

# ACU6 Pro Off Highway

ACU6 Pro OH is aimed at customers requiring the latest in terms of secure connectivity as well as a powerful computation environment. The flexible concept means that the product can be configured for a wide range of off highway applications such as asset management and machine control. ACU6 Pro OH is available in three variants to support worldwide cellular deployment and together with its flexible subscription management, forms part of ACTIA's 'end to end' solution.

ACU6 Pro OH supports a number of telematics services such as tracking and system status as standard. User applications are simple to implement using the onboard software development kit (SDK). This can be done directly by the customer or by ACTIA.

The product consists of a fixed 'base' section and an adaptable 'customer' section. The customer section is available with a standard 'generic' content that can be configured parametrically. It is also readily possible to adapt the content (e.g. adding serial interfaces), including the main connector, to accommodate specific customer needs. A LIN based expansion port allows peripherals to be added at a later date. Inclusion of antennas for all radio functions as well as the optional backup supply results in a self-contained function and simplifies product integration.

Future additions to the ACU6 Pro OH series include key items such as 5G cellular compliance and support for ISO26262 as well as a further enhanced telematics feature set.

**Wireless:**

LTE Cat 6 (future evolution 5G Rel. 15/16). Parallel 'access point' and 'station mode' WiFi ac. BLE. GNSS with optional dead reckoning. All antennas integrated, ports for external antennas (except BLE).

**Subscription:**

SIM or eUICC. Support for 'bootstrap operator' which allows the target operator to be selected at a later point in time.

**Network:**

Ethernet 100 Base T1 port (TC10). Ethernet 100 Base Tx and USB2.0 port as well as multiple CAN FD interfaces are available options in the customer interface.

**Processing:**

System operation is managed by quad core 'system on chip'. Each 64 bit ARM V8 Cortex A35 core offers 2000 DMIPS. LP-DDR4 RAM 1GByte and 8GByte eMMC as standard (both can be scaled upwards).

**Middleware:**

Software Development Kit (SDK) with libraries provides full support for customer applications such as data management and processing.

**Security:**

Data security is ensured by use of a 'trusted execution environment' and 'signed software'. An HSM is used for secure key storage.

**Upgrade:**

Software download is supported via the electrical network/s and 'over the air' via the cellular or WiFi radio link.

**Interfaces:**

Generic setup: Main supply. 8 digital/analogue I/O. LIN based expansion port. Adaptation examples: Serial interfaces (CAN, USB, etc.).

**Supply:**

The flexible supply concept supports operation with 12V, 24V and 48V systems. The optional battery ensures that critical functions continue if the main supply is lost and ensures clean shutdown and network de-registration.

**Peripherals:**

Standard peripherals include a XYZ-axis accelerometer and gyro, three LEDs and a temperature sensor.

## Technical specification

## Cellular modem

## LTE Advanced Pro 3GPP Rel.12, Rel.13

- 2 CA DL up to 300 Mbps Cat6 (64 QAM) / 1 UL up to 50 Mbps (16 QAM)

## Europe/APAC/Brazil (World):

- FDD-LTE: B1, B3, B5, B7, B8, B18, B19, B20, B26, B28
- TD-LTE: B38, B39, B40, B41
- TD-SCDMA: B34, B39
- UMTS: B1, B3, B5, B8
- GSM: 850, 900, 1800, 1900 MHz

## Americas:

- GSM: 850, 900, 1800, 1900MHz
- UMTS: B2, B4, B5
- FDD-LTE: B2, B4, B5, B12

## WiFi and Bluetooth

Simultaneous access point (AP) and station mode (STA) operation 801.11 a/b/g/n/ac operation on 2.4GHz and 5.0GHz. Bluetooth 4.2.

## Positioning

Satellite positioning based on GPS, Glonass, Beidou, Galileo with optional dead reckoning. 10 positions/sec. Accuracy <3m.

## CPU

Quad Dual core 64 bit ARM V8 Cortex A35 processor.  
1GByte LP-DDR4 RAM and 8GByte eMMC Flash as standard – both scalable upwards.

## Supply

## Primary supply:

- Operating voltage: 7.5V to 72V
- Consumption @12V: 500mA (norm), 5mA (stby), 100µA (sleep)

## Optional backup battery:

- 1000mAh

## Wakeup sources:

- Cellular activity (standby mode)
- 4 digital inputs
- Wake input
- RTC trigger
- Internal Accelerometer/Gyro
- Main supply disconnect / Backup supply low

## Internal sensors and indicators

- 3 x LEDs (Red, Green, Blue)
- XYZ accelerometer 2g – 16g
- XYZ gyro 125°/s – 2000°/s
- Temp sensor -40°C – 125°C
- RTC supplied via backup battery

## Interfaces

## Generic interface setup (configurable / adaptable):

- 8 x Analogue or digital inputs with support for 4 x frequency inputs and 2 current loop inputs
- 4 x High/Low side outputs (HS 100mA / LS 500mA)
- 1 x LIN based expansion port
- 1 x Digital 'wake' input

## Serial data interface:

- 1 x Ethernet 100 Base-T1 (optional)
- 1 x USB 2.0 High Speed host mode (optional)

## Connectors

- 1 x Main connector: Tyco SUPER SEAL 6437288-1
- 1 x Ethernet T1: Rosenberger HSD (Green)
- 1 x Ethernet TX: Rosenberger HSD (Blue) - optional
- 4 x External RF antennas

## Dimensions

- H 155mm x D 110mm x H 40mm
- Weight <500g

## Environment

- Qualification to ISO standards in accordance with OEM requirements for off highway usage
- Temperature: -40°C – +85°C
- IP5K2 / IP6K9K with connectors mated (option)

