Aplicom A11 Series

Reliable platform for demanding telematics and telemetry applications

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APLICOM A11 SERIES DATA SHEET

The Aplicom A11 telematics unit is a proven, reliable platform for demanding telematics and telemetry applications.

Like all A-Series units, it comes with unique, configurable Aplicom Telematics Software, and is fully programmable to meet any special needs.

Substantial memory and a separate real-time communication processor make the unit capable of efficiently handling all interfaces in parallel.

Aplicom Over-the-Air management tools allow device software and configurations to be updated remotely.

Contents

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KEY FEATURES

- ✓ A-Series Telematics Software included
  - ✓ Functionality without programming
  - ✓ Complete access to all device resources
  - ✓ Access to the free Aplicom A-GPS service that speeds up GPS start-up and enhances initial accuracy.

- ✓ Support for Aplicom Data Service ADS that gives access to data over REST API in JSON format

- ✓ Updates of configurations and device software over the air (OTAP)

- ✓ Supports Aplicom RDL function for remote downloading of tachograph data to a server. Support for all major tachograph brands.

- ✓ Geofences support various location-based functions

- ✓ Versatile connections and interfaces

- ✓ Optional Bluetooth low energy module for beacon recognition

- ✓ Optional WLAN module with three operating modes

- ✓ Internal accelerometer for acceleration measurement, movement detection and wake-up

- ✓ Measurement of supply voltage for engine operation detection and battery condition monitoring

- ✓ 3-year warranty

- ✓ Designed and manufactured in Finland

MADE IN FINLAND

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APPLICATIONS

Standard Software

A-Series Telematics Software contains a library of functions that give full access to A11 resources. Applications are created - without programming - by configuring this software.

You have access to an extensive set of **events** that can trigger **actions** for the units. These resources help you easily define the logic that shall be executed.
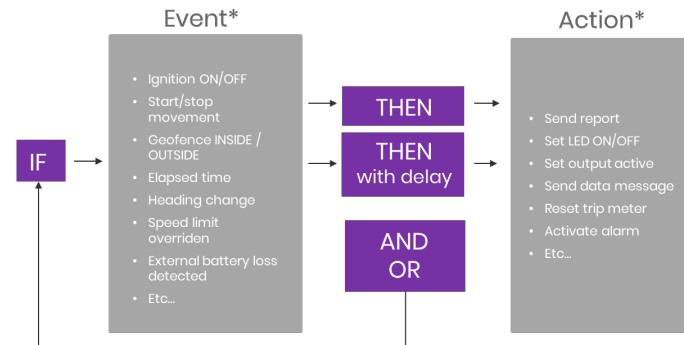
Configurations are created with the **A-Series Telematics SW Configuration tool.**

Software options

The MX models of A11 contain available standard options of Telematics Software. Options can be purchased individually for BX models according to your task requirements.

Custom software

We also offer also a Java programming toolkit (SDK) and customised software to meet any special needs.

Event*

- Ignition ON/OFF
- Start/stop movement
- Geofence INSIDE / OUTSIDE
- Elapsed time
- Heading change
- Speed limit overriden
- External battery loss detected
- Etc...

IF

THEN

THEN with delay

AND OR

Action*

- Send report
- Set LED ON/OFF
- Set output active
- Send data message
- Reset trip meter
- Activate alarm
- Etc...

* The events and actions shown here are examples only. For a full list, please refer to the Aplicom A-Series SW Configurator User's Manual

Documentation

- "Professional Telematics Made Easy": A-Series and Aplicom ADS data service brochure*

- A-Series Configuration Template Catalogue*

- Aplicom A-Series SW Configurator User's Manual**

*   Downloadable at Aplicom web site
** Available at Aplicom Partner Extranet. For access, please contact Aplicom Sales to register as partner

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TELEMATICS SW CONFIGURATION TOOL

The A-Series SW Configuration Tool makes it easy to configure A-Series devices to your needs

The system uses **events** that you define. **Event handlers** decide what actions are triggered by events.

This allows you to create the powerful application logic needed to execute your own use cases.

We have created a set of configuration templates accessible through the SW Configurator to support your work.

Access to the SW Configurator and full documentation on the Aplicom Partner Extranet is available free of charge to all registered Aplicom partners. Please contact Aplicom Sales at sales@aplicom.fi for more details!

