Operating Instructions SMS Relay CMS-10 (V02.16)

Content

1. SMS Relay Operating Instructions

1.1 Short description of the CMS Comat Message System SMS Relay

The Comat CMS-10 SMS relay is a remote control and messaging system. It has six inputs which can be used as analogue or digital inputs and four outputs with change over contacts. All the inputs can be monitored by SMS (Short Message System). At the same time, the outputs are controlled and activated with SMS messages via a mobile telephone network* (SIM card determines the provider). The device's own phone book saves up to 50 mobile phone numbers and names of message receivers. Each status change on one of the inputs sends a pre-defined message by SMS to the assigned max. 5 different receivers. The receivers are processed cyclically one by one, according to the selected sequence. The outputs can be switched ON and OFF with pre-defined messages by SMS. In order to obtain an overview of the present status of all in- and outputs and with that in generally of the condition of the entire installation, the input and output status can also be questioned and retrieved by SMS. The relay outputs can be linked to a „timer function" and can be switched time dependant for a preset time. With the password option, unauthorized remote access to the SMS Relay by a third party is avoided. The SMS relay sends out a message at regular intervals as for example in case of a power loss, whereby the SMS relay is able to send a last warning message before it shuts down. If the power is restored, the CMS-10 will announce its operational status again with a new message. All input and output status can be attached to each message. All these options can of course be made active or inactive as required. The programming of the SMS Relay is carried out with the *FAST SMS Set™* configuration software provided together with the device. All the settings can be configured very easy and without special knowledge of any programming language.With the implemented remote maintenance tool there is a possibility to maintain the SMS Relay and to modify the configuration over a GSM connection (requirements: GSM modem, CMS-10F or CMS-10ADF, „FAST SMS Set™" from version 3.0 and for CWS portal from version 4.0).

***GSM network**: 850MHz, 900MHz, 1800MHz, 1900MHz (quad-band GSM module inside)

1.2 Safety instructions

WARNING   *The electrical installation of the SMS relay must be carried out by a professional person*

Please read the complete operating instructions before installation and commissioning!

Injuries and or damages cannot be excluded if this warnings are neglected

WARNING   *This device is not suitable for monitoring sensitive installations or time critical processes. GSM network failure or power interruptions cannot guarantee a secure monitoring.*

WARNING   *This device shall not be used in explosive endangered environment or close to medical appliances*

REMARK   *The individual responsibility for protecting the SIM card against abuse lies solely with the card owner.*

REMARK   *Comat AG does not accept any liability for possible damage to persons, buildings and/or machines, which occur due to incorrect use or from not following the instructions or abusing the device. Comat AG cannot accept any responsibility for the application and use of the SMS relay. In particular Comat AG cannot guarantee the connection security with the mobile network.*

1.3   Application examples

Heating control
Pump control
Irrigation installations
Alarm transmission
Level monitoring
Temperature monitoring
Pressure monitoring
Valve control
Voltage monitoring
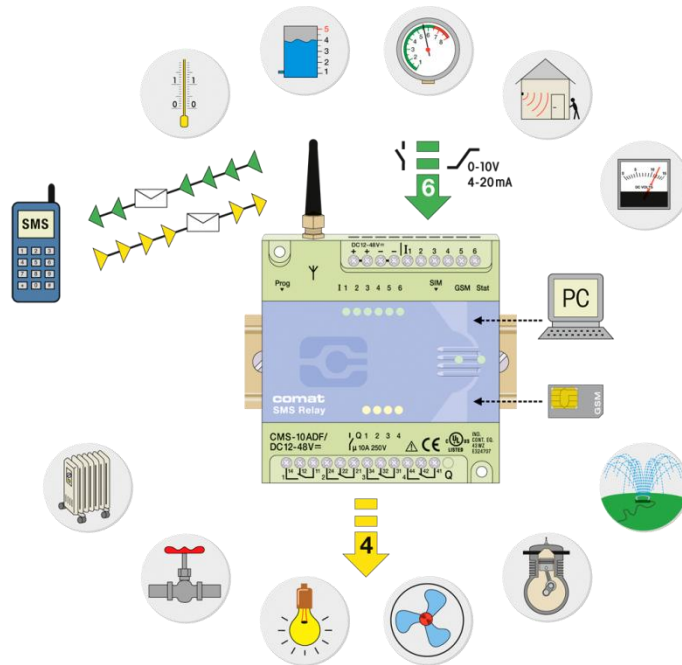
1.4   Android App

The Android App for Smartphones and Tablets make sure a simple monitoring and operation of your plant. You can download it in Android Play Store for free. Please consult the operation instructions "SMS Relay App for Android Smartphones" for more information.

REMARK   *The Android App is released for simple communication to your SMS Relay. In background charged messages are sent.*

2.   Short instructions

1. The SMS Relay must be separated from the power supply.

2. Place the SIM card into the card holder

3. Connect the RS232 interface of your PC or Notebook with the programming interface of the SMS Relay. Use the programming cable.

Instruction for the USB converter

In case that there is no RS232 interface connection on the PC or Notebook, an RS232 interface connection can be generated with a USB converter (e.g. CMS-USB).
For that purpose the USB converter is plugged into a free USB-Port on the PC/Notebook. For perfect functioning of the interface converter, the driver software has to be loaded from the included CD-ROM beforehand. After successful installation, the RS232 programming cable can be connected to the USB converter and the SMS Relay.
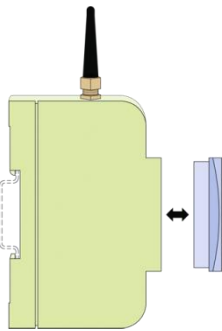
Remove cover
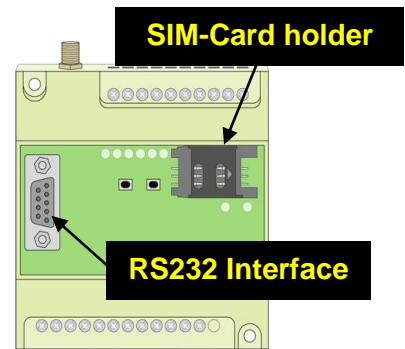
SIM-Card, RS232-Interface

PC / Notebook mit serieller Schnittstelle
Verbindung mit CMS-RS232

PC / Notebook ohne serielle Schnittstelle
Verbindung mit CMS-USB und CMS-RS232
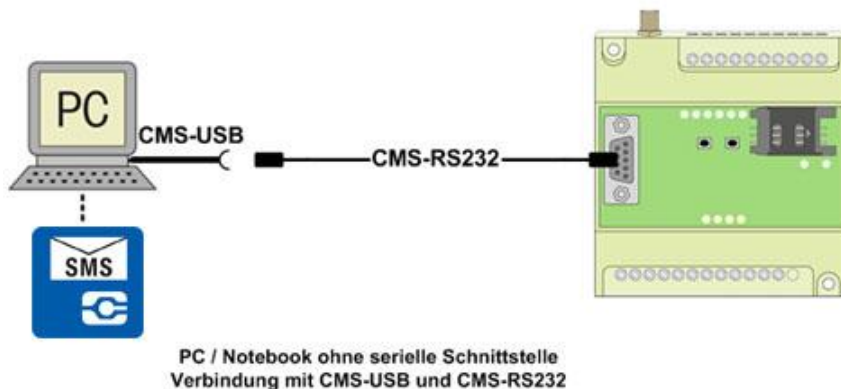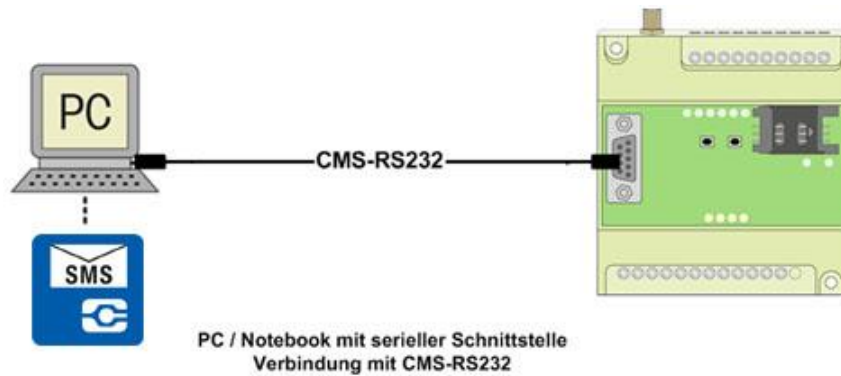
4. Connect the power supply to the SMS Relay. Obey connection diagram

5. As soon as the SMS Relay is ready (after approx. 100 sec), Status-LED & GSM-LED are flashing regularly in a cycle of 1 second. Start the programming software *FAST SMS Set™*

6. Select your prepared file or create a new file with your configuration. Please set the correct PIN code (Very important to set correct PIN code, otherwise the SIM card may block).

REMARK *Enter correct PIN number of SIM card. This is absolute necessary for the first commissioning of the installation! The SIM-Card maybe locked without correct PIN-Code.*

7. Select a free COM port (Menu Option – Communication Settings)

8. In menu "Option – Write" download the file to the SMS Relay (→ download)

9. Wait until the SMS Relay is ready again (after approx. 100 sec)

10. Set the time and the date (Menu Option – Set date and time)

3. Installation details / scope of supply

3.1 Antenna

The SMS Relay comes together with the CMS-ANT small device antenna. The location of installation must be taken into account and the right antenna has to be selected to ensure reliable connection with the network.

REMARK *The CMS-ANT small device antenna is not suitable for installation inside a control panel (shielding).*

For that purpose, the CMS-ANT-MAG/2.5M antenna with magnetic feet or the CMS-ANT-SPEZ/5M external signal antenna provide a much better result. Please take this into account when ordering. The signal strength may be checked beforehand with a cell phone. Our product specialists will be glad to answer any questions or to give further advice.

REMARK *Extension cables for the use together with the antennas CMS-ANT-MAG/2.5M and CMS-ANT-SPEZ/5M are available optionally. Please make sure that the total length of antenna cable and extension doesn't exceed 25 m. The number of connections must be reduced to a minimum.*
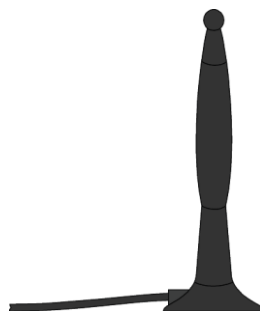
CMS-ANT   **CMS-ANT-MAG/2.5M**   **CMS-ANT-SPEZ/5M**
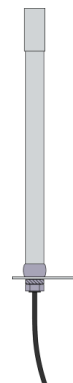
3.2   Wiring

When connecting to the 230VAC mains it is absolutely necessary to ensure that the power supply and the inputs power supply originate from the same phase i.e. a voltage above 240VAC must be avoided on the device. The SMS relay is isolation protected and does not need grounding. The SMS relay must be connected according to the following schematic:

WARNING   *The electrical installation of the SMS relay must be carried out by a professional person.*

Please read the operating instructions carefully before setup!

