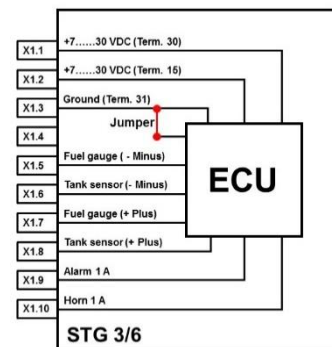


## Tank protection STG 3/6 base module



## Block diagram



## Electronic diesel theft surveillance

The tank protection STG 3/6 prevents diesel theft from lorries and construction machinery by monitoring the fuel level in the tank permanently. When the level falls below an automatically determined reference value, an alarm is triggered. There are outputs for triggering a horn relay (light signal), and GPS / GSM / telematics. The tank protection is activated when the vehicle ignition is switched off, and measures the levels in the vehicle tanks at a fixed time interval after a standby period (STG 6: normal measurement function; STG 3: inverted measurement function). Falling tank level triggers an alarm (horn: 30 sec. interval [statutory maximum period], GSM/telematics: 10 sec. The switching terminal outputs may be used to drive commercially available 12/24 V relays or the direct connection of consumers of less than 1 A output term. 9 and 10 are ground connected.

## Characteristics

- For vehicles with 12 or 24 V on-board voltage
- Ideal for trucks, construction machinery and other mobile and stationary diesel-powered equipment with tank sensor
- clocked alarm output for vehicle horn
- Alarm signal output for 12/24 V relay
- Automatic arming when ignition OFF
- Convenient connection via spring-loaded terminals
- Vibration-proof cast
- Switching via jumper: STG 3 jumper closed, STG 6 jumper open

## Scope of supply

- Tank protection STG 3/6
- Pluggable spring clamp 10-pin
- User information

## Approval

Kraftfahrt-Bundesamt approval number (E1) 036319  
European Patent Application No. 12171559.3

## Electrical connection

The connection of the tank protection is to take place according to the table below. Please also refer to the device label and wiring diagram on page 2.

## Connector X1 (10-pin)

Pin	Function
1.1	+7..30 VDC, battery, terminal 30 (fuse max. 2 A)
1.2	+7..30 VDC, ignition, terminal 15
1.3	Ground, terminal 31
1.4	free
1.5	Fuel gauge (- minus)
1.6	Tank sensor (- minus)
1.7	Fuel gauge (+ plus)
1.8	Tank sensor (+ plus)
1.9	Alarm output 1 A GSM (ground connected) 10 sec.
1.10	Alarm output horn clocked (ground connected) 30 sec.

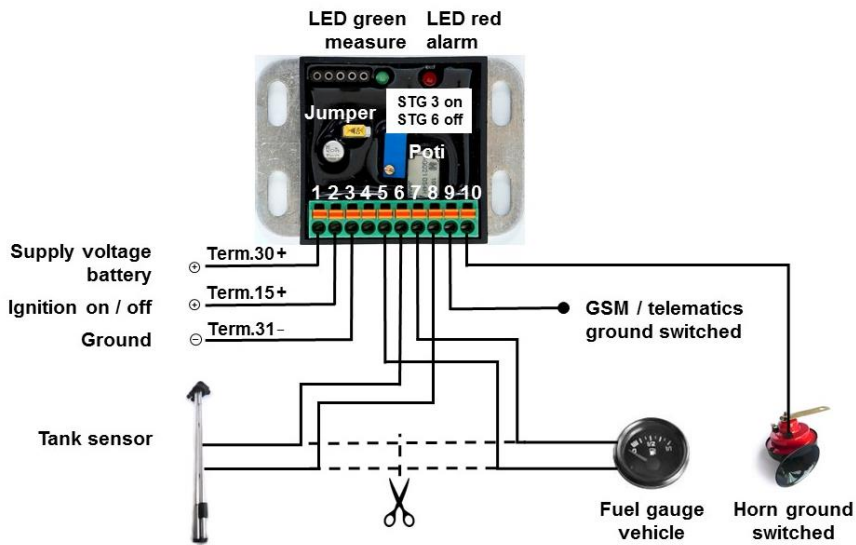
## Assembly

Mount the tank fuse using the rear-mounted aluminium retaining plate. Note the environmental conditions and cable cross-sections specified in the technical data.

