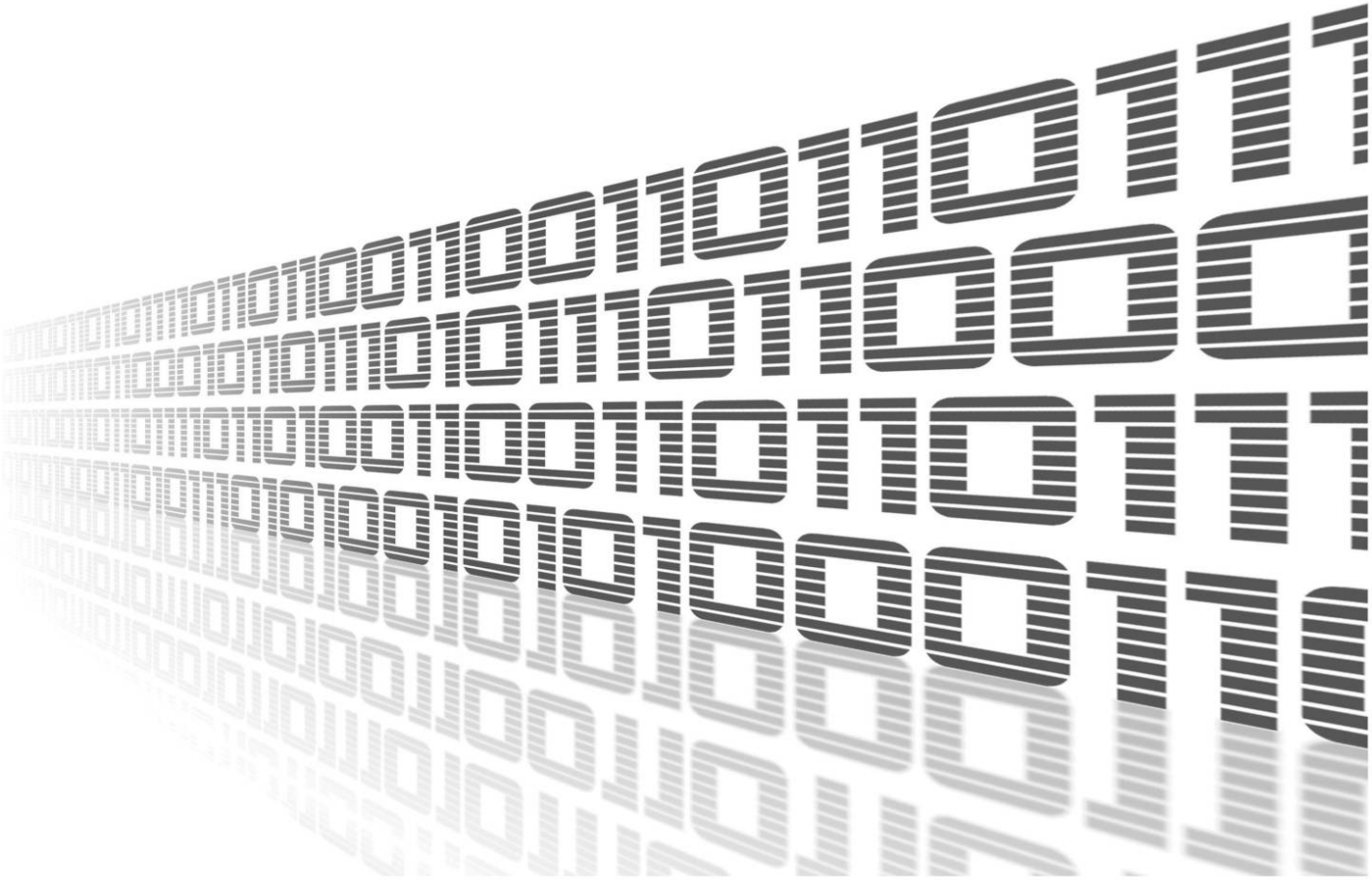
ADVANTECH

RouterApp

GPS



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Used symbols

Danger – Information regarding user safety or potential damage to the router.

