



**GPS receiver**

Quectel GPS receiver with ANTY-JAMMING and JAMMING DETECTION (dedicated EventID) function  
GPS/GLONASS/GALILEO/BeiDou/QZSS  
Ultra Low Power Consumption



**GPS/LTE antennas**

High-quality GPS/GSM/LTE antennas  
In the external and internal version



**Advanced integrations**

Integration of many additional devices  
TPMS Continental/GARMIN/MobileEye /Thermometers/MOVON/Dallas/RFID etc. Integrations prepared for dedicated customer projects.



**LTE modems**

GPRS / LTE Quectel modems with JAMMING DETECTION (dedicated EventID)  
Ultra Low Power Consumption



**Downloading DDD files from tachograph - mass memory and driver cards**

Remote tachograph reading (from the indicated period), reading the statuses, drivers cards, names and surnames of both drivers. Support for new smart tachographs. VDO Counter Data. Information about tachograph errors.



**CAN J1939/J1708/J1587/FMS/OBDII**

The module is equipped with a new 3rd generation processor, in a version dedicated to the automotive industry, reading data from the CAN bus (J1939, J1708, J1587, FMS, OBDII) - supported over 900 vehicles and machines (full description of the CAN module on a separate catalog card).  
Dedicated connection schemes for all vehicles. Auto-sync function with the vehicle CAN bus.

**albatross**  
SYSTEM

CATALOGUE OF PRODUCTS

TERMINAL S10.2

TERMINAL S10.3

TERMINAL S10.5

CAN TECHNOLOGY

TMR TECHNOLOGY

TERMINAL FM11

TERMINAL FM11 MAGNET

TERMINAL FM23

ADVANCED ECODRIVING SOLUTION

ADDITIONAL EXPANSION MODULES

# S10.2 TERMINAL

LTE

(2G/LTE/GPS)

## Basic informations

- Available with 2 modem versions
  - GSM/EDGE/LTE Modem Quectel with JAMMING DETECTION (dedicated EventID), version EU  
LTE: B1/B3/B5/B7/B8/B20/B28 operating region EMEA  
GSM: B2/B3/B5/B8
  - GSM/EDGE/LTE Modem Quectel with JAMMING DETECTION (dedicated EventID), version LA  
LTE: B2/B3/B4/B5/B7/B8/B28/B66 operating region Latin America  
GSM: B2/B3/B5/B8
- GPS Quectel L76 GPS receiver with ANTY-JAMMING and JAMMING DETECTION (dedicated EventID) function
- Internal clock sustaining RTC (Real Time Clock)
- Maintaining the key operating parameters: time and GPS data - **Data is never lost - even after a power cut**
- Advanced filters of analog inputs (analog floats; fuel probes) with data support after the loss of the main power supply
- Communication port RS-232-TTL (optional RS-232, RS-485)
- **Internal battery 500 mAh, charging control**
- **External active GPS antenna (3 meter/SMA connector)**
- **External LTE antenna (3 meters/SMA-RP)**
- ABS casing: 89x63x30 [mm]
- Memory archive - minimum of 24.000 events (up to 48.000)
- LED diods signifying the strenght of the GSM signal and the number of GPS satellites
- Full support of 1-Wire DALLAS protocol (6 thermometers, DALLAS/RFID identification)
- **Alarm, which informs that the GPS antenna is disconnected - real-time monitoring**
- Full support for Mobileye technology
- Full solutions support MDAS MOVON
- Authoring solution of protecting the devices inputs (power; ignition switch, analog inputs) - these inputs are damage resistant (e.g surge in vehicle installation)
- Incremental firmware - backward compatible; **always contains all the device functions** which ensures ease of managing software versions; Files to update are delivered directly to a partner in order to further updates by using the FTP server
- Open communication protocol and remote support of engineers in real time (Skype) facilitates the process of implementation; **Record implementation of the protocol took place in a few days!**
- Optional support of 3D sensor in order to detect accident, tows, car cullents
- ImmoDALLAS - an additional security for customers vehicle. The device activates the output in case of detecting the absence of authorization (DALLAS, RFID). **The device allows you to save up to 2047 identification numbers of drivers!**
- Ignition detection using a dedicated analog input, the main power supply voltage or from CAN bus
- Ability to implement a dedicated logic functions, commands and a help of handling modules on partners demand in case of further cooperation
- Possibility of connecting Garmin navigation using the signal converter RS-232 to RS-232-TTL

## JP-1 description

1. The main power supply input (8V - 32V)
2. Open collector output (300 mA)
3. Ignition signal input (+)
4. Input (-)
5. Input (+) / analog measurement 0-32V
6. Main mass input. (GND)

## JP-2 description

1. Input (-)
2. Open collector output (300 mA)
3. not used in this version
4. not used in this version
5. not used in this version
6. not used in this version
7. Counter input
8. Input (+) / analog measurement 0-32V

## JP-3 description

1. Mass (GND)
2. TxD (for RS communication needs)
3. RxD (for RS communication needs)
4. Supply voltage for the Dallas (3.7V) thermometer
5. Input 1-Wire (identification of drivers and temperature measurement)
6. Power supply 3.3V (LED Dallas reader)

## Data read

- RTC Time (special synchronization algorithm based on GPS Time)
- GPS Data: latitude and longitude; altitude; driving angle; the number of satellites, speed
- Mileage meter (advanced counting algorithm based on the data from the GPS - the value is added up and always remembered by the GPRS Terminal)
- EVENTID information (the cause of generating data frame)
- The current state of all inputs (active/inactive)
- The current state of all outputs (active/inactive)
- The main power supply voltage
- Internal battery voltage
- **The connection status of the GPS antenna (connected/not connected - an immediate alarm informing about disconnecting GPS antenna by unauthorized persons)**
- Internal battery connection status (connected/not connected)
- The state of SIM card logging (home network/roaming)
- GSM signal strength
- GSM code of currently logged GSM operator
- GPS performance status (correct/incorrect)

## Additional information

- Counting mileage based on data from the GPS
- Cost control of the SIM card
- Daily limit for GPRS connections in the roaming and home network
- Daily SMS limit
- Additional algorithm stabilizing analog measurements of fuel
- SIMHOLDER in a drawer version:
  - As standard, the terminal is equipped with a 2FF - MINI SIM drawer (the same size as in the S8 series terminals)
  - Option to buy the 3FF - MICRO SIM drawer (Q3 2022)
- Power supply of thermometers and accessories from JP3 connector can be controlled (possibility to make hard reset of accessories from S10 Terminal)

