Billien OBU 5450

Hybrid On-Board Unit for Electronic Toll Collection and More Services

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Introducing the Billien OBU 5450

The Billien OBU 5450 is a hybrid On-board Unit for free-flow Electronic Toll Collection systems. It uses GNSS positioning (presently GPS, GLONASS and GALILEO) and GSM data transmission. Depending on the application configuration the Billien OBU is capable of operation in smart client or thin client mode.

In addition to the operation in GNSS/GSM/LTE electronic tolling solutions, the Billien OBU 5450 is also capable of DSRC communication so it can also operate in microwave electronic tolling solutions.

The combination of GNSS/GSM/LTE and DSRC standard support makes the Billien OBU 5450 perfectly suitable for deployment with European Electronic Toll Service (EETS).

The Billien OBU 5450 has been designed with the key objectives of ease of use, efficiency, durability and perfect fit to driver's workplace. It offers simple and quick installation, simple operation and clear indications of information to the driver.

The product design ensures long-term operation without need of repeated visits to customer service points - all software and data can be seamlessly updated over the air using the GSM/LTE mobile data link.

Electronic toll collection can be characterised by high demands on performance, accuracy and reliability of on-board units. The Billien OBU 5450 offers various features to meet the most stringent requirements, like continuous monitoring of unit hardware, tampering detection, rechargeable backup battery, encrypted storage for sensitive information and others.

Product Features

- Perfect design fit into truck interior
- OBU's bracket installation by:
  - Driver (installation on the windshield by means of suction pads and connection to the cigarette lighter socket)
  - Service technician (permanent installation using strips of mounting tape)

- Option of unit's housing colour customisation and/or logo placement on the housing as per customer requirements
- Comfortable user interface
  - Big buttons for comfortable operation
  - Lucid information presentation - LED-backlit graphical display (128 x 64 pixels)
  - Acoustic / visual indication (prepaid credit run-out, locking conditions, GNSS and/or GSM/LTE reception problems and others)
- Sophisticated application software
  - Unit management, monitoring, coordinate collection, road segment identification, OTA upgrades and diagnostic functions
  - Encryption and authentication for all communication
  - Transport mode to prevent unwanted charging during OBU transport to vehicle or to a customer service point
  - Support of Value Added Services using dedicated application
- Hybrid operation - GNSS, GSM/LTE, DSRC
  - Integrated antennas
  - Multiple DSRC applications for tolling and enforcement
  - Optional Bluetooth and NFC support for interconnection with other devices
- Movement recognition by three-axis accelerometer
- Intrusion detection against unit tampering
- Internal rechargeable battery provides for full operation in case of external power supply disconnection
- Unit software and firmware can safely and reliably be upgraded over the air (OTA)
  - OTA personalisation, no need for any personalisation devices

Detail view of OBU's display indicating active state

Technical Parameters

- Power supply
  - 8 to 32 V DC (nominally 12 or 24 V) from cigarette lighter or permanent connection to vehicle electrical system
  - Backup rechargeable battery for up to 6 hours of full operation or up to 30 days of DSRC operation
- GNSS subsystem
  - GPS, GALILEO and GLONASS positioning
  - Reception of up to 72 tracking channels, -167 dBm tracking
  - Support for SBAS ranging (WAAS, EGNOS, GAGAN, MSAS) and Assisted GPS
  - Optional support of Dead Reckoning technology
- GSM/LTE subsystem
  - GSM: Quad-band support: 850/900/1800/1900 MHz; GPRS class 12, CS1-CS4 - up to 85.6 kbit/s (uplink and downlink)
  - EDGE: up to 296 kbit/s downlink, 236.8 kbit/s uplink
  - LTE: Cat M1 and Cat NB2, Freq. bands B20, B8, B3, B28; Cat M1 up to 588 kbit/s downlink, 1119 kbit/s uplink; Cat NB2 up to 127 kbit/s downlink, 158.5 kbit/s uplink
- DSRC subsystem
  - CEN TC278 and ETSI 200 674-1 (5.8 GHz)
  - Applications: CCC (EN ISO 12813), CEN-EN 15509, PISTA, TIS, AVI, VIA, CARDME, AutoPASS, LAC and others (application set is configurable)
- Bluetooth and NFC subsystem (optionally)
  - Bluetooth 5 (low energy)
  - GATT client and server
  - Receiver sensitivity -97dBm
  - NFC-A tag support
- Security
  - Authentication/signing: ECC, RSA; Encryption: 3DES and AES; Hash: SHA
  - Dedicated tamper-proof security storage for keys
- Certificates
  - CE, E8, IP 54 (IEC 60529), ISO 16750

Physical Parameters

- Temperature - storage/operation: -40 °C to +85 °C
- Housing
  - Outer dimensions: 145 x 92 x 40 mm
  - Weight: 290 g (without bracket and cable)
  - Default colour: dark grey

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