

Smart & Simple Telematics



Turnkey solutions

SEZTEC USA
innovative sensors and
telematics systems



Seztec USA develops a wide model range of sensors for such telematic applications as fuel consumption monitoring, onboard weighing systems, cold-chain control, etc. Seztec USA's solutions are easily integrated into fleet management systems, remote monitoring platforms and IoT networks.

The company strives for best quality both of products and technical support. We are proud to have ISO 9001-2008 certificates. Our devices are easy to install and maintain. Also we provide free training for technical and commercial personnel.

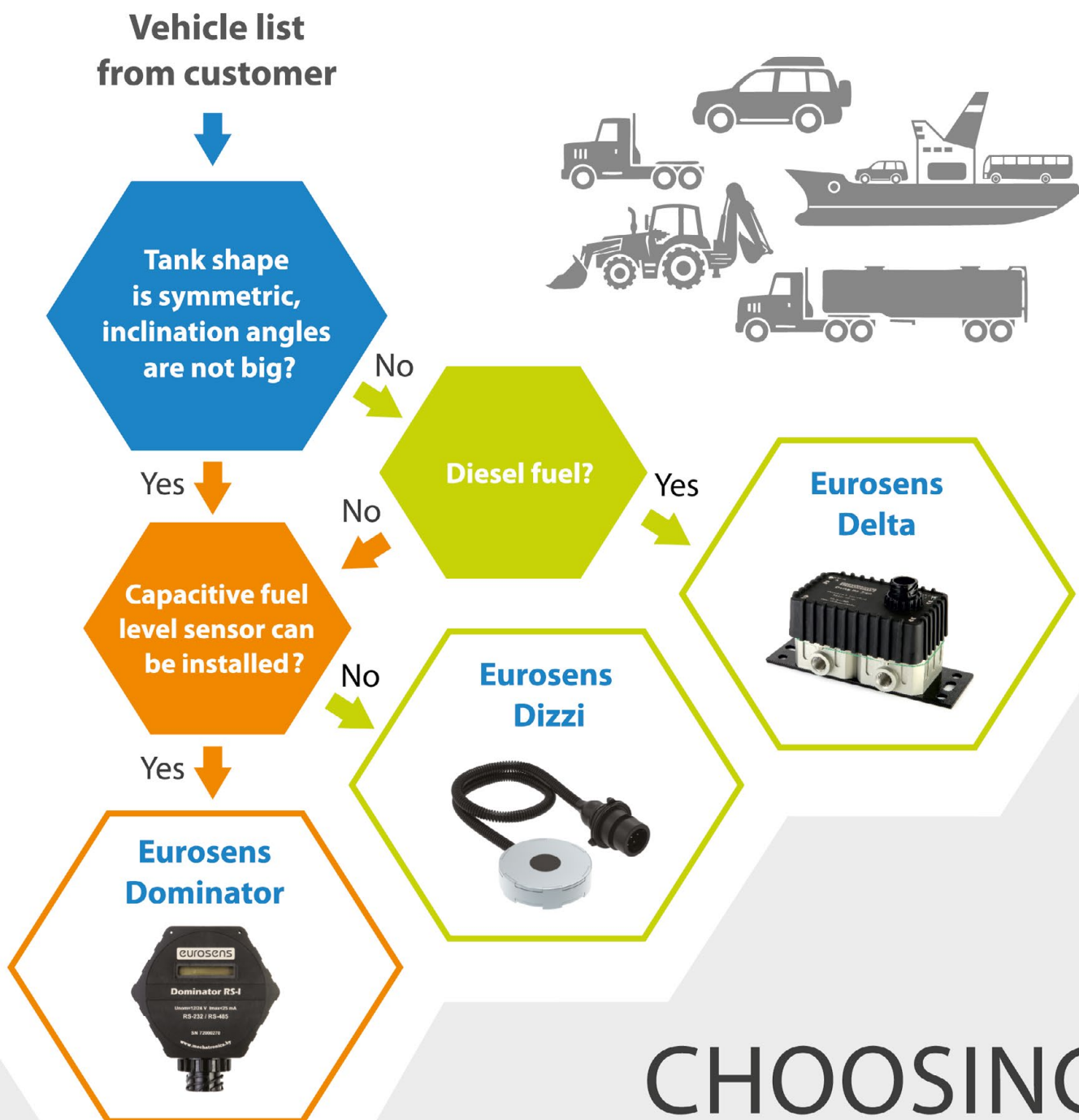
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How to choose fuel consumption sensor

Our main focus — remote fuel consumption monitoring.

Mechatronics is the only company that develops and manufactures three types of fuel consumption sensors. The choice of the appropriate sensor depends on the object where it should be installed.



CHOOSING SUITABLE FUEL SENSOR

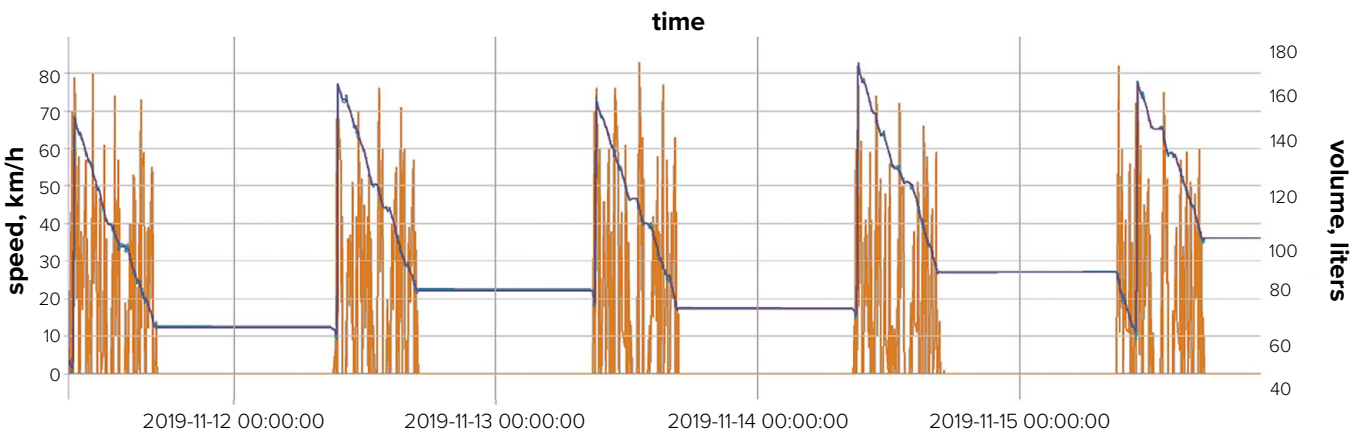
Fuel consumption monitoring

trucks and buses



Fuel level sensors Eurosens Dominator

- automotive design and accessories
- fuel theft alarm
- modular design
- easy maintenance