We can provide training and support on the use of these tools. We also offer a **configuration service** to create configurations according to your requirements. Ask our sales for details!
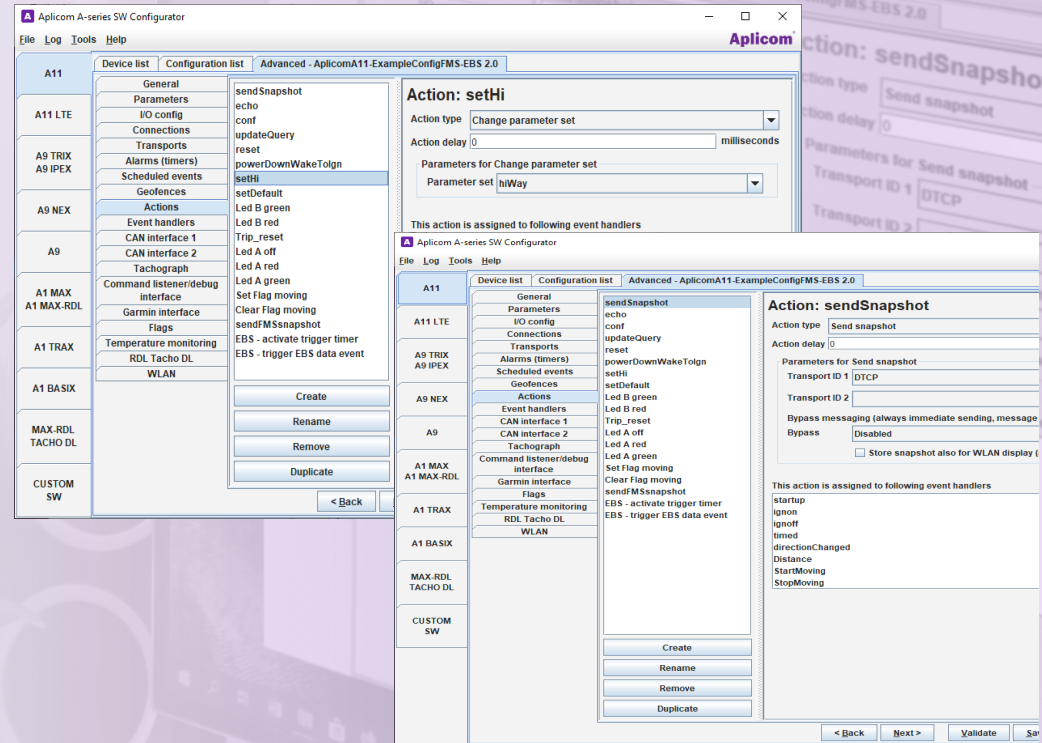
PRODUCT VARIANTS

Model	Software	SW options	Comms**
A11 BX	Telematics SW with basic options	Purchased separately	Default: 2G/3G

Alternative: 4G LTE Cat 1 |
A11 MX	Telematics SW with standard options	Standard options included	
A11 RDX	A11 MX + SW support for RDL* service option	Standard options included	
A11 DX	Platform product for software developers	All options are available for development with Aplicom Java Software Development Kit (SDK)	

Option	Description	Notes	Comments
BLE option	Bluetooth Low Energy (BLE) 5.0 Beacon recognition	External antenna (reverse SMA)	BLE and WLAN options as alternatives
WLAN option	WLAN module: Client, access point and hotspot modes		

*   Software support for Aplicom tachograph remote download (RDL) service
** Please check the available combinations in A11 Series product catalogue

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INTERFACES

Power input, IGN signal, ground
- 8-32 VDC
- With input voltage level measurement

Antenna connectors
- FME connector, GSM/3G/GPRS antenna
- SMA connector, GPS/GLONASS antenna
- Reverse SMA, BLE/WLAN antenna

Micro USB for SW and configuration management

5 x RS232 COM port for application use
- COM 5 can also be used as RS485
- A11W uses COM1 internally,
  not available for external use

1-Wire interface:
Data bus connection for e.g.
- Driver identification with iButton
- Status monitoring with Aplicom 3PAD keypad
or
- 1-Wire temperature sensor

K-line for tachograph real-time data

- 4x Digital/analogue input
- 2 x pulse counter input

- Four voltage regions:
  0-5V, 0-10V, 0-20V, 0-40 V
- Trigger point in the middle of region
- Selectable 20% trigger hysteresis
  for noise filtering

6 x digital input
- Input hi limit 5V
- 32V tolerant

2 x open collector output
- Open collector / digital output (e.g. LED control)

2 x CAN
- Buses with independent function
- FMS, CIF and RDL options
- Programmable for custom CAN protocols

1 x power output
- 5V/6V selectable, max load 300 mA

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TECHNICAL DATA CONNECTIVITY

2G/3G European standard versions

Communication platform	Europe
GPRS	900/1800 MHz
3G	900/2100 MHz
	Secure data transmission with HTTPS/SSL,TLS 1.3 Jamming detection