## Technical specifications

Control voltage	7..30 VDC
Standby current	< 5 mA
Fuse	2 A (mandatory!)
Tank sensor resistance	0..1 kΩ
Output current (alarm, horn)	1 A each (ground connected)
ESD surge protection Inputs/Outputs	8 kV according to IEC61000-4-2 Level 4
Operating ambient temperature	-25..+60 °C IEC 60068-2-1/2
Conductor cross-section Terminals	0.5..1.5 mm <sup>2</sup> (stranded)
Stripping dimension	10 mm
Protection class	IP20 (EN 60529)
Shock resistance	min. 100 m/s <sup>2</sup> (10 G)
Vibration resistance	min. 40 m/s <sup>2</sup> (4 G) @ 10 Hz to 100 Hz
Humidity (relative)	5..95% (no condensation) (IEC/EN 60068-2-30)
Weight	50 g
Dimensions (LxWxH) without retaining plate	40 x 40 x 22 mm
Jumper settings	ON => STG 3, OFF => STG 6

## Wiring diagram



## Guideline values for alarm trigger or the following tank sizes

- <300 l tank, trigger approx. after 5-12 l
- 300 - 400 l tank, trigger approx. after 10-18 l
- 400-600 l tank, trigger approx. after 15-25 l
- 600-800 l tank, trigger approx. after 22-30 l
- >800 l tank, trigger approx. after 25-40 l

For higher accuracy levels, use of a separate and independent tank sensor is recommended, which can be adjusted to less than 20 litres for larger tank volumes. Note that the thermal expansion for diesel fuels is equal to approx. 1% per 10°C. For example: In an 800 litre tank, the expansion is equal to approx.

15-18 litres at a temperature variation of +/- 20 °C.

For dual tank fuel systems, the measurement is only feasible if balancing of the tanks is also turned off when the ignition is off.

## Installation instructions

1. Fuse max. 2 A Consumers greater than 1 A for external relays such as the vehicle horn, lights, or other signalling devices greater than 1 A (Check fuse required to prevent destruction of the equipment). Polarity protection up to max. 5 A Note the operating voltage of 9 to max. 30 volts.
2. Cable cross-sections for plug-in terminals up to 1.5 mm<sup>2</sup>.
3. Only perform resistance measurements on the equipment when no voltage is present.
4. Measurement values at term. 6 and term. 8 must be equal to the ohm values for the level sensor in the tank.
5. Fuel sensor lines via CAN-BUS must be distributed to term. 5, 6, 7 and 8, and connected according to the wiring diagram.

## Safety and liability notes

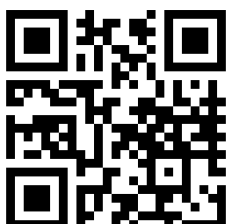
**Before all works, ensure that no voltage is present by disconnecting the vehicle battery. Short circuits may cause fires, explosions and severe burns!**

**Guarantee and warranty claims are rendered void by improper use, misuse or modification of the product.**

**Connection works must be performed by trained staff only.**

## Default settings

1. First reference measurement after approx. 130 seconds. A pre-alarm may take place after another 25 second delay, followed by the main alarm.
2. Green LED measurement function
3. Red LED alarm trigger
4. One message per alarm trigger
5. Term. 9: 10 sec. duration
6. Term. 10: 30 sec. clocked (ideal for horn signal)
7. Repeat alarm for further drop in level after approx. 60 seconds.
8. Complete reset when ignition is switched on.
9. Jumper On => STG 3 => 1 kΩ empty .. 0 Ω full  
Jumper Off => STG 6 => 0 Ω empty .. 1 kΩ full



## Schematic STG 3/6