N°	Day	Spent on the Fuel level sensor	Mileage for all messages	First level	End level	Total refueling	Total sinks	Filled	Theft
1	2019-11-11	25.11 l	11.19 km	73 l	131 l	1	0	83 l	0 l
2	2019-11-12	73 l	66 km	131 l	58 l	0	0	0 l	0 l
3	2019-11-13	1.57 l	0.53 km	58 l	56 l	0	0	0 l	0 l
4	2019-11-14	0 l	0.00 km	56 l	56 l	0	0	0 l	0 l
5	2019-11-15	40.04 l	18.33 km	56 l	100 l	1	0	84 l	0 l

Fuel consumption monitoring

agricultural and special machinery

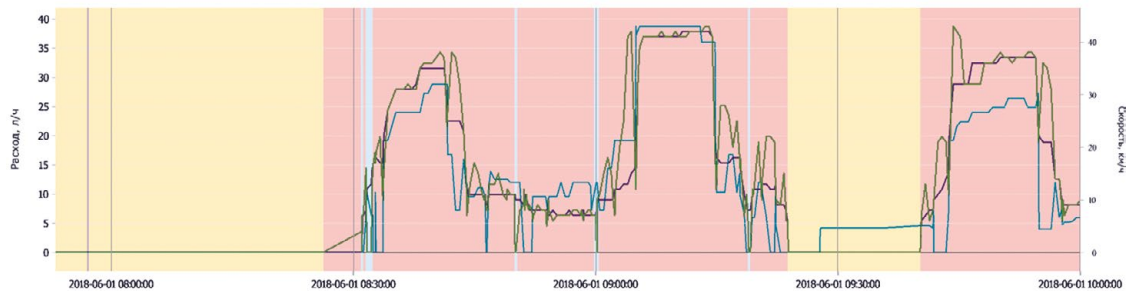


Non-symmetric fuel tanks, uneven road surface

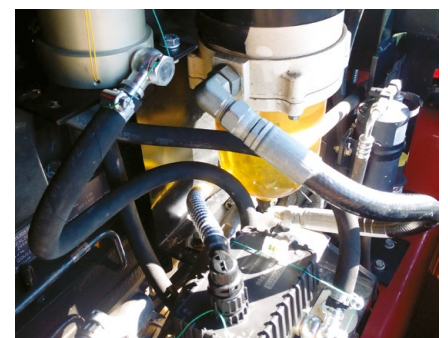
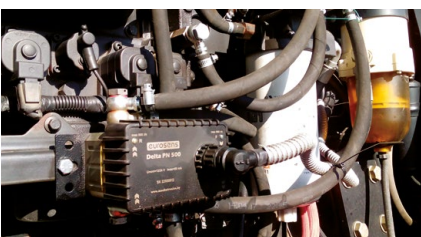


Fuel flow meters Eurosens Delta

- high precision
- insensitivity to interferences and road conditions
- easy installation and maintenance



N°	Day	Distance	Fuel consumed	Avg distance per 1 liter	Max speed	Time in movement	Stops
1	2018-06-01	60 km	55 l	1,09 km	43 km/h	3:26:48	11:14:41

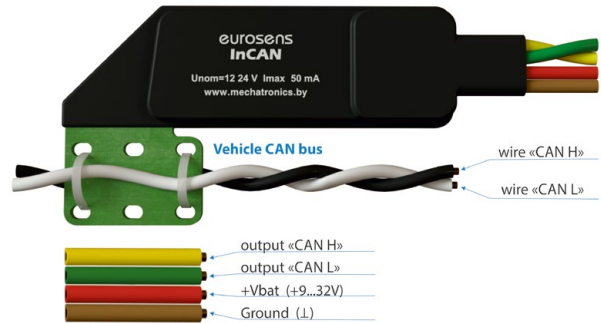


Fuel consumption monitoring

cars



Car with CAN bus

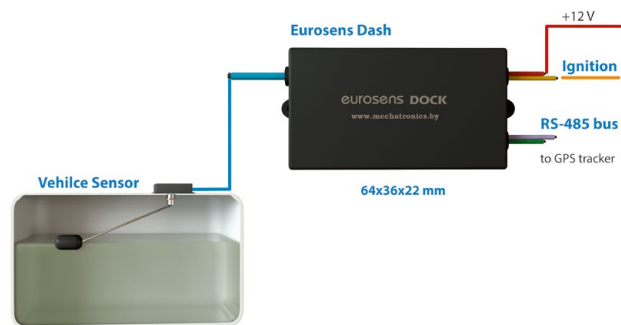


Contactless CAN-bus reader

Safe connection to the CAN bus of a vehicle. Remote monitoring of fuel consumption and other parameters: rpm, speed, seat belts, coolant and oil temperature and etc.



Cars without CAN bus



**Eurosens Dock —
vehicle fuel sensor's data improver**

We cannot retrofit a capacitive level sensor inside the tank as there is not enough space for that. But we can improve data of vehicle float type sensor with Eurosens Dock device.