Injuries and or damages cannot be excluded if this warnings are neglected
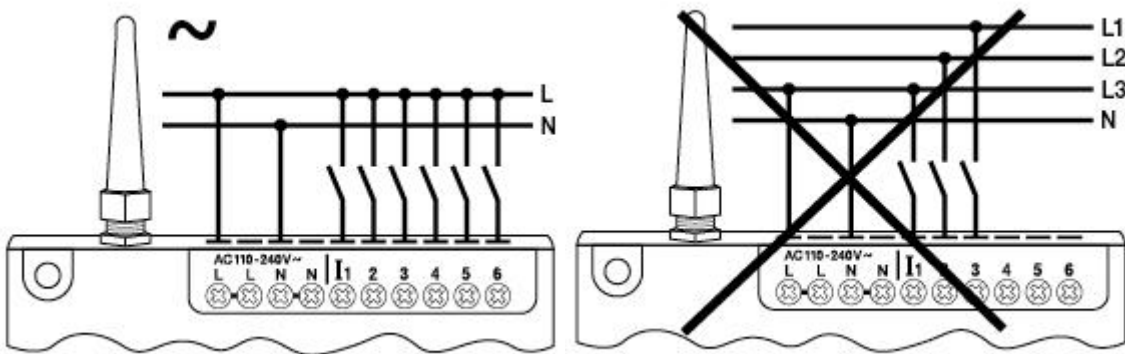
Connection CMS-10F/AC110-240V
Digital inputs

WARNING   *When connecting to the 230V AC supply, please absolutely obey that the power supply and there inputs are from the same phase.*
Voltages above 230V AC on the device are not allowed.
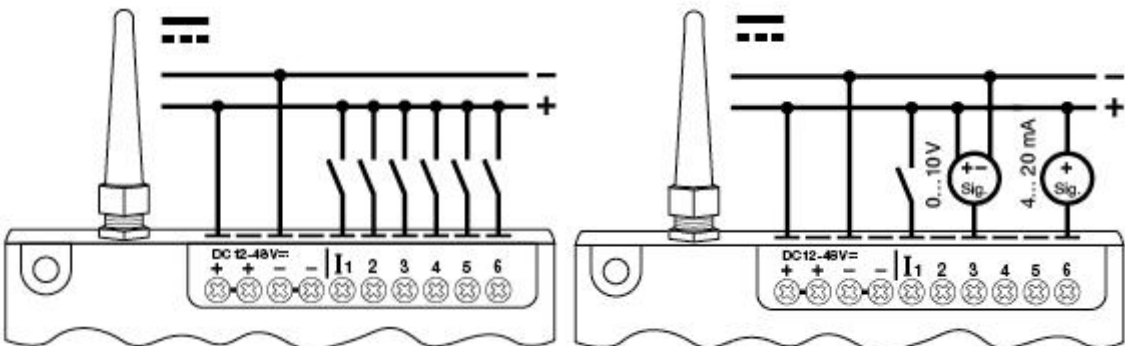
Connection CMS-10F/DC12-48V
Digital inputs

Connection CMS-10A(C)DF/DC12-48V
Analogue or digital inputs as selected
(configuration with programming software)
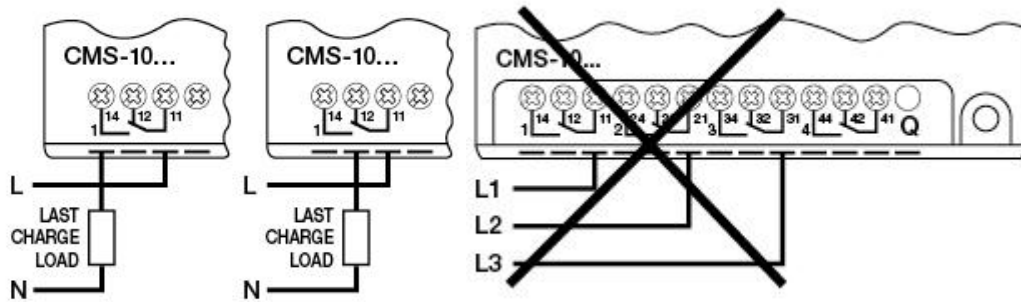
Connection CMS-10F/AC110-240V outputs

WARNING   *When connecting to the 230V AC supply, please absolutely obey that the power supply and there Inputs are from the same phase.*
Voltages above 230V AC on the device are not allowed

WARNING   *Installation and disconnection of the device only if de-energized.*

WARNING   *All applicable regulations and standards have to be obeyed for the installation of the device. The installation must be executed by a professional.*

3.3 Test and Reset Buttons

TEST Button (right button from front view)
If the TEST button is pushed for more than 5 seconds, a test message will be sent to the defined receivers of status information.

RESET Button (left button from front view)
All relays outputs are reset to the home position if the button is pushed for minimum 15 secs.. That means for the first change over contact: 12-14 → open / 12-13 → closed.
The characteristic of all change over contacts is the same.
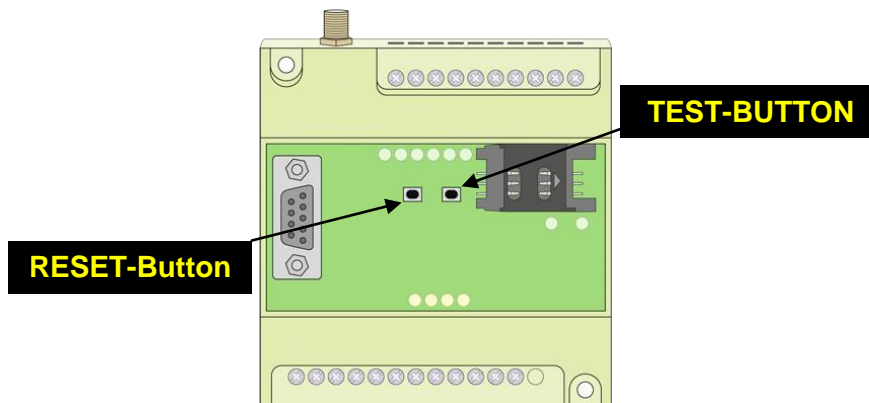
Test and Reset Buttons

4. Software

4.1 System requirements

The „*FAST SMS Set*"™ configuration software runs on the current Microsoft® operating systems. The following minimum system requirements must be met in order that the software functions properly:

Operating system
> Windows®2000
> Windows®XP
> Windows®Vista
> Windows®7
> Windows®8 (Java 32-bit only)

CPU computer capacity
> Pentium II / 166MHz
> *Recommended: Pentium III / 800MHz*

RAM
> 256MB (Windows®XP)

Hard disc storage capacity available
> 40MB

Programming interface
> RS232
> USB (with USB-RS232 interface converter e.g. CMS-USB)

Screen resolution
> Minimal: 1024 x 768 pixels

4.2 Software installation

Once the CD-ROM is inserted into the CD drive, the installation menu starts automatically. If this is not the case, then the CD-ROM can be started by double clicking „Start" in the Windows®Explorer. In case that there should be no CD-ROM available, the software is available for free download from the website of COMAT AG. Please visit www.comat.ch.

The installation menu is available in different languages. Please choose the required language. Please follow the set-up programming instructions during installation.

The SMS relay starts up automatically once power has been supplied. If the signal is strong enough, the device will register itself in the GSM network (according to the SIM card settings, depending on provider). Both LED will display the actual status of the device as well as the network status (→ chap.5).

5. Run Mode

5.1 LED status display

The SMS relay has two LEDs, the GSM LED und the status LED. Both LEDs can be seen from the outside and are located below the cover. The following statuses are indicated:

5.1.1 GSM-LED

- Flashing regularly (every second)	Module is not registered in the GSM network.
- Short flashing (approx. every three seconds)	Module is registered and ready for data communication
- Irregular flashing	Data are transmitted (SMS)

5.1.2 Status-LED

- Dark LED	Device does not run
- Intermittent flashing (irregular)	Device starts up
- Short flashing (like GSM LED, approx. every 3s) 1x	Device runs, everything OK
- Short flashing (like GSM LED, approx. every 3s) 2x	No credit left
- Short flashing (like GSM LED, approx. every 3s) 3x	Clock not adjusted
- Flashing regularly (every second) 1x	Module in initial state
- flashing regularly (every second) 2x	Configuration error / SIM blocked
- Flashing regularly (every second) 3x	Communication error

Further information's and solutions please refer to "5.3 Diagnose"

5.1.3 Inputs / outputs

Each input and output status is displayed with individual LED's.
These LED are designated as follows:

Inputs   I1, I2, I3, I4, I5, I6   (LED lighting = Input is switched on)
Outputs   Q1, Q2, Q3, Q4   (LED lighting = Output is switched on)
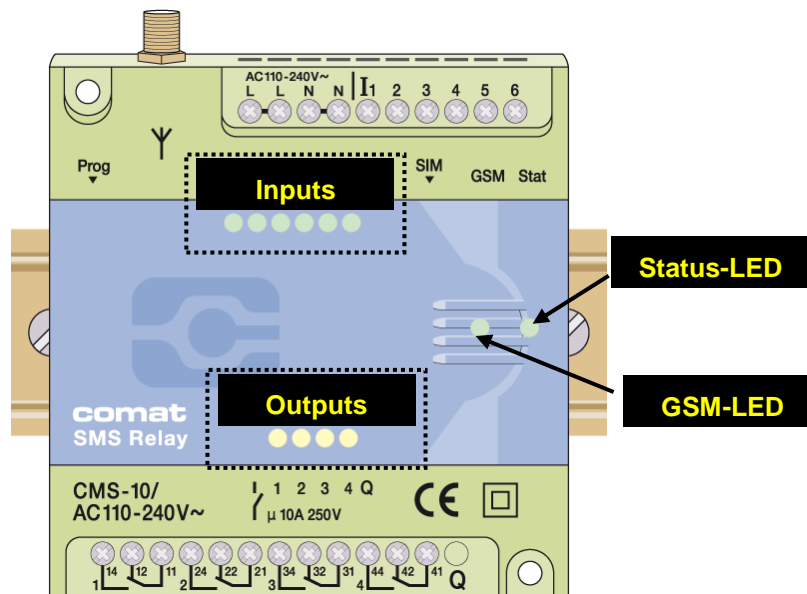
5.2 Power failure

Short power supply failures (t < 1s) are tolerated and do not change the module status.

Longer power failures (t > 1s) are registered and can trigger a last SMS alarm message (depending on the set mode) before the device shuts down. The device restarts automatically after the power supply is restored. The registration of the SMS Relay in the GSM network is restored and the same status of the outputs is initiated as before the power failure (Memory function).

REMARK   *The monostable relays are in their home position during power off. E.g. contact 11-14 → open / contact 11-12 closed.*
After power restore, the contacts are in the same position as before the power failure. (Memory function.)

5.3 Diagnose

The SMS Relay together with the programming software „FAST SMS Set™" allows the display of the actual signal strength. For that function, the SMS Relay has to be connected to a PC / Notebook with the programming cable. To get to the diagnose function, select *Option – Diagnose* from the menu in the programming software. In addition to the signal quality, the diagnose will display some more information like version numbers, error codes and service provider.

Diagnose window

Error codes and signification:

Error	Signification	Reason	Remedies
1	No credit	Pre-paid card empty	Load SIM card
2	Time not set	No time set	Configuration -> Set time
3	no configuration found	no configuration loaded	Load file
4	Configuration error	Incomplete file safe	Repeat file loading
5	Communication error	Relay connection to PC is interrupted for a short moment during data transfer. SMS relay function is however normally fully maintained. Status LED is flushing 2*/second	Repeat file loading
1001	SIM card blocked	Wrong Pin code entered 3 times	SIM card must be inserted into a (mobile phone) --> to clear PUK code --> insert again into SMS relay
1002	No SIM card	SIM card missing, not correct inserted or contaminated surface	Insert SIM card correctly or clean
1003	PIN change without success	Wrong "old PIN" while change in FastSMSet	Repeat change with the correct "old PIN"

5.4 Status request

If the SMS Relay is connected by a cable (CMS-RS232 or CMS-USB with CMS-RS232) the actual status of the inputs and outputs can be requested. The status can also be requested by remote maintenance (→ chap.7).