## Technical specification

- System supply from + 8V to + 32V
- The average value of power consumption:
- Offline terminal (5 minutes after the ignition is turned off):  
29 mA +/- 5% for power supply=12.7V  
20 mA +/- 5% for power supply=25.4V
- Online terminal (Ignition is on):  
54 mA +/- 5% for power supply=12.7V  
32 mA +/- 5% for power supply=25.4V
- Terminal in SLEEPMODE:  
< 5 mA +/- 5% for power supply=12.7V  
< 3 mA +/- 5% for power supply=25.4V
- Operating temperature -30°C to + 85°C

## Inputs/Outputs

- 2 reacting to mass inputs
- 3 open collector outputs
- 3 analog inputs (for ignition voltage measurement, fuel probes)
- 1-Wire Input (identification of drivers; temperature measurement; DALLAS, RFID)
- RS-232-TTL communication port (default)
- RS-232 communication port (optional)
- RS-485 communication port (optional)
- Counter input

## Configuration

- Remote: SMS, GPRS, TCP, programming application
- Local (PC application + programming wire)

## Tracking modes

- 8 independent tracking modes (including the ignition signal)
- Time mode
- Distance considering mode
- **Separate settings for network Roaming**

## Individual settings for partners

- A default device configuration
- Dedicated functions, commands
- Individual device casing
- Individual device identification

# S10.3 TERMINAL

(2G/LTE/GPS/CAN)

LTE

## Basic informations

- Available with 2 modem versions
  - GSM/EDGE/LTE Modem Quectel with JAMMING DETECTION (dedicated EventID), version EU  
LTE: B1/B3/B5/B7/B8/B20/B28 operating region EMEA  
GSM: B2/B3/B5/B8
  - GSM/EDGE/LTE Modem Quectel with JAMMING DETECTION (dedicated EventID), version LA  
LTE: B2/B3/B4/B5/B7/B8/B28/B66 operating region Latin America  
GSM: B2/B3/B5/B8
- GPS Quectel L76 receiver with ANTY-JAMMING and JAMMING DETECTION (dedicated EventID) function
- **Built-in module which read the data from the CAN bus (J1939/J1708/J1578/FMS/ OBDII) - over 900 vehicles and machines supported (Full CAN module description on a separate catalog card)**
- **Ability to read DTC codes (Diagnostic Trouble Codes)**
- **Reading the statuses, cards numbers, names and surnames of both drivers (also on the switched off ignition! New smart tachographs also supported!)**
- Maintaining the key operating parameters: time and GPS data - Data is never lost - even after a power cut
- Advanced analog inputs filters (analog floats; fuel probes) with data support after the loss of the main power supply
- External active GPS antenna (3 meters/SMA)
- External LTE antenna (3 meters/SMA-RP)
- Internal clock sustaining RTC (Real Time Clock)
- Communication port RS-232-TTL (optional: RS-232, RS-485)
- Internal battery 500mAh, charging control
- ABS casing: 89x63x30 [mm]
- Memory archive - minimum of 24.000 events (up to 48.000)
- LED diodes signifying the strenght of the GSM signal and the number of GPS satellites
- Full support of 1-Wire DALLAS protocol (6 thermometers, DALLAS/RFID identification)
- Alarm, which informs that the GPS antenna is disconnected - real-time monitoring
- Full support for Mobileye technology
- Full solutions support MDAS MOVON
- Authoring solution of protecting the devices inputs (power, ignition switch, analog inputs) - these inputs are damage resistant (e.g surge in vehicle installation)
- Incremental firmware - backward compatible; always contains all the device functions which ensures ease of managing software versions; Files to update are delivered directly to a partner in order to further updates by using the FTP server
- Open communication protocol and remote support of engineers in real time (Skype) facilitates the process of implementation; Record implementation of the protocol took place in a few days!
- Support of 3D sensor in order to detect accident, tows, car cullets
- ImmoDALLAS - an additional security for customers vehicle. The device activates the output in case of detecting the absence of authorization (DALLAS, RFID). The device allows you to save up to 2047 identification numbers of drivers!
- Ignition detection using a dedicated analog input, the main power supply voltage or from CAN bus
- Ability to implement a dedicated logic functions, commands and a help of handling modules on partners demand in case of further cooperation
- Possibility of connecting Garmin navigation using the signal converter RS-232 to RS-232-TTL

## Technical specification

- System supply from + 8V to + 32V
- The average value of power consumption:
- Offline terminal (5 minutes after the ignition is turned off):  
29 mA +/- 5% for power supply=12.7V  
20 mA +/- 5% for power supply=25.4V
- Online terminal (Ignition is on):  
54 mA +/- 5% for power supply=12.7V  
32 mA +/- 5% for power supply=25.4V
- Terminal in SLEEPMODE:  
< 5 mA +/- 5% for power supply=12.7V  
< 3 mA +/- 5% for power supply=25.4V
- Operating temperature -30°C to + 85°C

## Inputs/Outputs

- 2 reacting to mass inputs
- 3 open collector outputs
- 3 analog inputs (for ignition voltage measurement, fuel probes)
- 1-Wire Input (identification of drivers, temperature measurement, DALLAS, RFID)
- RS-232-TTL communication port (default)
- RS-232 communication port (optional)
- RS-485 communication port (optional)
- Counter input
- **CAN J1939, J1708, J1587, FMS, OBDII**

## Configuration

- Remote: SMS, GPRS, TCP, programming application
- Local (PC application + programming wire)

## JP-1 description

1. The main power supply input (8V - 32V)
2. Open collector output (300 mA)
3. Ignition signal input (+)
4. Input (-)
5. Input (+) / analog measurement 0-32V
6. Main mass input (GND)

## JP-2 description

1. Input (-)
2. Open collector output (300 mA)
3. **CAN-H input - CAN J1939/CAN-TACHO input\***
4. **CAN-L input - CAN J1939/CAN-TACHO input\***
5. **CAN2-H input - CAN J1939/J1708/J1578 /FMS/OBDII/CAN-TACHO input\***
6. **CAN2-L input - CAN J1939/J1708/J1578 /FMS/OBDII/CAN-TACHO input\***
7. Counter input
8. Input (+) / analog measurement 0-32V

