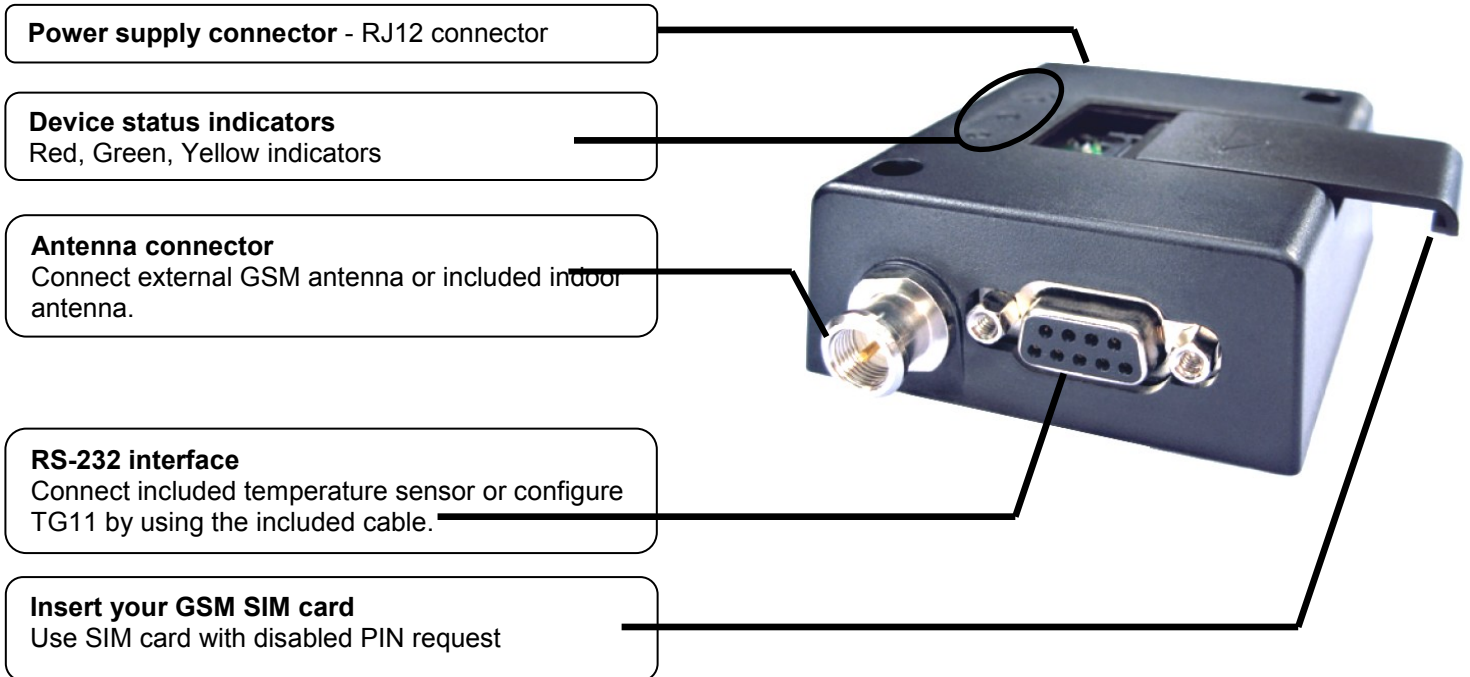


## HWg-Tg11

### First steps for remote monitoring & logging via GSM/GPRS

#### Device description



#### Status indicators

- Green LED blinking signalizes data processing, power OK
- Red LED shining – sensor in alarm state or disconnected
- Yellow LED blinking signalizes GPRS or SMS transmission
  - 2x blink of yellow LED – SMS sent
  - 3x blink of yellow LED – Error sending SMS



#### HWg-Tg11 package contains:

- HWg-Tg11 device
- Temp-232 Outdoor 3m temperature probe
- Power adaptor 12V
- This printed manual
- CD s documentation, manual and Software