4G/2G European standard versions

Communication platform	Europe:
GPRS	900/1800 MHz
4G LTE Cat 1	800/900/1800/2100 MHz
	Secure data transmission with HTTPS/SSL,TLS 1.3 Jamming detection

3G US version

Communication platform	North America
GPRS	850/1900 MHz
3G	850/1900 MHz Secure data transmission with HTTPS/SSL,TLS 1.3 Jamming detection

4G/3G US version

Communication platform	North America
3G	850/1900 MHz
4G LTE Cat 1	750/850/1900 MHz Secure data transmission with HTTPS/SSL ,TLS 1.3 Jamming detection

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TECHNICAL DATA

General

Memory	10 MB FLASH, 10 MB RAM Up to 150 000 snapshots (EU version)
	31 MB FLASH, 18 MB RAM (US version)
Coprosessor	Realtime processing, Cortex M7 Watch dog functionality
RTC	Time, Wake-up
Acceleration sensor	+/-16g
	Three-axial acceleration sensor
	• Acceleration measurement • Movement detection • Device wake up • Configurable impact detection (Option for Telematics Software)

Battery

Backup battery	Internal Li-Po battery 200 mAh (2G/3G versions) 1700 mAh (LTE versions)

Positioning technology

GPS/GLONASS (GNSS module data)	
Position technology	uBlox EVA, 72 channels
Frequency bands	GPS/QZSS L1 C/A, GLONASS L10F, GALILEO
SBAS support	EGNOS, MSAS and WAAS
Acquisition sensitivity	-160dBm
Tracking sensitivity	-164dBm
Time to first fix	Hot start: 1s, Cold start: <26s
With A-GPS	Aided start: <3s
Other functions	2 trip distance counters Jamming and spoofing detection
Cell ID	Network information of currently used cell is sent over D-protocol

Operating conditions

Full performance	-30ºC…+70ºC
Degraded communication	-40ºC…+85ºC
Internal battery charge	0ºC…+45ºC
Internal battery operating	-5ºC…+60ºC
Humidity	+95 % max

Physical

Enclosure material	PC/ABS (LG Chem V0 GN5001RFP)
Colour	Black
Dimensions	121mm x 97 mm x 35mm (LxWxH)
Weight	170g
IP rating	IP31

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TECHNICAL DATA

Electrical

Power supply	8…32VDC (nominal +12V) With supply voltage level measurement
Typical	<100mA
Max (peak)	1A / <1s
Stand by	<3mA
Stand by	<1mA from internal battery
	Transient and polarity protected
Fuse	Internal fuse 2A
Power switch	• SW controlled power management • No mechanical switch
On/off switching options:	• Ignition input • Movement detection • Real timer clock (RTC) • Timer triggered wake-up

SIM, User indicators & Interfaces

SIM	SIM holder socket Micro SIM
LEDs	6 LED indicators: • 4 under application SW control • 2 for unit status

Approvals

Aplicom A11 Europe

CE marking	2014/53/EU (EMC directive) 2011/65/EU (RoHS)
E-type	ECE 10R – 05 14245 (E-type approval)

Aplicom A11 USA/Canada

	FCC Parts 15, 22, 24 PTCRB IC RSS (Canada)

Applications

Create functionality with A11 Telematics Software	A-series SW configurator
Development tools	A11 SDK, Java SDK for custom SW development

Aplicom A-GPS service

• Improves GPS performance at receiver start-up: Faster first fix, better initial accuracy
• Downloads periodically a file with satellite almanac data to the GPS receiver.

• The required A-GPS functionality is included in A11 Telematics Software, all you need to do is change the A-GPS parameter value in your configuration to "true".

• SIM allows access to public network
• Typically consumes 300–500 kB data/month, otherwise completely free of charge!

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## BLUETOOTH OPTION

Overview

Bluetooth option of Aplicom A11 provides BLE 5.0 beacon reception functionality. The BLE receiver listens fo BLE beacons, that send their ID and eventual attached data.

The BLE receiver of A11 is integrated in the device, and it uses an external antenna for maximum range.

The module is supported by A-Series Telematics Software and Java SDK.
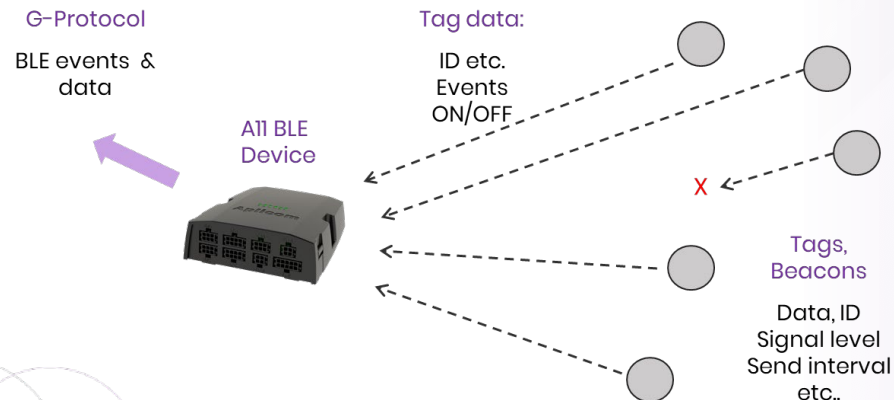
Bluetooth module data and connectors