6. Configuration of the SMS Relay with the „FAST SMS Set™" Software

6.1 General

The SMS Relay is configured and prepared for use with the *„FAST SMS Set™"* configuration software. The SMS Relay configuration (telephone book creation, message definitions, default settings, etc.) can be done on a PC and saved in a respective file without connection to the device. In order to do this, the software is started, a new or existing file opened and edited. The saved file needs to be downloaded to the SMS Relay with the CMS-RS232 programming cable. In offline mode, the diagnostic functions are not active and can only be accessed once the SMS Relay is connected with the RS232 serial interface cable to the PC.

With the implemented remote maintenance tool there is a possibility to maintain the SMS Relay and to modify the configuration over a GSM connection (requirements: GSM modem, CMS-10F, CMS-10ADF or CMS-10ACDF, FAST SMS Set™ from version 3.0). The procedure to setup the remote access is explained in chapter 7.

6.2 Create connection

- Cut off the power supply of the SMS Relay
- Insert the SIM card
- Connect the RS232 interface of your PC or Notebook with the SMS Relay programming interface using the CMS-RS232 programming cable. *If your PC or Notebook does not have an RS232 interface connection then use a CMS-USB interface converter. With this converter the programming cable can be directly connected to one of the computer's USB slots.*
- Connect power supply to the SMS Relay
- As soon as the Status-LED of the SMS Relay flushes in a cycle off 1 second, the software can be started.
- Choose a saved file or create a new one.
- For transmission, choose the required COM port of your PC. Select menu „Option – Communication settings – Available COM ports".

Everything is now set up to download the prepared configuration file to the device.

6.3 Edit telephone book

The software offers the possibility to register and manage up to 50 telephone numbers or email addresses. Administration of the telephone book as described below:

6.3.1 Phone number

- Add – register of a new phone number
- Edit – editing of an already existing entry
- Delete – deleting of an existing entry

Please enter the phone number in international format (i.e. with country code and prefix), e.g. +41793333333 (+41 Switzerland; +49 Germany, +31 Netherland, etc).

6.3.2 E-Mail address

Activate first the e-mail function in the field *Activate e-mail* and enter the provider service number. Register now the e-mail addresses as follows:

- Add – register of a new e-mail address
- Edit – editing of an already existing entry
- Delete – deleting of an existing entry

Please enter the addresses in the format xxx@xxx.xx!
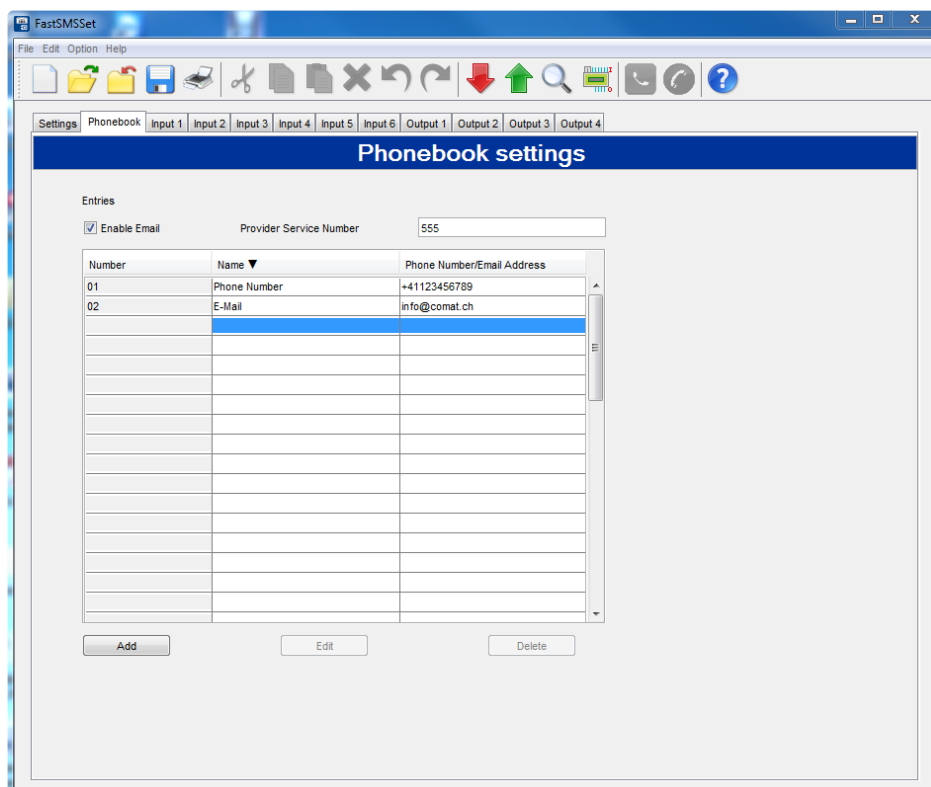
Phonebook entry

REMARK

Not all special characters can be used for SMS messages. The characters are recognized by the programming software and displayed in an error window. Subsequently, the respective characters have to be erased.

In the data field „Name", the list can be sorted in ascending or descending alphabetical order. The sorting does not influence entries which have already been used.

The *default* entry shall be replaced with an own entry!

SMS Relay telephone book editor

6.4   Settings

The default settings for SMS transmission contain important general data which help to identify the device. The SIM card can be protected with a PIN code just like for normal cell phone use. The PIN request is activated and the PIN code is inputted in the required field. This concerns PIN1. Further information can be obtained from the SIM card manual. Likewise the process of unblocking the SIM card after three incorrect inputs of PIN1 is described in the SIM manual. In order to do this, the SIM card must be removed from the SMS Relay and inserted into a mobile phone. Now the card can be unblocked according to the details of the network providers.

SMS Relay Settings

6.4.1 Device types

Depending on the device type, the correct type has to be selected. The selection has an influence on the configuration of the inputs and outputs. It is however possible to correct the selected type at any time. The following types are available:

Type	Description
CMS-10 digital **substituted by CMS-10F**	This type has **only** digital inputs ✓ CMS-10/AC110-240V ✓ CMS-10/DC12-48V
CMS-10AD analogue **substituted by CMS-10ADF**	For this type the inputs can be used to work as analogue or digital inputs ✓ CMS-10AD/DC12-48V
CMS-10F digital	This type has **only** digital inputs. Remote access integrated ✓ CMS-10F/AC110-240V ✓ CMS-10F/DC12-48V
CMS-10ADF analogue	This type allows using the inputs as analogue or digital inputs. Remote access integrated. Input signal 0-10V. ✓ CMS-10ADF/DC12-48V
CMS-10ACDF analogue	This type allows using 4 inputs as analogue 0-10V or digital inputs. Additional this device has 2 current inputs 4-20mA (I5 and I6). Remote access integrated. ✓ CMS-10ACDF/DC12-48V

6.4.2 Automatic provider search

The automatic provider selection depends on the SIM card inserted into the SMS Relay. The provider details and access of the SIM card are adapted. Basically, the provider is preassigned when the SIM card is purchased. With the „Automatic" setting, the network provider is automatically searched and logged. That is useful if the card is used in the home network. Other GSM networks can be accessed abroad with the same SIM card according to the roaming contracts.

6.4.3 Manual provider search

For manual provider searches, the available GSM networks are scanned several times. The results of this search are displayed with a list of networks. A mouse click on „Search" displays the available networks. The desired network can now be chosen.
The SMS service centre number can be taken from the SIM card documentation. Normally this number is already saved on the SIM card. The number depends on the GSM provider. In the „SMS Relay description" field, a name for the SMS relay can be entered. All outgoing messages from this SMS Relay are provided with this identification text. The available number of characters for a message is reduced according to the number of characters already used for the identification name. The actual number of available characters is displayed.

6.4.4 SMS Relay identification

The SMS Relay can be described with a name or a description. All messages sent from this SMS Relay receive the name as entered in the field "SMS Relay description". The SMS Relay identification can be deactivated so that the messages can be sent without this identification (this function is only available in devices with firmware version FW > 5.0).

REMARK *The display of special characters in the GSM network can cause problems. Please use only text characters and figures. The programming software identifies special characters and an error messages will occur.*

6.4.5 Activate remote access

The SMS Relay can be described with a name or a description. All messages sent from this SMS Relay receive the name as entered in the field "SMS Relay description".

REMARK *Remote Access has to be set up by a conventional serial cable connection (RS232) with a PC/notebook for the first time.*

WARNING *The remote access can be deactivated in the remote access mode. After deactivating the remote access, the device can not be reached and configured over the mobile network anymore. Remote Access has to be set up by a conventional serial cable connection (RS232) with a PC/notebook.*
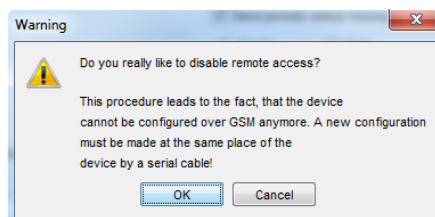
Warning 'disable remote access'

6.4.6   Enable local authentication

The local access can be protected by a password. The password is the same as for the remote access.

6.5   Status messages

The receiver of the status messages can be chosen from the telephone book. In order to do this click with the mouse pointer onto the expand arrow and select the required entry.

The SMS relay can send the following status messages:

- *Remote enquiry of all inputs and outputs*
  The device offers the possibility to interrogate all input and output states by SMS. A code word is therefore sent by SMS to the device. The code word can be individually created. The default code word is: **?#all**

The answer is sent to the same phone number from which the correct code word was received (phone number identification). The states of the inputs and outputs are displayed as follows in the SMS message:

SMS Relay I=001001 Q=0101	**I:001001** → Inputs 1 to 6 →	**0 = OFF / 1 = ON**
V1.4.5 SPIOS=1.7.0 HW=2.1	**O:0101** → Outputs 1 to 4→	**0 = OFF / 1 = ON**
SN=358244014610861		
16.09.2009 15:38		

If there are inputs configured as analogue inputs, the SMS Relay sends the analogue value including the selected unit after the status of all the digital inputs. The analogue inputs will be substituted with "-". In the following example, with the inputs I2 and I5 configured as analogue inputs, the status message looks as follows:

SMS Relay I=0-00-0 Q=0000
21.3m3/h,126lt V1.4.5
SPIOS=1.7.0 HW=2.1
SN=358244014610861
16.09.2009 15:38

I: 0-10-1 O:0101 21.2m^3/h,126lt

I: 0-10-1 → Inputs 1 to 6 → 0 = OFF / 1 = ON / - = analogue
O: 0101 → Outputs 1 to 4 → 0 = OFF / 1 = ON

- *Attach Status of all inputs and outputs with each message*
  A status message of all inputs and outputs is attached to each message.
  (Firmware Version 2.8 and Software 1.3.0)

- *Periodical message*
  The periodic message provides information of the device's current status and is sent periodically. The message can be sent daily (time), weekly (time, weekday) or monthly (time, date). The message text can be edited. It is for checking functionality or operation confirmation.

- *Message at the start*
  A message for each start up (switching on / return of power) of the SMS relay is sent (According to the phone number assigned to the event). The message contents can be edited.