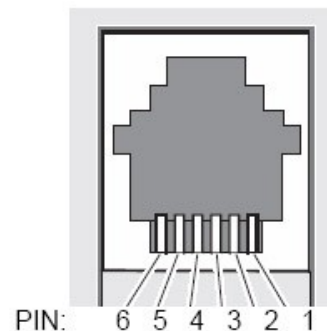


## Technical parameters

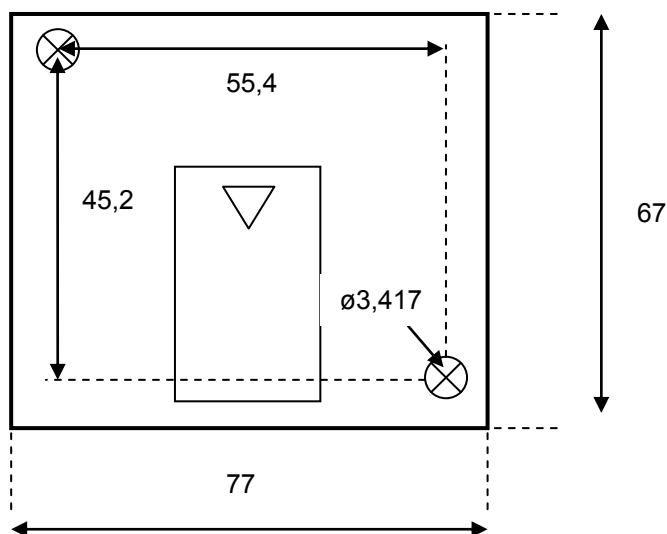
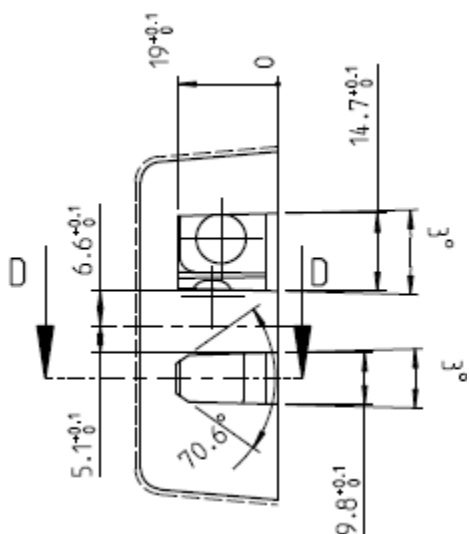
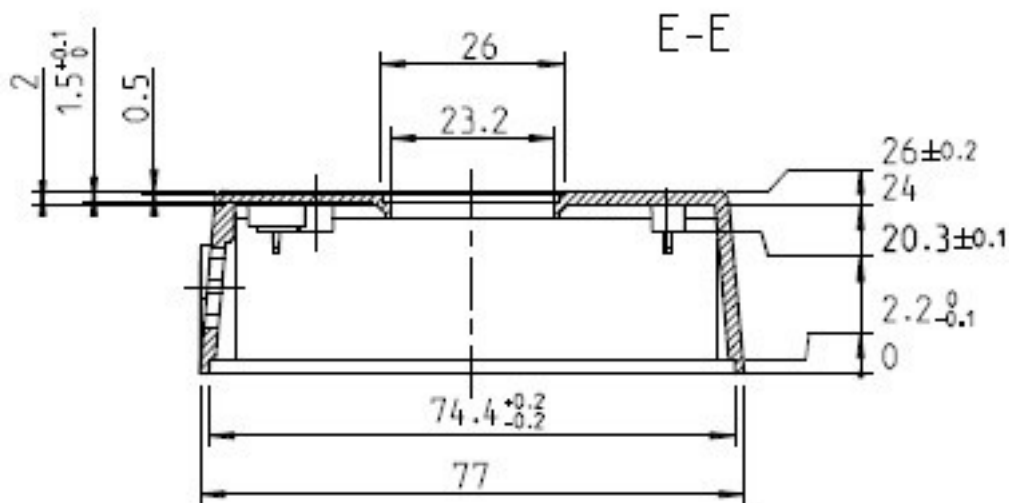
Communication	
+ Interface	GPRS Class 10 Quad band (850/900 MHz & 1800/1900 MHz)
+ Supported protocols	TCP/IP (SMTP, NTP), SMS commands
+ Antenna	FME male coaxial jack 50Ω
+ Alert events	Ring-out / SMS / Email over GPRS
+ Logfile events	Email with logfile attachment over GPRS
Temperature probe	
+ Measured temperature	-30°C .. 125°C
+ Resolution	2 decimal digits
+ Probe	3m silicon cable, stainless steel probe coverage
Device	
+ Power	D-sub 9-pin male connector (DB9M)
+ Dimensions	77 x 67 x 26 [mm]
+ Weight	90g (modem unit) / 430g (complete delivery)
+ Not used	Mini USB connector with audio interface
+ Modem conditions	5..50°C / 20..80% RH
+ Probe interface	RS-232 DB9F - D-sub 9-pin female connector
+ Configuration	Over probe serial port - Win application "Hwg-Tg11 Config"
LED Status indicators	
+ POWER	<b>Green</b> blinking – Power OK
+ DATA	<b>Green</b> blinking – Data processing
+ GPRS / SMS	<b>Yellow</b> blinking – GPRS or SMS transmission <b>2x Yellow</b> blink – SMS transmission OK <b>3x Yellow</b> blink – SMS transmission error
+ SENSOR	<b>Red</b> lit – Sensor in alarm state or disconnected
+ CONFIGURATION	<b>Red</b> and <b>Yellow</b> lit – device connected to PC in setup mode
Physical parameters	
+ Supply voltage	12V / 1A
+ Dimensions	77 x 67 x 26 [mm]
+ Weight	90g (modem unit) / 430g (complete delivery)

