

When using the module's Power Down function, you are advised to use this voltage source instead of the module's normal supply voltage.

If you use the supply voltage for the digital inputs, it is possible that the module will interpret failure of the supply voltage as a change to the digital inputs before it detects the "Power Down" state. Then, the module reports the change at the digital inputs to the entered users first. In certain circumstances, after that there are no longer sufficient power reserves to then also send the "Power Down" message.

Note

V+ is a source with a maximum current of 20mA that is designed for signaling only. This output is not suitable as a power supply for other control tasks.
Wiring example

In this example, all digital inputs (DI) are wired to +24 V.

![Diagrams showing wiring example]

Figure 2-10  Powering the digital inputs (DIs) via the Out output
2.5.4.2 Digital outputs

Configuration

The GSM alarm module has four outputs with changeover contact. The following objects can be configured/activated on the associated tabs:

- Name (this name must be unique and cannot be used with any other input or output. The defaults are DO1 to DO4.)
- After a digital output has been switched, the module sends a confirmation message followed by the new status of the output ("auto message"). This message is sent only to the sender of the settings.
- If you activate "Send only user defined text", the module only sends the text defined in the message box (no module name, IO name or timestamp).
- Defining your own commands for controlling the outputs (On instruction, Off instruction, one-shot instruction).
- Activating switching (changeover) of the output (response to RING) when the module is addressed by a telephone call.
- Linking DO with DI
- Switching on when there is no connection to the GSM network
- Retaining the status on restart
Selecting users

Users have access to the digital output for which they are entered.

Note

Users selected here do not have any rights to send further commands to the module, with the exception of the output where they are entered as users.
### SMS instruction/user-defined commands

It is possible to switch the outputs individually or in a group with the user-defined or default commands.

With these commands, you can activate an output (SMS instruction for activation), deactivate it (SMS instruction for deactivation) or activate it for a specific period of time (SMS instruction for one-shot activation).

In this way, you can switch all outputs with user-defined commands, for instance, "pumpon" for switching on and "pumpoff" for switching off.

With this function, it is also possible to switch several module outputs with one command at the same time by defining the same command for these outputs.

It is also possible to combine commands, to simultaneously activate an output, deactivate another one and activate a third one only for a specific period of time.

### Number ID

You deactivate checking of the caller’s telephone number by unchecking the ‘Number ID’ box.

When this setting is made, the output responds to telephone calls or SMS messages from any sources.

---

**Note**

Please consider the possible risks when using this function together with the ring function.

---

### Switching a single digital output

To set one single digital output (DO), send the "wdonx" SMS text to the module, where "n" is the number of the output and "x" is its status.

The x stands for the respective output’s status: 0 = Off, 1 = On, 2 = no change and 3 = change over.

For example, if you send the "wdo31" SMS to the module, the digital output DO3 is set to 1.

If a specific name is assigned to an output (in "Digital output name:"), you can switch this output by putting the name between asterisks in the SMS text sent.

For example, you can change over an output named ‘Light’ by sending the "w*light*3" SMS.

If sending of a confirmation message is set, the module sends an SMS message in the form of "status DO=n=x" or if you have defined a name: "status name=x".

The "Status not changed" text is added in the module’s reply if an output is already in the desired status and does not need to be switched.
Switching several digital outputs at the same time

To set all digital outputs (DOs) simultaneously, send the SMS text "wmdoxxxx" to the module. The module then sends a confirmation message, to the sender only, containing the statuses of the outputs: "status DO1=x, DO2=x, DO3=x, DO4=x"

Each x stands for the respective output's status: 0 = Off, 1 = On, 2 = no change and 3 = change over.

Sending the SMS text "wmdo0123" to the module produces the following result:

- DO1 is set to 0
- DO2 is set to 1
- DO3 is not changed
- DO4 switches over its status (i.e., depending on the original state, from 0 to 1 or from 1 to 0)

Using the pulse function

The digital outputs can be activated for a time from 1 to 36000 seconds. When the command is received, the DO switches to 1 and then back to 0 after expiry of the set time. You address the pulse function by way of the command for setting a single output followed by a 't' and the time in seconds. For example, if you send wdo1t10, DO1 is activated for 10 seconds.

The pulse function sends 2 messages, one at the start and one at the end of the sequence.

Reading out digital outputs

To query the status of a single digital input, send the "rdon" SMS to the module, where 'n' is the number of the chosen digital output. The module responds with: "status DOn=x".

If a user-defined name has been assigned to an output, you can select this output by putting the name between asterisks. For example, the status of an input called 'Light' can be queried by sending the SMS text "r*light*". The module responds with: "status light=x"

Send the "rmdo" SMS to the module to query the statuses of all digital outputs.