- *Messages in case of power failure*
  In case of voltage failure, the SMS relay sends a last message to the assigned receiver No.1 to 5 of the status messages. The message contents can be edited.

REMARK   *The display of special characters in the GSM network can cause problems. Please use only text characters and numbers. The programming software identifies special characters and an error messages will occur.*

REMARK   *Message in case of network problems: The message "**Restart due to a Network Problem**" is sent to every receiver of status messages in case of a lost and re-found connection to the GSM-Network. Please check in such a case the receiving quality using the diagnostic function.*

- *Trailing information*
  The trailing information of each message (date, time, remaining balance) can be activated or deactivated in the field *Trailing Message Info* located under tab *Settings*.

Trailing information

6.6 Input configuration

6.6.1 General

The SMS Relay has 6 inputs. Depending of the device type, all this inputs can be used as **digital inputs** only (CMS-10F/AC110-240V and CMS-10F/DC12-48V) or as **digital / analogue inputs** (CMS-10ADF/DC12-48V and CMS-10ACDF/DC12-48V).

6.6.2 Digital inputs (CMS-10F/AC110-240V and CMS-10F/DC12-48V)

Each one of these inputs can activate an SMS message to a predefined telephone number either in case of HIGH or LOW input signal (up to 5 various numbers).

REMARK   *Please mind every input needs at least one phone number in his list. It doesn't matter if the input is connected or not or if the status messages are set inactive. If the receiver field is empty, the software can't save the file or the file can't be downloaded to the SMS Relay.*

Basically two events can trigger an SMS message: the change from LOW-to-HIGH and the inverse, the change from HIGH-to-LOW. One or both events can be configured to activate a message. A separate text message can be entered for each event. For details refer to 6.6.2.2 and 6.6.2.3

With **confirmation function** activated:

If the SMS Relay does not receive an acknowledgement SMS within a certain preset time from the receiver, the event message will be sent to the next receiver. This means that the device runs through the 5 allocated receiver numbers and restarts afterwards with the first number again (The number of running loops can be pre-defined). As soon as the device receives a confirmation from the receivers the process is stopped. If this is not the case, the message will be sent to the next receiver (after expiry of the preset time).

If the **confirmation** is inactive, all receivers who are allocated to that event will receive a message without repetition.

If the **confirmation code word** is not activated, the phone number identification is carried out as a security check and it is sufficient to send an empty SMS message to the SMS Relay.

REMARK   *The display of special characters in the GSM network can cause problems. Please use only text characters and figures. The programming software identifies special characters and an error messages will occur.*

6.6.2.1   Parallel message handling

It may occur that the status of several inputs change at the same time or within the actual running message cycle. Every input activates its individual message.

Every change of the input status, which triggers an event message, is processed in order of the appearance. That means that all the messages for every input will be handled individual. Several events at the same time can trigger different messages at the same time. Example: The events "pump breakdown" and "over temperature" (two different inputs) appear at the same time → both events are processed individual and both messages will be sent one after the other.
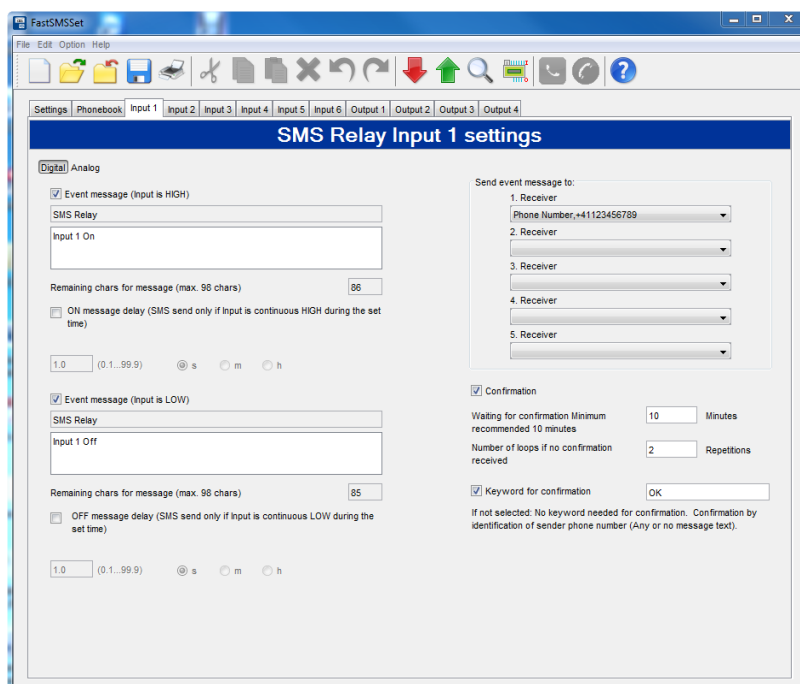
Digital input configuration

6.6.2.2 Time delayed message for input ON

If there is an input signal, the respective message transmission can be time delayed, i.e. the SMS relay only sends the pre-defined message after the preset time has elapsed and if the signal has remained ON constantly during that time. In other words, the input signal is ignored during the set delay time. Time delays of 0.1 seconds to 99.9 hours are possible. This time function default must be activated and is to prevent that unstable short signals can activate numberless identical SMS messages.

REMARK   *It is recommended to use the delay function to avoid that several messages are sent for the same event.*

### 6.6.2.3 Time delayed message for output OFF

If an input changes from HIGH to LOW, i.e. there is no longer an input signal, a delayed message can also be activated here. The SMS relay sends the predefined message after the preset time has elapsed and if the signal is no longer present respectively the input signal was constantly OFF during the selected time delay. Time delays of 0.1 seconds to 99.9 hours are possible. This time function must be activated and is to prevent that unstable short signals as for example of a floating level switch will activate numberless messages.

REMARK   *It is recommended to use the delay function to avoid that several messages are sent for the same event.*

6.6.3 Analogue inputs (CMS-10ADF/DC12-48V and CMS-10ACDF/DC12-48V)

The 6 inputs can be individually configured as digital or analogue inputs. For that purpose each input has to be predefined as analogue or digital input. The analogue inputs are designed for a standard 0 … 10V DC or 4 … 20 mA analogue signal. The LSB is 12.5 mV respectively 20 µA.
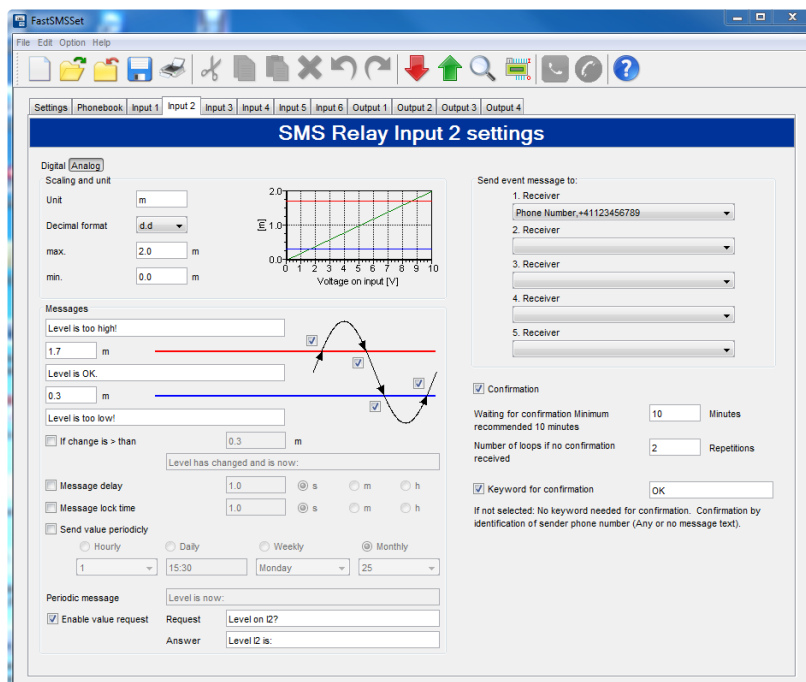
Configuration of the analogue inputs

6.6.3.1   Scaling and units

In a first step, the measuring unit and the scale have to be defined. For both end-values 0V (4mA) and 10V (20 mA), a minimal and a maximum value of the selected unit is assigned. With this two values, a linear function is interpolated (straight line between 2 points) and displayed in the configuration window. The linear function is adapted automatically in accordance to the set values.

The values displayed on the PC screen or transmitted by SMS can be display in different resolutions:

d	integer value, i.e. 5200
d.d	one digit after decimal point, i.e. 5200.0
d.dd	two digits after decimal point, i.e. 5200.00
d.ddd	tree digits after decimal point, i.e. 5200.000

Ten characters are available for the description of the units. This unit will be sent with every value message following the actual value:

Example of a message: **The temperature is 15.5C**

REMARK   *The display of special characters in the GSM network can cause problems. Please use only text characters and figures. The programming software identifies special characters and an error messages will occur.*
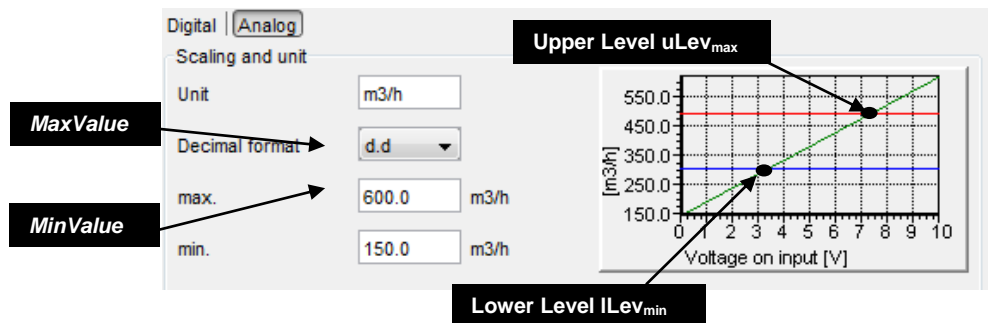
Detail: Scaling and unit

The top and the bottom thresholds have to be defined to allow sending of messages.
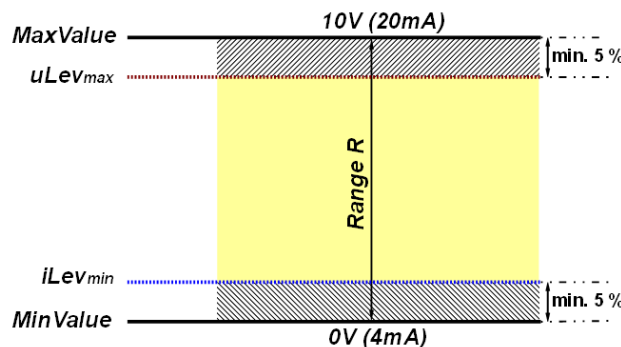
Description of the range

The value between the max and the min value is the range R. This range has an important function in the designation of the thresholds.

6.6.3.2   Messages and thresholds

The top and the bottom thresholds have to be defined to allow sending of messages.
These limiting values depend on the installation which is monitored.
However, certain rules have to be obeyed so that the level values can be recognized in the scale window.