# Power supply

RJ12 pin	Description
1	Positive Power Input
2	Analogue Input
3	Active high control line
4	Positive edge triggered signal
5	NC (not connected)
6	Negative (ground) Power Input



# Mechanical dimensions



## Connecting Tg11

- 1) Prepare your SIM card:
  - **Disable initial PIN code control**  
(You can test it in your mobile phone)
  - Check the amount of credit
  - Check if it's possible to use GPRS services with your SIM card
- 2) Insert the SIM card in the Tg11
- 3) Connect the GSM antenna.
- 4) Connect serial cable to your PC.

## Hwg-Tg11 Config

Configure the Tg11 device via serial port and Windows setup application.

The Installer of the Hwg-Tg11 Config application can be found on included CD in the Tg11 folder (only Windows version) \Tg11\HWg-Tg11 Tools.exe

### Prepare your Tg11 configuration:

The screenshot shows the HWg TG11 Configurator 1.0.7 application window. The window has a menu bar (File, Device, Help) and a toolbar (General, Alarms, GPRS, E-mail, Logger). The main area is divided into several sections:

- Connection:** Contains a 'COM Port' dropdown menu set to 'COM1' and a 'Connect' button.
- General:** Contains a 'Device Name' text box with 'Jan\_TG11' and a 'Device Password' text box with 'xxxx'.
- Temperature Safe Range:** Contains a 'Sensor 1' section with 'Minimum' and 'Maximum' spinners set to '10' and '30' respectively, and a temperature unit dropdown set to '°C'.

Callout boxes provide the following information:

- Select your serial port:** Points to the 'COM Port' dropdown menu.
- Define the name of your device:** Points to the 'Device Name' text box.
- Define min and max value for your sensor and temperature unit. Alarm will be sent when temperature limits are exceeded.** Points to the 'Minimum' and 'Maximum' spinners.
- Password for authorization in SMS communication. Default: 0000** Points to the 'Device Password' text box.
- Status bar Shows state of the connection to Tg11 and instructions how to connect.** Points to the red status bar at the bottom of the window.

## Alarm parameters

The screenshot shows the 'Alarms' tab of the HWg TG11 Configurator. The interface includes sections for 'SMS Report Settings' and 'E-mail Report Settings'. The 'SMS Report Settings' section has two input fields for 'Alarm SMS Recipient(s)' containing the number '+420777514889'. It also features four checkboxes: 'Ring-out on Alarm Start' (checked), 'Report End of Alarm over SMS' (checked), 'Report Incorrect Time at Start-up over SMS' (unchecked), and 'Send Device Status if Called from Alarm SMS Recipient No' (checked). The 'E-mail Report Settings' section includes fields for 'Alarm E-mail Recipient (TO):' with the email 'rehak@hw.cz', an empty 'Alarm E-mail Recipient (CC):' field, and a dropdown menu for 'Remind Pending Alarm by E-mail every' set to '5 Minutes'. A 'Store Configuration to Device' button is located at the bottom. A red status bar at the very bottom reads: 'Status: Select COM port, click on Connect and wait for device dete...'. On the right side of the window, there is a temperature display showing '20.0 °C' and a vertical red and blue bar.