Bluetooth LE	Bluetooth 5.0, IEEE 802.15.4, 2.4 GHz Bluetooth low energy (BLE) mode
	Support for standards V. 4.0 to 5.0.
Max. data rate	2 Mbps
Range	>100m (depending on conditions and specifications of beacons)
Operation mode	BLE beacon recognition (ID&MFG ID) and additional advertising data reception.
	No data connection function.
Data filtering	• Whitelist filtering to exclude unwanted beacons, based on beacon ID range, beacon name and manufacturer ID • Beacon signal strength based filtering
Bluetooth antenna connector	Reverse SMA BLE antenna connector

G-Protocol
BLE events & data

A11 BLE Device

Tag data:
ID etc.
Events
ON/OFF

X

Tags, Beacons
Data, ID
Signal level
Send interval
etc..

TECHNICAL DATA
WLAN OPTION

WLAN module data and connectors

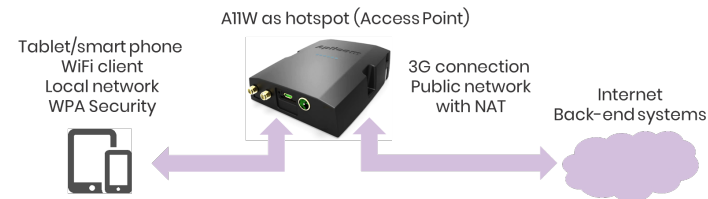| WLAN	IEEE 802.11b/g/n WLAN module
Encryption	WEP/WPA/WPA2
Max. data rate	1 Mbps
Max no. of clients	4
Max no. of sessions	16
Range	> 100m (depending on conditions)
Operation modes	Client, access point and hotspot modes
WLAN antenna connector	• Reverse SMA WLAN antenna connector

Use Cases

A11W as WLAN client connects to an Access Point

- Data collection and upload over WLAN connection
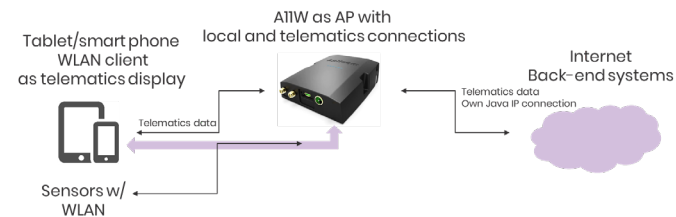- **Use case**: Connect to company WLAN, e.g. when the vehicle is at company facilities

A11W as WLAN client

Back-end system access over Internet

Telematics data
Own Java IP connection
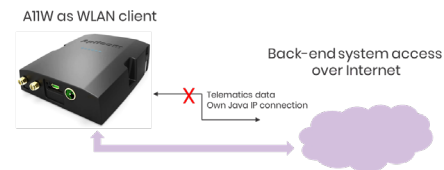
A11W acts as limited Access Point

- Local IP connection to A11W
- **Use case:** Connect sensors and a pad device to the A11W unit

A11W as hotspot (Access Point)

Tablet/smart phone
WiFi client
Local network
WPA Security

3G connection
Public network
with NAT

Internet
Back-end systems

IP routing hotspot with cellular access over A11

- **Use case:** Use the A11W as a router to give local device access to back-end systems over a mobile network
- Not designed for general web browsing

A11W as AP with
local and telematics connections

Tablet/smart phone
WLAN client
as telematics display

Internet
Back-end systems

Telematics data
Own Java IP connection

Telematics data

Sensors w/
WLAN

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DOCUMENTATION

Public documents

Available at Aplicom web site

- "Professional Telematics Made Easy":
  A-Series and Aplicom Data Service ADS brochure

- A-Series Configuration Template Catalogue

Partner documents

Available for Aplicom partners at Aplicom Extranet*

- Aplicom A11 Series Product Catalogue

- Aplicom A11 Product Description

- Aplicom A-Series SW Configurator User's Manual

- Aplicom A11 User Manual

- Aplicom A11 installation Guide

* Please contact Aplicom Sales at sales@aplicom.fi to be registered as Aplicom partner

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