\* a detailed description of the input in the installation manual

## JP-3 description

1. (GND) mass
2. TxD (for RS communication needs)
3. RxD (for RS communication needs)
4. Supply voltage for the Dallas (3.7V) thermometer
5. 1-Wire input (identification of drivers and temperature measurement)
6. Power supply 3.3V (LED Dallas reader)

## Tracking modes

- 8 independent tracking modes (including the ignition signal)
- Time mode
- Mode which takes a distance into account
- **Separate settings for roaming network**

## Data read

- Over 60 logistic informations reading from CAN bus
- Over 30 CAN telltales (checkengine, lights, belts, airbag...)
- Sudden acceleration, sudden brakings
- Advanced ECODRIVING module
- Fully automatic vehicle synchronization procedure
- Data from tachograph - current STATUS
- Driver identification from tachograph
- Ability to read Diagnostic Trouble Codes

## Additional information

- Dedicated installation schemes for every vehicle (CAN)
- Counting mileage based on data from the GPS
- Cost control of the SIM card
- Daily limit for GPRS connections in the roaming and home network
- Daily SMS limit
- Additional algorithm stabilizing analog measurements of fuel
- SIMHOLDER in a drawer version:
  - As standard, the terminal is equipped with a 2FF - MINI SIM drawer (the same size as in the S8 series terminals)
  - Option to buy the 3FF - MICRO SIM drawer (Q3 2022)
- Power supply of thermometers and accessories from JP3 connector can be controlled (possibility to make hard reset of accessories from S10 Terminal)

## Individual settings for partners

- A default device configuration
- Dedicated functions, commands
- Individual device casing
- Individual device identification

# S10.5 TERMINAL LTE

## (2G/LTE/GPS/CAN/TMR/DDD)

### Basic informations

- The S10.5 terminal allows you to connect modules to support advanced fleet management projects, full reading of logistics data from the CAN BUS J1939 / J1708 / J1579 / FMS / OBDII, remote download of DDD files of driver cards and tachograph mass memory, reading the statuses, cards numbers, names and surnames of both drivers (also on the switched off ignition!), communication and transport management via connected Garmin navigation (FMI)
- Available with 2 modem versions
  - GSM/EDGE/LTE Modem Quectel with JAMMING DETECTION (dedicated EventID), version EU  
LTE: B1/B3/B5/B7/B8/B20/B28 operating region EMEA  
GSM: B2/B3/B5/B8
  - GSM/EDGE/LTE Modem Quectel with JAMMING DETECTION (dedicated EventID), version LA  
LTE: B2/B3/B4/B5/B7/B8/B28/B66 operating region Latin America  
GSM: B2/B3/B5/B8
- Built-in module which read the data from the CAN bus (J1939/J1708/J1578/FMS/ OBDII) – over 900 vehicles and machines supported (Full CAN module description on a separate catalog card)
- Ability to read DTC codes (Diagnostic Trouble Codes)
- Reading the statuses, cards numbers, names and surnames of both drivers (also on the switched off ignition! New smart tachographs also supported!)
- TMR technology - possibility of remote DDD files download (Full TMR technology description on a separate data sheet)
- GARMIN FMI - Connects to Garmin navigation; Garmin offers a wide range of useful, versatile and economical solutions for fleet management
- GPS Quectel L76 reciver with ANTY-JAMMING and JAMMING DETECTION (dedicated EventID) function
- Maintaining the key operating parameters: time and GPS data - Data is never lost - even after a power cut
- Advanced analog inputs filters (analog floats, fuel probes) with data support after the loss of the main power supply
- Active external GPS antenna (3 meters/SMA)
- External LTE antenna (3 meters/SMA-RP)
- Internal clock sustaining RTC (Real Time Clock)
- External RS-232-TTL (optional: RS-232, RS-485)
- Internal battery 500mAh, charging control
- ABS casing: 89x63x30 [mm]
- Memory archive - minimum of 24.000 events (up to 48.000)
- Signalling operation diodes of GSM and GPS
- Full support of 1-Wire DALLAS protocol (6 thermometers, DALLAS/RFID identification)
- Alarm, which informs that the GPS antenna is disscconnected - real-time monitoring
- Full support for Mobileye technology
- Full solutions support MDAS MOVON
- Authoring solution of protecting the devices inputs (power; ignition switch; analog inputs) - these inputs are damage resistant (e.g surge in vehicle installation)
- Incremental firmware - backward compatible; always contains all the device functions which ensures ease of managing software versions; Files to update are delivered directly to a partner in order to further updates by using the FTP server
- Open communication protocol and remote support of engineers in real time (Skype) facilitates the process of implementation; Record implementation of the protocol took place in a few days!
- Optional support of 3D sensor in order to detect accident; tows; car cullets
- ImmoDALLAS - an additional security for customers vehicle. The device activates the output in case of detecting the absence of authorization (DALLAS, RFID). The device allows you to save up to 2047 identification numbers of drivers!
- Ignition detection using a dedicated analog input, the main power supply voltage or from CAN bus
- Ability to implement a dedicated logic functions, commands and a help of handling modules on partners demand in case of further cooperation

### JP-1 description

1. The main power supply input (8V - 32V)
2. K-Line(D8) input
3. Ignition signal input (+)
4. Input (-)
5. Input (+) / analog measurement 0-32V
6. Main mass input (GND)

### JP-2 description

1. Input (-)
2. Open collector output (300 mA)
3. CAN-H input - CAN J1939/CAN-TACHO input\*
4. CAN-L input - CAN J1939/CAN-TACHO input\*
5. CAN2-H input - CAN J1939/J1708/J1578 /FMS/OBDII/CAN-TACHO input\*
6. CAN2-L input - CAN J1939/J1708/J1578 /FMS/OBDII/CAN-TACHO input\*
7. Counter input
8. Input (+) / analog measurement 0-32V

\* a detailed description of the input in the installation manual

### Data read

- Over 60 logistic informations reading from CAN bus
- Over 30 CAN telltales (checkengine, lights, belts, airbag...)
- Sudden acceleration, sudden brakings
- Advanced ECODRIVING module
- Fully automatic vehicle synchronization procedure
- Data from tachograph - current STATUS
- Driver identification from tachograph
- Ability to read Diagnostic Trouble Codes

### Individual settings for partners

- A default device configuration
- Dedicated functions, commands
- Individual device casing
- Individual device identification