**Ring 10 seconds to Alarm number when Alarm starts (after sending SMS).**

**Send SMS notification after Alarm finished**

**Inform user to Alarm number via SMS when NTP Time synchronization failed after power-up. (GPRS connection is not working)**

**Request status SMS just by ringing from the Alarm number. (it is not needed to send SMS requesting state).**

**Alarm SMS will be sent to these numbers.**

**SMS can be sent to 2 different numbers.**

**Alarm Email will be sent to these addresses (TO and CC)**

**Repeat sending Email alert notifications during alarm state with defined period.**

## GPRS parameters

The screenshot shows the 'GPRS' tab in the HWg TG11 Configurator. The 'Enable GPRS' checkbox is checked. The 'Mobile Operator' dropdown is set to 'Custom'. The 'GPRS Operator Settings' section includes:
 

- APN Address: internet.t-mobile.cz
- APN User Name: (empty)
- APN Password: (empty)
- GPRS Packet Size: 512

 The 'NTP Server Settings' section includes:
 

- NTP Server: clock1.zcu.cz
- Time Zone Offset: 2 Hours

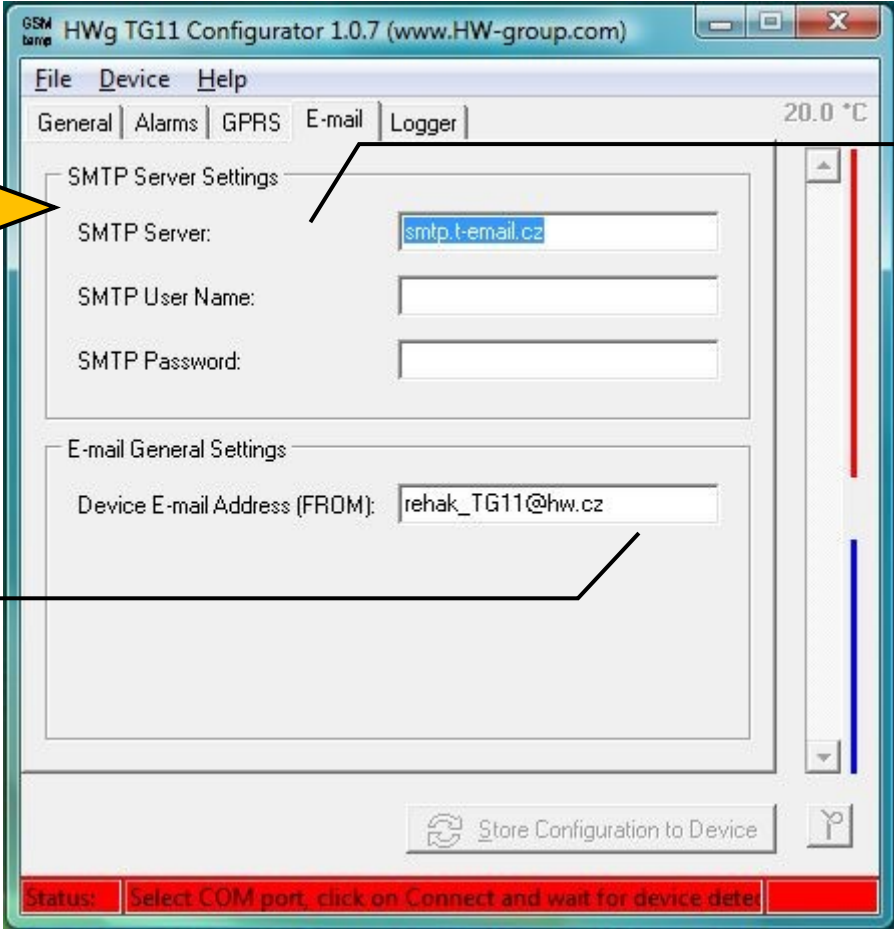
 Callouts provide instructions: 'Enable GPRS' points to the checkbox; 'GSM Operator' points to the APN Address field; 'Keep default value 512, if GPRS is not working ask your operator for details.' points to the GPRS Packet Size field; 'Time shift on GMT' points to the Time Zone Offset field; 'Choose one the given operator profiles.' points to the Mobile Operator dropdown; 'Contains APN, SMTP settings etc ..' points to the APN fields; 'Fill APN parameters, they are provided by your operator.' points to the APN fields; and 'Use any NTP server' points to the NTP Server field.