Attention – Problems that can arise in specific situations.

Information – Useful tips or information of special interest.

Example – Example of function, command or script.

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1. Changelog

1.1 GPS Changelog

v1.0.1 (2012-08-23)

- First release

v1.0.2 (2012-09-13)

- Added support for internal GPS of Cinterion PHS8 module

v1.0.3 (2012-09-25)

- Fixed NMEA USB port recovery

v1.0.4 (2013-01-09)

- Added firmware revision check for MC8705 module
- Added possibility to manually switch antenna input for MC7710 module

v1.0.5 (2013-01-16)

- Suppresed log message about GPSSEL failure for MC8705 module

v1.0.6 (2013-02-13)

- New item text format at Status->Location

v1.0.7 (2013-07-11)

- Added NMEA messages forwarding over TCP/UDP
- Extended internal SNMP server MIB tree by GPS data (FW 3.0.7 or newer only)
- Added system time synchronization by GPS date and time
- Removed active/passive antenna selection (not needed more)

v1.0.8 (2013-11-18)

- Fixed module quit when GSM firmware revision can't be read

v1.0.9 (2014-01-13)

- Added GPS restart if location is not read within predefined time period

v1.1.0 (2014-05-29)

- Added support for UCR11 v2 (BIVIAS)

v1.1.1 (2014-09-18)

- Added support for MC7304 module (without antenna switching possibility, because only GPS antenna input is working in current firmware)

- Added support for PLS8 module

v1.1.2 (2014-10-15)

- Added support for HCR-v2 board (BIVIAS)

v1.1.3 (2015-01-13)

- Fixed locking for Sierra modules

v1.1.4 (2015-01-21)

- Fixed open/close for Gobi 3000 modules

v1.1.5 (2015-03-04)

- Fixed SNMP failting when reporting by TRAPs is disabled

v1.1.6 (2015-03-26)

- Added support for MC7700 and MC7750 modules (always use GPS antenna input only)
- Fixed antenna selection for HCR-v2 board (BIVIAS)

v1.1.7 (2015-06-05)

- Fixed problem with disconnecting/connecting ttyUSB0 device

v1.1.8 (2015-09-11)

- Disabled SNMP TRAPs for router OWL LTE

v1.1.9 (2015-12-01)

- Fixed duplicate "Power/Antenna" configuration for PLS8 module

v1.1.10 (2016-03-21)

- Added GPSD deamon (http://www.catb.org/gpsd/)

v1.2.0 (2016-07-19)

- Added support of Telit SL869-DR
- Added Hirschmann SNMP OID
- Fixed registration to SNMPD

v1.3.0 (2016-08-31)

- Added antenna power configuration on Telit SL869-3DR

v1.3.1 (2016-09-16)

- Fixed cooperation between Telit SL869-3DR and GPSD daemon

v1.3.2 (2016-10-02)

- Fixed NMEA buffer overflow
- Tightened condition for time synchronization

v1.3.3 (2017-01-24)

- Added building two versions, one with DR nmea records dropping

v1.3.4 (2017-03-28)

- Fixed autodetection of Telit GPS speed

v1.4.0 (2017-04-05)

- Added support of Quectel EC25
- Added identification of module by VID/PID

v1.5.0 (2017-05-25)

- Added pseudoterminal as new destination for raw NMEA output

v1.5.1 (2017-08-21)

- Fixed segmentation fault during service stop

v1.5.2 (2018-03-23)

- Enabled broadcast on UDP socket

v1.5.3 (2018-06-11)

- Enabled output of GLONASS NMEA sentences at EC25 module

v1.5.4 (2018-07-26)

- Reworked detection of router platform

v1.5.5 (2018-07-30)

- Fixed enabling of GLONASS NMEA sentences at EC25-AU module
- Fixed too aggressive access to GPS module

v1.6.0 (2018-09-05)

- Added support of Quectel BG96 modules

v1.6.1 (2018-09-27)

- Added expected ranges of values to JavaSript error messages

v1.6.2 (2019-01-02)

- Added licenses information

v1.6.3 (2019-03-11)