GPS fleet tracking

trucking and cold chain solution

Fuel consumption monitoring



Fuel level sensors Eurosens Dominator

- automotive design and accessories
- fuel theft alarm
- modular design
- easy maintenance

Cold chain monitoring

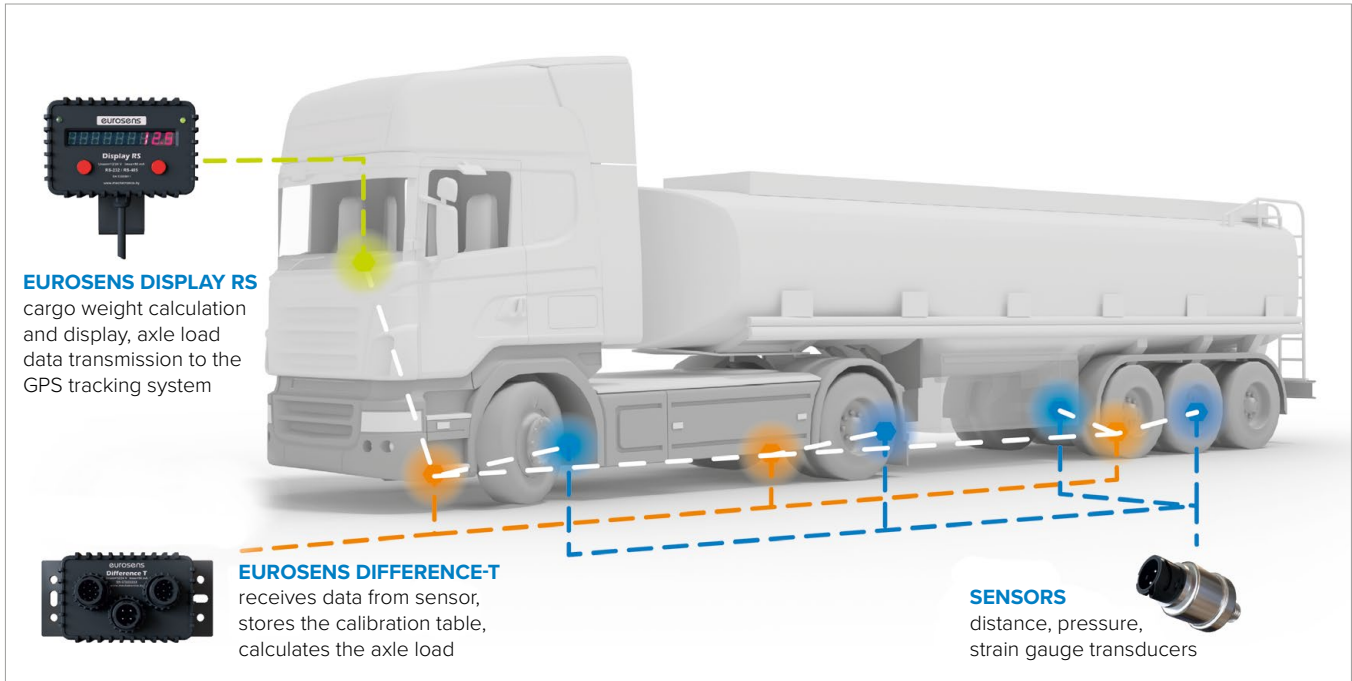
Wireless temperature sensors Eurosens DTS RF

- 1 year battery life
- no cabling inside cold compartments



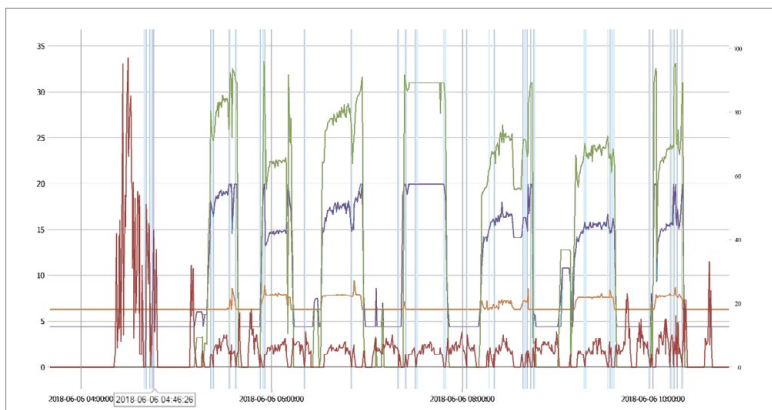
Cargo weight and axle load monitoring

Onboard weighing system Eurosens Difference

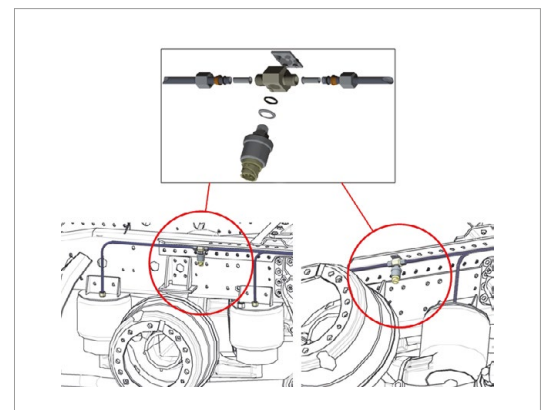


- Individual axle load measurement for truck and trailer
- Cargo weight calculation
- Axle overload alarm
- Shows axle load and cargo weight on the driver's display
- Axle load and cargo weight data transmission to the GPS tracking system

Cargo weight data



Installation of the axle load sensor



Waste truck monitoring solution

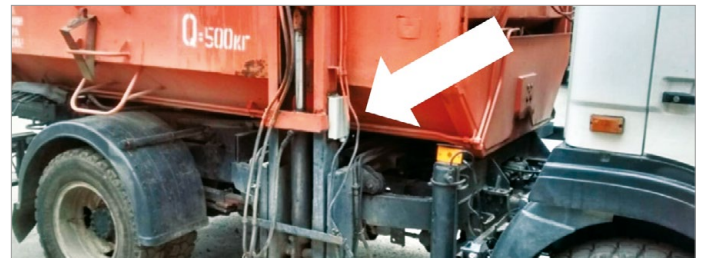
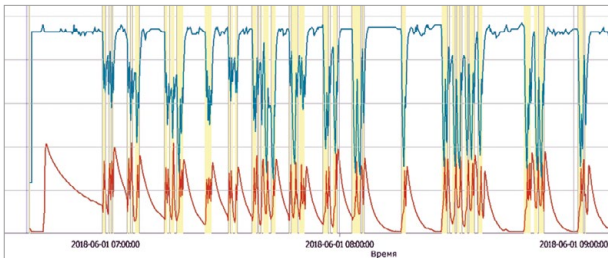


Tilt angle sensor Eurosens Degree



Wireless tilt angle sensor Eurosens Degree BT

Eurosens Degree tilt angle sensor is used as a part of GPS tracking system to detect the position of manipulator's arm.



