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SMS Alarm- and remote maintenance modem

ESGSM-001

Installation and operating instructions for plant engineering companies, installers and service engineers

WELBA KONSOFT

12.08.2020
Alarm
Tank 2
Cooling failed

Contents

Intended use

The SMS- Alarm- and maintenance modem ESGSM-001 is used:
- for sending fault messages via SMS
- for the remote configuration
- for remote diagnosis
of the connected controls.

Independent operation (without connected control)

The status of the digital input, the batteries and the voltage status (power failure) can be sent as a predefined fault message to a mobile phone via SMS.

In case of the independent operation the SIM-PIN entry is only possible via the configuration Software Konsoft.

Operation with connected Welba-control

Up to four Welba controls (with remote maintenance functionality) can be connected to the SMS-remote maintenance module ESGSM-001. These must NOT be specially parameterized, but a function monitoring of the modem can be activated. (See documentation of the corresponding device).

It is possible to:
 - transfer fault messages of the controls via SMS to a mobile phone
 - carry out a remote maintenance of the controls*
 - carry out a remote diagnosis of the controls*

Requirements for commissioning

For the operation of the SMS-alarm and remote maintenance modem the following is required:

- 4 Mignon (AA) NiMh rechargeable batteries – min. 2000 mAh. **No batteries!**
- a valid, registered or activated Mini-SIM-card*
  (pay attention to the information of your provider)
- the PIN of the SIM-card (if PIN is activated)
  (pay attention to the information of your provider)
- the APN-data of your provider, if remote maintenance and diagnosis function is requested
- in case of a commissioning without PC:
  a mobile phone with SMS-functionality
- In case of a commissioning with PC:
   - Parameterisation Software "Konsoft" (included in the scope of supply)
   - a USB / RS-485 adapter cable

= see information for SIM-card (next page)

Information about the SIM card

If the ESGSM-001 is operated with a SIM-card <u>without a data tariff</u> (only with SMS functionality), only SMS alarm messages can be sent.

Remote maintenance and diagnosis functions are only possible via a SIM-card <u>with data tariff!</u>

<u>Without data tariff</u> **- SMS operation only**	**2G** <u>"2G" - With data tariff</u> **- SMS operation** **- remote maintenance** **- fault diagnosis** *APN-data required!*

APN-data (Access point Name)

Pre-condition for the ESGSM-001 for a dialling into the mobile data network is, that the APN- data matching the inserted SIM-card must have been stored in the configuration of the ESGSM-001.

Normally the configuration is no longer necessary, since the APN-data of the most popular network providers are already preinstalled at the factory.

Note: Non-pre-installed APN-data can be entered

- by PC via the configuration Software "Konsoft" or

- manual SMS
(command **setApn** *-> see paragraph „SMS-commands"*

These operating instructions contain important technical and safety information. Please read carefully before installation and before any work on or with the regulator.

The SMS alarm and remote maintenance modem must be installed by an authorised specialist observing local safety regulations.

Access to the environment when connected must be restricted to specialised personnel.

The SMS alarm and remote maintenance modem contains live components and must not be opened up.

The modem must not be operated with the housing lid open!
Before the lid is opened (e.g. to change the rechargeable batteries) the power supply must be interrupted!

The device must not be used if the housing or connection terminals are damaged.

No fluids must penetrate the housing.

The SMS alarm and remote maintenance modem may not be exported to the USA without the manufacturer's express permission.

Proper use

The SMS alarm and remote maintenance modem ESGSM-001 is used to send fault messages of specially designed controls with remote maintenance functionality via SMS to pre-selected mobile phones. In addition to that, the device enables the remote maintenance of the connected controls (provided these are parameterized for this purpose). During the independent operation (without connected control) the status of the digital access can be sent as fault message via SMS.

Any other use of the device is permitted only with prior written permission from the manufacturer.

The SMS alarm and remote maintenance modem ESGSM-001 is only ready for use after adapted parameterization. A commissioning without an appropriate parameter-setting does not make sense.

The SMS alarm and remote maintenance modem fulfils the EC requirements for electromagnetic compatibility (EMC) and the Low Voltage Directive (LVD).