- Fixed detection of Telit SL869-DR

v1.6.4 (2019-03-27)

- Added support of PLS8-E version 4

v1.6.5 (2019-09-16)

- Added feature for sending router identification in NMEA sentence

v1.6.6 (2019-11-13)

- Added week rollover fix

v1.6.7 (2020-01-21)

- Hardened closing of NMEA device

v1.6.8 (2020-01-23)

- Fixed wrong ’false’ status of used satellites in gpsd

v1.6.9 (2020-01-27)

- Fixed week rollover fix for timezone GMT+3 and more

v1.7.0 (2020-09-01)

- Added second time period of sending the GPS data when a velocity is 0 (not moving)
- Fixed javascript check of valid SNMP period range

v1.8.0 (2020-10-01)

- Updated CSS and HTML code to match firmware 6.2.0+
- Upgraded gpsd to version 3.18.1

v1.9.0 (2021-04-12)

- Added support of Quectel RM500
- Added support of Thales PLS83

v1.10.0 (2021-09-21)

- Added support of Quectel EM12

v1.11.0 (2022-09-13)

- Added support of Quectel RM520N

2. Description of router app

This Router app is not contained in the standard router firmware. Uploading of this router app is described in the Configuration manual (see Chapter Related Documents).

Router app *GPS* (Global Positioning System) allows your router to provide location and time information in all weather, anywhere on or near the Earth, where there is an unobstructed line of sight to four or more GPS satellites.

This router app is compatible with all the routers equipped with one of the following GSM modules:

- Gobi 3000,
- SW MC8705,
- SW MC7710,
- SW MC7304,
- PLS8,
- PHS8,
- Quectel EC25,
- SIM7070E-PCIE.

Type of the GSM module installed in the router can be found in the *Mobile WAN* status in the *Mobile Network Information* part.

For the SW MC8705 module it is necessary to update the firmware of this module to version 3.5.2.1. Update must be done externally, which means that it is necessary to take out the module from the router and update firmware via corresponding tool. If firmware version is uncompatible, warning in log will be displayed.

Warning! For routers with two antennas is not functional diversity reception when using GPS! In case that router has three antennas, GPS and diversity reception can be used simultaneously.

GPS Rollover issue, related to firmware of the cellular module, resulted in incorrect display of date in the GPS router app. This issue was fixed in router app of version 1.6.6.

3. Web interface

The left part of the web interface contains the menu with pages for monitoring (*Status*), *Configuration*, *Information* and *Customization* of the router. *Information* block contains *licenses* item, where used licenses are displayed. *Customization* block contains only the *Return* item, which switches the GPS web interface to the interface of the router.

3.1 Location

If the device has an unobstructed line of sight to four or more GPS satellites, there are available detailed information about accurate location of the device (router).

Item	Description
Current time (UTC)	Current time in hhmmss.0 format (it's patterned on Coordinated Universal Time)
Latitude	Geographic coordinate that specifies the north-south position (in ddmm.mmmmmmG format where *d* stands for degrees, *m* for minutes and *G* for geographical direction [N, S])
Longitude	Geographic coordinate that specifies the east-west position (in dddmm.mmmmmmG format where *d* stands for degrees, *m* for minutes and *G* for geographical direction [E, W])
Altitude	Specifies the height above sea level of a location (in meters)
Satellites in view	Number of satellites that are directly visible for the router
Fix status	Indicates the availability of data and its quality. If no data is available, the value of this item is 0. A nonzero value indicates the presence of data.
Speed over ground	Current speed of the router relative to Earth's surface (in knots)
Course over ground	The actual course the router is moving along at the moment relative to Earth's surface (in degrees)
Date	Current date in ddmmyy format

Table 1: Location

There is a clickable item called *Show on map* at the bottom part of the window that displays an exact location of the Advantech router on the map server of Google company (Google Maps) in a new tab.