Hydraulic telemetry with oil pressure sensors

Hydraulic pressure and manipulator position allows to count the number of loaded waste containers and their weight.

N°	Event	Start	End	Location
1	Container load	2018-06-01 06:40:40	2018-06-01 06:40:41	Vaneeva, 40, Minsk, Belarus
2	Container load	2018-06-01 06:59:24	2018-06-01 06:59:29	Karla Marksa 12a, Minsk, Belarus
3	Container load	2018-06-01 06:59:49	2018-06-01 06:59:53	Karla Marksa 12a, Minsk, Belarus
4	Container load	2018-06-01 07:00:41	2018-06-01 07:00:45	Karla Marksa 12a, Minsk, Belarus
5	Container load	2018-06-01 07:01:15	2018-06-01 07:01:19	Karla Marksa 12a, Minsk, Belarus
6	Container load	2018-06-01 07:01:21	2018-06-01 07:01:25	Karla Marksa 12a, Minsk, Belarus
7	Container load	2018-06-01 07:01:49	2018-06-01 07:01:53	Karla Marksa 12a, Minsk, Belarus
8	Container load	2018-06-01 07:01:39	2018-06-01 07:05:44	Komsomolskaya 38, Minsk, Belarus

Wireless sensor Eurosens Degree BT can be used as a standalone device. It has onboard memory and you can download the log of manipulator's actions (date, time, event) to your smartphone.

Waste container monitoring solution

Monitor the waste level in containers remotely with Eurosens LDS optical distance sensor

- effective route planning
- built-in battery
- wireless communication module



Eurosens LDS-GSM: Quectel GSM module

- + Common GSM networks
- Weak power efficiency. 0.5 year battery life

Eurosens LDS-IOT: Quectel IOT module

- + Great power efficiency, 1 year battery life
- GSM-IOT network is needed

Eurosens LDS-LoRa: built-in LoRa module

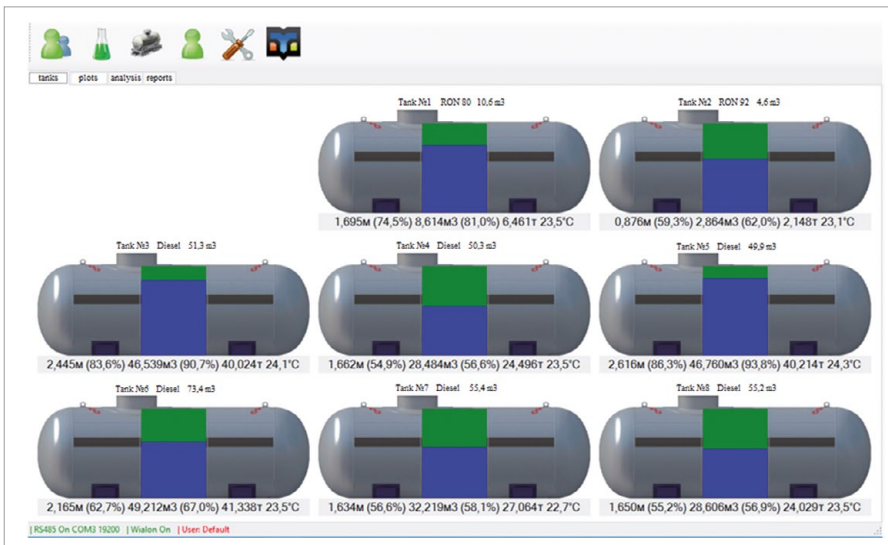
- + Great power efficiency, 1 year battery life
- Works as a node of LoRa network

Optical measurement improves reliability
Smart event detection

Fuel storage monitoring with Eurosens Monitor

We developed special software for local fuel storage monitoring:
Eurosens Monitor

- the maximum number of tanks — 32
- fuel flow meters and RFID-readers can be integrated for fuel distribution reports
- the data can be forwarded to the cloud service Wialon by Wialon IPS protocol
- event-based video recording to prevent unauthorized fuel distribution
- software can be further customized to the customer’s needs



We offer services of 3D tank reconstruction for tank calibration

Special sensors for a liquid monitoring solutions



Eurosens Dominator capacitive level sensor

Is used to measure different types of fuel: diesel, gasoline, low viscous oil, water (special version), Tank's height is up to 10 meters.



Eurosens MWS contactless sensor

Can be used for any liquid measurement (food, aggressive chemicals) in the tanks up to 2 meter height. Does not require drilling for plastic tanks.



Eurosens Dizzi contactless sensor

Is used for non-invasive liquid level measurement in tanks with up to 5 mm thickness. Does not require drilling. Can measure LPG level.

Driver, trailer and equipment identification and tracking



Eurosens Dottrack bluetooth beacon with built-in accelerometer. Can be used for agricultural machinery and trailers identification.

Any types of bluetooth devices can be used as beacons to identify person or equipment.

Example of the report

Driver	Start	End	Period	Distance	Fuel consumed
Gilevich	2016-01-20 08:02:18	2016-01-20 07:56:18	2 days 23:47:40	1827 km	508 l
Merc_driver	2016-01-20 08:02:18	2016-01-20 23:55:32	15:53:14	508 km	94 l
Scania r730	2016-01-18 00:01:52	2016-01-20 07:56:18	2 days 7:54:26	1319 km	414 l
Ivanov	2016-01-18 00:04:20	2016-01-19 23:59:59	1 day 23:51:21	1135 km	364 l
Scania r730	2016-01-19 08:00:00	2016-01-19 23:59:59	15:59:59	586 km	176 l
Volvo FH16	2016-01-18 00:04:20	2016-01-19 07:55:42	1 day 7:51:22	549 km	187 l
Kveten	2016-01-18 00:01:36	2016-01-20 23:59:54	2 days 23:58:18	1558 km	523 l
Lazarev	2016-01-18 00:03:40	2016-01-19 23:55:44	1 day 23:47:22	334 km	112 l

