

# ACU6-Pro Off Highway

ACU6-Pro Off Highway 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 Off Highway supports worldwide cellular deployment in a single product variant. Together with its flexible subscription management, ACU6-Pro Off Highway forms part of ACTIA's 'end to end' solution.

User applications are simple to implement using the onboard software development kit (SDK). These can be created by ACTIA or directly by the customer.

The product consists of a fixed 'base' section and an adaptable 'customer' section. The customer section is available with a standard generic content which can be adapted (i.e. interfaces, connector type, ...) on customer request. A rich set of interfaces allows for connection of peripherals, even 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 evolutions of ACU6-Pro Off Highway include e.g. key items such as 5G cellular compliance.



#### Wireless:

LTE Cat 4. WiFi. Bluetooth. GNSS. Internal antennas for all radio functions. RF ports for connection of external antennas with diagnostics (except Bluetooth) and GNSS phantom feed.



#### Subscription:

Virtual MNO setup which supports global roaming with selective localisation.



#### Network:

Ethernet 100BASE-T1 port (TC10), Ethernet 100BASE-TX and USB2.0 port as well as dual CAN FD interfaces.



#### Processing:

System operation managed by a dual core 'system on chip'. Each 64-bit ARMv8-A Cortex-A35 core offers 2000 DMIPS. LPDDR4 RAM 2GByte and 32GByte eMMC as standard (both can be scaled upwards as an option).



#### Middleware:

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



#### Security:

Secure boot supported. Data security is ensured through Encrypted Data Storage.



#### Upgrade:

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



#### Electrical interfaces:

Serial interfaces (RS232, RS485, 1-Wire, LIN expansion). Digital/analogue/frequency inputs. Highside output, Lowside output. Main supply, On-Off input, Digital wakeup input.



#### 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.



#### Internal sensors and indicators:

XYZ-axis accelerometer, three LEDs and temperature sensor.

**Technical specification****Cellular modem****LTE 3GPP Rel.9**

- Global LTE Cat 4 modem with 3G/2G fallback, DL max. 150Mbps, UL max. 50Mbps

**Supported frequency bands:**

- FDD-LTE (4G): B1, B2, B3, B4, B5, B7, B8, B12, B13, B18, B19, B20, B26, B28, B66
- TD-LTE (4G): B38, B40, B41
- WCDMA (3G): B1, B2, B3, B4, B5, B6, B8, B9, B19
- GSM (2G): 850, 900, 1800, 1900 MHz

**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. Accuracy <3m.

**CPU**

Dual core 64-bit ARMv8-A Cortex-A35 processor (quad core as option).  
2GByte LPDDR4 RAM and 32GByte eMMC Flash as standard – both scalable upwards.  
Real time clock (RTC).

**Supply****Primary supply:**

- Operating voltage: 8V to 72V
- Consumption @12V: 500mA (normal)  
<8mA (standby)  
<200µA (sleep)

**Optional backup battery:**

- 1000mAh (replaceable)

**Wakeup sources (hardware support):**

- Cellular SMS/IP data (when in standby mode)
- CAN activity
- ON/OFF (KI.15) input
- Digital inputs
- RTC trigger
- Internal Accelerometer/Gyro
- Main supply disconnected

**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

**Interfaces****Generic interface setup (configurable / adaptable):**

- 4 x Analogue / Digital / Frequency inputs
- 2 x Digital inputs (with maskable wakeup)
- 1 x High side output (500mA)
- 1 x Low side output (500mA)

**Serial data interfaces:**

- 1 x Ethernet 100BASE-T1 & 1 x Ethernet 100BASE-TX
- 1 x USB2.0 (host mode)
- 2 x CAN FD (with partial networking) / 1 x termination
- 1 x RS232 and 1 x RS485
- 1 x 1-Wire port
- 1 x LIN port

**Control:**

- 1 x ON/OFF (KI.15) input

**Connectors**

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

**Dimensions**

- H 155mm x D 114mm x H 40mm
- Weight <500g

**Environment**

- Temperature: -40°C – +85°C
- IP6K7 / IP6K9K (with connectors mated)