The module responds with: "status DO1=x, DO2=x, DO3=x, DO4=x".

Switching in response to a call (RING)

This function enables you to switch over one or more digital outputs (DOs) in response to a phone call (RING command). If one of the users selected on the "Settings" tab dials the module's number, it switches over all selected DOs and interrupts the connection. The caller then receives an SMS text containing the new statuses of the DOs.

If the output's timer function ("output timer") is set to a time greater than 0, the digital output is set to 1 for the set time (in seconds), after which the output returns to 0.

If the output is already set to 1, it is kept at 1 for the set time and then returns to 0.

To deactivate the output timer function, set the time back to 0.
2.5 Configuring

Linking inputs and outputs (DIs to DOs)

The digital outputs (DO1 to DO4) can be linked to the respective digital inputs (DI1 to DI4). For example, if there is a change to the input DI1, the associated output DO1 is switched to 1.

The DO's status can still be switched at any time via an SMS message.

Note
This function can lead to conflicts when using the SMS or ring function.

Switching ON when GSM connection lost

When this function is chosen, the output is activated as soon as there is no longer a connection to the GSM network. It is deactivated as soon as the connection is restored.

Note
This function can lead to conflicts when using the SMS or ring function.

Preserve status on startup

The statuses of the outputs are stored prior to restarting and are then restored. If this function is not selected, the outputs remain deactivated after restarting ("0" setting).

Wiring example

In this example, D01 is implemented as a normally-open contact and D04 as a normally-closed contact.

NOTICE
Connect only to a single-polarity supply!
2.5.4.3 Reading all I/O statuses

Send the "rall" SMS to the module to query the statuses of all I/Os. The module responds with the "<module name> IO status:DO1=x (to) DO4=xUI1=xxx (to) UI8=xxx" SMS.

UI is replaced with the set input type: AI or DI.

To send the complete IO status to an email address, send the "rall<email>" SMS to the module.

2.5.4.4 Linking several GSM alarm modules

It is possible to link several GSM alarm modules by SMS. You can send previously defined messages to other modules by selecting "Send only user defined text" in the IO configuration.

Example: digital input 8 sends WDO21 on a rising flank to a second unit. This unit receives the message, switches the digital output 2 and sends a WDO31 message to a third unit, and so forth. On the falling flank of the first unit, it sends WDO20 to deactivate the digital output on the second unit and so forth.

It is also possible to send an SMS to the sending GSM alarm module to thus activate digital outputs in response to digital inputs.

Note

The digital outputs cannot send any messages.
2.6 Advanced settings

On the 'Edit' tab, select 'Advanced Settings' or press 'F2' to go directly to the tabs pertaining to 'Advanced Settings'.

You can configure the following tabs:

- Update
- Network (network connections)
- SMTP (email)
- Log (record)
- SIM (SIM card)
- COM port

**Note**

After completing the entries, you must load the current configuration into the module. You will find further information in chapter "Importing/exporting settings".

See also

Data exchange (Page 15)
2.6.1 Update

The GSM alarm module can perform OTA ("Over The Air") firmware updates or via the USB connection using a PC.
In the case of the Over The Air (OTA) firmware update, the data is transferred via GPRS.

![Update tab](image)

Figure 2-12 "Update" tab

**Note**

To perform an OTA action, the module must have a GSM data connection and data usage must be activated (see Network settings chapter).
2.6 Advanced settings

Manual firmware update

Download the latest firmware to your PC.
Click on the 'Firmware Update' button. On your PC, select the downloaded file containing the current firmware (*.jar file).

All the UI LEDs on the GSM alarm module light up during the firmware update.
Firmware update takes about 2 minutes. The module restarts automatically after the update.

**Note**
Do not disconnect the module from the PC or the power supply during the firmware update!!

OTA firmware update

Send the "fotap" SMS to the GSM alarm module to update the firmware by remote access. The module then downloads the firmware provided online, installs it and restarts. The module sends a confirmation to the sender when the firmware update has been completed successfully.

You can check the firmware version installed on the module by sending the "fwv" SMS. The module replies to the SMS with <module name>firmware version: <version number>

To check whether a more recent firmware version is available on the server, send the "cupd" SMS to the module. The module responds to the SMS with <module name>(no) update found. Online <firmware version> local: <firmware version>.

OTA configuration

The GSM alarm module can also be configured by remote access (Over The Air). Send the "rotac" SMS to the module to start the operation. The module then uploads the current configuration to the server and responds with 'module IMEI nr: <IMEI nr> <module name> configuration file uploaded'.

