

# Billien OBU 5050

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



*Billien OBU 5050*

### Introducing the Billien OBU 5050

The Billien OBU 5050 is a hybrid On-board Unit for free-flow ElectronicToll 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 electronic tolling solutions, the Billien OBU 5050 is also capable of DSRC communication so it can also operate in microwave electronic tolling solutions.

The combination of GNSS/GSM and DSRC standard support makes the Billien OBU 5050 perfectly suitable for deployment with European ElectronicToll Service (EETS).

The Billien OBU 5050 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 GPRS data link.

Electronic toll collection can be characterised by high demands on performance, accuracy and reliability of on-board units. The Billien OBU 5050 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 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, DSRC
  - Integrated GNSS and/or GSM 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 dedicated personalisation devices



*Detail view of OBU's display indicating active state*

- Optional support of Dead Reckoning technology
- GSM subsystem
  - Quad-band support: 850/900/1800/1900 MHz
  - GPRS class 12, CS1-CS4 - up to 85.6 kbit/s (uplink and downlink)
- DSRC subsystem
  - CEN TC278 and ETSI 200 674-1 (5.8 GHz)
  - Applications: EN15509, CCC, PISTA, TIS, AVI, VIA, Slovakia, 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: RSA 2048, SHA-256
  - Encryption: 3DES and AES
  - Dedicated tamper-proof security storage for keys
- Certificates
  - CE, E8, IP 54 (IEC 60529), ISO 16750

## Technical Parameters

- Power supply
  - 8 to 32V 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, GLONASS and GALILEO positioning
  - Reception of up to 72 tracking channels, -167 dBm tracking
  - Support for SBAS ranging (WAAS, EGNOS, GAGAN, MSAS) and Assisted GPS

## Physical Parameters

- Temperatures
  - storage: -40 °C to +85 °C, operation: -40 °C to +85 °C
- Housing
  - outer dimensions: 145 x 92 x 40 mm
  - weight: 290 g (without bracket and cable)
- Colour: dark grey