For easier configuration you can use GSM operator profile from predefined list.  
 On request we can add parameters of your operator (APN, SMTP, GPRS Packet Size..).

- CZ Vodafone (Vodafone card)
- CZ Vodafone
- CZ T-Mobile
- CZ TelefonicaO2



## E-mail parameters



**GSM Operator**

Fill the SMTP parameters for sending email.

Most of the GSM operators allow using only their own SMTP servers. Contact operator.

Parameters can be saved in predefined operator profile

**Sender email address (FROM).**

Status: Select COM port, click on Connect and wait for device dete

## Logger parameters

The screenshot shows the 'Logger' tab in the HWg TG11 Configurator 1.0.7 software. The interface includes a menu bar (File, Device, Help), a tabbed view (General, Alarms, GPRS, E-mail, Logger), and a temperature display (20.0 °C). The 'Logger' section contains the following settings:

- Sampling Period:** A spinner box set to 5, with the unit 'Minutes'.
- Log E-mail Period:** A spinner box set to 4, with the unit 'Hours'.
- Disable Periodic Log Upload if Roaming is Detected:** A checkbox that is currently checked.
- Log E-mail Recipient (TO):** A text input field containing 'rehak@hw.cz'.
- Log E-mail Recipient (CC):** An empty text input field.
- Log E-mail Subject:** A text input field containing 'HWg TG11 report'.

Callout boxes provide additional information:

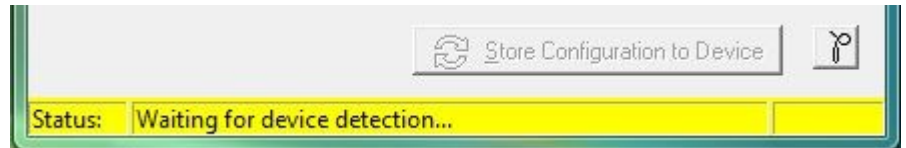
- How often is current value saved to the logfile.** Points to the 'Sampling Period' spinner.
- How often is the logfile sent with all saved values.** Points to the 'Log E-mail Period' spinner.
- Disable periodic sending of the logfile when device is out of the domestic network.** Points to the 'Disable Periodic Log Upload...' checkbox.
- Logfile recipient email address. (TO)** Points to the 'Log E-mail Recipient (TO)' text field.

A note at the bottom left states: *Note: Log sending can be anytime enabled also by SMS command.*

At the bottom of the window, there is a 'Store Configuration to Device' button and a red status bar with the text: 'Status: Select COM port, click on Connect and wait for device dete'.

## Configuration upload to Tg11

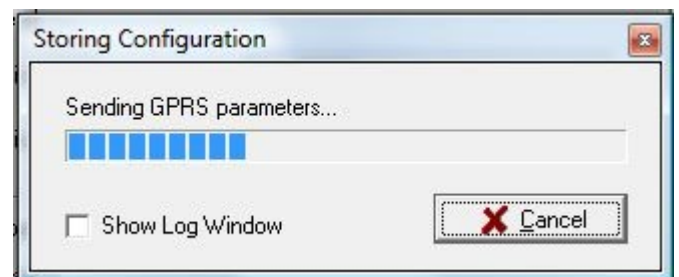
- 1) Check if the serial cable is connected from PC to Tg11 and click the button “Connect”. The status bar turns yellow and program waits for the device detection.