At first the measuring range has to be calculated. The range is the span between maximum and minimum values. These 2 values refer to the end values 0…10V respectively 4…20mA of the analog input signal. The calculated is positive.

$$\lvert\textbf{\textit{Range R}}\rvert = \lvert \textit{MaxValue} - \textit{MinValue}\rvert$$

The maximum Upper Level $uLev_{max}$ is calculated as follows:

Deduct 5% of the Max value.

$$\textbf{\textit{uLev}}_{\textbf{\textit{max}}} = \textit{MaxValue} - (\lvert R\rvert \times 0.05)$$

➔ Inserted values higher then calculated above are corrected automatically by the software

The minimum Lower Level $lLev_{min}$ is calculated as follows:

Add 5% to the Min. value

$$\textbf{\textit{iLev}}_{\textbf{\textit{min}}} = \textit{MinValue} - (\lvert R\rvert \times 0.05)$$

➔ Inserted values lower then calculated above are corrected automatically by the software

Example:
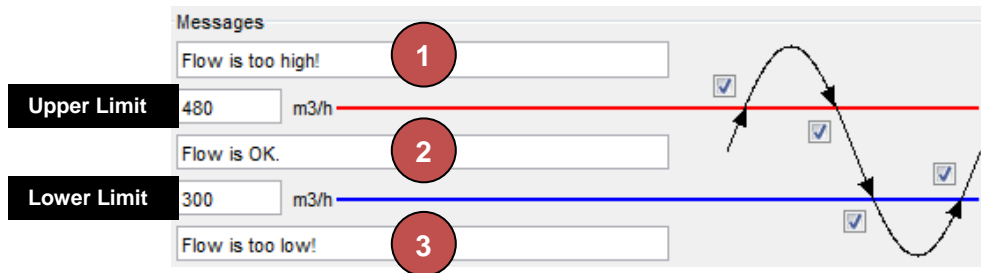Max. value 600m3/h ➔ 10V of the analog signal
Min. value 150m3/h ➔ 0V of the analog signal

Range R = Max value – Min value = 600m3/h – 150m3/h = 450m3/h

Upper Limit uL = Max. value – B x 0.05 = 600m3/h – (450m3/h x 0.05) = 577.3m3/h

Lower Limilt iL = Min value + B x 0.005^= 150m3/h + (450m3/h x 0.05) = 172.5m3/h
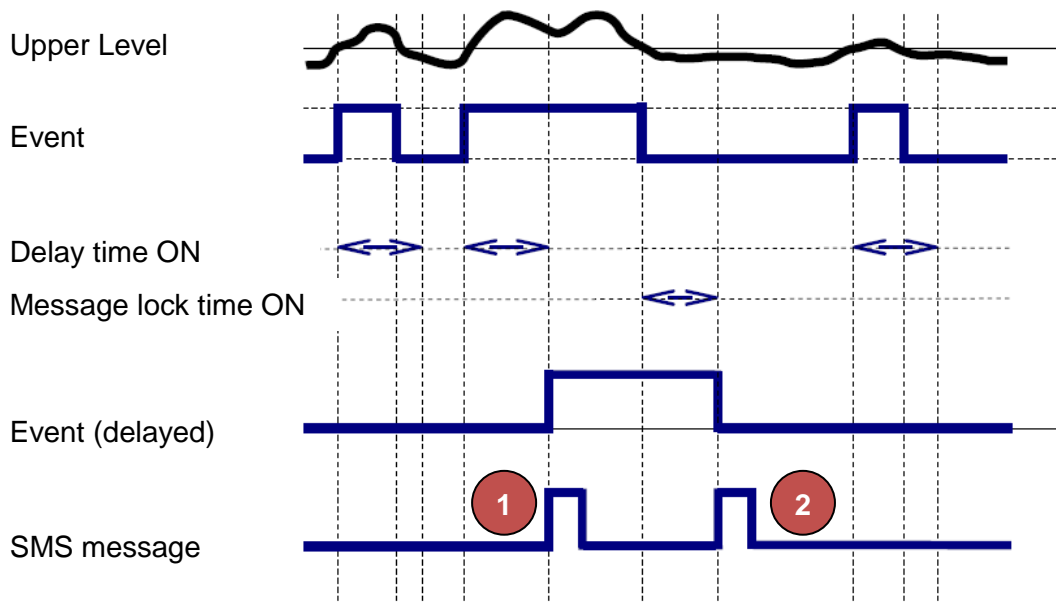
The above example allows monitoring the scenario as seen below:

Threshold messages

The actual measured value is higher than the defined upper limit.
The system is not in its normal status. The upper limit is exceeded. A message is sent (if this is activated by ☑). The message text can be freely configured.
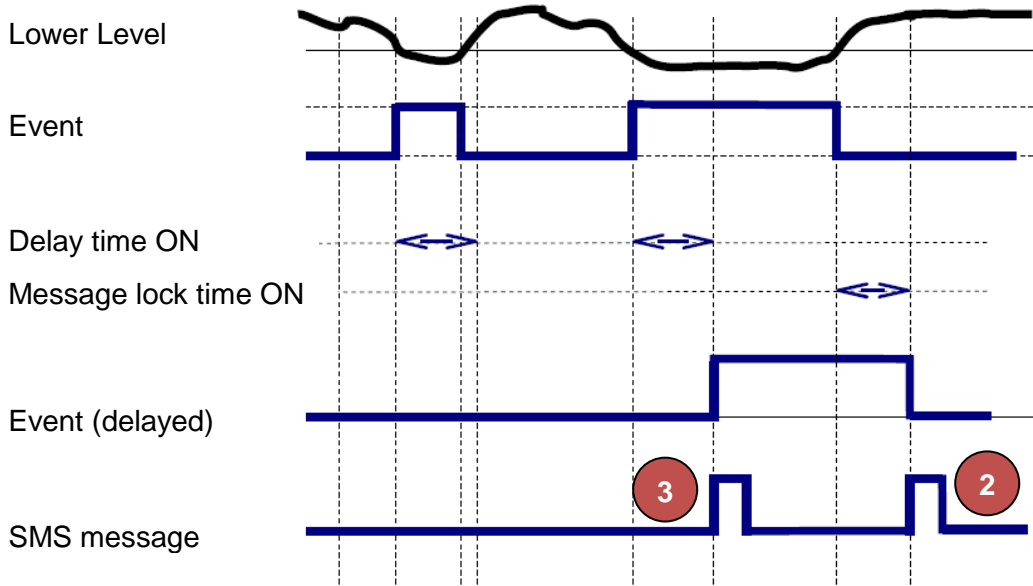

Analogue value processing: The measured value is above the upper level.

The actual measured value is between the Upper and the Lower Level.
The installation is in normal status. A message is only sent (if default set) if previously the measured value was above or below Upper or Lower limit.

On this example the actual measured value is below the set Lower Level
The system is not in its normal status. The value is below the lower limit. A message is sent (if this is activated by ☑). The message text can be freely configured.

Analogue value processing: "Value is smaller than the lower level"

A certain difference between the actual value and the last sent value is exceeded

The SMS Relay monitors the analogue value. A message is sent if the difference exceeds a certain value (if this is activated by ☑). The message text can be freely configured. The maximal value for this is 50%.

REMARK

Inserted values above that 50% limit are corrected automatically by the software

Periodical messages

The actual values can be sent by SMS periodically in intervals of days, weeks or months.
The periodical message is sent to the first receiver. If this message is not confirmed, it will be forwarded automatically to the next receiver.
All message texts can be freely edited. The measured value and the unit are always transmitted together with the message text.
A space is inserted automatically between the message text and the value. No space is inserted between the value and the unit.

Periodical messages

Request value

The actual present value can be enquired by SMS. The message text can be freely edited. To enquire the actual value, a SMS message has to be sent to the device first. This message text can be edited freely. However, the incoming SMS text must comply fully with the programmed enquiry text. A space is inserted automatically between the message text and the value. No space is inserted between the value and the unit.

☑ Enable value request	Request	Flow on I1?
	Answer	Flow I1 is:

Request value

Confirmation

If the SMS Relay does not receive a confirmation SMS within a certain preset time from the receiver, the event message will be sent to the next receiver. This means that the device runs through the 5 allocated receiver numbers and restarts afterwards with the first number again (The number of running loops can be pre-defined). As soon as the device receives a confirmation from the receivers the process is stopped. If this is not the case the message will be sent to the next receiver (after expiry of the preset time).

If the acknowledgement is inactive, all receivers who are allocated to that event will receive a message without repetition.

If the confirmation code word is not activated, the phone number identification is carried out as a security check and it is sufficient to send an empty SMS message to the SMS Relay.

REMARK
The display of special characters in the GSM network can cause problems. Please use only text characters and figures. The programming software identifies special characters and an error messages will occur

6.6.3.3   Message delay

If the message criteria are reached, the respective message transmission can be time delayed, i.e. the SMS relay only sends the pre-defined message after the preset time has elapsed and if the value has remained constantly during that time. In other words, the measured value is ignored during the set delay time. Time delays of 0.1 seconds to 99.9 hours are possible. This time function default must be activated and is to prevent that unstable short signals can activate numberless identical SMS messages.

REMARK
It is recommended to use the delay function to avoid that several messages are sent for the same event.

6.6.3.4   Message block

If message criteria are reached, which requires sending of a message, a timer is triggered. There will be no further message (same messages) sent during that pre-set time.
With that setting it can be avoided that the same status message is sent repeatedly during a set time (Block time).

REMARK   *It is recommended to use the delay function to avoid that several messages are sent for the same event.*
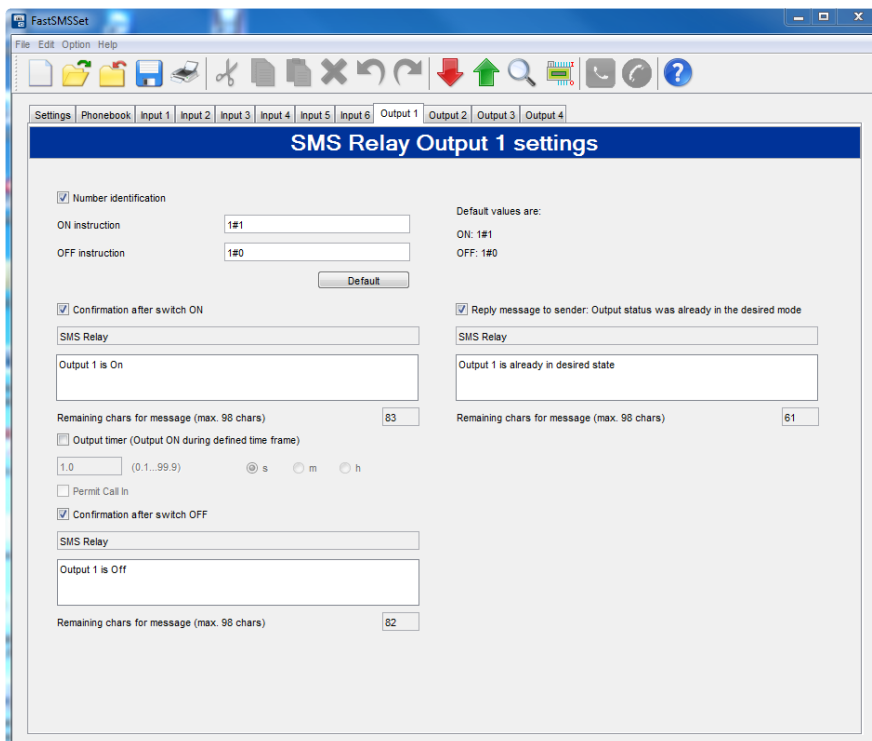
6.7   Output configuration

6.7.1   General

The SMS Relay has 4 relay outputs (change over contacts 10A, 250V). The outputs can be controlled by a message i.e. they can be switched ON and OFF. Each output can be activated individually. The message text can be edited individually. However, the device only accepts the exact expression i.e. the message must correspond exactly with the registered expressions. Upper and lower cases are ignored, spaces between the words and other characters must be typed correctly. Switching commands are only accepted from numbers which are registered in the telephone book. That means, an output can be switched ON or OFF by receiving a SMS message. The SMS Relay confirms this with an acknowledging message to the sender after carrying out the action. An additional message can be defined, to inform the sender if the output is already switched to the required state and consequently no action will be carried out.