### Technical specification

- System supply from + 8V to + 32V
- The average value of power consumption:
- Offline terminal (5 minutes after the ignition is turned off):  
29 mA +/- 5% for power supply=12.7V  
20 mA +/- 5% for power supply=25.4V
- Online terminal (Ignition is on):  
54 mA +/- 5% for power supply=12.7V  
32 mA +/- 5% for power supply=25.4V
- Terminal in SLEEPMODE:  
< 5 mA +/- 5% for power supply=12.7V  
< 3 mA +/- 5% for power supply=25.4V
- Operating temperature -30°C to + 85°C

### Inputs/Outputs

- 2 reacting to mass inputs
- 2 open collector outputs
- K-Line (D8)
- 3 analog inputs (for ignition voltage measurement, fuel probes)
- 1-Wire Input (identification of drivers, temperature measurement, DALLAS, RFID)
- RS-232-TTL communication port (default)
- RS-232 communication port (optional)
- RS-485 communication port (optional)
- Counter input
- CAN J1939/J1708/J1578/FMS/OBDII/TACHO

### Configuration

- Remote: SMS, GPRS, TCP, programming application
- Local (PC application + programming wire)

### Tracking modes

- 8 independent tracking modes (Including the ignition signal)
- Time mode
- Mode which takes a distance into account
- Separate settings for roaming network

### JP-3 description

1. (GND) mass
2. TxD (for RS communication needs)
3. RxD (for RS communication needs)
4. Supply voltage for the Dallas (3.7V) thermometer
5. 1-Wire input (identification of drivers and temperature measurement)
6. Power supply 3.3V (LED Dallas reader)

### Additional informations

- Dedicated installation schemes for every vehicle (CAN)
- Counting mileage based on data from the GPS
- Cost control of the SIM card
- Daily limit for GPRS connections in the roaming and home network
- Daily SMS limit
- Additional algorithm stabilizing analog measurements of fuel
- SIMHOLDER in a drawer version:
  - As standard, the terminal is equipped with a 2FF - MINI SIM drawer (the same size as in the S8 series terminals)
  - Option to buy the 3FF - MICRO SIM drawer (Q3 2022)
- Power supply of thermometers and accessories from JP3 connector can be controlled (possibility to make hard reset of accessories from S10 Terminal)

# CAN TECHNOLOGY

Used in Terminal S10.3/S10.5/FM15 Full CAN  
(J1939/J1708/J1587/FMS/OBDII)

## Basic informations

- Support for over 900 models of passenger vehicles, trucks, supply and construction machines.
- **Advanced ECODRIVING** with the possibility of a dedicated configuration for selected vehicles
- **PLUG&PLAY** - module includes a special algorithms that ensures the correctness of available parameters; the device is ready to work right after installing!
- **AUTOSYNC** - automatic synchronization - after installing the device automatically finds the model of the vehicle to which it is connected (100% efficiency); Any additional configuration after installation is not required
- The guarantee of reading available parameters described in the list of supported vehicles
- Precise information about the available parameters and a dedicated wiring diagram for the particular model of vehicle
- **CAN UNIFICATION** - It means that all data is sent in the same units
- Remote update and configuration (via Terminal)
- Internally integrated processors in the housing of Terminal
- Reading data from **Renault** and **Volvo** using the integrated internally J1708 bus (does not require connecting to any additional accessories)
- **Pulse-calibrated** reading distance and fuel consumption right where total value is unavailable
- The module remembers and provides summed value (the course of the clocks; fuel consumption; acceleration deceleration; engine running time and others) It revolutionizes the time required to generate reports in the client application
- Remote diagnostics of reading data problems from the CAN; the ability to add unsupported parameters using the diagnostic server



**Software update**  
Remote (via Terminal): TCP/FTP

## Reading data from the CAN bus Electric vehicles

The newly monitored logistics parameters enable more efficient management of electric vehicle maintenance. By monitoring the battery status and other critical parameters, it's possible to plan regular inspections and maintenance in a more precise manner, minimizing the risk of breakdowns and repair costs.

	battery condition		total energy consumed (while driving and idling)
	battery charge cycles		total recovery energy (regeneration)
	instantaneous battery current		total energy charged to the battery
	instantaneous battery power		remaining time to full battery charge (passenger vehicles from the PSA Group only)

## Reading logistics parameters

- Ability to read DTC codes (Diagnostic Trouble Codes)
- Ignition signal, engine conditions
- Total vehicle mileage read from clocks
- Engine rpm, vehicle speed
- Fuel level
- Total fuel consumption, Total fuel consumption at a standstill
- The pressure on the gas pedal
- Total drive time, total standstill time on running engine
- The total running time of the engine (motohours)
- Engine temperature, oil and coolant
- Vehicle range (number of km to ride on the remaining fuel)
- Instantaneous fuel consumption
- **Data from the tachograph (connection by CAN): work mode of two drivers, card numbers of two drivers, drivers work time limit**
- Information about exceeded limits
- Pressure on the axles (4 axles) and **total vehicle weight**
- The use of engine torque, engine speed
- The module counts rapid **accelerations and brakings** using advanced algorithms (the user can configure parameters adjusting event to a vehicle model)
- Exceeding the engine rpm speed (event)
- The driving time on the exceeded speed (time)
- The driving time on the exceeded rpm speed (time)
- The driving time on exceeding the pressure on the gas pedal (time)
- **AdBlue level**
- **VIN number of the vehicle**
- **Vehicle registration number**
- **Reading of additional information for electric vehicles (battery level, charging the vehicle)**
- **Over 30 indicators and over 60 logistic information read from CAN bus**
- **New parameters available in the S10 series terminals:**
  - Ambient temperature
  - Pressure on the brake pedal
  - Driving times from the tachograph (which are currently only supported by TMR) **(Coming soon)**
  - Steering wheel angle value **(Coming soon)**
  - Turn Signal Lamps **(Coming soon)**
  - Charging current (electric cars)
  - Starting the engine
  - Total driving time with the cold engine
  - VIN - in most vehicles
  - Parameters specific to heavy vehicles
  - Check engine light - on most passenger vehicles
  - Hazard lights - most passenger cars **(Coming soon)** (applies to vehicles with a reading of the parameter "fuel level")
- **And much more**