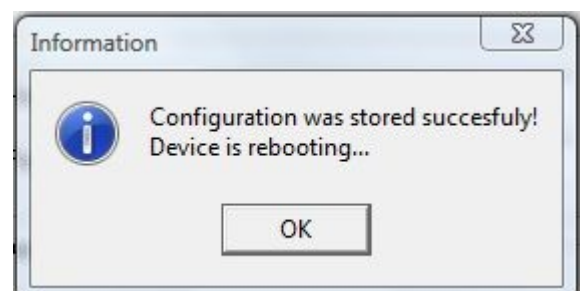
- 2) Connect power adaptor and switch on the power. Green LED starts blinking and after booting is finished red and yellow LEDs switch on. Status bar of Config application turns green and device is ready to upload the configuration. This process can take about 3 minutes.



- 3) Click the “Store Configuration to Device” button and start uploading the configuration.
- 4) Wait about 1 minute until Config uploads the configuration to the Tg11 device.



- 5) Configuration is updated and Tg11 device is restarted. Reboot of the device can take about 3 minutes. Now if the device is ready you can start the first test.

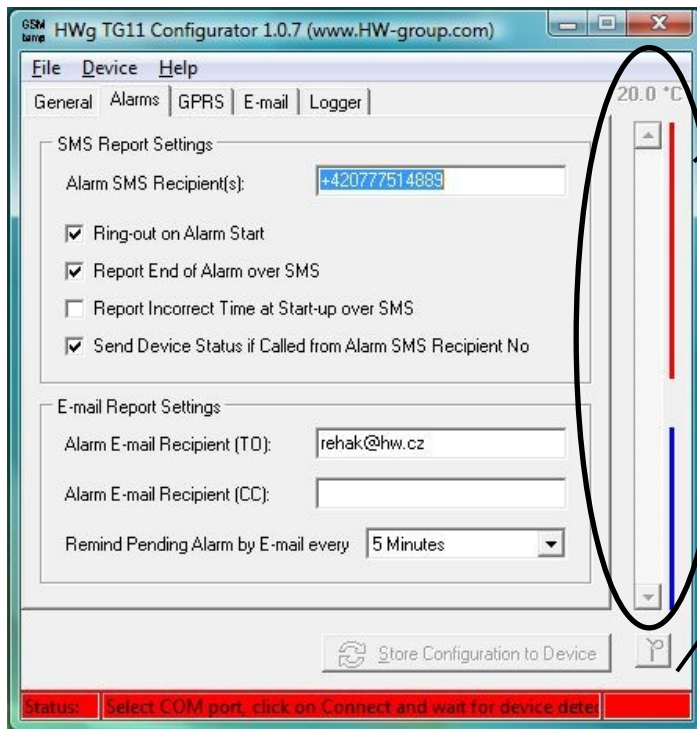


## Testing the configured Tg11 device

Configured device can be tested:

- Connected to the PC – with Hwg-Tg11 Config application
- With connected temperature probe.

### Test with Hwg-Tg11 Config application



When the Tg11 device is turned on and connected to the PC, you can simulate the temperature probe by this slider.

By this you can easily test all the reactions to Alarm state.

Turn on temperature probe simulation.

### Test with connected temperature probe

- 1) Connect Temperature sensor Temp-232 to the serial port on the Tg11.
- 2) Wait about 3 minutes after power-up. Then place the temperature sensor in the hot water or use the lighter to increase the temperature over the maximum limit. Red LED blinks and 30 seconds later you receive the SMS.
- 3) SMS about the Alarm situation is sent first, yellow LED blinks twice when the device is sending the SMS. Alarm Ring-out call to Alarm number follows as next step. Alarm Email to Alarm address is sent as a last step.

Alarm SMS:

FROM: +42060345170

Sensor Temperature reports value 56.0C being above the limit 30.0C.

Alarm Email:

FROM: [rehak\\_TG11@hw.cz](mailto:rehak_TG11@hw.cz)

TO: [rehak@hw.cz](mailto:rehak@hw.cz)

SUBJECT: Alarm report

Sensor Temperature reports value 56.0C being above the limit 30.0C.