Then, enter the module's unique IMEI (International Mobile Equipment Identity) number in the configuration program field and click on the 'Download Configuration' button. The module's configuration is then automatically loaded into the program.

Once you have made the necessary changes to the configuration, click on the 'Upload Configuration' button to upload the new configuration to the server (configuration files are kept on the server for five days).

By sending the "cotac" SMS, you inform the module that a new configuration is available for it on the server and that it is to be downloaded to the module. The module then downloads the configuration from the server and restarts. This takes approximately one minute. After successful restarting, the module responds with: '<module name> configuration file updated'
To request the configuration file by email, send the "ccf" SMS followed (without blanks) by a valid email address (ccfname@email.de) to the module. As soon as the module is ready it replies with a confirmation message and sends the configuration file to the specified email address.

**Note**
The PC must be connected to the Internet to enable uploading and downloading of the configuration.

---

**See also**

Settings (Page 16)

---

### 2.6.2 Network

![Network settings](image)

**Figure 2-13 **"Network" tab
Enable data usage

Place a checkmark in this box if a data connection is required.

Note
Enabling data usage can cause additional costs.

Data usage can be enabled by SMS if it has not been enabled in the basic configuration, but is nevertheless needed. To do this send the "APN,<APN name>,<APN username>,<APN password>" SMS to the module.

The module then sets up an Internet connection until the next time it is restarted.

If you wish to preserve the Internet connection for later use, you must configure it permanently (OTA or by PC connection).

Roaming

If roaming is disabled, the SMS blocks SMS and data connections when it is booked into an external GSM network.

Note
Consult your GSM service provider for details of roaming charges.

APN settings

To enable a GPRS connection to be established, you must enter the GSM service provider's APN (Access Point Name) setting.

Before uploading the setting to the module, you can check it by clicking on the 'Test' button.

You can also check the GSM data connection by remote access by sending the SMS "cdc" SMS to the module. The module responds with the status of the connection.

OTA date/time synchronization

The module can check the correct date and time settings via the online function and can synchronize them, if required.

If the "Internet time sync." function is selected, the date and time are synchronized approximately every 24 hours.

To synchronize the date and time manually, send the "time" SMS to the GSM alarm module. The module uses the timestamp of the mobile provider's SMS for synchronization and responds with "<Module Name> set time to <timestamp>".

Note
The module is restarted automatically after date and time synchronization.
2.6 Advanced settings

**App**

Mark the App checkbox to synchronize your events and the I/O status with your mobile phone. To do this, you need the associated app on your mobile phone, which you can download free of charge from the Google Store.

You can also use the app to switch the digital outputs.

**2.6.3 SMTP**

Enter the SMTP (Simple Mail Transfer Protocol) settings for outgoing emails here. SMTP is used to send emails through the outgoing mail server. Fill this tab with entries only if the module is to send emails.

![SMTP settings](image)

Figure 2-14 "SMTP" tab
2.6 Advanced settings

SMTP settings

If you prefer to use your own SMTP server, enter the applicable SMTP settings. Contact your hosting provider for further details.
Make sure you enter a valid sender. This is an email address on an SMTP server.
If it is not correct, some servers might not accept a self-addressed email or the email may get stuck in the spam filter.

Note
The GSM alarm module does not support SSL-secured SMTP servers such as Hotmail or Gmail.

SMTP test

Before uploading the settings to the module, you can check the SMTP settings by entering a valid email address and then clicking on the 'Test' button.

Note
A GSM data connection is needed to check the SMTP server.
2.6.4 Log

The module can create log files (referred to below simply as "logs") containing up to 720 events. The module sends a warning to the active users when a log is 90 % full. When the log is 100 % full, the module sends another warning and logging is stopped until the log is erased or downloaded. A full log can also be sent to a selected email address and automatically erased. The module continues logging automatically after the log file has been sent. Every log can be viewed or erased while connected to the PC with a data cable.

![Log tab](image)

Figure 2-15 "Log" tab
Module

2.6 Advanced settings

Event log

The GSM alarm module logs the following events when this log is enabled:

- Threshold limits reached at the analog inputs (AI)
- Rising and falling flank at the digital inputs (DI)
- Received messages
- Messages sent
- Data transmissions
- OTA updates

While there is a connection to the PC by means of a data cable, you can view this log by clicking on the 'View event log' button.

You can erase the log by clicking on the "Erase event log" button.

To view the log by remote access, send the "evlog" SMS followed (without blanks) by a valid email address (evlogname@email.de) to the module. As soon as the module is ready it replies with a confirmation message and sends the event log to the specified email address.