Identification of the tractor attached implements

N°	Start	End	Period	Attachment	Fuel consumed	Tractor
1	2016-03-10 16:10:25	2016-03-10 19:53:46	3:43:21	Harrow Degelman	158 l	JD 8335RT 4573
2	2016-03-10 16:10:59	2016-03-10 19:53:48	3:42:49	Harrow Degelman	121 l	JD 8335RT 4574
3	2016-03-11 11:26:19	2016-03-11 15:37:31	4:11:12	Harrow Degelman	182 l	JD 8335RT 4574
4	2016-03-11 15:18:17	2016-03-11 21:43:37	6:25:20	Harrow Degelman	236 l	JD 8335RT 4573
5	2016-03-12 11:47:21	2016-03-12 14:13:35	2:26:14	Harrow Degelman	100 l	JD 8335RT 4574
6	2016-04-04 10:02:26	2016-04-04 19:18:22	9:15:56	RUM 5500	174 l	JD 6930
7	2016-04-05 10:19:01	2016-04-05 12:33:47	2:14:46	Cultivator Saturn	26,29 l	JD 8430
8	2016-04-06 10:44:27	2016-04-07 00:59:17	14:14:50	Seed drill JD DB-044	261 l	JD 8335RT 4574

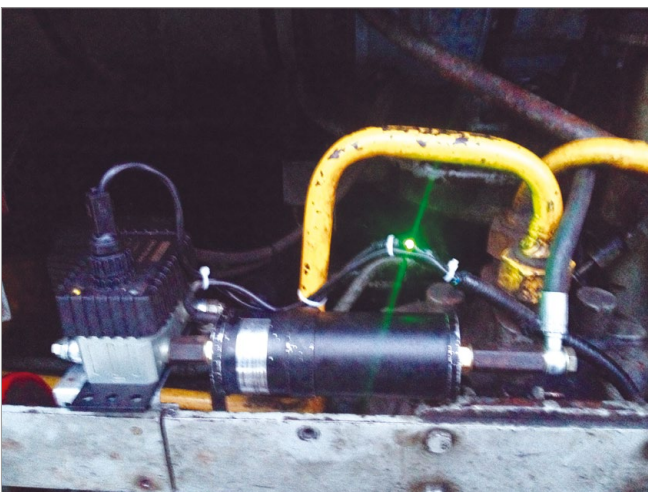
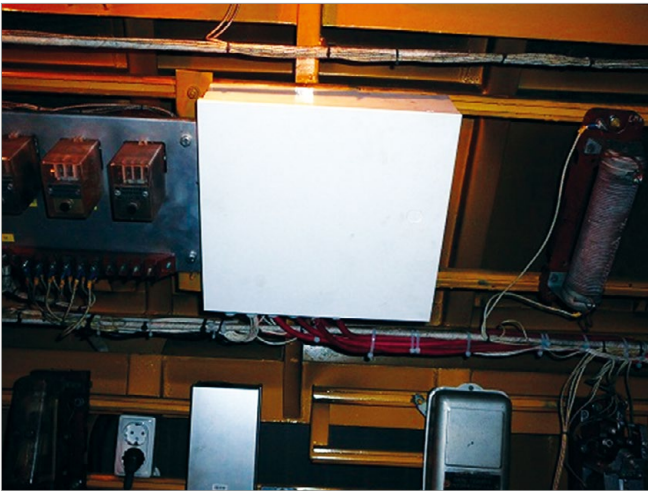
Railroad locomotives tracking and fuel consumption control

Listed sensors can be used:

- fuel flow meters, fuel level sensors
- oil and coolant temperature sensors
- fuel and oil pressure sensors
- rpm sensor
- voltage and current sensor of electric transmission
- brake air pressure sensor

Remote monitoring system for railroad locomotive can be flexibly configured:

from basic features of the fuel consumption monitoring to the advanced engine and transmission performance monitoring



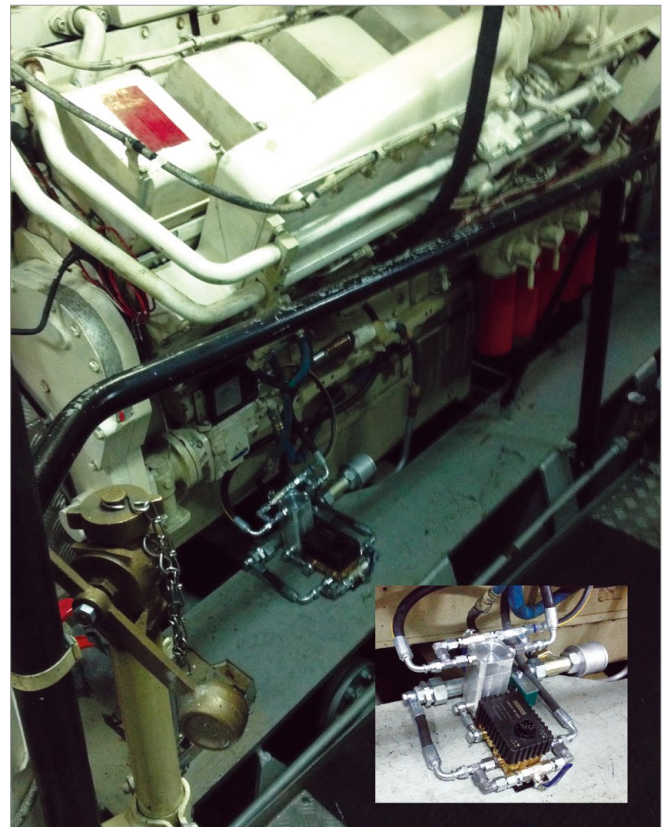
Sea and river vessel remote monitoring

Remote monitoring of sea and river vessels can be flexibly configured.
Main focus is individual fuel consumption monitoring of each engine onboard.