- 4) Anytime when the device is not in alarm state, you can **ring Tg11** from Alarm number. Tg11 hangs your call after a second ring and sends you back status SMS:

## SMS reply from Tg11

```
0000 NAME= Jan_TG11 TEMP=62.0C MIN=10.0C
MAX=30.0C ALARM= +420777232750
TIME=18:29:07 DATE=08/03/26
```

- 5) You can request Tg11 status message by sending SMS with this text:

## SMS for Tg11

```
0000 STATUS
```

## SMS reply from Tg11

```
0000 NAME= Jan_TG11 TEMP=62.0C MIN=10.0C
MAX=30.0C ALARM= +420777232750
TIME=18:35:17 DATE=08/03/26
```

- 6) In defined period, the logfile is sent by an email. In current configuration it is sent every 4 hours:

Periodic log Email:

```
FROM: rehak\_TG11@hw.cz
TO: rehak@hw.cz
SUBJECT: HWg TG11 report
```

```
HWg TG11
-- HEAD --
NO_ID
Jan_TG11
4
08/03/26;18:07:05
-- SENSORS --
1
1;Temperature;0;C;-18.0;26.0
-- LOG --
08/03/25;22:42:27;129;31.2;
08/03/25;22:42:33;1;25.1;
08/03/25;22:43:05;1;24.6;
08/03/25;22:44:05;1;24.0;
08/03/25;22:45:05;1;23.6;
08/03/25;22:46:05;1;23.4;
08/03/25;22:47:05;1;23.2;
08/03/25;22:48:05;1;23.1;
08/03/25;22:49:06;1;23.0;
-- END --
```

- 7) In case that the probe is disconnected for longer time than 5 minutes Tg11 will inform you about that by Ring out and by sending SMS with this text:

## SMS reply from Tg11

```
Sensor Temperature reports no value for more than
5 minutes.
```

## SMS messages

Tg11 can be also configured without the connection to the PC using the SMS commands.

### SMS messages format

Messages sent to the SIM card number inserted to the Tg11 must respect:

- SMS must contain correct password
- SMS must be in correct format



Example of correct format of the SMS command for Tg11status request:

SMS for Tg11

0000 STATUS

- When SMS with incorrect password or in incorrect format is received, Tg11 will alert you to this by SMS. If SMS is correct, command is executed without warning.
- You can put more command to one SMS.
- Values containing spaces have to be in quotation marks, in order to not to be taken as 2 separate commands.

**Note:** *When you are finished with the configuration, the device has to be restarted. You can do this by the SMS command REBOOT.*

### General SMS settings

MODULENAME	- Name of the device
PASSWORD	- Password – one word without spaces (e.g. PASSWORD=1234)
MIN	- Sets minimum value of temperature (always have to contain unit) (e.g. MIN=5C)
MAX	- Sets maximum value of temperature (always have to contain unit) (e.g. MAX=5C)
TEMPERATURE_UNITS	- Temperature unit setting. You can use C – Celsius, F – Fahrenheit, K- Kelvin

## Alarm settings

ALARM	- Alarm SMS recipients numbers (separated by semicolon) (e.g. <i>ALARM=+420777123456;+420666123456</i> )
ARING	- Ringout at the start of the alarm to Alarm number
EOF_ALARM	- report about the end of the alarm by SMS
RESET	- report incorrect time after power up by SMS
QRING	- Sends SMS with device status if called from alarm number
AEMAIL_TO	- Alarm email recipient address (e.g. <i>AEMAIL=user@hwg.cz</i> )
AEMAIL_CC	- Alarm email copy recipient address
ALARM_REPORT	- period of reminding Emails, during alarm (in minutes) (e.g. <i>ALARM_REPORT=10</i> )

## GPRS settings

GPRS_DISABLED	- Disables GPRS
APN_ADR	- GPRS APN address
APN_USER	- GPRS local APN user name
APN_PASS	- GPRS local APN password
GPRS_PACKET_SIZE	- Maximal GPRS packet size
NTP_TIME	- Time server address (NTP server)
TIME_ZONE	- Time zone (+/ - and number in hours) (e.g. <i>TIME_ZONE =+1</i> )

## Email settings

SMTP_ADR	- SMTP server address
SMTP_USER	- User name (if SMTP server requires authorization)
SMTP_PASS	- Password (if SMTP server requires authorization)
EMAIL_FROM	- Sender Email address (device)

