## 1. HARDWARE: FUEL LEVEL SENSORS

### GuardMagic DLLS1a
**Robust Digital Fuel and Oil level sensor for standard and heavy application**

Mobile objects and stationary objects application: Trucks, Road Fuel Tankers, Special Machinery, Locomotives, Towboats, Fuel Storage, DG, Power Transformers etc. No moving parts.

- Multi sensors system;
- Internal filter;
- Communication interface: EIA-485;
- Sensor serial connection;
- Operation liquids: crude, oil, fuel oil, transformer oil, diesel fuel, gasoline, kerosene;
- Ambient temperature: -40 … +80;
- Temperature of measurement liquids: -40 …+ 105;
- Resolution: 1024 or 4096 levels;
- Anti vandal casting aluminum cover ( IK 10 protection) ;
- IP 67 protection;
- Strong mounting;
- One cable with SuperSeal connector;
- Available sensor length: 300 mm – 3000mm.

Directly connection to **GuardMagic modules:  mTF3**;  **VB3,  VB4,  VB5, FSM2,  FSM3**

### GuardMagic DLLS1b
**Robust Digital Fuel and Oil level sensor for standard and heavy application**

Mobile objects and stationary objects application: Trucks, Road Fuel Tankers, Special Machinery, Locomotives, Towboats, Fuel Storage, DG, Power Transformers etc. No moving parts.

- Multi sensors system;
- Internal filter;
- Communication interface: EIA-485;
- Sensor serial connection;
- Interface repeater;
- Operation liquids: crude, oil, fuel oil, transformer oil, diesel fuel, gasoline, kerosene;
- Ambient temperature: -40 … +80;
- Temperature of measurement liquids: -40 …+ 105;
- Resolution: 1024 or 4096 levels;
- Anti vandal casting aluminum cover ( IK 10 protection) ;
- IP 67 protection;
- Strong mounting;
- Two cables with SuperSeal connector;
- Available sensor length: 300 mm – 3000mm.

Directly connection to **GuardMagic modules:  mTF3**;  **VB3,  VB4,  VB5, FSM2,  FSM3**

### GuardMagic DLLS1ct
**Robust Digital Fuel and Oil level sensor for standard and heavy application**

Mobile objects and stationary objects application: Road Fuel Tankers, Towboats, Fuel Storage etc. For connection to GuardMagic JBB01 (protective barrier junction box). No moving parts.

- Multi sensors system;
- Internal filter;
- Communication interface: EIA-485;
- Sensor serial connection;
- Operation liquids: crude, oil, fuel oil, transformer oil, diesel fuel, gasoline, kerosene;
- Ambient temperature: -40 … +80;
- Temperature of measurement liquids: -40 …+ 105;
- Resolution: 1024 or 4096 levels;
- Anti vandal casting aluminum cover ( IK 10 protection) ;
- IP 67 protection;
- Strong mounting;
- One cable without connector. Cable length 2 meters;
- Available sensor length: 1300mm, 1500mm, 1700mm, 1980mm, 2500mm, 3000mm.

Directly connection to **GuardMagic modules:  mTF3**;  **VB3,  VB4,  VB5, FSM2,  FSM3**

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## GuardMagic DLLS2a; DLLS2b
### Robust Digital Fuel and Oil level sensor for standard and heavy application

Stationary objects application: Fuel Storage, Fuel station etc. No moving parts.
Sectional sensor (independent pipes section).

(Mobile application for 2500 mm. mobile application for longer sensors only with an additional fastening system for measuring rod).

- Multi sensors system;
- Internal filter;
- Communication interface: EIA-485;
- Sensor serial connection;
- Interface repeater (GuardMagic DFLS2b);
- Operation liquids: crude, oil, fuel oil, transformer oil, diesel fuel, gasoline, kerosene;
- Ambient temperature: -40 … +80;
- Temperature of measurement liquids: -40 …+ 105;
- Resolution: 1024 or 4096 levels;
- Anti vandal casting aluminum cover ( IK 10 protection) ;
- IP 67 protection;
- Strong mounting;
- One cable with SuperSeal connector (DLLS2a version);
- Two cables with SuperSeal connector (DLLS2b version);
- Available sensor length : 2500mm – 6000mm

Directly connection to **GuardMagic modules:  mTF3**;  **VB3,  VB4,  VB5, FSM2,  FSM3**

## GuardMagic DLLS2ct
### Robust Digital Fuel and Oil level sensor for standard and heavy application

Stationary objects application: Fuel Storage, Fuel station etc. No moving parts.
Sectional sensor (independent pipes section).

(Mobile application for 2500 mm. mobile application for longer sensors only with an additional fastening system for measuring rod).

- Multi sensors system;
- Internal filter;
- Communication interface: EIA-485;
- Sensor serial connection
- Operation liquids: crude, oil, fuel oil, transformer oil, diesel fuel, gasoline, kerosene;
- Ambient temperature: -40 … +80;
- Temperature of measurement liquids: -40 …+ 105;
- Resolution: 1024 or 4096 levels;
- Anti vandal casting aluminum cover ( IK 10 protection) ;
- IP 67 protection;
- Strong mounting;
- One cable without connector. Cable length 2 meters;
- Available sensor length : 2500mm – 6000mm

Directly connection to **GuardMagic modules:  mTF3**;  **VB3,  VB4,  VB5, FSM2,  FSM3**

## GuardMagic DLLE1

### Robust Digital Fuel and Oil level sensor for standard and heavy application.

Mobile objects and stationary objects application: Road Fuel Tankers, Fuel Storage etc. No moving parts.