Send the "evclr" SMS to the module to erase the log by remote access. The module responds with a confirmation message.

Note

The event log fills up very quickly if usage is intensive. You are urgently advised to select the auto send function when this log is enabled.

AI log

You can select the following intervals for the AI log:

- 10 min. (5 days)
- 15 min. (7.5 days)
- 20 min. (15 days)
- 30 min. (15 days)
- 45 min. (22.5 days)
- 60 min. (30 days)

The maximum log duration given in parentheses is based on logging of one (1) AI.

While there is a connection to the PC by means of a data cable, you can view the log by clicking on the 'View AI log' button. You can erase the log by clicking on the "Erase AI log" button.

To view the log by remote access, send the "ailog" SMS followed (without blanks) by a valid email address (evlogname@email.de) to the module. As soon as the module is ready it replies with a confirmation message and sends the AI log to the specified email address.

To erase the log by remote access, send the "aiclr" SMS to the module. The module responds with a confirmation message.
I/O operating hours counter

The I/O operating hours counter registers the total time during which the respective I/O is in the HIGH state. You can activate the counter for every digital input or output. The value can then be appended to the periodical message and "rAll" (see chapter "Overview of SMS commands" (Page 49)).

The counters have a maximum value of 17,500 hours.

Note
When configuring the counters, make sure that all of the module's IOs are in the LO state, as otherwise time recording errors may arise.

Querying the operating hours counter of a digital output

To query the counter of a single digital output, send the "timedon" SMS to the module, where n is the number of the output.

The module responds with "Don ON for x,xx hours".

Send the "timedo0" SMS to the module to query the counters of all digital outputs. The module responds with "Do1 was ON for x,xx hours, Do2 was ON for x,xx hours ... Do4 was ON for x,xx hours".

Resetting the operating hours counter of a digital output

To reset the counter of a single digital output, send the "clrtimedon" SMS to the module, where n is the number of the output.

The module responds with "erasing counter Don".

You can reset the counters of all digital outputs by sending the "clrtimed00" SMS to the module. The module responds with "erasing counter Do1, erasing counter Do2... erasing counter Do4".

Querying the operating hours counter of a digital input

To query the counter of a single digital input, send the "timedin" SMS to the module, where n is the number of the input.

The module responds with "Din ON for x,xx hours".

You can query the counters of all digital inputs by sending the "timedi0" SMS to the module. The module responds with "Di1 was ON for x,xx hours, Di2 was ON for x,xx hours ... Di4 was ON for x,xx hours".
2.6 Advanced settings

Resetting the operating hours counter of a digital input

To reset the counter of a single digital input, send the "clrtimedin" SMS to the module, where \( n \) is the number of the input.

The module responds with "erasing counter Din".

You can reset the counters of all digital inputs by sending the "clrtimed10" SMS to the module.

The module responds with "erasing counter Di1, erasing counter Di2, ... erasing counter Di4".

Monitoring inputs during restarting

The module monitors the inputs during restarting. The status of the inputs are stored before restarting and are then compared against the current status. Every change detected is then sent to the defined users.

2.6.5 Service option for the SIM

Figure 2-16 "SIM" tab
Changing the SIM PIN code

If you would like to change your SIM PIN code, enter your current PIN in the "Insert PIN code" box and then, in the "Insert new PIN code" box, enter the PIN to which you would like to change from the previous PIN code.
You change the PIN code by clicking on the "Change SIM PIN code" button.

SIM PUK code

If an incorrect PIN code is entered three times in a row, the SIM card is blocked and the PUK code must be entered. The diagnostics page shows this in the error messages. Then, enter the correct PUK code and the new PIN code and click on "Send SIM PUK code".

2.6.6 COM port

The "COM port" tab shows the COM interface at which a GSM alarm module has been found.

Figure 2-17 "COM port" tab
3.1 Troubleshooting

Cannot connect to the PC, no module found

- Disconnect the module from the power supply/PC, wait for 10 seconds and then reconnect the power supply/PC.
- Reboot the PC after installation of the configuration software.
- In your Device Manager for the ports (COM and LPT), check whether Silicon Labs CP210x drivers are installed and their version is higher than or equal to 6.3.0.0. Try a different USB port. Remove all hubs or extension leads.

No connection to GSM network

- Make sure that the SIM card is inserted properly, the correct PIN code has been entered, and the information has been loaded into the module.
- Check the 'Diagnostics' tab for error messages.
- Check the signal strength.