The safety components meet the VDE regulations.

Installation place

Pre-condition is an adequate reception power at the installation site of the ESGSM (if necessary, to be checked with a mobile phone prior to the start of the installation).

The installation must be avoided under the following conditions:
- severe jolting or vibration
- permanent contact with water
- relative humidity of more than 90%
- sharply fluctuating temperatures (condensation)
- without rain protection or in case of direct sunlight
- operation in an aggressive atmosphere (ammonia or sulphur fumes) - risk of oxidation
- operation in the immediate vicinity of radio transmitters with high levels of spurious radiation
- operation in metallized closed housings
- installation on metallized surfaces (can lead to reduced performance)

Installation of housing

For fixing the housing please follow the instructions:
- Insertion of drilling holes at an appropriate location acc. to drilling pattern,
- Open the housing lid and fit the lower part of the housing,
- Make the electrical wiring, insert SIM-card and batterys as described on the following pages,
- Close the housing lid and screw it tightly,
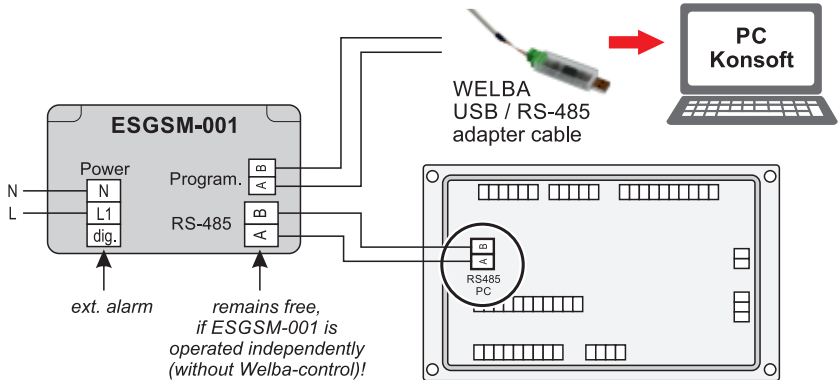- Then: Apply the mains voltage.
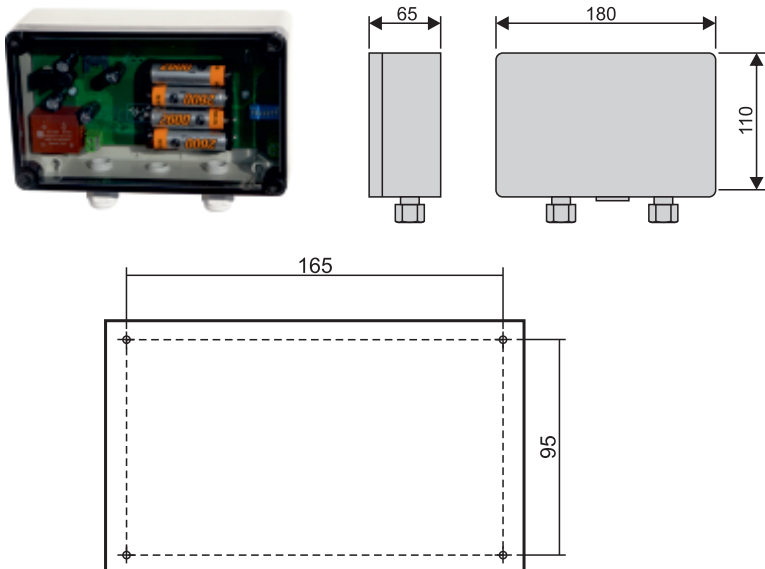
Electrical connection

Take the electrical connection to the circuit diagram of the respective control unit to which the remote monitoring module is connected.

⚠️ ***ATTENTION: Modem must be voltage free!***
(Neither battery mode nor network operation)

ATTENTION: Connect the ESGSM-001 modem to the **RS485-PC** interface of the Welba controller.

Connection of external devices

This modem offers the sending of fault messages of external devices (e.g. from a robot, a level sensor, an overpressure monitor, etc.). To do this, the digital input must be connected to (L1) via a potential-free switching contact.