Examples of the solution

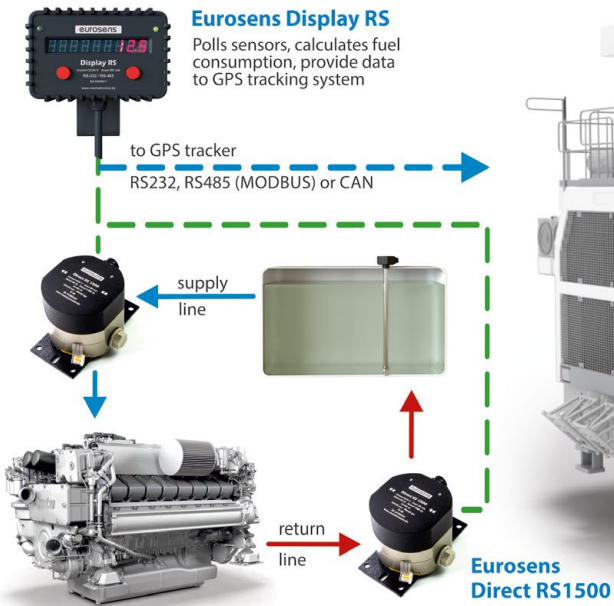
- **real engine fuel consumption, fuel temperature** — with fuel flow meters **Eurosens Direct** and **Delta**
- **fuel fillings and fuel theft monitoring** — with fuel level sensors **Eurosens Dominator**
- **motor-hours** monitoring for each engine: in movement, during stops, time of heater operation
- **automatic trip time calculation**, vessel's downtime
- **instant fuel consumption and engine rpm monitoring** for each engine
- **shows vessel's current position on the map, movements history**
- **geozone entrance and exit alarm**

Eurosens sensors are compatible with **NMEA2K** data bus and can be used in a cooperation with modern marine electronics such as fishfinders, sensors



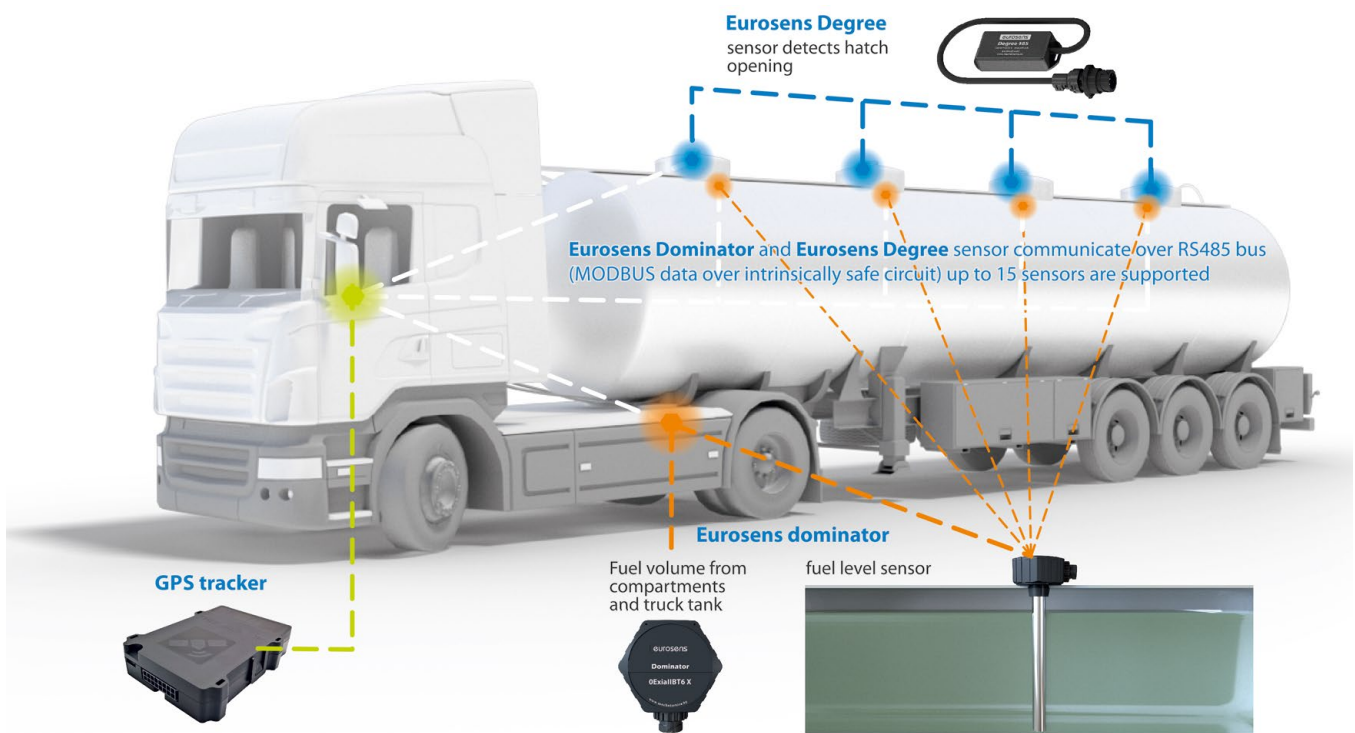
Eurosens Display + Eurosens Direct 1500

Fuel consumption monitoring of mining trucks



GPS tracking: fuel delivery monitoring

- current position, history of movement, speed of tanker truck
- fuel movement — refilling and discharges, place, time and volume of the events
- place and time of hatch openings
- tanker truck fuel consumption monitoring



Fuel distribution monitoring



Before:

fuel bulk dispenser with mechanical counter

After:

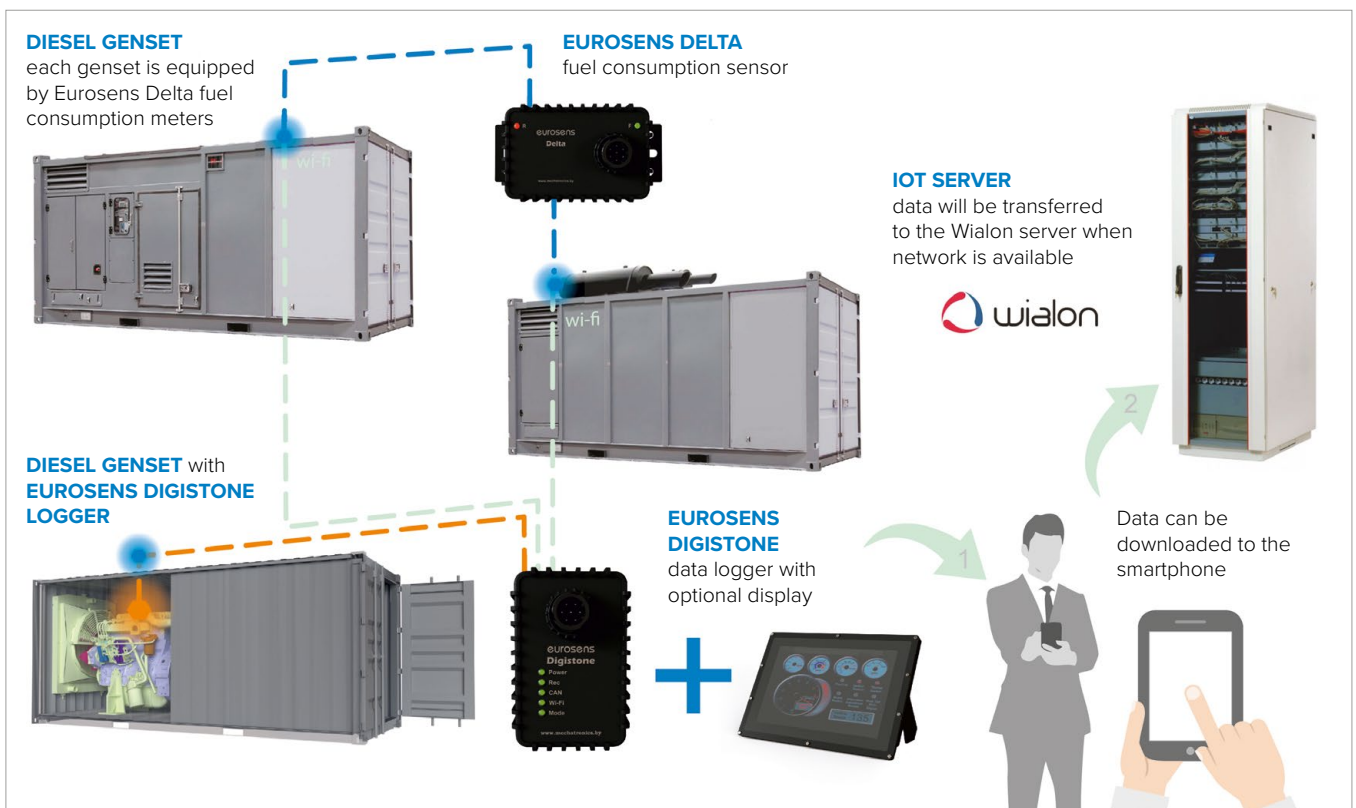
mechanical counter is replaced by electronic module with driver identification and dispatch control

Sample fuel distribution report

Data	Volume before	Income	Outcome	Volume after	sensor	Driver	Address
27.09.2017 8:30:09	4685,2		179	4628,7	TPK	General	Sevastopol, Gagarinski okrug, voennyh stroitelei
27.09.2017 8:37:09	4619,2		100	4619,2	TPK	General	Sevastopol, Gagarinski okrug, voennyh stroitelei
27.09.2017 8:49:55	4609,8		200	4440,5	TPK	20 t Kamaz A347BX	Sevastopol, Gagarinski okrug, voennyh stroitelei
27.09.2017 9:14:05	4412,2		50	4384,1	TPK	General	Sevastopol, Gagarinski okrug, voennyh stroitelei
27.09.2017 9:41:10	4365,4		150	4262,1	TPK	Loader LT A997	Sevastopol, Gagarinski okrug, voennyh stroitelei
Total		0	679				

Data aquisition without GSM coverage

Eurosens Digistone — Data logger with Wi-Fi connectivity, CAN bus interface, HDMI display support and event-based video recording