## Reading informations about indicators in the vehicle:



driver belt sensor | fuel reserve state indicator | the status of air conditioning | Webasto heater | the brake pedal (pressed, not pressed) | the illumination of light "stop"  
clutch pedal | handbrake - released; incurred (lit indicator) | the state of the cruise control | reverse gear - off, on (lit reversing light) | parking lights | headlights  
high lights | front fog lamps | rear fog lamps | Low brake fluid level indicator | Low coolant level indicator | battery charge indicator | brake system indicator (brake system error report)  
oil pressure indicator | engine temperature indicator | ABS system indicator | system ESP indicator | engine flaw indicator ("Check Engine") | airbags indicator | service calling indicator  
oil level indicator | fastening the seat belt (indicator turning off) | unfastening the seat belt (indicator turning on)  
door locked | doors open | trunk closed | trunk open | engine hatch closed | engine hatch open | lock crate discharge | discharge crate locked  
discharge case unlocked (ready to open) | central locking open | central locking closed | car is closed using remote control | the car was not closed by remote control  
factory alarm status: factory alarm unarmed | switching the factory alarm | factory alarm is on standby mode | triggered factory alarm

# TMR TECHNOLOGY

Used in Terminal S10.5

DDD/K-Line (D8)

Live TACHO COUNTERS

Smart tachographs V2

## Applications and device description

In accordance with Regulation (EC) 561/2006 companies having in its fleet vehicles equipped with digital tachographs are required to read driver cards every 28 days, and tachograph memory every 90 days. **TMR technology allows remote reading of the indicated range of tachographs memory and driver cards placed in the slots of the tachograph.** Digitally signed DDD file is downloaded. Advantage of the device is no need to return the vehicle to the base in order to read the memory of the tachograph and driver cards through external readers. The downloaded files are protected before editing.

In addition, connecting the device to a CAN bus provides a reading of the **current state of drivers** (ride, rest, work, break) and **card numbers of drivers**. Reading these monitoring of drivers hours limit. Data are available on the ignition switched on and off.

## Connecting the device and verification of assembly

Terminal S10.5 should be connected to the outputs of the rear wall of the tachograph (connector C and D) and **remains invisible during the operation**. Remote reading does not require the participation of the driver and can be done on the on/off ignition, while driving or on a standstill (up to 48 hours after the ignition is switched off). Sometimes it requires additional configuration of the tachograph by an authorized agency. The device indicates that. The set includes an extra installation kit in the form of socket connectors C, D and pins for assembly.

## The process of downloading DDD file

Remote DDD files downloading is very simple and easy action that saves businessman time in comparison to local DDD files downloading. It only requires a computer with internet access, a smart card

1. Connecting a smart card reader (with a company card) to a computer using USB port.
2. Sending request of downloading DDD file to Terminal.
3. Remote authorization - exchange of authorization data, between the company card and a tachograph.
4. Loading selected the DDD file to internal memory by Terminal.
5. Sending DDD file to a client server.
6. Downloading DDD file to a hard drive from the client server.

## Supported models of digital tachographs

Support for new smart tachographs.

Stoneridge from R7.1 version



### Informations read from tachograph

- General information about the vehicle
- Information about the direction of the vehicle
- Vehicle speed
- Engine RPM speed
- Drivers work time limit
- Information about exceeding the speed
- Total mileage
- Drivers card in the tachograph (Information about the presence of the driver card in the tachograph)
- Informations from the tachograph
- Information about the movement of the vehicle
- VIN number
- Vehicle registration number
- A set of basic informations
- A set of text informations
- **Reading the statuses, cards numbers, names and surnames of both drivers (also on the switched off ignition!)**
- **Guaranteed data reading on the ignition switch on and off - even with smart tachographs!**
- **Calculating and analyzing driver work time**
- **Reading VDO COUNTER data**
- **Advanced technical informations about downloaded DDD files**
  - Does the authorization was made with a correct company card?
  - Does the tachograph was blocked by a company card?

### LIVE TACHO COUNTERS – drivers working time counters

- **All working time counters of both drivers read directly from the tachograph, 100% compatible with its indications**
- Driving time from 45-minute break / pause
- Cumulative break time
- The duration of the currently selected activity
- Cumulative driving time: previous and current week
- Remaining current driving time
- Remaining time until next break or daily rest
- Minimum time of next break or rest
- Remaining time of the current rest / break
- Next required rest / break time
- Time left until next driving period
- Maximum allowed duration of next driving period
- Remaining daily driving time
- Time left until daily rest period
- Duration of the next daily rest period
- Remaining week's driving time
- Time left until week's rest period
- Duration of next week rest period
- Current daily driving time
- Current weekly driving time
- Number of exceeded 9h daily driving times

EFAS from V02 version



Connental/VDO/Siemens from Rel. 1.3a version



# TERMINAL FM11

(2G/LTE/GPS)

GENERATION 2

LTE

Monitoring of vehicles, cargos, semi trailers, containers and special machines

## Applications and describe of the device:

GPRS Terminal FM11 was created as a logistic device, as well as a protection of valuable vehicles, cargos, semi trailers, containers. It has its own specialized backup power supply solution that maintains the device for up to 6 months in the event of a main power failure.

## Basic informations:

### 100% compatibility of GPRS FM11 Terminal protocol with protocols of other Albatross device series

- Compatibility with communication commands
- Compatibility formats of data frames

### Optional additional digital inputs

High quality Li-Ion battery - dedicated for use in an extended temperature range 10 years of vitality and 3000 charging cycles

### Hermetic housing of the FM11 terminal

Special casing protection ensures resistance to demanding working conditions. It is characterized by transparent terminal cover and an innovative installation method which increases the level of protection against external factors such as flooding/moisture



Transparent cover

Hermetic GPRS Terminal FM10 case specially secured housing provides a resistance during difficult working conditions  
5 meters of dedicated wire slow-burning according to IEC 60332-1-2 oilproof according to EN 60811-404

An ability of the device to operate over 6 months without a need power supply using a dedicated work mode

- Awakening the device at a specified time generates a frame with the current parameters of the GSM/GPS and information about the state of inputs
- Immediate awakening of the device in case of unauthorized movement (3D sensor)
- Immediate awakening of the device in case of sabotage detection (disconnecting from the power supply)
- Power consumption by the device during a dedicated work mode < 1 mA

Dedicated main power supply type for 12V/24V installations

Charging internal accumulator from main power supply

Dedicated internal antennas (GSM/GPS)