- Multi sensors system;
- Communication interface: EIA-485;
- Operation liquids: oil, lube oil, transformer oil, fuel oil, diesel fuel, gasoline, kerosene;
- Operation only with **GuardMagic JBB01** (intrinsically safe barrier);
- Ambient temperature: -40 … +80;
- Temperature of measurement liquids: -40 …+ 105;
- Resolution: 1024 or 4096 levels;
- Anti vandal casting aluminum cove ( IK 10 protection) ;
- IP 67 protection;
- Strong mounting;
- Available sensor length: 1000 mm – 2500mm;

Directly connection to **GuardMagic modules:  mTF3**;  **VB3,  VB4,  VB5, FSM2,  FSM3**

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### GuardMagic DLLE2
**(soon)**
**Robust Digital Fuel and Oil level sensor for standard and heavy application**

Stationary objects application: Fuel Storage, Fuel station etc. No moving parts. Sectional sensor (independent pipes section).

(Mobile application for 2500 mm. mobile application for longer sensors only with an additional fastening system for measuring rod).

- Multi sensors system;
- Communication interface: EIA-485;
- Operation liquids: oil, lube oil, transformer oil, fuel oil, diesel fuel, gasoline, kerosene;
- Operation only with **GuardMagic JBB01** (intrinsically safe barrier);
- Ambient temperature: -40 … +80;
- Temperature of measurement liquids: -40 …+ 105;
- Resolution: 1024 or 4096 levels;
- Anti vandal casting aluminum cove ( IK 10 protection) ;
- IP 67 protection;
- Strong mounting;
- Available sensor length: 2500 mm – 6000mm;

Directly connection to **GuardMagic modules:  mTF3**;  **VB3,  VB4,  VB5, FSM2,  FSM3**

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### GuardMagic FLPa/V5
Electronic Fuel Level Sensors (not moving parts) with analog output voltage for Vehicle and Land application.
Output voltage GuardMagic FLPa/V5  : 0 … 4,5 V.
Probe length: from 200mm till 6000 mm.

L1: length =   200mm … 1100mm.
L2:  length = 1200mm … 1700mm.

GuardMagic FLPa can be installed in any type of motor vehicles, tractors, construction and agricultural machines or diesel-electric locomotives or stationary tank.

*Not recommend to use fuel level sensor with analog output in modern system*

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## 2. HARDWARE: EXTENSION CABLES FOR DLLS-DLLE FUEL LEVEL SENSORS

**Cable with SuperSeal connector**
Oil, fuel, water and UF resistance cable.

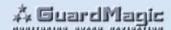**One connector, socket:**
- **GM4.016-06**  - L= 2m
- **GM4.016-08**  - L= 3m
- **GM4.016-09**  - L= 5m
- **GM4.016-10**  - L= 7m
- **GM4.016-11**  - L= 10m

**Two connectors, plug + socket:**
- **GM4.017-06**  - L= 2m
- **GM4.017-08**  - L= 3m
- **GM4.017-09**  - L= 5m
- **GM4.017-19**  - L=7m
- **GM4.017-11**  - L=10m

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## 3. HARDWARE: ADDITIONAL COMPONENTS

### GuardMagic DAFS                                    *(soon)*

**Adapter (controller) for resistive type floating fuel level sensor with analog output and EIA-485 communication interface.**

GuardMagic DAFS is intended for connection car, light vehicle regular floating fuel level sensor to GPS-GSM/GPRS module.

GuardMagic DAFS intended to read the analog signal from the vehicle regular resistive type floating fuel level sensor and converts it into:
- digital form: EIA-485 communication interface;
- stable noise and pulse free analog voltage output   0-8,5 V range.

GuardMagic DAFS could be used to provide fuel monitoring function on passenger cars, "JEEPs",  VANs,"pick-up" or light trucks (Light Commercial Vehicles) on which the use of DLLS fuel level sensors is not  reasonable due to technical, or  economic reasons.

### GuardMagic JBB01

Die-cast anti vandal IP 65 protected "**Junction Box"** with internal two channels intrinsically safe barriers.
For fuel level sensor intrinsically safe connecting to EIA-485 communication bus in fuel trailer (cargo tanks, fuel storage etc.).
Independently support two fuel level sensors.
EIA-485 communication bus.
Support GuardMagic DFLS3, GuardMagic DLLS, Guardmagic DLLE fuel level sensors.

## 4. HARDWARE: TECHNOLOGICAL COMPONENTS

### GuardMagic DLLS-DLLE programming tool

The technological complete set for sensor programming and changes of adjustments of GuardMagic DLLS, GuardMagic DLLE fuel level sensors by a personal computer.
Also available fuel tank calibration.
Set consist of: GuardMagic SCA (sensor connection adapter), AC/DC power adapter, connection cables, technological software;

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