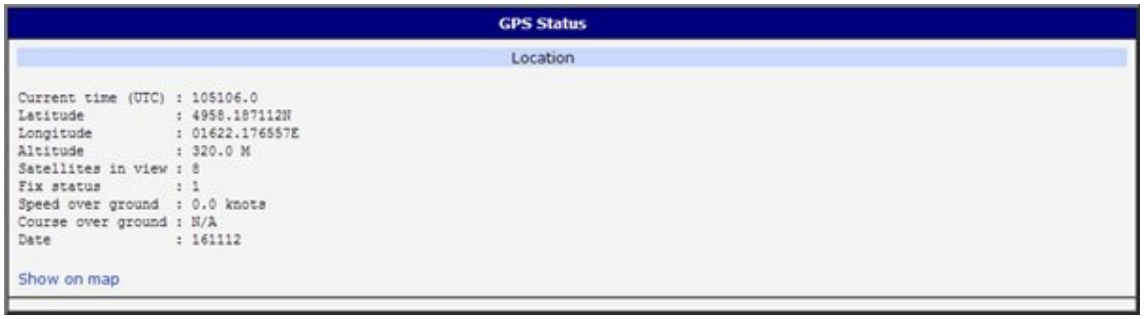

Figure 1: GPS Status – Location

3.2 System Log

In case of any problems it is possible to view the system log by pressing the *System Log* menu item. There are displayed detailed reports from individual applications running in the router. Using the *Save* button it is possible to save the system log to the computer.

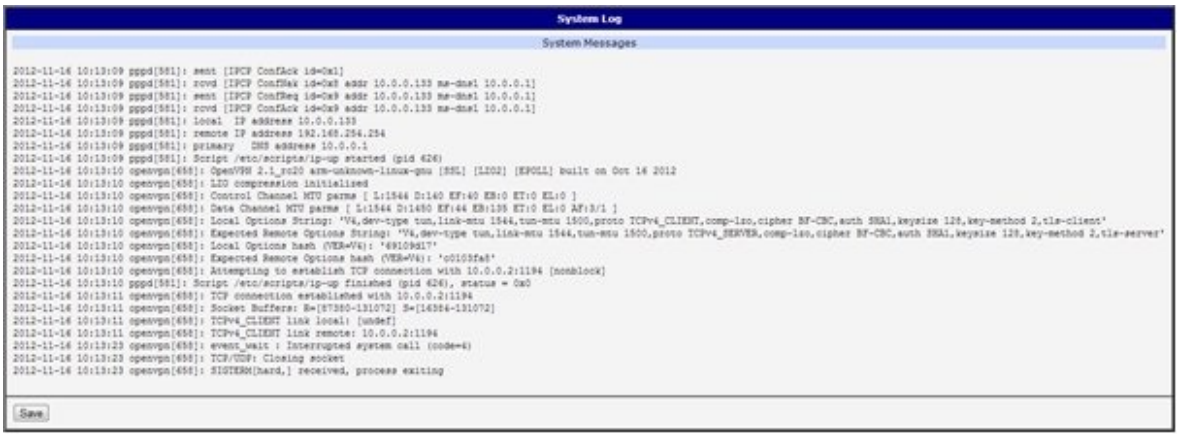

Figure 2: System Log

The System Log default size is 1000 lines. After completion of the 1000 lines it will be created a new file for storing system log. After completion of the 1000 lines in the second file, the first file will be deleted and then will be created a new one.

3.3 Global

After clicking the *Global* item in the configuration part of the menu, you can find a form that allows you to activate the GPS service by checking *Enable GPS service* item. In the next part of this form is an availability to choose the port that will be used for sending data from the GPS. You can select from the following options: *expansion port 1*, *expansion port 2*, *USB port* and pseudoterminal /dev/ttyp5. Expansion port 1 and expansion port 2 are optional ports of the router. Data are stored in *raw NMEA* format.

The configuration form also allows router to forward raw NMEA output to a remote socket. In this case it is necessary to check the box in front of the "configuration line" and define the following information:

Item	Description
IP Address	IP address to which the raw NMEA output will be forwarded
Protocol	The protocol by which raw NMEA output will be sent
Port	Port on which the communication will be underway
Period	Forwarding period

Table 2: Forwarding data to a remote socket

At the bottom of the form, it can be enabled the automatic reset of GPS. It is performed every time when location data are not available within set number of minutes.