GSM/EDGE/LTE Modem Quectel with JAMMING DETECTION (dedicated EventID), version EU  
LTE: B1/B3/B5/B7/B8/B20/B28 operating region EMEA  
GSM: B2/B3/B5/B8

High-quality GPS receiver with

ultra low power consumption mode

Internal battery with sustained RTC clock

Internal sim holder (opened/closed)

### Information about the voltage of the battery

Dedicated line to connect ignition signal

Dedicated line to connect an additional signal (eg. reed, door sensor)

A connector for cable battery charging of the device using a dedicated charger

## Technical informations:

### GPS receiver

- Registering data from GPS:
  - Current position
  - The direction of movement (0-360)
  - Speed (km/h)
  - Height above the sea level
  - UTC time - on the basis of which RTC clock is synchronized
  - Quantity of visible satellites
- Ultra low power consumption solution
- CE/FCC certificates
- Built-in GPS antenna

### Internal battery

- Battery type: Li-Ion
- Dimensions: 37.1 mm x 64.8 mm x 18.5 mm
- Working temperature: od -40 do 70°C
- Charging temperature: od -10 do 60°C
- Capacity: 5300 mAh
- Voltage: 3.7V
- **Charging from power supply installation while driving**
- Certificates UL 1642, UN 38.3, ROHS 2002/95/EC directive, Nordic Ecolabel license 330 011
- PCM protection against a discharge and overcharge
- Extended battery life:
  - 1000 cycles at 100% DOD
  - 3000 cycles at 80% DOD

### Device casing\*

- Length: 120 mm
- Width: 80 mm
- Height: 41 mm
- Material: ABS
- Complies with norm: IP68
- Color: Black

\* contains a culvert for cables

### GSM/GPRS modem

- Information about the GSM signal strength, reading GSM code
- GSM/EDGE/LTE Modem Quectel with JAMMING DETECTION (dedicated EventID), version EU  
LTE: B1/B3/B5/B7/B8/B20/B28 operating region EMEA  
GSM: B2/B3/B5/B8
- GPRS Class 12 Max. 85.6kbps (uplink & downlink)
- CE/FCC/GCF/PTCRB/NCC/ANATEL/IC/ICASA/UCRF/RCM/Vodafone

### Additional connector

- Cable charging of the device (~500mA)

### 3D sensor

- Detection of overloads/movement/tow

### Anti-theft protection

- Proprietary solution of alarming about sabotage

# TERMINAL FM11 MAGNET LTE

## (2G/LTE/GPS) IP67 CONNECTOR MAGNET

### Applications and describe of the device:

The GPRS FM11 Connector Magnetic Terminal was created as a logistic device for a security of valuable vehicles, cargo, trailers and containers. It has its own specialized backup power supply solution that maintains the device for up to 6 months in the event of a main power failure. Available in two versions with external or internal magnets. Magnet capacity max. up to 148kg! Both versions have a hermetic IP67 connector for wired charging of the device's battery using a dedicated charger and proprietary alarming solutions for sabotage.

### Basic information:

- Available in two versions with external or internal magnets
- 100% compatibility of the FM11 Terminal GP11 IP67 CONNECTOR MAGNETIC protocol with protocols of other series of Albatross devices
- Compatibility of communication commands
- Compatibility of data frame formats
- High-quality Li-Ion battery - dedicated for use in an extended temperature range
- Information about the device's battery voltage
- Dedicated line for connecting an additional signal (eg reed switch, door sensor)

- Current consumption by the device during armed mode < 1 mA
- Dedicated internal antennas (GSM and GPS)
- Modem GSM / GPRS 850/900/1800/1900MHz with ultra low power consumption mode

- Immediate device wake up when unauthorized motion is detected (3D sensor)
- Immediate wake up when sabotage is detected

- Waking up the device at a specified time, generates a data frame with current GSM / GPS parameters and current information on the state of inputs
- Hermetic IP67 connector for wired charging of the device's battery using a dedicated charger
- The device can operate for up to 6 months without power supply using a dedicated operating mode

- High-quality GPS receiver with ultra low power consumption mode
- Internal RTC clock battery
- Internal simholder (opened / closed)
- Maintaining key operational parameters of the device: real time, GPS data, calculated GPS mileage - data never disappear

- Simple installation with magnets
- Magnet capacity max:
  - Magnetic OUT - up to 148 kg
  - Magnetic IN - up to 35 kg

The specified lifting capacity is the maximum load measured under optimal conditions, using as a jumper a low-carbon steel sheet with a thickness of 10mm, with a smooth surface, with a perpendicular force at room temperature.



### Technical informations:

#### GPS receiver

- Registering data from GPS:
  - Current position
  - The direction of movement (0-360°)
  - Speed (km/h)
  - Height above the sea level
  - UTC time - on the basis of which RTC clock is synchronized
  - Quantity of visible satellites
- Ultra low power consumption solution
- CE/FCC certificates
- Built-in GPS antenna

#### Internal battery

- Battery type: Li-Ion
- Dimensions: 37.3 mm x 64.8 mm x 19 mm
- Working temperature: od -40 do 70°C
- Charging temperature: od -20 do 60°C
- Capacity: 5300 mAh
- Voltage: 3.65V
- Charging from power supply installation while driving
- Certificates UL 1642, UN 38.3, ROHS 2002/95/EC directive,
- Nordic Ecolabel license 330 011
- PCM protection against a discharge and overcharge
  - Extended battery life:
    - 1000 cycles at 100% DOD

#### Device casing\*

- Length: 120 mm
- Width: 80 mm
- Height: 41 mm
- Material: ABS
- Meets the IP standard: 67
- Black colour
- IP67 connector for charging the terminal / connecting an additional signal (eg reed switch, door sensor)

#### GSM/GPRS modem

- Information about the GSM signal strength, reading GSM code
- GSM/EDGE/LTE Modem Quectel with JAMMING DETECTION (dedicated EventID), version EU
  - LTE: B1/B3/B5/B7/B8/B20/B28 operating region EMEA
  - GSM: B2/B3/B5/B8
- GPRS Class 12 Max. 85.6kbps (uplink & downlink)
  - CE/FCC/GCF/PTCRB/NCC/ANATEL/IC/ICASA/UCRF/RCM/Vodafone

#### Additional connector

- Wired charging of the device using a dedicated charger (POWER ADAPTER FM11)