- *Default*
  A click on this button reset the ON/OFF instructions to factory setting.

Output configuration

REMARK   The display of special characters in the GSM network can cause problems. Please use only text characters and figures. The programming software identifies special characters and an error messages will occur.

6.7.2 Timer function

An output can be switched ON for a certain time with the time function option. With that function the output can be switched ON with an SMS message for a preset time. The output will switch OFF again automatically without the need of receiving an OFF message again after that time has elapsed. Time delays of 0.1 seconds to 99.9 hours are possible. The output OFF is reconfirmed to the sender after set time has expired. If a switch-OFF message is received before the set time has elapsed, the output will ignore the remaining ON time and switches to OFF status immediately. The default of that timing function is normally inactive and therefore must be activated.

WARNING   *This device is not suitable for monitoring sensitive installations or time critical processes. GSM network failure or power interruptions cannot guarantee a secure monitoring.*

6.7.3 CALL-IN function

The CALL-IN function allows the user to activate the outputs by phone call for a certain time as described in chapter 6.7.2. The device detects the incoming call and switches the outputs without answering. The outputs are automatically switched-off after the preset time. This allows activating a process without costs.

REMARK   *Activate the output timer to activate the field "Activate Call-In"!*
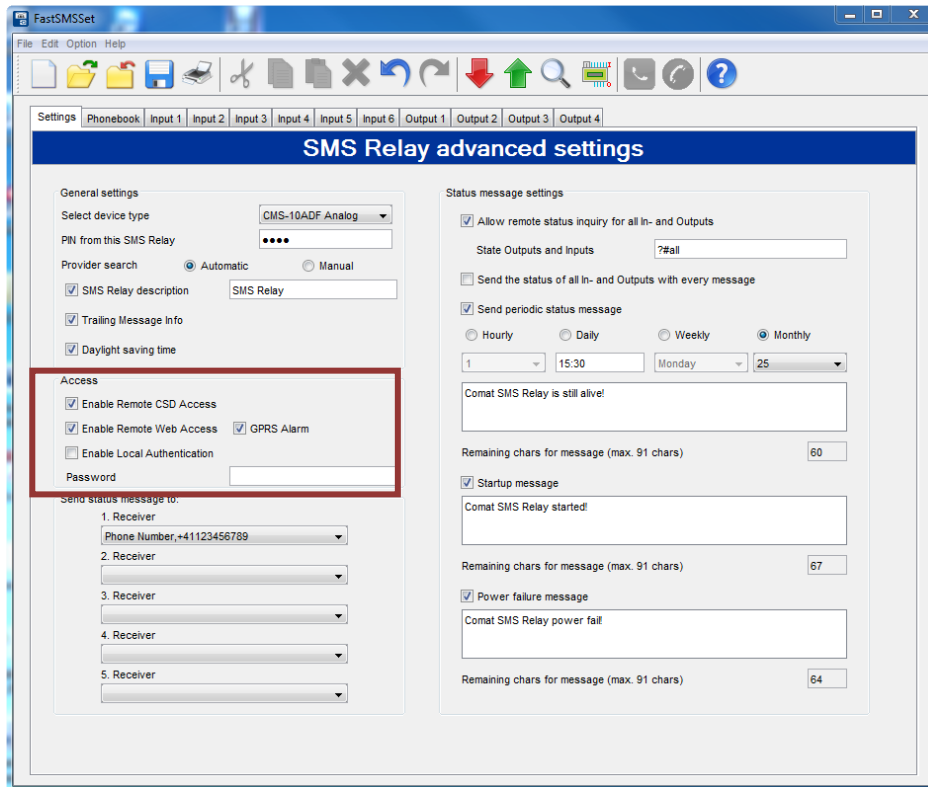
7. Remote Access

7.1 General

The feature „Remote Access" allows you to modify the configuration of a SMS Relay by remote access, with the configuration software *FAST SMS Set™* (from version 3.0) using a GSM modem (DATA call to the SMS Relay via CSD). Units including Firmware Version V7.1 or later can be managed by web on www.sms-relay.com.

Only the SMS Relay types CMS-10AF and CMS-10ADF are able to be modified by remote access. The SMS Relay types CMS-10 and CMS-10AD don't support this functionality.

7.2 Configuration of Remote Access

The activation of the remote access is set in the configuration software *FAST SMS Set™* in the general settings. Choose either "Enable Remote CSD Access" to activate GSM modem remote access or "Enable Remote Web Access" to activate web remote access. Devices from Firmware 7.1 contain web access activation from factory.

General settings

A personal password prevents unauthorized access.

REMARK

SMS Relays with Firmware V7.1 or later are supporting the Remote Access functionality by web by factory setting. To access a new device the PIN "1234" and the password "admin" must be used. The device must be equipped with a GPRS-ready SIM either with disabled PIN or with PIN set to "1234".
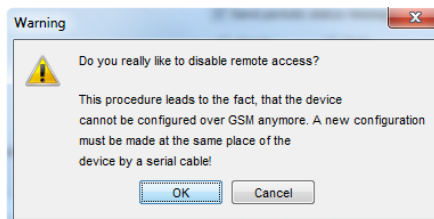
REMARK

Remote Access has to be set up by a conventional serial cable connection (RS232) with a PC/notebook for the first time.

WARNING

The remote access can be deactivated in the remote access mode. In this case, the device cannot longer be remote accessed. Remote Access can only be reactivated over a serial cable connection with a PC/notebook.

Warning 'disable remote access'

7.3   Remote Access by web

To remote access a SMS Relay by web a device with Firmware V7.1 or later and the configuration tool *FAST SMS Set™* version 4.0 or later are required.
The devices can be managed via a private account on www.sms-relay.com. Changes into the configuration can be done locally with your computer using *FAST SMS Set™*.
Configuration files can be transferred from your devices to your computer and vice versa over the internet.

7.3.1   GPRS Alarms

Alarms can be transferred to the CWS Portal additionally using GPRS. This option can be activated in the configuration file under "General Settings" in *FAST SMS Set™.*

7.4   Remote Access by a GSM Modem

After the remote connection is established, all the modifications can be done in the usual environment of FAST SMS Set™. The first start-up shall be executed as described in chapter "1.1 Short description SMS Relay CMS Comat Message System" and "6. Configuration of the SMS Relay with the FAST SMS Set™ Software". These steps are necessary to activate the remote access.

REMARK   *The SIM-cards used for remote access by GSM Modem (in the relay and in the GSM-modem) need to be ready for CSD protocol. CSD (Circuit Switched Data) is a special data communication standard. The net provider has all the required information.*

7.4.1 Connection establishment

A SMS Relay with activated remote access and a GSM modem are necessary to establish a connection for communication. The GSM modem is connected to a PC or a notebook (the SMS Relay has a GSM modem already integrated).

After connecting the modem with the PC / notebook and successful connection to the network, the PC / notebook can communicate with the SMS Relay over the GSM modem. Afterwards, configuration data's for the SMS Relay will be uploaded over the GSM connection to the Relay or data's from the Relay can be downloaded to the PC / notebook.

REMARK *For the duration of the data communication between the GSM modem and the SMS Relay same connection fees are billed as for normal phone calls (Please pay attention in other countries because of the roaming fees). The connection should be disconnected after the data transfer.*

REMARK *In order to reduce communication time and to avoid high phone costs, it is advised to create the SMS Relay configuration first and to save it on the PC / notebook. Establish the remote connection with the SMS Relay and then transfer the final configuration.*

In order to establish a connection over GSM to the SMS Relay, the option *Modem connection* has to be selected. The software supports some modem types and shows a selection. Only these modems were tested by Comat AG and guarantee support by the software. The modems are available from Comat AG.

REMARK *Comat AG advises to use only Comat-tested modems. The functionality of other modems cannot be guaranteed. Under certain circumstances, unsupported modems may work as well if previously configured with the respective AT commands. Comat AG is not able to provide any support for modem configurations if other than recommended modems are used.*

After choosing the specific modem type, the PIN of the SIM card must be entered into the respective window. These data are confirmed by clicking OK.
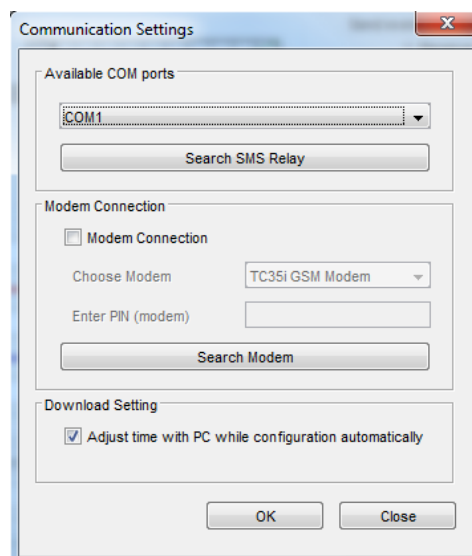
Communication settings

The connection to the remote SMS Relay is now built up and established. In the menu list and in the menu *Option*, the remote access button is shown active.
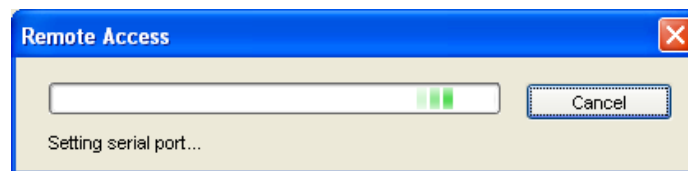

Remote access button „activated"

If remote access is selected, *FAST SMS Set™* starts to establish a data connection via the modem. To set up this connection, the software is asking for the phone number of the SMS Relay and for the password to enable the remote access.
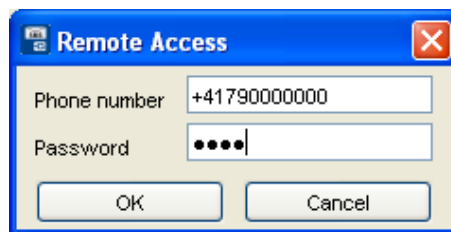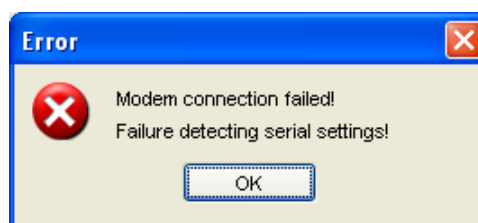

Phone number for data call

Progress of „connection establishment"

If the data connection fails, try again to establish the connection from the beginning (Please note that it may take up to one minute to establish the connection).