## Logger settings

SAMPLE_PERIOD	- Values sampling period (in seconds) (e.g. <i>SAMPLE_PERIOD=300</i> )
LOG_PERIOD	- Log email period (in minutes)
RAM_RECORDS_COUNT	- Number of records stored in RAM memory before they are saved to FLASH memory (0 = saving to RAM disabled, data saved directly to FLASH)
ROAMING_DISABLED	- Disable periodic log sending, upload if roaming network is detected (1 = do not send log if roaming is active)
EMAIL_TO	- Log email recipient address (e.g. <i>EMAIL_TO =user@hw-group.com</i> )
EMAIL_CC	- Log email copy recipient address
EMAIL_SUBJ	- Log email subject

## Additional commands

STATUS	- Device sends SMS with information about its state.
INIT	- Device sends log as soon as possible by an Email
REBOOT	- Device reboot
TIME, DATE	- Set time and date in format HH:MM:SS and YY/MM/DD, (e.g. <i>TIME=02:10:00 DATE=08/08/17</i> )
SEND_CONF	- Device sends whole device configuration to preset recipient email addresses

SEND\_CONF="user@domain" - Device sends whole device configuration to email "user@domain"

## Firmware update

- 1) Connect Tg11 to the PC with serial cable.
- 2) Download the newest version of firmware for Tg11 device HW group website ([www.hw-group.com/download/fw/HWg-Tg11/HWg-Tg11\\_fw.zip](http://www.hw-group.com/download/fw/HWg-Tg11/HWg-Tg11_fw.zip)) and save it to local disk.
- 3) Start the program HWg\_Tg11\_FW\_Uploader. Program can be found on the included CD. (*\Tg11*)
- 4) Set, on which serial port is the Tg11 device connected.
- 5) Click the „Browse“ browse button and find the downloaded firmware
- 6) Click the „Upload FW into the Device“ button.
- 7) Window with the warning will show up.
- 8) Disconnect the power supply from Tg11.
- 9) Confirm the Windows by clicking the „Ok“ button.
- 10) Within 5 seconds connect power supply to the Tg11.
- 11) Wait, until firmware is uploaded to the device.
- 12) Confirm the Windows by clicking the „Ok“ button.
- 13) Firmware is successfully updated.

## Format description

**Note:** Format is for general purpose and describes also sensors, which are not yet supported by Tg11.

```

HEAD
-----
BEGIN\r
Device_ID\r                #Device unique ID (ASCII string contains 6bytes in 12 chars as HEX
string)
DeviceName\r              #Device name (ASCII string up to 16bytes)
report_ID\r               #Unique number per one email
report_date_and_time\r    #Time when email sent in ASCII YY/MM/DD;hh:mm:ss
Sensors_quantity\r       #How many sensors available, Equal to next description lines
sensors_headings\r       #Detailed sensors listing with all sensor detail
                           - All sensors described in several headding lines
                           - Each sensor identified by unique sensor ID

                           #ID;type;Name;units;Min;Max

                           #ID is Unique channel identification, maximum are 64 channels
                           #0..127 Channel identification - input/sensor/output
                           #128..255 Input Channel in Alarm state (Value out of Min/Max range)

                           #type[byte] channel sensor/output type definition
                           # 1=Binary input
                           # 2=Binary Output
                           # 3=Temperature Sensor,
                           # 4=Humidity Sensor
                           # 5=Current
                           # 6=Voltage
                           # 7=pulses

                           #Name is string[16] channel name

                           #Unit is string[4] s;s;°C;%RH;mA / A;V / mV; p
                           #Min[integer/10] is minimum for sensor local alarm
                           #Max [integer/10] is minimum for sensor local alarm

\r
date;time;ID;value;ID;Value\r    #date;time;sensor_ID;value
date;time;ID;value;ID;Value\r
date;time;ID;value;ID;Value\r
END\r

```

Format of e-mail - example

```

-----
BEGIN
000FAAB18817
My_gsm_sensor
12345678
07/02/12;10:00:04
1;3;temp_outside;°C;-32.5;-2.5;;2;3;temp_outside2;°C;0.3;2.5;;3;4;humid_outside;%RH;0;50;;

07/02/12;10:00:04;1;-10;2;2.1;3;40
07/02/12;10:30:04;33;10;2;1.2;3;44
07/02/12;10:50:04;33;10;2;1.2;3;44
07/02/12;11:10:04;1;-14;2;1.5;3;34
END

```