The module does not send any messages

- Are the I/Os used set properly?
- Make sure the SIM card is inserted properly.
- When using a prepaid card, does it have enough credit?
- Check your email Spam/Unwanted box.
3.1 Troubleshooting

The module does not start

- Disconnect the module from the power supply, wait for 5 minutes and then reconnect the power supply.
- Place a jumper on the upper pins of J2 (left side of the SIM card) and repeat the above step. The module starts with the factory defaults. The configuration might have to be restored.
### 3.2 Overview of SMS commands

<table>
<thead>
<tr>
<th>SMS command</th>
<th>Description</th>
<th>More information</th>
</tr>
</thead>
<tbody>
<tr>
<td>csq</td>
<td>Queries signal strength + quality of the connection</td>
<td>Signal strength chapter (Page 20)</td>
</tr>
<tr>
<td>status</td>
<td>Queries the diagnostics page</td>
<td>Diagnostics chapter (Page 20)</td>
</tr>
<tr>
<td>r</td>
<td>Before commands involving read access (&quot;read&quot;)</td>
<td>I/O configuration and messaging chapter (Page 20)</td>
</tr>
<tr>
<td>w</td>
<td>Before commands involving write access (&quot;write&quot;)</td>
<td>I/O configuration and messaging chapter (Page 20)</td>
</tr>
<tr>
<td>rmui</td>
<td>Read out status of all universal inputs</td>
<td>Universal inputs chapter (Page 21)</td>
</tr>
<tr>
<td>wdonx</td>
<td>Set one single digital output (DO), where &quot;n&quot; is the number of the output and &quot;x&quot; is its status. 0 = Off, 1 = On, 2 = no change and 3 = change over</td>
<td>Digital outputs chapter (Page 28)</td>
</tr>
<tr>
<td>wmdoxxxx</td>
<td>Simultaneously set all 4 digital outputs (DOs)</td>
<td>Digital outputs chapter (Page 28)</td>
</tr>
<tr>
<td>wdonTxxxx</td>
<td>Pulse function The DO output is switched for xxxx</td>
<td>Digital outputs chapter (Page 28)</td>
</tr>
<tr>
<td>rdon</td>
<td>The status of a digital output is queried, where &quot;n&quot; is the digital output's number.</td>
<td>Digital outputs chapter (Page 28)</td>
</tr>
<tr>
<td>ruin</td>
<td>The status of a universal input is queried, where &quot;n&quot; is the digital input's number.</td>
<td>Analog inputs (Page 22) and Digital inputs (Page 25) chapters</td>
</tr>
<tr>
<td>rall</td>
<td>Queries status of all I/Os.</td>
<td>Reading all I/O statuses chapter (Page 33)</td>
</tr>
<tr>
<td>rall&lt;email&gt;</td>
<td>The status of all I/Os are queried and sent to the specified email address</td>
<td>Reading all I/O statuses chapter (Page 33)</td>
</tr>
<tr>
<td>fotap</td>
<td>The latest firmware is downloaded from the server and installed on the module</td>
<td>Update chapter (Page 35)</td>
</tr>
<tr>
<td>fwv</td>
<td>Check to determine which firmware is located on the module</td>
<td>Update chapter (Page 35)</td>
</tr>
<tr>
<td>cupd</td>
<td>Check to determine whether a more recent version of the firmware is available on the server.</td>
<td>Update chapter (Page 35)</td>
</tr>
<tr>
<td>rotac</td>
<td>The current configuration is uploaded to the server from the module.</td>
<td>Update chapter (Page 35)</td>
</tr>
<tr>
<td>cotac</td>
<td>The configuration on the server is downloaded to the module.</td>
<td>Update chapter (Page 35)</td>
</tr>
<tr>
<td>ccf&lt;email&gt;</td>
<td>The module sends its configuration to the specified email address</td>
<td>Update chapter (Page 35)</td>
</tr>
<tr>
<td>APN,&lt;APN name&gt;,&lt;APN username&gt;,&lt;APN password&gt;</td>
<td>Establishes an Internet connection until the next restart</td>
<td>Network chapter (Page 37)</td>
</tr>
<tr>
<td>time</td>
<td>Date and time are synchronized with the Internet.</td>
<td>Network chapter (Page 37)</td>
</tr>
</tbody>
</table>
### 3.3 Diagnostics commands