Error message „Connection failed"

As soon the connection is build up successfully, the modification of the SMS Relay is now possible as described in the chapters before. Please note, that the data transfer over the GSM network takes some time and the system requires as well time to read and transfer data from the remote SMS Relay.
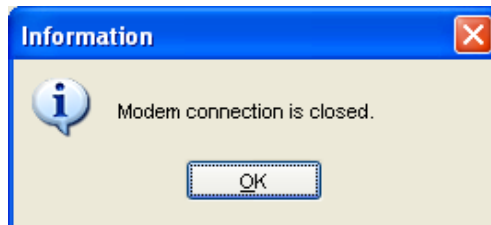
REMARK   *The data transfer over GSM (remote access) takes more time as the direct access over the serial interface.*

The breakup of the GSM connection takes place in reversed order. Select *Close remote connection* in the menu list or in the menu *Option*.
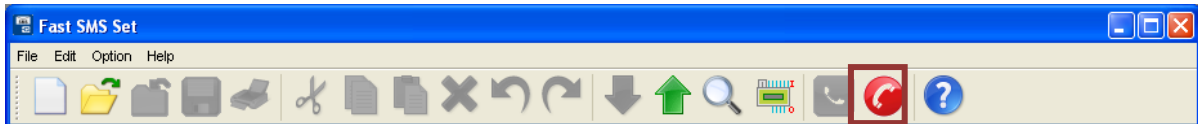
Disconnect remote access

Information „Modem connection is closed"

The time out of the data connection is 15 minutes. After elapsing of this time, the connection is disconnected. The connection has to be set up again for a new access or communication.

7.4.2   I/O status remote request

With a successful established data connection (via GSM-network connection or via a serial cable connection RS232), the user can ask for the status of all inputs and outputs of the SMS Relay including analogue input values.
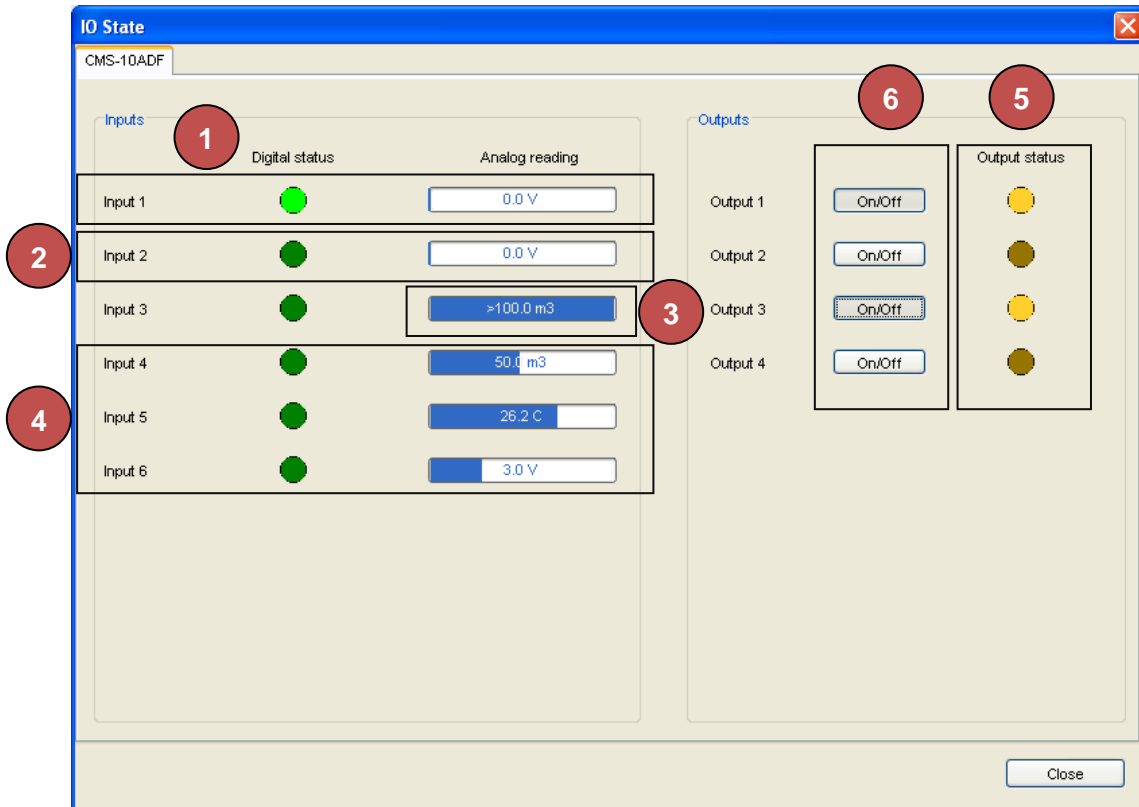
REMARK   *Modification of values and settings over remote access will not be immediately showed in the I/O states display window. This takes some time and depends on the scanning cycle.*

REMARK   *The data transfer over GSM (remote access) takes more time as the direct access over the serial interface.*
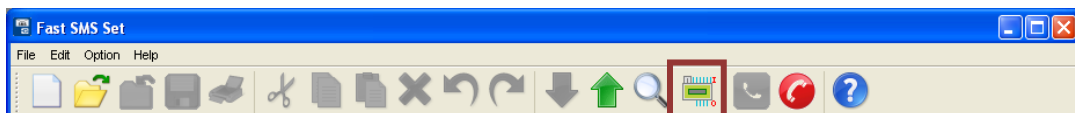
Read I/O states

I/O States - Layout

7.4.2.1   Digital inputs

1   Digital input **ON** →   🟢

2   Digitale input **OFF** →   🟢

7.4.2.2   Analogue inputs

The measuring bar displays the input value with the configured unit.

3   The measuring range of the analogue signal is from 0V to 10V (resp. 4…20mA). If the analogue signal is more than 10V (20mA), the measuring bar displays this with █ >100.0 m3 █ at the specific inputs. The display shows the measuring unit and the pre-configured maximum value.

4   If the signal is within the measuring range, the length of the bar represents the value proportional to the analogue signal. That means, if the minimum value of 0V (4mA) corresponds to 0m^3 and the maximum value of 10V (20mA) corresponds to 100m^3, the measuring bar will show with half of the maximal length █ 50.0 m3 █ (corresponds to 50m^3). Other values will be displayed proportional to the measuring range.

7.4.2.3 Outputs

5 The states of the outputs are displayed with ⬤ → **ON** and ⬤ → **OFF**.

6 All the outputs can be remotely controlled. With a simple mouse click on the On/Off button of the specific output, the output is switched.

8. Language selection

8.1 General

Several languages of the SMS Relay configuration software "Fast SMS Set"™ are available. The languages can be selected from a library. It is not necessary to restart the program after selecting another language. Select the language menu to access the available configuration languages and click onto the required language from the library.
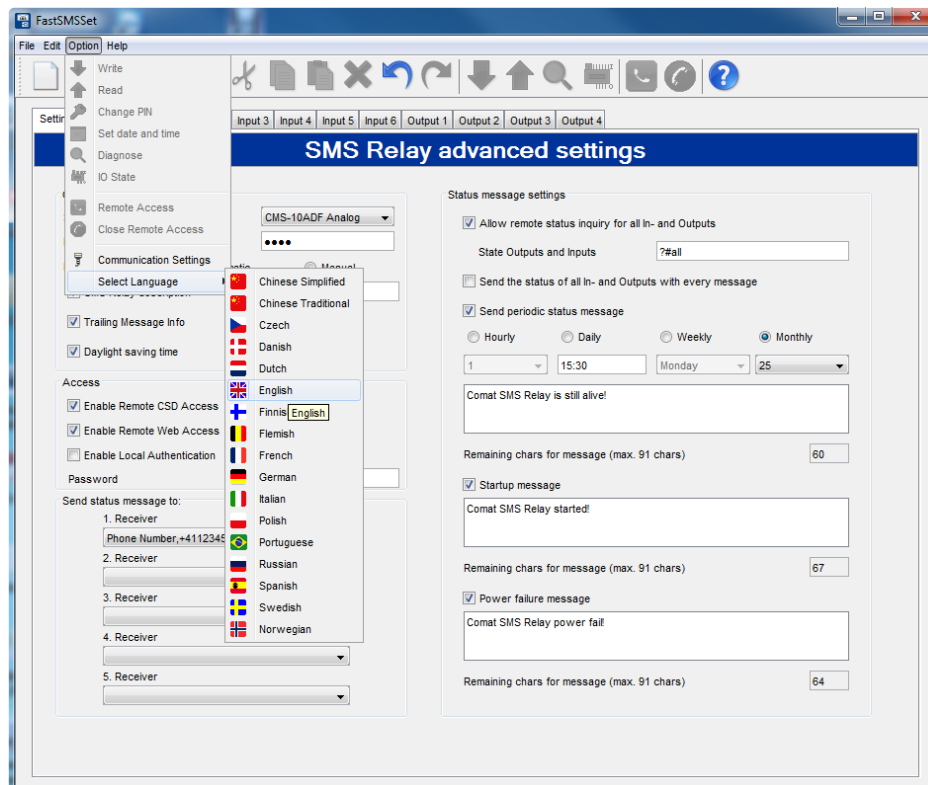
Select language