The last item configures router's identification. When switched on, the identification string `$GPFID`, `RouterIdentificationString` is being sent in every NMEA batch. The `RouterIdentificationString` is the string configured in the GUI.

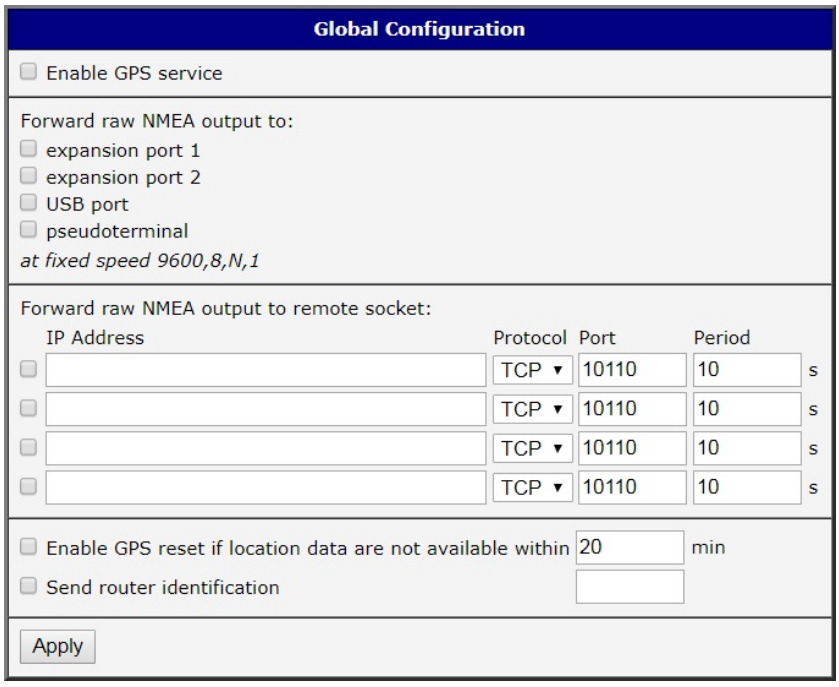

Figure 3: Global Configuration

3.4 GPSD

The GPSD form can be displayed by selecting the *GPSD* item in the configuration part of the menu. If the *Enable GPSD deamon* option is checked, the router automatically starts to listen on port specified below.

Item	Description
Inner port	Port in device dedicated for GPS
Listen port	TCP/IP port on which to listen for GPSD clients (default is 2947)

Table 3: GPSD Configuration

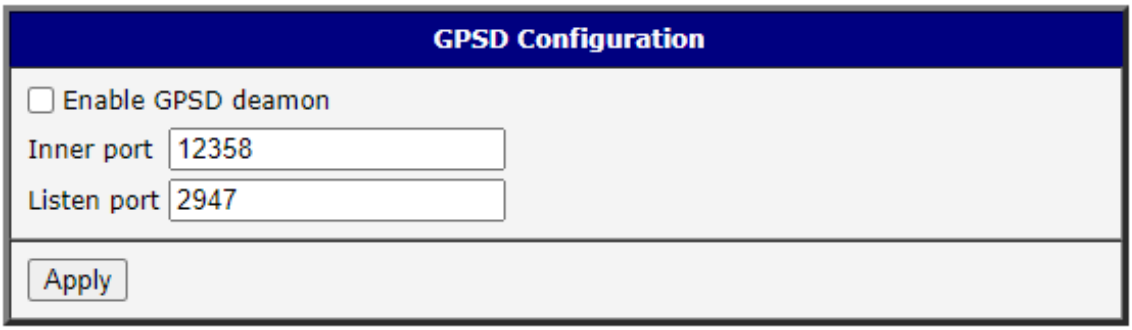

Figure 4: GPSD Configuration

3.5 SNMP

The SNMP form can be displayed by selecting the *SNMP* item in the configuration part of the menu. If the *Enable reporting to supervisory system* option is checked, the router automatically sends messages to supervisory system at the specified periods.