<table>
<thead>
<tr>
<th>SMS command</th>
<th>Description</th>
<th>More information</th>
</tr>
</thead>
<tbody>
<tr>
<td>evlog&lt;email&gt;</td>
<td>The event log is sent to the specified email address.</td>
<td>Log chapter (Page 41)</td>
</tr>
<tr>
<td>evclr</td>
<td>The event log is erased.</td>
<td>Log chapter (Page 41)</td>
</tr>
<tr>
<td>ailog&lt;email&gt;</td>
<td>The AI log is sent to the specified email address.</td>
<td>Log chapter (Page 41)</td>
</tr>
<tr>
<td>aclr</td>
<td>The AI log is erased.</td>
<td>Log chapter (Page 41)</td>
</tr>
<tr>
<td>timedon</td>
<td>The operating hours counter of the digital output n is queried.</td>
<td>Log chapter (Page 41)</td>
</tr>
<tr>
<td>timedo()</td>
<td>The operating hours counters of all digital outputs are queried.</td>
<td>Log chapter (Page 41)</td>
</tr>
<tr>
<td>clrtimedon</td>
<td>The operating hours counter of the digital output n is reset.</td>
<td>Log chapter (Page 41)</td>
</tr>
<tr>
<td>clrtimedo()</td>
<td>The operating hours counters of all digital outputs are reset.</td>
<td>Log chapter (Page 41)</td>
</tr>
<tr>
<td>timedin</td>
<td>The operating hours counter of the digital input n is queried.</td>
<td>Log chapter (Page 41)</td>
</tr>
<tr>
<td>timedi()</td>
<td>The operating hours counters of all digital inputs are queried.</td>
<td>Log chapter (Page 41)</td>
</tr>
<tr>
<td>clrtimedin</td>
<td>The operating hours counter of the digital input n is reset.</td>
<td>Log chapter (Page 41)</td>
</tr>
<tr>
<td>clrtimedo()</td>
<td>The operating hours counters of all digital outputs are reset.</td>
<td>Log chapter (Page 41)</td>
</tr>
<tr>
<td>wreset</td>
<td>The device is reset.</td>
<td></td>
</tr>
<tr>
<td>rmdo</td>
<td>Several (all) digital outputs are read out.</td>
<td></td>
</tr>
<tr>
<td>ccf&lt;email&gt;</td>
<td>The configuration file is sent to the email address.</td>
<td></td>
</tr>
<tr>
<td>cdc</td>
<td>The data connection is checked.</td>
<td></td>
</tr>
<tr>
<td>meson</td>
<td>Sending of messages is activated.</td>
<td></td>
</tr>
<tr>
<td>mesoff</td>
<td>Sending of messages is deactivated.</td>
<td></td>
</tr>
<tr>
<td>help</td>
<td>A list of all SMS commands is queried.</td>
<td></td>
</tr>
<tr>
<td>imei</td>
<td>The IMEI number is queried.</td>
<td></td>
</tr>
<tr>
<td>startapp</td>
<td>App use is configured.</td>
<td></td>
</tr>
<tr>
<td>PORTAL&lt;ip&gt;:&lt;port&gt;</td>
<td>Portal use is configured.</td>
<td></td>
</tr>
<tr>
<td>DEBUG&lt;ip&gt;:&lt;port&gt;</td>
<td>The remote diagnostics function is configured.</td>
<td></td>
</tr>
</tbody>
</table>

### 3.3 Diagnostics commands

<table>
<thead>
<tr>
<th>HELLO</th>
<th>alive call, module answer with &quot;world&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>RST</td>
<td>Module Reset</td>
</tr>
<tr>
<td>MPWR</td>
<td>Module voltage (Volt)</td>
</tr>
<tr>
<td>Uln</td>
<td>Query UI number n, &quot;0&quot; for all</td>
</tr>
<tr>
<td>Donx</td>
<td>Set DO number n to status x, &quot;0&quot; for all</td>
</tr>
</tbody>
</table>
### 3.4 Signal strength

