

Intelligent Vision Monitoring

Universal system for long-term monitoring of the condition and position of wagons with an application that allows you to control the status, routes, employees, inspections and alarms of the rolling stock

DEVICE CHARACTERISTICS AND APPLICATION

The device is adapted to work in railway conditions, for mounting on freight cars and containers..

- ✓ Locating the position (GPS) performed at a specified time interval
- ✓ Wagon condition analysis based on vibration - chassis damage prediction algorithms
- ✓ ITSS interface2 READY - for optional external sensors
- ✓ BluetoothLE 5.0 - for optional external sensors
- ✓ GSM communication with the server
- ✓ Possibility to control via SMS
- ✓ Ambient measurements - pressure, humidity, temperature
- ✓ Possibility of using Energy Harvesting - solar panels etc.
- ✓ Intelligent energy management, automatic operating modes of the device
- ✓ Battery life up to 5 years, the possibility of extending the battery capacity
- ✓ Thermal resistance -40 to 70 degrees Celsius (continuous operation)
- ✓ The ability to remotely update the software

MEASUREMENT DATA

- ✓ Exact geographic location determined by GNSS satellites
- ✓ Vibration analysis result, raw vibration data (when damage is detected)
- ✓ Data from optional sensors (e.g. axle box temperature, brake pressure)
- ✓ Information about the operating mode
- ✓ Vehicle speed, altitude
- ✓ Device number and signal strength
- ✓ Pressure, temperature, and ambient humidity
- ✓ Device, battery status



Universal system for long-term monitoring of the condition and position of wagons with an application that allows you to control the status, routes, inspections, and alarms of the rolling stock

Intelligent Vision Monitoring

TECHNICAL PARAMETERS OF THE DEVICE

MCU	Ultra-Low Power CPU	Extremely low-power and high-performance Arm® Cortex®-M4 32-bit,
MEMORY	Flash 64 Mb	QPI, QSPI 133MHz
MODES	NORMAL	Mode in which the device performs its activities at specified, configurable intervals. Entering the mode is possible thanks to a physical button, as well as via a remote command.
	CONTINUOUS	Mode in which the device performs its activities continuously. Entering the mode is possible thanks to a physical button, as well as via a remote command.
	SERVICE	The mode in which the device performs only basic activities related to the operation of the software and communication with the server. Entering the mode is possible thanks to a physical button, as well as via a remote command
	STOP	An automatic, energy-saving mode in which only movement and position are tested.
GPS	33 tracking /99 acquisition - channel	Time-To-First-Fix -Cold starts: 28s (typ.) -Hot starts: <1s -Warm starts: 22s
GSM/GLONASS	2G	Quad-Band 850/900/1800/1900 MHz, 2W (class 4 @ GSM850/EGSM900), 1 W (class 1 @ 1800/1900MHz)
	eSIM	MFF2 eSIM
	Communication	SMS, GPRS
ANTENA	GSM 824MHz-2170 MHz	
	GPS/GNSS 1559-1609 MHz	
	RF_802.15.4	
	Internal	Bluetooth
BATTERY	Type	LiMnO2 12500 mAh, 6V
		LiMnO2 25000 mAh, 6V
		LiMnO2 25000 mAh, 6V + external EH system
CONSUMPTION	1 Year	Less than 3000 mAh, depends on parameters and sensors
INTERNAL SENSORS	Accelerometer - 3 dimensional	Adjustable sampling rate. Vehicle motion detection. Intelligent vibration analysis algorithm that predicts and detects damage of carriage.
	Temperature sensor	Ambient temperature measurement.
	Humidity sensor	Measurement of ambient humidity.
	Pressure sensor	Atmospheric pressure measurement.
	Battery temperature sensor	Battery temperature monitoring. Protection of the battery against overheating.
TEMPERATURE RANGE	Operating	-40 to 70 °C
	Maximum	-40 to 100 °C - automatic sleep system above operating temperature
PROTECTION CLASS	IP65	Water and dust resistant

WIRELESS INTERFACE (FOR SENSORS)	Bluetooth Low Energy 5.0	Fast data transfer with multiple sensors. Range up to 200m.
	ITSS interface2 READY	IEEE 802.15.4 compatible transceivers operating in the 2.4 GHz ISM band.
DIMENSIONS	Box dimensions	141 x 76 x 70 mm