In case of a fault (230 Volt are at the digital input), fault '98' will be sent.
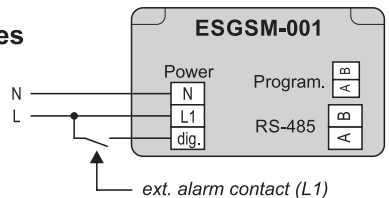
Insert SIM card

- Slide the cover backwards and fold up.
- Insert the SIM card in the lid.
- Fold down the lid and lock it forwards.
- Check that the SIM-card is inserted correctly into the holder and that the holder is locked correctly.

Setting the DIP switches

	1
	0

Default setting

DIP 1 | 2 | 5	**"0"**	without function
DIP 3	**"0"**	Operation with connected control.
	"1"	Independent operation (without connected control)
DIP 4	**"0"**	SIM-card „2G" with data tariff inserted
	"1"	SIM-card without data tariff inserted
DIP 6 | 7 | 8	**"0"**	Termination OFF
	"1"	Termination ON*

* Activate the BUS termination

DIP switches 6 to 8 are used for BUS termination with a terminating resistor.

The termination must always be set to "ON"!

Insert / replace rechargeable batteries

IMPORTANT NOTE

The life of the rechargeable batteries is limited. Those fitted must be replaced by new ones every two years at the latest.

Only (!) rechargeable batteries of the following specification may be used:

1,2 V NiMh - size AA   (min 2.000 mAh)

DO NOT USE ORDINARY BATTERIES !!!
EXPLOSIVE !!!
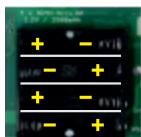
- Insert the rechargeable batteries into the battery holder.
  Pay attention to the correct polarity (marked in the battery holder).

DANGER
Incorrectly inserted rechargeable batteries can destroy the device.

After inserting the rechargeable batteries, both LEDs start lighting or blinking.

- Switch on the 230V power supply to avoid an unnecessary discharging of the rechargeable batteries.

After inserting the rechargeable batteries, both LEDs start lighting or blinking
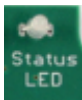
LED "Status GSM" *(LED yellow)*

LED "Status GSM" can be ignored.
It is only used for diagnostic purposes for the manufacturer.

The "Status-LED"

The Status-LED lights up /blinks orange, green or red during commissioning and normal operation. The different colours mean the following:

- 🟠 *ORANGE*　　　　　Modem in initialisation
- 🟢 *GREEN*　　　　　　Modem ready for operation
- ☀️ *RED blinking*　　　　Fault

Status message <u>during the boot process</u>

- 🟠　*Orange permanent　　device starts. (boot process can take about 1 minute).*

Status message <u>after boot process</u>

- 🟢 *permanent:*　　Device ready for operation
  NO RS485-connection to the control.

- ☀️ *1 x blinking:*　　Device ready for operation
  RS485-connection to control ok.

If the Status-LED lights up / blinks in "GREEN", the installation has been completed - the modem is ready for operation.

If the Status-LED blinks in "RED", there is a fault that must be rectified. Continue with the commissioning.

Overview commissioning with / without a PC

	Input Standard with PC	Input manual without PC
Commissioning of the SIM-card.	●	●
Entering of **one** telephone number which will get the fault-SMS.	●	●
Entering of further (up to 5) telephone numbers which will receive fault-SMS.	●	○
Use of the default fault texts sent via SMS (Default texts are already included in the delivery state).	●	●
Individual customizing of the fault texts sent via SMS.	●	○
Individual customizing of the information texts to ensure an easy assignment of a fault SMS to a customer or the monitored tank.	●	○

○ = *not supported*

Commissioning with a PC (recommended)

The use of Konsoft is inevitable, if
· fault messages are to be sent **to various** telephones
· fault texts are to be adjusted individually
· information texts are to be adjusted individually
· several controls are to be queried

To be able to use all the features of the ESGSM-001 modem and to be able to enter your parameters conveniently, use the free Software "Welba-Konsoft" for the commissioning of the module.