<table>
<thead>
<tr>
<th>% (percentage)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>Connection too poor</td>
</tr>
<tr>
<td>3.2</td>
<td>Connection too poor</td>
</tr>
<tr>
<td>6.5</td>
<td>Connection too poor</td>
</tr>
<tr>
<td>9.7</td>
<td>Connection too poor</td>
</tr>
<tr>
<td>12.9</td>
<td>Connection too poor</td>
</tr>
<tr>
<td>16.1</td>
<td>Connection too poor</td>
</tr>
<tr>
<td>19.4</td>
<td>Connection too poor</td>
</tr>
<tr>
<td>22.6</td>
<td>Connection too poor</td>
</tr>
<tr>
<td>25.8</td>
<td>Connection too poor</td>
</tr>
<tr>
<td>29.0</td>
<td>Connection too poor</td>
</tr>
<tr>
<td>32.3</td>
<td>Connection too poor</td>
</tr>
<tr>
<td>35.5</td>
<td>Connection too poor</td>
</tr>
<tr>
<td>38.7</td>
<td>Connection too poor</td>
</tr>
<tr>
<td>41.9</td>
<td>Connection too poor</td>
</tr>
<tr>
<td>45.2</td>
<td>Connection too poor</td>
</tr>
<tr>
<td>48.2</td>
<td>Poor reception</td>
</tr>
<tr>
<td>51.6</td>
<td>Poor reception</td>
</tr>
<tr>
<td>54.8</td>
<td>Poor reception</td>
</tr>
<tr>
<td>58.1</td>
<td>Poor reception</td>
</tr>
<tr>
<td>61.3</td>
<td>Poor reception</td>
</tr>
<tr>
<td>64.5</td>
<td>Adequate reception</td>
</tr>
<tr>
<td>67.7</td>
<td>Adequate reception</td>
</tr>
<tr>
<td>71.0</td>
<td>Adequate reception</td>
</tr>
<tr>
<td>74.2</td>
<td>Adequate reception</td>
</tr>
<tr>
<td>77.4</td>
<td>Adequate reception</td>
</tr>
<tr>
<td>80.6</td>
<td>Good reception</td>
</tr>
<tr>
<td>83.9</td>
<td>Good reception</td>
</tr>
<tr>
<td>87.1</td>
<td>Good reception</td>
</tr>
<tr>
<td>90.3</td>
<td>Good reception</td>
</tr>
<tr>
<td>93.5</td>
<td>Good reception</td>
</tr>
</tbody>
</table>
3.5 Technical specifications

Ordering data

<table>
<thead>
<tr>
<th>Type</th>
<th>GSM alarm module</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order number</td>
<td>5TT7210-0</td>
</tr>
<tr>
<td>Weight</td>
<td>275 g</td>
</tr>
</tbody>
</table>

Input/output data

| 8 multifunctional inputs (analog/digital) | 0 ... 10 V/24 V DC (4 ... 30 V DC) |
| Resolution/accuracy (0 ... 10 V)          | 20 mV/± (20 mV + 0.3 %*)          |
| Input resistance (0 ... 10 V)             | 46 kOhm                         |
| Input current (dig. inputs)              | @10 V; 0.3 mA/@24 V: 0.8 mA/@30 V: 1.0 mA |
| Ul minimum pulse duration                | 800 ms (not during transfer)    |
| Threshold, dig. inputs                   | Low < 2 V/High > 4 V          |
| 4 relay outputs                          | 4 x CO contact, 250 V ~        |
| Continuous/inrush current (ohmic load)   | 5 A/5 A                        |
| Max. switching power                     | 1200 VA at 240 V AC, 5 A       |
| Useful life@Ohmic load                   | Electrical: at max. load: > 1.5 x 10⁶ switching cycles; mechanical: 15 x 10⁶ switching cycles |
| Max. switching frequency                 | 6 rpm at continuous current, 1200 rpm at low load |
| Contact material/test voltage            | AgNi/4 kV                      |

* of the measured value

GSM data

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>850 / 900 / 1800 / 1900</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>- 108 dBm @ 850/900 MHz/- 107 dBM @ 1800/1900 MHz (typical)</td>
</tr>
<tr>
<td>Transmit power</td>
<td>Class 4 (2 W @ 850/900 MHz), Class 1 (1 W @ 1800/1900 MHz)</td>
</tr>
<tr>
<td>Antenna</td>
<td>50 Ohm impedance, SMA connector</td>
</tr>
</tbody>
</table>
Further information
3.5 Technical specifications

### General data

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power supply</strong></td>
<td>10 ... 30 V DC</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>220 mA @ 30 V DC</td>
</tr>
<tr>
<td></td>
<td>275 mA @ 24 V DC</td>
</tr>
<tr>
<td></td>
<td>550 mA @ 12 V DC</td>
</tr>
<tr>
<td></td>
<td>660 mA @ 10 V DC</td>
</tr>
<tr>
<td><strong>Reference out</strong></td>
<td>4.7 V ± 10 %/20 mA</td>
</tr>
<tr>
<td><strong>Backup power</strong></td>
<td>Internal maintenance-free SuperCap capacitor</td>
</tr>
<tr>
<td><strong>Operating/storage temperature</strong></td>
<td>- 20°C ... + 50 °C/- 20 °C ... + 70 °C</td>
</tr>
<tr>
<td><strong>Max. relative humidity</strong></td>
<td>80 %, non-condensing</td>
</tr>
<tr>
<td><strong>DIN VDE specifications</strong></td>
<td>Low Voltage Directive (LVD) 2006/95/EC, in compliance with EN 50178</td>
</tr>
<tr>
<td><strong>Electromagnetic characteristics</strong></td>
<td>Directive 2004/108/EC, in compliance with EN 55011 and EN 61326-1</td>
</tr>
<tr>
<td><strong>Frequency spectrum</strong></td>
<td>R&amp;TTE1999/5/EC in compliance with ETSIEN 301-511V9.0.2</td>
</tr>
<tr>
<td><strong>Conductor cross-section/stripped length</strong></td>
<td>0.2 to 2.5 mm² screw terminal connection/6 mm</td>
</tr>
<tr>
<td><strong>Dimensions LxWxH (TS 35/direct)</strong></td>
<td>88 x 95 x 60/58 mm (without antenna)</td>
</tr>
<tr>
<td><strong>Material/combustion class</strong></td>
<td>Enclosure: Noryl. Terminals: polyamide 6.6 V0/UL94-V0</td>
</tr>
<tr>
<td><strong>Safety class (DIN 40050)</strong></td>
<td>IP20</td>
</tr>
</tbody>
</table>

