

Train On-Board Unit



The Train On-Board Unit (TR-OBU) is a versatile integration platform for in-train applications. The system is made up of an Interface Unit, a Main Unit and application specific modules.

INTERFACE UNIT

The system is controlled via a 7" touch screen Interface Unit. A wide viewing angle and configurable brightness ensure excellent visibility in all conditions and external buttons are easily configured for enhanced interaction.

MAIN UNIT

The Main Unit provides an interface among the communication node, the operation centre, and any on-board devices. Depending on the requirement, dedicated interfaces can be provided including:

- › Up to two data GPRS/EDGE/UMTS/HSxPA/LTE and GPRS voice modems for voice and data transmission
- › 10/100Mbps Ethernet Interfaces
- › Standard POE 802.3af
 - Up to 8x IP channels (up to 4 POE)
 - Up to 12x IP channels 4 POE + 4 10/100 Mbps+ 4 10/100/1000
- › 4 configurable RS-232/RS-485/RS-422 ports are available for connection to external devices
- › Wi-Fi 802.11a/b/g/n for wireless devices integration.

KEY FEATURES

- › Automatic Vehicle Monitoring and Fleet Management
 - TR-OBU enables accurate vehicles position tracking by utilising satellite signals (GPS, with software configurable EGNOS support, as option GALILEO and GLONASS positioning system) and dead-reckoning correction, in case of lack of signal.
- › Communication
 - The platform offers data, messaging and voice call functionalities for on-board-centre, centre-on-board and on-board-on-board communications.
- › Passenger Information Display Systems (PIDS)
 - Native text-to-speech engine for notice to passenger through integrated audio system
 - Integration with external PIDS (i.e. Ameli, Aesys, etc.) for real-time passenger information
- › Security Video Surveillance
 - Video surveillance module for A/V recording.
- › Ticketing
 - Ticketing appliance.
- › Driver Access Control
 - By using smartcard with different profiles.
- › Passenger Counter System
 - By using POE IP Cameras.

MOBILE VIDEO RECORDER (MVR)

As an option, the Mobile Video Recorder (MVR) video surveillance module can be hosted in the Main Unit for recording and streaming of audio/video data streams. MVR can manage more than 60 real-time audio/video channels at various resolutions and frame rates with live streaming functionality on RTP/RTSP protocols (Real-Time Transport Protocol/Real-Time Streaming Protocol). Audio/Video data can be recorded on an internal hard drive with privacy guaranteed by the high security AES/Rijndael encryption algorithm

Alarm management allows users to configure the automatic response action following a specific event. For instance, one can decide to start a video recording, to show a text alarm on the video or to mark the recordings for easy retrieval. MVR can be connected to an external colour monitor in order to display images coming from the installed cameras.

CONFIGURATIONS

Several TR-OBU functionalities are available by combining the following base configurations:

- › Automatic Vehicle Monitoring (AVM)
- › Communications
- › Passenger Information Display System (PIDS)
- › Mobile Video Recorder (MVR)
- › Ticketing
- › Driver Access Control
- › Passenger Counter

TECHNICAL DATA

HARDWARE

| | |
|-----------------------|-------------------------------------|
| Cooling system | Totally fan less |
| Case material | Aluminum |
| Operative temperature | -40°C to +70°C (-40°F to 158°F) |
| Storage temperature | -40°C to +85°C (-40°F to 185°F) |
| Operating humidity | Up to 95% not condensing |
| Input Voltage | 110V DC |
| Power | <150W |
| Size (WxHxD) | 200x120x280 mm (7,87x4,72x11,02 in) |
| Weight | 4,5 kg (max) (9,92 lb) |
| Connector type | M12-D, M12-X, DBx |

PROCESSOR/MEMORY

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|------------------|--|
| CPU | IMx6 QuadCore a 800 MHz (automotive range) |
| RAM | 1GB RAM |
| Flash Disk | 8GB eMMC |
| HDD | up to 2TB SATA 2.0 disk (expandable) |
| Operating System | Linux 4.15 to enable real-time application |

INTERFACES I/O

| | |
|---------------------|--|
| Wi-Fi | 802.11a/b/g/n/ac AP/Client mode |
| 3G/4G | Up to 2 module UMTS/HSPA/LTE |
| Ethernet | › Ethernet Interface 10/100Mb/s Standard POE 802.3af. 4 ports › Ethernet interface 10/100Mb/s 802.3 4 ports › Ethernet interface 10/100/1000Mb/s 802.3 4 ports |
| Ports I/O | › 4x configurable ports (RS-232/RS-485/RS-422) › 2x USB 2.0 › 4x digital inputs plus 4 digital output › 2x digital I/O › 2x CAN ports |
| Satellite | GPS signal accuracy 3 1.5m, better with EGNOS support |
| Optional satellites | › GALILEO positioning service › GLONASS positioning service |
| Audio | › 2x analog input › 2x analog output at 1.5W/line › 3x analog class D output at 20W/line › Audio Matrix |
| Video | HDMI and LVDS connections to external display |

TETRA

| | |
|-----------|---|
| Interface | Interfacing external standard TETRA devices via standard serial PEI |
|-----------|---|

CERTIFICATION

| | |
|-----------------|---|
| CE marking | Compliant to Directive 2014/53/EU |
| EN 50155 | Directive compliant |
| ROHS | Directive compliance 2011/65/UE |
| Operating temp. | 40°C to +70°C (80°C for 10 minutes) (176°F) |
| Vibrations | Compliant to technical rules CEI EN 60068-2-6 (2g value), CEI EN 60068-2-64 (0.1g ² /Hz value) |
| Shock | Compliant to technical rule CEI EN 60068-2-27 (5g value), compliant to EN 61373 |
| IP protection | IP65 |

MVR FEATURES

| | |
|--------------------------------|---|
| Video surveillance capture | › Up to 12 channels (even more, if available on the network) at various resolutions and frame rates. › Dynamic text insertion (date, time..., GPS) |
| Video | Supported recording formats: MPEG4/H264/H265/ MJPEG, H264 encryption on disk |
| Streaming | › Unicast and multicast over RTP recording and extracting › Circular buffers for permanent recording › Streaming of recorded videos › Extraction of sequences (standard container) |
| Configurability | Onvif 2.2 compliancy |
| Remote control and maintenance | Built in web server and upgradeable firmware via network |
| Security | › AES Data encr. with a 128/256 bit key › Login with user name and password via secure protocol (HTTPS) › Portable HDD protection with double password |

ADDITIONAL FEATURES

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|-----------------|-----------------------------------|
| Software Suites | AVM, OBC, PIS, MVR, PCS, CAN, SDK |
|-----------------|-----------------------------------|



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