



5DI/2DO

2AI



RS-485 option

4G



- Specialized module for vehicle tracking and monitoring
- Integral GPS receiver supporting the following systems: GPS, GLONASS, Galileo, BeiDou with Dead Reckoning function
- Integral 2G/4G GSM modem
- Binary inputs and outputs
- Efficient fuel measuring
- Driver identification
- Monitoring the temperature of cargo during transportation
- Cargo doors monitoring, preventing cargo theft and protecting refrigerated loads
- Construction equipment monitoring, included load/unload processes
- GPS Snowplow tracking (materials usage reporting)
- Large data recorder 30k records
- 2 serial ports RS-TTL (3V) - one of them RS-485*
- 3 axis accelerometer
- Configuration via SMS
- Detection of GSM and GPS antennas
- Detection of connection/disconnection of USB cable
- Detection of signal interference with external devices (jammers)
- USB-C interface for local device configuration

* option



- Detection of attempted falsification of GNSS signal (spoofing)
- Backup power battery input (12V), built-in charge control system
- Optional BLE interface for local wireless configuration of the device

The ML-232 location module is a specialized telemetry unit dedicated to solutions in many industries, using the monitoring functionality, the status of specific parameters and the current position of a given object.

The design of the module based on the latest GPS/GSM technology ensures precise location and reliable operation in changing conditions of GSM propagation.

The Dead Reckoning function uses a number of additional sensors, making it possible to continue tracking the vehicle's route in places with limited GPS signal range (e.g. tunnels, underground parking).

The device detects signal interference with external devices (so-called jammers) and attempts to falsify the GPS signal.

The module is made in accordance with the requirements of automotive structures. It is successfully used in the transport of goods, construction and public services. The module is compatible with additional components and the configurator, which allows you to adjust the device in terms of the presentation of specific appearances, such as: the temperature level, door opening signaling, loading and unloading signaling, sprinkling and plowing signaling.

Resources:

- 5 binary inputs including:
 - » dedicated ignition ON detection
 - » dedicated alarm detection input
 - » 2 general purpose binary inputs (with counting and scaling function)
 - » 1 ground sensitive binary input
- 2 binary outputs
- 2 voltage analogue inputs
 - » frequency measurement
 - » average value computing

- » max value detection
- » differential measurement
- » voltage measuring with alarm thresholds
- » precise fuel level measuring
- Main supply input with voltage measurement
- Auxiliary supply with voltage measurement
- Two 1-Wire inputs (Dallas iButton) for driver identification and temperature measuring
- Optional BLE interface for local wireless communication with software tools

Functionality:

- Cyclical position calculation on GPS signal base (GLONASS, Galileo, GPS, BeiDou)
- Monitoring of analogue and binary inputs and outputs
- Monitoring of fuel level and rapid level falls
- Speed monitoring/speeding/stopping
- Binary inputs signal filtration eliminates signal interference
- Additive or subtractive pulse counting on I3 and I4 inputs allows variable flow meter connections.
- Controlling binary outputs according to internal logic and remote commands
- Detection of missing GPS signal and antenna connection
- Detection of disconnection of GSM antenna
- Detection of disconnection/connection of USB cable
- Jamming detection – the device detects signal interference using external devices (jammers)
- GNSS spoofing detection – the device detects attempts to falsify the GNSS signal
- Reporting according to defined distance and time criteria as well as driving direction change
- Transmission of information as a result of triggering predefined event
- Logging of data in case of missing GSM communication

- Transmission modes:
 - » packet transmission
 - » SMS
- Configurable transmission in home network and in roaming
- Dynamic SMS composing allowing transmission of current measurements values
- Configurable SMS limits
- Local or remote configuration via packet data transmission, SMS commands or optional BLE interface
- Configurable access permissions – list of authorized IP addresses and phone numbers
- Monitoring of main and auxiliary supply voltage
- Diagnostic LED facilitating module's start
- Detachable connector and antenna sockets
- Dedicated local connection socket for PC for configuration and verification of parameters
- Possibility to extend the functionality of the module with external accessories
- 3-axis acceleration measurement – motion detection

General

| | |
|--------------------------------------|--------------------|
| Dimensions (length x width x height) | 112 x 65 x 23,5 mm |
| Weight 110 g | 110 g |
| Mounting mode Velcro/Strap | Velcro/Strap |
| Operating temperature -20 do +55 °C | -20 to +55 °C |
| Protection class IP 4 | IP40 |

Modem

| | |
|----------|---|
| Type | LARA-R6801 |
| Region | Multi-Region |
| 2G bands | 850, 900, 1800, 1900 MHz |
| 4G bands | 1, 2, 3, 4, 5, 7, 8, 18, 19, 20, 26, 28 |
| Antenna | 50 Ω, SMA-F |
| SIM card | Mini (25 x 15) mm |

GPS Receiver

| | |
|-------------------|--------------------------|
| Receiver type | µBlox NEO-M9V |
| Sensitivity | -159 dBm |
| Position accuracy | to 1.5 m |
| Antenna | Aktive 3V, MCX connector |

Power Supply

| DC voltage 9 – 30 V | 9 – 30 V | | |
|---------------------------------|----------|---------|----------------|
| Input current (mA) (for 13,8 V) | Max 200 | Idle 35 | Power Save <10 |
| Input current (mA) (for 27 V) | Max 100 | Idle 20 | Power Save <10 |

Inputs I 1 – I 5

| | |
|--|------------|
| Input voltage range 0 – 30 VDC | 0 – 30 VDC |
| Input resistance 22 kΩ | 22 kΩ |
| Input voltage ON (1) >7 V | > 7 V |
| Input voltage OFF (0) <2,5 V | < 2,5 V |
| Frequency range in counter mode (I 3, I 4) 50 Hz | 50 Hz |
| Minimum pulse width "1" 20 ms | 20 ms |

Output 1, 2

| | |
|---|--|
| Recommended average current for single output | 250 mA |
| Voltage drop at 250 mA | 0,3 V |
| Voltage drop at 250 mA 0,3 V | 20 µA |
| Application | Immobilizer, parking mode, LED/BUZZER signalling, others |

Input 1-Wire 1, 2

| | |
|-------------|---|
| Standard | Dallas I-Button |
| Application | Driver authorization Temperature measurement |

Analogue Inputs

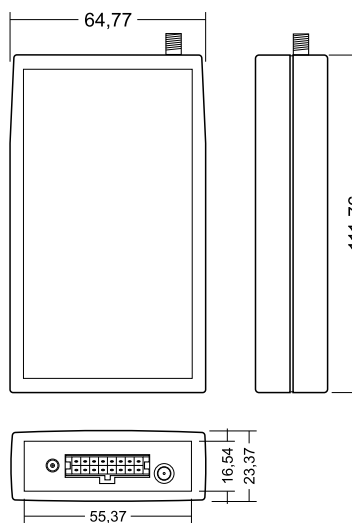
| | |
|-----------------------------|-----------|
| Measurement range 0 – 10 V* | 0 – 10 V* |
| Input Resistance 200 kΩ | 200 kΩ |
| A / D converter 12 bits | 12 bits |

* with the possibility to increase the scope

Serial ports

| | |
|-----------------|--|
| Standard | USB-C |
| Optional RS-485 | RS-485 |
| Application | External expansion modules (CAN, RFID) |

Drawings and dimensions (all dimensions in millimeters)



Connections