Accessories

HDMI-display



IP-camera



Eurosens Delta CAN



Eurosens Dominator CAN



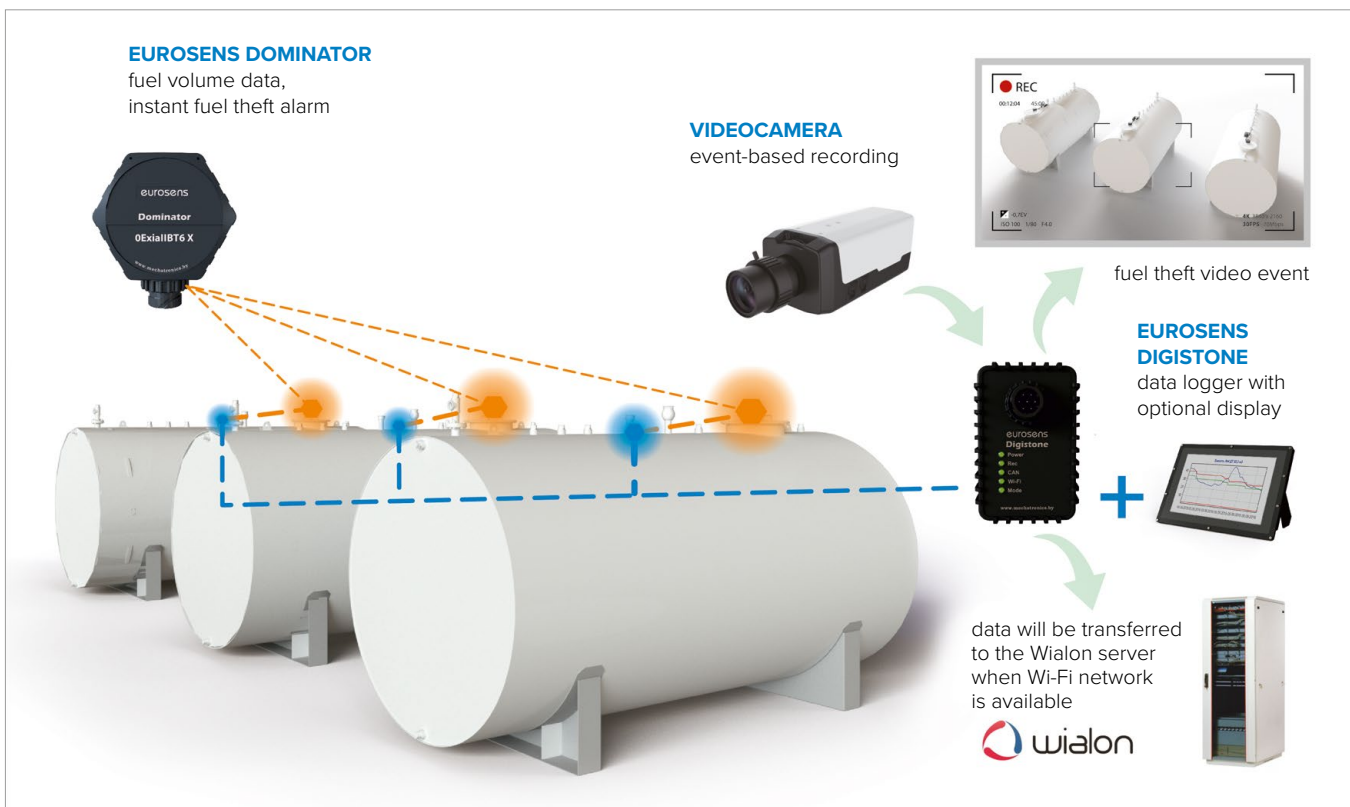
InCan reader



Event-based video recording

Each important event in the monitoring system (speeding, fuel fillings and thefts, door opening, leaving the geofences, etc.) will correspond to the recorded video fragment with specified duration. The video will include a predefined time interval before the event.

Example: record fuel theft in fuel storages



Example: video with vehicle identification number will be recorded as soon as the platform scales register weighing process. Weight information and video will come together to the manager who will check the weighing process.



GSM base station monitoring solution

Eurosens Modem + 433 MHz alarm sensors

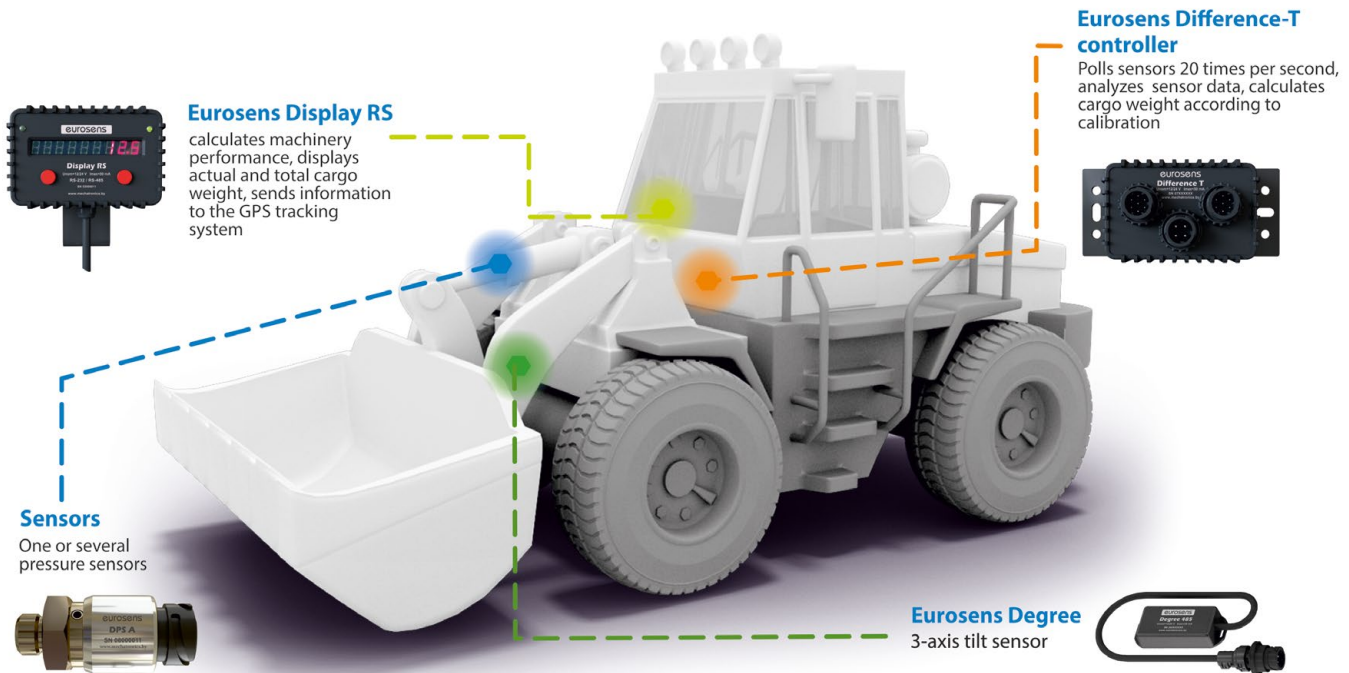
Features:

- Best solution for remote tank monitoring.
- Reads up to 4 discrete alarm sensors by wireless 433 MHz EV1527 protocol (door opening sensor, smoke sensor, flooding sensor etc).
- Compatible with Mechatronics cloud platform MeOT or other IOT server software (MQTT protocol support is necessary).



Eurosens Armlog

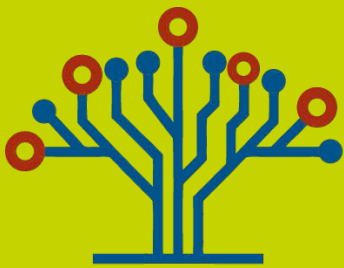
Onboard weighing system **Eurosens Armlog** performs an advanced monitoring of the hydraulic system and manipulator's arm position. Calculates the weight of the cargo being lifted.



Technical data	
Power voltage, V	9...32
Number of angle sensors	1...2
Temperature range, °C	-40...+85
Data output interface	RS485
Interface for pressure sensors	0-10V, RS485
Number of pressure sensors	1...2
Sensors polling interval, ms	50

Can be used as an onboard weighing system for front loaders, manipulator trucks, waste trucks.

- Pressure sensors must be installed in the hydraulic system to monitor oil pressure. Angle sensors are installed on the arms of manipulator to monitor their position.
- After Eurosens Armlog installation, the system starts collecting data. Based on the data received, our developers create an event profile to adopt the system for a given vehicle.
- To work in a cargo weighing mode, the system needs to be calibrated.
- Onboard weighing during low outdoor temperatures may require the installation of extra sensors to correct oil viscosity changes.
- It is possible to use already installed onboard pressure sensors.
- System can be customized by customer's request.



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