A detailed description of the procedure for the commissioning of the ESGSM-001 is in the Software documentation in section "SMS-alarm and remote maintenance modem".

Note: The Software "Konsoft" and the associated documentation is on the USB-stick supplied with the parts.

Note: Status messages of the modem can be conveniently tracked during the commissioning on the 'Konsoft'-monitor - in additition to the Status-LED.

Commissioning without a PC

A BASIC-installation of the modem is also possible without 'Konsoft.

Precondition is that the serial number of the modem is SN0420105 or newer.

(If this is not the case, an update must be carried out via the' Konsoft'.)

In case of a basic-commissioning without a PC ...

· fault messages can only be sent to one phone
· only one control can be queried,
· only predefined fault texts can be sent,
· only predefined info texts can be sent.

Procedure

After inserting the batteries or applying the mains voltage, the Status-LED "GREEN" lights up / blinks - provided there are no faults.

If there is a fault (Status-LED blinks "RED"), it must be rectified as described as follows. If there are several faults at the same time, these must be resolved sequentially.

Once all faults have been eliminated, the LED lights up or blinks "green".

	Fault code	Fault
☀	*1 x blinking:*	**SIM-card mistake**
		Check if the SIM-card is inserted correctly, is not blocked or is defective
☀ ☀	*2 x blinking:*	**PIN-input necessary**
		Enter the PIN of your SIM-card in the corresponding parameter [mostly E50] of the connected device. Please observe the instructions for the device.
☀ ☀ ☀	*3 x blinking:*	**No GSM-reception**
		Device possibly metallically shielded or source of interference nearby? Radio mast reachable? (Check with smartphone.)
		Reception on site can possibly be improved by changing the position of the modem. Position of modem has to be improved.
☀ ☀ ☀ ☀	*4 x blinking:*	**Entry of APN-data necessary**
		Enter the APN-data (see documentation SIM-card) into the modem as follows: Send an SMS to the telephone number of the modem with the text:
		setAPN:APN User, password (see "SMS-commands)
☀ ☀ ☀ ☀ ☀	*5 x blinking:*	**Power failure.** Modem runs on rechargeable battery mode. Check the 230V mains connection

Entry of the telephone number

Precondition
- The remote maintenance module is ready for operation
- So far, there is no entry for the first number in the telephone number list.

Procedure
- Send an SMS with the text "**setNumber1**" with your mobile phone to the telephone number of the ESGSM-001.

  Then your phone number will be the first entry in the phone number list.

  This first entry:
  - gets all fault messages sent as SMS
  - can make queries via SMS and
  - can access the ESGSM-001 and the connected devices via remote maintenance (via the "Konsoft" configuration software).

Test of the SMS-connection
- Send an SMS with your mobile phone to the telephone number of the remote maintenance module with the text **"getstate"**

  Answer*:   State: 1. 15:30 F42 OFF 18.8C, Pwr: ok, Bat: ok

Service technicians have the option of sending status queries via SMS to the modem's phone number. After entering the relevant command, the modem will send the relevant information back a short time later.

Requirement:

The respective phone number must have the appropriate authorization.

Command   Statement

getticket   Request of a remote maintenance security code

Via the configuration Software "Konsoft" a remote maintenance session can be started with this "ticket". (See instruction Konsoft: section "SMS-alarm and remote maintenance modem").

Precondition for a remote maintenance is

- a data tariff and

- that no other user is already using a remote maintenance with this device.

Answer*:   Ticket: BOvELflk7Lzirr3gh8VF

getstate   Request of the status of the modem and its connected devices

- Device number	connected device: State: 1. device unavailable State: 1. … , 2. … , 3. …
- Time	connected device
- Operating status	connected device: off / cool / power off / clean
- Temperature in °C	connected device
- Power status ESGSM	Pwr: ok / not ok
- Battery status ESGSM	Bat: ok / not ok

Answer*:   State: 1. 15:30 OFF 9.5C, 2. 15:31 OFF 8.0C, 3. Device not reachable, Pwr: ok, Bat: ok

getsignal   Request of the received signal strength of the modem

Answer*:   Signal: -74dBm (65%), „Netz-Provider"