9.   Technical items

9.1   Dimension
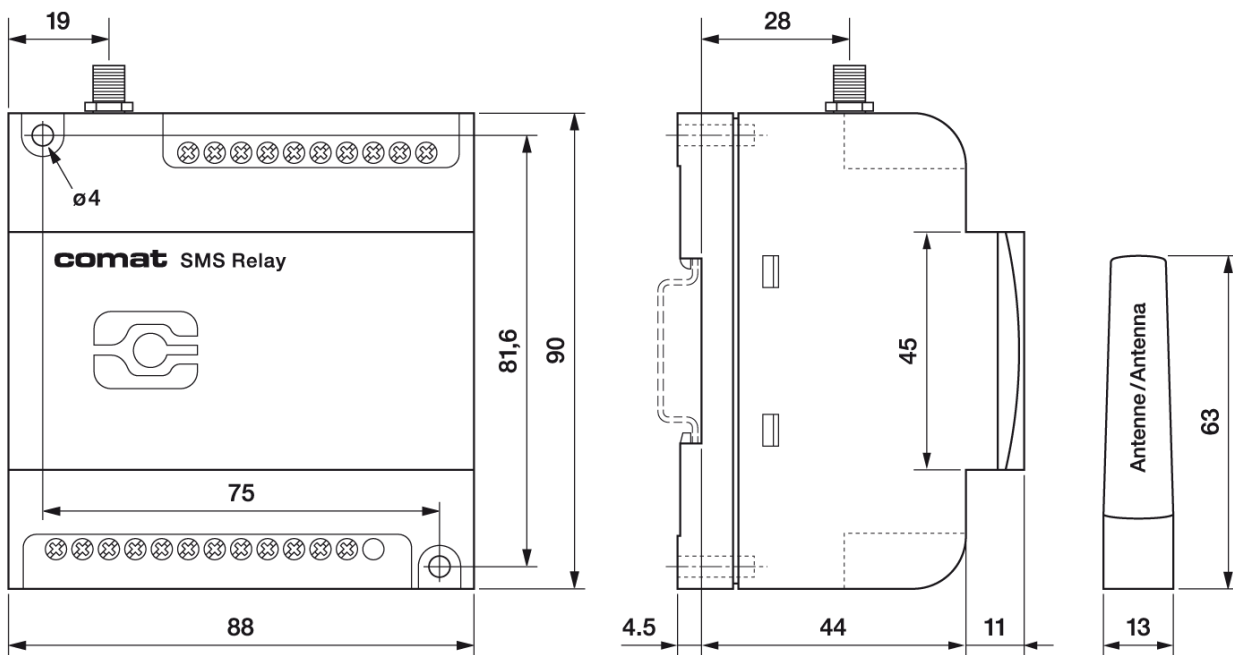
SMS Relay - Dimension

Antennas - Dimension

9.2 Technical data

9.2.1 CMS-10F

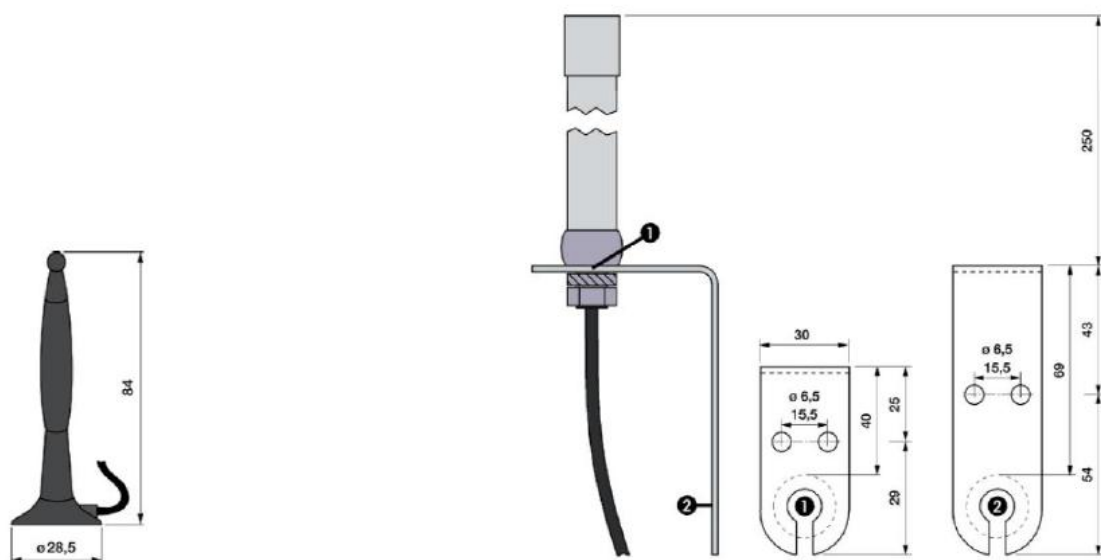| Operating voltage	AC 110-240V~ 50/60Hz	DC 12-48V ⎓ ⩡ max. 10%
Power consumption	8VA / 6W	6W
Switching capacity	4 x 10 A 250 V **CAUTION:** total current of all outputs:20 A	
Temperature range	Temp: -25…+55°C Rel. humidity: 5…95% (non condensing) Protection: IP 20	
Inputs	6x digital trigger level 85V~	6x digital trigger level 9.5V ⎓
Outputs	4x CO contacts	
Provider (Phone / Network)	User selectable (depending on SIM card)	

9.2.2 CMS-10ADF

Operating voltage	DC 12-48V ⎓ ⩡ max. 10%
Power consumption	6W
Switching capacity	4 x 10 A 250 V **CAUTION:** total current of all outputs: 20 A
Temperature range	T_u : -25…+55°C Rel. humidity: 5…95% (non condensing) Protection: IP 20 built in
Inputs	6 Inputs, for each Input elective **digital** or **analog** **Digital:** trigger level 9.5V ⎓ **Analogue:** 0…10V analogue signal, 10 Bit A/D-converter
Outputs	4x CO contacts
Provider (Phone / Network)	User selectable (depending on SIM card)

9.2.3 CMS-10ACDF

| Operating voltage	DC 12-48V ⎓ ⩡ max. 10%
Power consumption	6W
Switching capacity	4 x 10 A 250 V **CAUTION:** total current of all outputs: 20 A
Temperature range	T_u : -25…+55°C Rel. humidity: 5…95% (non condensing) Protection: IP 20 built in
Inputs	4 voltage inputs (I1-I4), for each Input elective **digital** or **analog** **Digital:** trigger level 9.5V ⎓ **Analogue:** 0…10V analogue signal, 10 Bit A/D-converter (LSB: 12.5 mV) 2 current inputs (I5 and I6), for each only **analog** **Analogue:** 4…20mA analogue signal, 10 Bit A/D-converter (LSB: 20 µA)
Outputs	4x CO contacts
Provider (Phone / Network)	User selectable (depending on SIM card)

10. Ordering information

Type	Description
CMS-10F/AC110-240V	SMS Relay AC 110-240V with 6 digital inputs incl. small antenna (CMS-ANT)
CMS-10F/DC12-48V	SMS Relay DC 12-48V with 6 digital inputs incl. small antenna (CMS-ANT)
CMS-10ADF/DC12-48V	SMS Relay DC 12-48V with 6 digital and/or analogue inputs incl. small antenna (CMS-ANT)
CMS-10ACDF/DC12-48V	SMS Relay DC 12-48V with 2 analog current inputs and 4 analog and/or digital voltage inputs incl. small antenna (CMS-ANT)
KIT consisting of:	A base unit with small antenna, antenna with magnetic pod and 2.5 m cable, programming cable, USB-RS232 interface convertor, CD with FAST SMS SET™ programming software and operation manual.
CMS-10FKIT/AC110-240V	Complete installation kit for SMS Relay AC 110-240V with 6 digital inputs
CMS-10FKIT/DC12-48V	Complete installation kit for SMS Relay DC 12-48V with 6 digital inputs
CMS-10ADFKIT/DC12-48V	Complete installation kit for SMS Relay DC 12-48V with 6 digital and/or analogue inputs
CMS-10ACDFKIT/DC12-48V	Complete installation kit for SMS Relay DC 12-48V with 2 analog current inputs and 4 analog voltage inputs
Accessories	
CMS-RS232	SMS Relay programming cable RS232
CMS-USB	USB→RS232 interface converter (incl. driver CD)
CMS-ANT	Small spare antenna for base unit, length of 63 mm
CMS-ANT-MAG/2.5M	Antenna with magnetic pod and 2.5 m antenna cable
CMS-ANT-SPEZ/5M	External antenna with 5m antenna cable
CMS-ANT-KAB/5M	Antenna cable 5 m (extension)
CMS-ANT-KAB/10M	Antenna cable 10 m (extension)
CMS-ANT-KAB/20M	Antenna cable 20 m (extension)
CMS-ANT-ADAPT	Adaptor FME to SMA plug
CMS-CAP	Device cover (spare)
CMS-CD	CD with FAST SMS SET™ programming software and operation manual
DR-15-24	Power supply 15W, 24V. DIN rail mounting
DR-30-24	Power supply 30W, 24V. DIN rail mounting
4116	Universal transmitter PReasy
4501	Display front (to PReasy 4116)
MV LKM 274	Pt100 / Pt1000 Amplifier
RF01-U	Room temperature sensor 0 … 50 °C without display
RF01-U-D	Room temperature sensor 0 … 50 °C with display
RTBSB-001-010	Room thermostat 5…30 °C with operation controls
WF50 ext-U	Outdoor temperature sensor -50 … +50 °C
KS-110	AC sensor for monitoring of humidity and temperature in control panels, archives and cabinets
PS1	Water gauge suitable for application of level measurements in water installations
CMS-GSM-MOD	GSM module (Connected to USB port of the PC) for remote access to the SMS Relay

SMS Relay KIT: CMS-10FKIT/…
CMS-10ADFKIT/…
CMS-10ACDFKIT/…

11. Notes
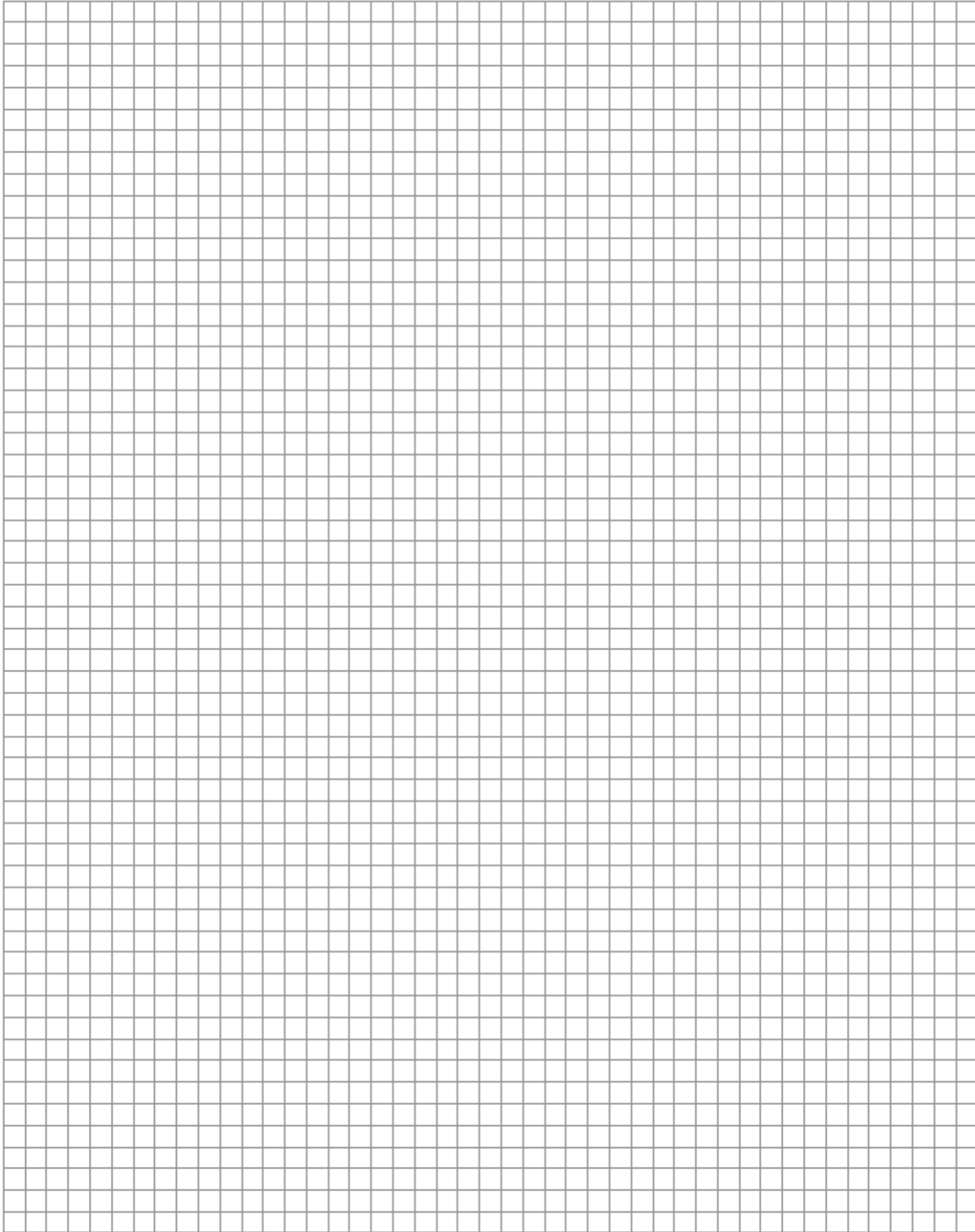
12. Overview of your devices and phone numbers

Devices

N°	SMS Relay description	Device type A/D	PIN	Password	Phone number
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Modem

N°	SMS Relay description	Device type A/D	PIN	Password	Phone number
1					