Item	Description
IP Address	Destination IP address
Period if moving	Interval of sending messages to supervisory system (in seconds) while in motion
Period if halted	Interval of sending messages to supervisory system (in seconds) when not moving (velocity is 0)

Table 4: SNMP Configuration

For sending GPS messages, the following range of OIDs is used. The importance of individual items is described in Table 1.

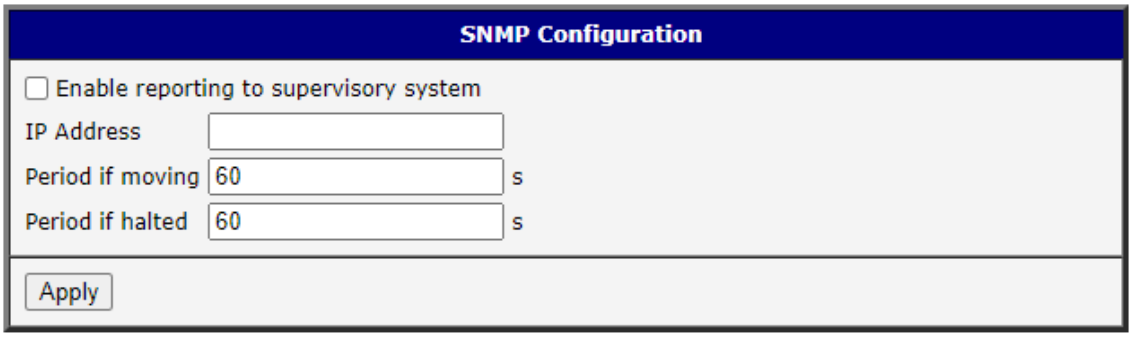

Figure 5: SNMP Configuration

OID	Designation
.1.3.6.1.4.1.30140.7.1.0	gpsTimeUTC
.1.3.6.1.4.1.30140.7.2.0	gpsLatitude
.1.3.6.1.4.1.30140.7.3.0	gpsLongitude
.1.3.6.1.4.1.30140.7.4.0	gpsAltitude
.1.3.6.1.4.1.30140.7.5.0	gpsSatellites
.1.3.6.1.4.1.30140.7.6.0	gpsFixStatus
.1.3.6.1.4.1.30140.7.7.0	gpsSpeedOverGround
.1.3.6.1.4.1.30140.7.8.0	gpsCourseOverGround
.1.3.6.1.4.1.30140.7.9.0	gpsDate

Table 5: GPS OID

3.6 Time synchronization

Form for synchronization of the system time can be invoked by pressing *Time Synchronization* item in the configuration part of the web interface menu. *Enable system time synchronization* check box is used to activate automatic time synchronization. Number of hours after which the synchronization is performed must be defined in the box below.

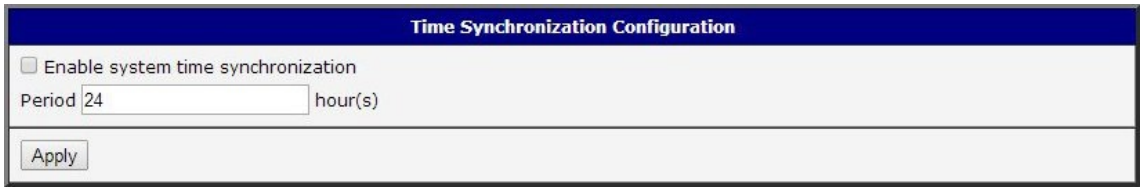

Figure 6: Time synchronization

4. Licenses

Summarizes Open-Source Software (OSS) licenses used by this module.

GPS Licenses

Project	License	More Information
gpsd	BSD	License

Figure 1: licenses

5. Related Documents

You can obtain product-related documents on *Engineering Portal* at *icr.advantech.cz* address.

To get your router's *Quick Start Guide*, *User Manual*, *Configuration Manual*, or *Firmware* go to the *Router Models* page, find the required model, and switch to the *Manuals* or *Firmware* tab, respectively.

The *Router Apps* installation packages and manuals are available on the *Router Apps* page.

For the *Development Documents*, go to the *DevZone* page.