#### 3D sensor

- Overload / motion / towing detection

#### Anti-theft device protection

- Original alarm solutions for sabotage



# FM23 TERMINAL

## (2G/LTE/GPS)

LTE

### Basic informations

- **GSM/EDGE/LTE Modem Quectel with JAMMING DETECTION (dedicated EventID), version EU**  
**LTE: B1/B3/B5/B7/B8/B20/B28 operating region EMEA**  
**GSM: B2/B3/B5/B8**
- **Quad band GSM 850/900/1800/1900 MHz internal antenna**
- **GPS Quectel L76 receiver with ANTY-JAMMING and JAMMING DETECTION (dedicated EventID) function**
- **Active external GPS antenna (3 meter/SMA)**
- **100% compatibility of the FM23 Terminal protocol with the protocols of other Albatross devices.**
- Internal clock sustaining RTC (Real Time Clock)
- Maintaining the key operating parameters: time, GPS data (data is never lost - even after a power cut!)
- Advanced analog inputs filters (analog floats, fuel probes) with data support after the loss of the main power supply
- Communication port: RS-232-TTL (optional: RS-232, RS-485)
- Integrated/internal battery with charging control and lack of battery detecting (Li-Polymer)
- ABS casing: 71x52x24 [mm]
- Memory archive - a minimum of 24,000 events (up to 48,000)
- LED diodes signaling the strength of GSM signal and the number of GPS satellites
- Full support of 1-Wire protocol (6 thermometers, identification of the driver, DALLAS, RFID)
- Alarm, which informs that the GPS antenna is disconnected - real-time monitoring
- Full support for Mobileye technology
- Full solutions support MIDAS MOVON
- Authoring solution of protecting the devices inputs (power, ignition switch, analog inputs) - these inputs are damage resistant (e.g surge in vehicle installation)
- Incremental firmware - backward compatible; always contains all the device functions which ensures ease of managing software versions; Files to update are delivered directly to a partner in order to further updates by using the FTP server
- Open communication protocol and remote support of engineers in real time (Skype) facilitates the process of implementation; Record implementation of the protocol took place in a few days!
- Optional support of 3D sensor in order to detect accident, tows, car cullets
- ImmoDALLAS - an additional security for customers vehicle. The device activates the output in case of detecting the absence of authorization (DALLAS, RFID). The device allows you to save up to 2047 identification numbers of drivers!
- Ignition detection using a dedicated analog input, the main power supply voltage or from CAN bus
- Ability to implement a dedicated logic functions, commands and a help of handling modules on partners demand in case of further cooperation
- Possibility of connecting Garmin navigation using the signal converter RS-232 to RS-232-TTL

### Technical specification

- System supply from + 8V to + 32V
- The average value of power consumption:
- Offline terminal (5 minutes after the ignition is turned off):  
29 mA +/- 5% for power supply=12.7V  
20 mA +/- 5% for power supply=25.4V
- Online terminal (Ignition is on):  
54 mA +/- 5% for power supply=12.7V  
32 mA +/- 5% for power supply=25.4V
- Terminal in SLEEPMODE:  
< 5 mA +/- 5% for power supply=12.7V  
< 3 mA +/- 5% for power supply=25.4V
- Operating temperature -30°C to + 85°C

### Inputs/Outputs

- 1 reacting to mass inputs
- 1 open collector outputs
- 2 analog inputs (for ignition voltage measurement, fuel probes)
- 1-Wire Input (identification of drivers, temperature measurement, DALLAS, RFID)
- RS-232-TTL communication port (default)
- RS-232 communication port (optional)
- RS-485 communication port (optional)

### Configuration

- **Remote: SMS, GPRS, TCP, programming application**
- **Local: (PC application + programming wire)**

### JP-1 description

1. The main power supply input (8V - 32V)
2. Open collector output
3. Ignition signal input (+)
4. Input (-)
5. Input (+) / analog measurement 0-32V
6. Main mass input (GND)

### JP-3 description

1. Mass (GND)
2. TxD (for RS communication needs)
3. RxD (for RS communication needs)
4. Power voltage for the Dallas (3.7V) thermometer
5. 1-Wire input (identification of drivers, temperature measurement)
6. Power supply 3.3V (LED Dallas reader)

### Tracking modes

- 8 independent tracking modes (including the ignition signal)
- Time mode
- Mode which takes a distance into account
- **Separate settings for roaming network**

### Data read

- RTC Time (special synchronization algorithm based on GPS Time)
- GPS Data: latitude and longitude, altitude, driving angle, the number of satellites, speed
- Mileage meter (advanced counting algorithm based on the data from the GPS - the value is added up and always remembered by the GPRS Terminal)
- EVENTID information (the cause of generating data frame)
- The current state of all inputs (active/inactive)
- The current state of all outputs (active/inactive)
- The main power supply voltage
- Internal battery voltage

### Individual settings for partners

- A default device configuration
- Dedicated functions, commands
- Individual device casing
- Individual device identification

### Additional informations

- Counting mileage based on data from the GPS
- Cost control of the SIM card
- Daily limit for GPRS connections in the roaming and home network
- Daily SMS limit
- Additional algorithm stabilizing analog measurements of fuel
- **The connection status of the GPS antenna (connected/not connected - an immediate alarm informing about disconnecting GPS antenna by unauthorized persons)**
- Internal battery connection status (connected/not connected)
- The state of SIM card logging (home/roaming network) GSM signal strength
- GSM code of currently logged GSM operator
- GPS performance status (correct/incorrect)

# ECODRIVING (ADVANCED ECODRIVING SOLUTION)

## Advanced tools for Series S10/FM

### Application and device description:

Albatross Terminals use CAN technology to read data from the CAN bus of vehicles. Advanced Ecodriving Solution has been prepared using data from the CAN bus and operational mechanisms of the sensor 3D. Ecodriving is an economical and environmentally friendly driving technique, which significantly reduces operating costs. The driver applying the principles of ecodriving reduces environmental pollution.

Using the principles Ecodriving driver reduces fuel consumption (up to 33%!) And also reduces the mechanical wear on the car components, especially components such as the brake system and tires. In addition, the driver takes care of the environment through limitations of CO2 emissions and noise. It is also reducing the risk of accidents, due to less aggressive and more and providing a reasonable drive.

