▶VRange

VX4700
Vehicle Device and MCX Platform for Mission Critical Users

VX4700 is a high-performance vehicle communications platform for next generation voice and data applications on LTE networks, including the UK Emergency Services Network (ESN)

Key features
- Modular and flexible solution
- 3GPP MCX compatible
- 4G/5G/LTE radio with +23dBm transmit power
- WiFi for Access Point ("hotspot")
- 5 x Ethernet ports for wired devices
- Compatible with vehicle OEM screens (via a switch)
- High performance GNSS receiver
- USB2/3 expansion ports
- RS232 serial port for legacy devices
- SATA M.2 SSID bulk storage
- SD card internal storage
- Wide range of audio accessories
- Device-to-Device (D2D) radio interface
- GPIO for vehicle telemetry
- CANbus and K-Line for vehicle telematics
- Linux Operating System
- External antenna connectors (SMA)
- 12V/24V vehicle power (9-36V operation)
- Integral 'brown out' power protection
- Low power consumption in standby
- Compliant with UK Reg 109/110 anti-driver distraction legislation

Network connectivity
- 4G/5G/LTE support including FDD bands B1, B3, B7, B8, B20, B28 and TDD bands B39 and B40
- UK Emergency Services Network (ESN) ready
- Supports 3GPP Release 12 QCIs for use with critical voice and data bearers
- WiFi 802.11a/b/g/n/ac 2.4/5GHz 2T2R MIMO Station Mode (Client) and Soft AP ("hotspot")
- Bluetooth 5.0 (Combined with WiFi)
- 10/100/1000Mbps wired Ethernet

Applications
- Fixed installation in passenger vehicles, commercial vehicles, ambulances, fire appliances, motorcycles, marine vessels, etc
- Multiple User Interface support for use with multi-compartment vehicles
- Compatible with fire appliance accessories including pump bay voice terminals and motorcycle accessories including helmet audio
- Marine variant with IP67 waterproof display

"VX4700 delivers high performance voice and data communications to fixed vehicle installations for MCX users, including the UK Emergency Services Network (ESN)"

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VX4700 is a high performance Fixed Vehicle Device platform that provides next generation voice and data communications for Mission Critical Users including the Emergency Services and other mission-critical users on the UK Emergency Services Network (ESN).

VX4700 supports voice and data on prioritised bearers (such as ESN in the UK), including Mission-Critical PTT and data via the public internet, or User Organisation private APNs.

VX4700 is designed to meet the harsh conditions found in the mobile environment and is suitable for standard and covert installation in a wide range of vehicles including passenger cars, rapid response vehicles, ambulances, fire appliances, commercial vehicles, motorbikes and marine vessels, and is compatible with a wide range of industry standard of optional components and accessories.

VX4700 takes the place of a 'traditional' radio unit and contains a high performance processor, memory, 4G/5G/LTE cellular radio module, WiFi radio module and interfaces to provide a wide range of voice and data services at multiple levels of priority. VX4700 interfaces include managed power, multiple antennas, microphones, speaker, D2D radio, CANbus, USB, Ethernet LAN and GPIO. The unit is usually installed in a location such as under a seat, in the boot, on a 'comms board' or in a comms cabinet.

VX4700 provides a Graphical User Interface via a standard HDMI video output/USB touch input which is compatible with any in-vehicle HDMI-compatible touchscreen device, including rugged vehicle touchscreen monitors in variable sizes, and vehicle OEM screens via a hardware HDMI switch.

VX4700 can also be supplied with a standard 'radio console' and/or other physical controls for power on/off, volume up/down, programmable keys for application short-cuts and a dedicated Emergency key. The keys are backlit, tactile and designed to be used while wearing gloves.

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Processor and Memory
- iMX8 Quad-core ARM® Cortex™ A53 @ 1.5GHz
- 4Gb LPDDR4 RAM
- 64Gb eMMC FLASH memory
- Secure Digital (SD) card slot

Cellular Radio
- 4G/LTE M.2 module with Cat 12 (600Mbps DL; 150Mbps UL), plug upgradable to 5G/LTE M.2
- FDD Bands B1, B2, B3, B4, B5, B7, B8, B9, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B66
- TDD Bands B38, B39, B40, B41
- Class 3 device with +23dBm ±2dB transmit power
- 3GPP Release 12 with Emergency Services QCIs
- Dual antenna 1T2R diversity (2 x SMA sockets)

Local Networks
- Gigabit Ethernet LAN port (RJ45 socket))
- WiFi with 802.11a/b/g/n/ac in 2.4GHz/5GHz bands with 2x2 MIMO (2 x SMA sockets)
- Bluetooth V5.0 (Combined with WiFi)

Integrated Sensors
- 72 Channel GNSS receiver with active antenna, fault monitoring and jamming/spoofing detection
- 3-Axis accelerometer ±16g 16-bit at 100Hz

Other Interfaces
- HDMI connector
- Dedicated radio console connector
- Local Audio Interface (DB15HD)
- Device-to-Device D2D interface (DB15HD)
- Loudspeaker output 10W into 4Ω
- 2 x USB 2.0 Host ports, 2 x USB3.1 Host ports
- RS232 serial port (RJ45 connector)
- 2 x CANbus 2.0A/B with active termination
- ISO 9141 KWP2000/K-Line
- 8 x General Purpose Inputs
- 4 x General Purpose Outputs

Operating system
- Devuan Linux
- Linux EMM

Security features
- Secure Boot
- Trusted Execution Environment
- Encrypted file system
- Secure key storage and tamper detection

Enclosure
- Rugged alloy extrusion, 190mm (W) x 130mm (D) x 40mm (H). Weight 1.2kg.