### Dimensional drawings
GSM alarm module

System Manual, 06/2014, 2541304131-01
A.1 Electrostatic sensitive devices (ESD)

ESD components are destroyed by voltage and energy far below the limits of human perception. Voltages of this kind occur as soon as a device or an assembly is touched by a person who is not electrostatically discharged. ESD components which have been subject to such voltage are usually not recognized immediately as being defective, because the malfunction does not occur until after a longer period of operation.

CAUTION

Electrostatic sensitive devices

Electronic modules contain components that can be destroyed by electrostatic discharge. These modules can be easily destroyed or damaged by improper handling.

- You must discharge your body electrostatically immediately before touching an electronic component. To do this, touch a conductive, grounded object, e.g., a bare metal part of a switch cabinet or the water pipe.
- Always hold the component by the plastic enclosure.
- Electronic modules should not be brought into contact with electrically insulating materials such as plastic film, plastic parts, insulating table supports or clothing made of synthetic fibers.
- Always place electrostatic sensitive devices on conductive bases.
- Always store and transport electronic modules or components in ESD-safe conductive packaging, e.g. metallized plastic or metal containers. Leave the component in its packaging until installation.

NOTICE

Storage and transport

If you have to store or transport the component in non-conductive packaging, you must first pack the component in ESD-safe, conductive material, e.g., conductive foam rubber, ESD bag.

The diagrams below illustrate the required ESD protective measures for electrostatic sensitive devices.
A.1 Electrostatic sensitive devices (ESD)

Protective measures

a  Conductive floor
b  ESD table
c  ESD footwear
d  ESD smock
e  ESD bracelet
f  Cubicle ground connection
# List of abbreviations

## B.1 Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>AC</td>
<td>Alternating Current</td>
</tr>
<tr>
<td>AI</td>
<td>Analog input</td>
</tr>
<tr>
<td>APN</td>
<td>Access Point Name</td>
</tr>
<tr>
<td>COM</td>
<td>Component Object Model</td>
</tr>
<tr>
<td>DI</td>
<td>Digital input</td>
</tr>
<tr>
<td>DC</td>
<td>Direct Current</td>
</tr>
<tr>
<td>DO</td>
<td>Digital output</td>
</tr>
<tr>
<td>I/O</td>
<td>Input/Output</td>
</tr>
<tr>
<td>ESD</td>
<td>Electronic Software Distribution</td>
</tr>
<tr>
<td>GPRS</td>
<td>General Packet Radio Service</td>
</tr>
<tr>
<td>GSM</td>
<td>Global System for Mobile Communication</td>
</tr>
<tr>
<td>IMEI</td>
<td>International Mobile Equipment Identity</td>
</tr>
<tr>
<td>OTA</td>
<td>Over The Air</td>
</tr>
<tr>
<td>PIN</td>
<td>Personal Identification Number</td>
</tr>
<tr>
<td>PUK</td>
<td>Personal Unblocking Key: number for unblocking SIM cards</td>
</tr>
<tr>
<td>SMTP</td>
<td>Simple Mail Transfer Protocol</td>
</tr>
<tr>
<td>UI</td>
<td>Universal input</td>
</tr>
<tr>
<td>V</td>
<td>Volt</td>
</tr>
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Glossary
Backup Power

Firmware version

Hosting provider

I/O configuration

IMEI

Interface version

International Mobile Equipment Identity

Log files

Reference out

Reset

Rising/falling flank

Roaming

Scale

SMTP settings

Threshold limit

User interface

V+

V+ is a source with 20 mA that is designed for signaling. This connection is not suitable as a power supply.
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