#### CAN module

CAN module installed in Albatross Terminals is responsible for reading the information from the CAN bus of the vehicle in which it is located. On the basis of the data read and used algorithms, it provides data so that you can easily determine if the driver moves the vehicle economically. Most of our algorithms were developed in cooperation with a professional team of people involved in training of economic driving. The data refreshed in real time in CAN bus guarantee the effectiveness of solutions display.

#### 3D sensor

3D sensor records events and then on the basis of proprietary calibration algorithm and data analysis, allows to determine the driving style. It protects the vehicle by detecting the unauthorized movement of the vehicle and possible towing. In addition, there is free Android application, which in a clear and easy way to present a method of ECODRIVING operation on the basis of sensor 3D. Accurately reproduces the 3D sensor calibration mechanism and sensitivity level of recorded events. Configuration obtained on the phone is generated in the form of a command that should be sent to the device using a password to the device and a phone number of the card in your device.

### Data from the CAN module counted directly by CAN module

Available for Terminals S10.3/S10.5



#### Total fuel used on stop

Fuel consumption is calculated only when the vehicle is at a standstill (vehicle speed from CAN is 0 km/h)



#### Total driving time

Calculating the time of the vehicle when the engine is switched on and the vehicle speed from CAN is greater than 0 km/h



#### Total time of engine operation at standstill

Calculating the time of the vehicle at a standstill on the running engine, when the vehicle speed from CAN is 0 km/h



#### Driving time with the speed from CAN above the defined limit

Time of driving the vehicle at a speed of CAN above defined limit is calculated



#### Driving time with engine RPM speed from CAN above the defined limit

Driving time is calculated when the engine speed from CAN is greater than the defined limit



#### Rapid braking

Calculating the amount of violent braking based on the time and the speed of the vehicle from CAN



#### Rapid acceleration

Number of rapid acceleration based on the time and the speed of the vehicle from CAN is calculated



#### The total amount of brake pedal use

Brake pressing is calculated when the vehicle accelerated by at least 10km/h or gas pedal was pressed down



#### Footbrake factor

Braking factor is calculated using the share of which was the brake pedal



#### Engine brake factor

Braking factor is calculated when the brake pedal was not used while braking



#### Number of kickdown events

Value is calculated when the gas pedal pressure was greater than 90%



#### Driving time on the kickdown

Driving time with pressure on the gas pedal more than 90% is calculated



#### Driving time on cruise control

Counter of the driving on the cruise control



#### Driving time with exceeded pressure on the gas pedal above the defined limit

Driving time with an emphasis on the accelerator above the defined limit is calculated



#### Number of exceedances of engine RPM speed above the defined limit

Engine RPM over speed above the defined limit is calculated.



#### Calculating (baskets) for CAN parameters

Solution is based on sampling every 1 second of data from the CAN. The purpose is the analysis of these parameters in a unit time (1s) and assigning the counted time to one of the defined compartments. There are 6 compartments for each parameter. The value of the counted time is transferred in every data frame according to the settings

TRACKING/TIMER/ASYNCHRONOUS DATA FRAMES



- Engine speed (RPM) - 6 compartments
- Speed from CAN
  - In order to verify the speed of the vehicle - available 6 compartments
  - In order to verify the acceleration of the vehicle - 6 compartments
  - In order to verify the braking of the vehicle - 6 compartments
- Pressure on the gas pedal (%) - 6 compartments



# Data from 3D sensor – counting on the basis of calibrated data from 3D sensor

Available for Terminals S10.3/S10.5

## ● Calibration of 3D sensor - Automatic

After installing a device in a car, the device will make calibration process automatically. 3D sensor while calibration is calibrating on the basis of registered accelerations and brakings.

## ● Registered value of overloads after 3D calibration: available in data frame fields



## ● Generating an event on the basis of calibrated 3D sensor (EVENTID):



### → Towing car

The car overload above defined limit when ignition is off



### → Crash

The sum of overloads (algorithm) above defined limit when ignition is on



### → Rapid acceleration

The car acceleration above defined limit when ignition is on



### → Rapid braking

The car braking above defined limit when ignition is on



### → Sharp bend

Overcoming bend by the car above defined limit when ignition is on

## Freeware Android application – “ECODRIVING: 3D sensor”



An application allows for imagine ECODRIVING feature that is prepared on the basis of the 3D sensor. It is designed for 3D sensor calibration in Terminals series S10/FM that are producing by Albatross System Sp. z o.o.. After correct calibration, following events are registered - brakings, accelerations, overcoming bends, towing and crashes. Tested configuration can be sent remotely to Terminals S10/FM by using command generated by the application.



Download now on your phone



# EXPANSION MODULES

## TECHNICAL DESCRIPTION

NEWS!



The **EXPANDER** module extends the range of available S10 terminal inputs and outputs, allowing you to connect additional peripherals to your existing system. The module is connected through the JP3 communication connector to the S10 terminal. Once connected, the EXPANDER module communicates with the terminal and additional digital inputs become available.

The module expands the range of inputs by:

- 3 analog inputs (responsive to +)
- 3 mass inputs (responsive to -)
- 2 Open Collector outputs



**CAN CLICK 12V/24V** is a dedicated attachment to devices with CAN. It allows you to load all the signals from the bus CANBUS, by isolating wires (contactless) from every vehicle in the list of supported vehicles. It works on both installations 12V | 24V.



**Bluetooth identification BTLE (Bluetooth Low Energy)** - module for remote reading of unique MAC address of BT ibuttons, which are within its reach. It is able to read up to 12 XBLITZ tags / up to 50 Eddystone tags / up to 6 ELA COIN T tags simultaneously and send them to the server via S10 / FM terminal. This module is intended for integration with S10 / FM terminals via the JP-3 connector, its range including dedicated ibuttons is 8 meters.



**FMS Adapter** module for remote reading of unique MAC address of BT ibuttons, which are within its reach. It is able to read up to 12 XBLITZ tags / up to 50 Eddystone tags / up to 6 ELA COIN T tags simultaneously and send them to the server via S10 / FM terminal. This module is intended for integration with S10 / FM terminals via the JP-3 connector, its range including dedicated ibuttons is 8 meters.



# albatross

**S Y S T E M**

ul. Miła 12, 05-090 Raszyn-Rybie

Tel: + 48 22 646 03 30

Tel/fax: + 48 22 646 00 09

biuro@albatross.com.pl

www.albatross.com.pl