Environmental
- Dust and water protection according to IEC529: IP54
- Vibration and humidity to ETS 300.019-2-5
- Operating Temperature: -20 to +60C
- Storage Temperature: -30 to +80C

Power
- Supply: 9-36V DC negative earth
- Consumption: 5-25 Watts (depending on options)
- Internal 11.1V 2600mA/H LiPo battery pack

Approvals
- UKCA mark (EMC)
- UN ECE Regulation 10 'E' mark vehicle approval
- Accreditation for UK ESN (to be specified by UK Home Office)

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Audio interface

VX4700 Local Audio Interface provides connections for two microphones and two PTT inputs along with hook-switch and function keys and can be used with a wide range microphones including visor mics, goose-neck mics, fist mics, telephone handsets and motorbike headsets.

The VX4700 amplifier provides a powerful 10W RMS into a 4Ω loudspeaker for use high noise environments. An auxiliary audio output allows connection of a second amplifier for multi-crew compartment installations or for connection to the Pump Bay Voice Terminal in fire appliances.

Device-to-Device operation

VX4700 incorporates a connector with audio and control signals to allow it to control another radio system such as TETRA in DMO, DMR or P25 to provide Device-to-Device (D2D) operation.

Advanced audio routing in the unit allows peripherals to be shared between ESN and D2D and ESN-Gateway Mode allows the local D2D radio zone to be bridged with an ESN talk-group. As an optional upgrade, the VX4700 can be supplied with an internal TETRA module, giving access to TETRA extension services without the need for an external TETRA terminal to be connected.

Mobile network support

VX4700 employs an M.2 radio module that supports all UK 4G/LTE frequency allocations including FDD bands B1, B3, B7, B8, B20 and B28 and TDD bands B39 and B40 ensuring that the device operates on ESN radio bands.

The radio module supports 3GPP Release 12 and the Emergency Services QCIs for access to priority bearers. Category 12 operation with Carrier Aggregation provides up to 600Mbps downlink and 150Mbps uplink, although actual data rates will vary and depend on network deployment and radio coverage.

Mission Critical PTT

VX4700 has been designed to support any standards-compliant 3GPP MCPTT client application for Mission Critical PTT (MCPTT) as a core feature.

The VX4700 integrates the control and management of the unit and its peripherals with MCPTT to provide a seamless solution to support a wide range of installation configurations and options.

Telephony and network services

VX4700 supports cellular voice calls via VoLTE and supports SMS/text messaging and related mobile services.

Vehicle Area Network

VX4700 provides a Gigabit Ethernet LAN interface (RJ45) for wired networking and connection to a device such as a mobile data terminal, vehicle computer, laptop PC, ANPR system or medical equipment. Multiple devices may be connected together using an Ethernet switch to form a Vehicle Area Network (VAN).

Wireless (WiFi) support

VX4700 incorporates an 802.11a/b/g/n/ac wireless card that can operate in Station mode and connect to authorised WiFi networks, or can operate in Access Point mode and provide a "hotspot" for devices in and around the vehicle.

Wireless operation is supported in the 2.4GHz and 5GHz bands with dual-stream MIMO to a maximum distance of 100m from the vehicle.

Network services

VX4700 provides a DHCP server, DNS server, IP routing and firewall for devices connected to the wired LAN or WiFi hotspot allowing access to data services at the user organisation.

GNSS receiver

VX4700 incorporates a high performance 72 channel multi-constellation GNSS receiver for vehicle tracking and location based services.

Vehicle telematics

VX4700 incorporates two ISO 11898 CANbus 1.0/2.0 interfaces and an ISO 9141 KWP2000/K-Line interface for vehicle telematics applications.

Power supply

VX4700 operates from a wide supply range of 9-36V DC and is compatible with 12V and 24V DC vehicles and 28V DC aircraft supplies.

An internal LiPo battery acts as a UPS and ensures continuous operation during transients such as engine starting.

Device management

VX4700 is managed via a secure and resilient Enterprise Mobility Management (EMM) solution optimised for Fixed Vehicle Device and Application management services.

Operating system updates and application software can be delivered Over-The-Air (OTA) from a secure central server, and are available for up to 7 years for service contract holders.

Service and support

VX4700 is supplied with a two-year return to base (RTB) hardware warranty and can be purchased with a software support contract or as part of a managed service provided by Simoco or one of its delivery partners.