* = example

Command   Statement

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getrights   Request of user rights for the associated SMS telephone number

onlMon   Remote maintenance: "online monitoring" allowed

rdParm   Remote maintenance: "reading of parameters" allowed

wrParm   Remote maintenance: "writing of parameters" allowed

wrGsm   Remote maintenance: "storing in GSM-modem" allowed

query   SMS "allowing of querying" allowed

Answer*:   Rights:onlMon,rdParam,wrParam,wrGsm,query
All options are allowed.
Rights:onlMon,query
only remote maintenance: "Online monitoring" and SMS "allowing of querying" are allowed.

Attention: If "allowing of querying" is not activated, all "GET"-commands are ignored, i.e. answers won't be sent.

getclasses   Request of the alarm classes which are transmitted to this SMS-telephone number

Cl1   class 1 is reported
Example: WTS300/TW31/TW32 => „System alarms"

Cl2   class 2 is reported
Example: WTS300/TW31/TW32 => „green alarms"

Cl3   class 3 is reported
Example: WTS300/TW31/TW32 => „red alarms")

Bat   is reported from ESGSM: rechargeable battery empty

Power   is reported from ESGSM: power failure

Answer*:   Classes: Cl1, Cl2, Cl3, Bat, Power
All alarms are reported.
Classes: Cl3, Bat
Alarms of class 3 and "ESGSM rechargeable battery empty" are reported.

* = example

Command   Statement

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setNumber1 enters the telephone number of the transmitting mobile phone in the first place of the telephone list. (Only possible if no SMS-telephone-number has been entered in the first place).

Answer*:   setNumber1: ok

SMS-telephone number has been entered successfully in the first place

setNumber1: not ok

Incorrect entry or first number place is already occupied.

If there is no answer after 1 to 2 minutes, check the following points:

- telephone network available

- telephone number of the SIM-card inserted in the ESGSM-001 correct

- command "setnumber1" correctly entered and without blanks

setApn   Enters the APN-data provided by the network provider (Access point name).

The command "setapn" with its parameters must be entered without blanks, a comma has to be used instead.

Command*:   setapn:www.provider.de,username,password

Even if the strings are empty, commas must be included.

setapn:www.provider.de,,

Answer*:   IGNORE   *valid APN-data are already available. Device was and is ready for use.*

OK   *valid APN-data accepted. Device is ready for use.*

NOT OK   *NOT OK APN data adopted Device is NOT ready for use..*

FORMAT   *APN-data have an invalid format.*

Note: If there is no query available for users and password for your APN-data, the entry is as follows:

Command: setApn:web.vodafone.de,,

* = example

For the purposes of disposal, the device is classified as waste electronic equipment within the meaning of European Directive 2002/96/EC (WEEE) and must not be included with household waste. It must be disposed of through the correct channels.

Local and current legislation must be observed.

Additional modem fault messages

Fault		Cause
F61 fault ESGSM-modem	=>	the ESGSM-001 does not have a connection to the the connected control.
F98 signal at the digital input*	=>	The digital input of the ESGSM-001 has "high" level.
WELBA ESGSM: battery alarm	=>	battery of the ESGSM-001 is empty
WELBA ESGSM: power alarm	=>	power failure ESGSM-001

All other fault messages are in the documentation of the connected Welba-control.

* see connection external alarm transmitter.

Technical data

Operating voltage	230V AC +/-10%, 50Hz
Usable rechargeable batteries	Mignon 1,2 V NiMh - size AA (min. 2.000 mAh) **Do not use ordinary batteries!**
SIM-card holder	to insert a mini-SIM (form factor 2FF)
Display	two status LEDs
Interface	RS-485
Housing - Dimensions	Surface-mounted housing 180 x 110 x 65 mm
Protection	IP65
Connection - screw connections - plug-in screw connections	Grid 5.0 mm for cables up to 2.5 mm² Grid 3.5 mm for cables up to 1.5 mm²
Environment specifications - Operation temperature - Storage temperature - max. humidity	0° .. +50°C -20° .. +70°C 75% (no dew)