

Installation and Operating Manual

Tank Electrode FL

No. 5550

Tank Measuring Sensor with capacitive measuring method, suitable and required for the VOTRONIC Tank Displays:

Tank Display Units (silver design):

Sewage Water Tank Display S
Feces Tank Display S
Info Panel Pro
Votronic Bus System VBS 2

Order No 12 V

5313
5315
5330
all Types

Order No 24 V

5313
5315
6330
all Types

Previous Tank Display Units (black design):

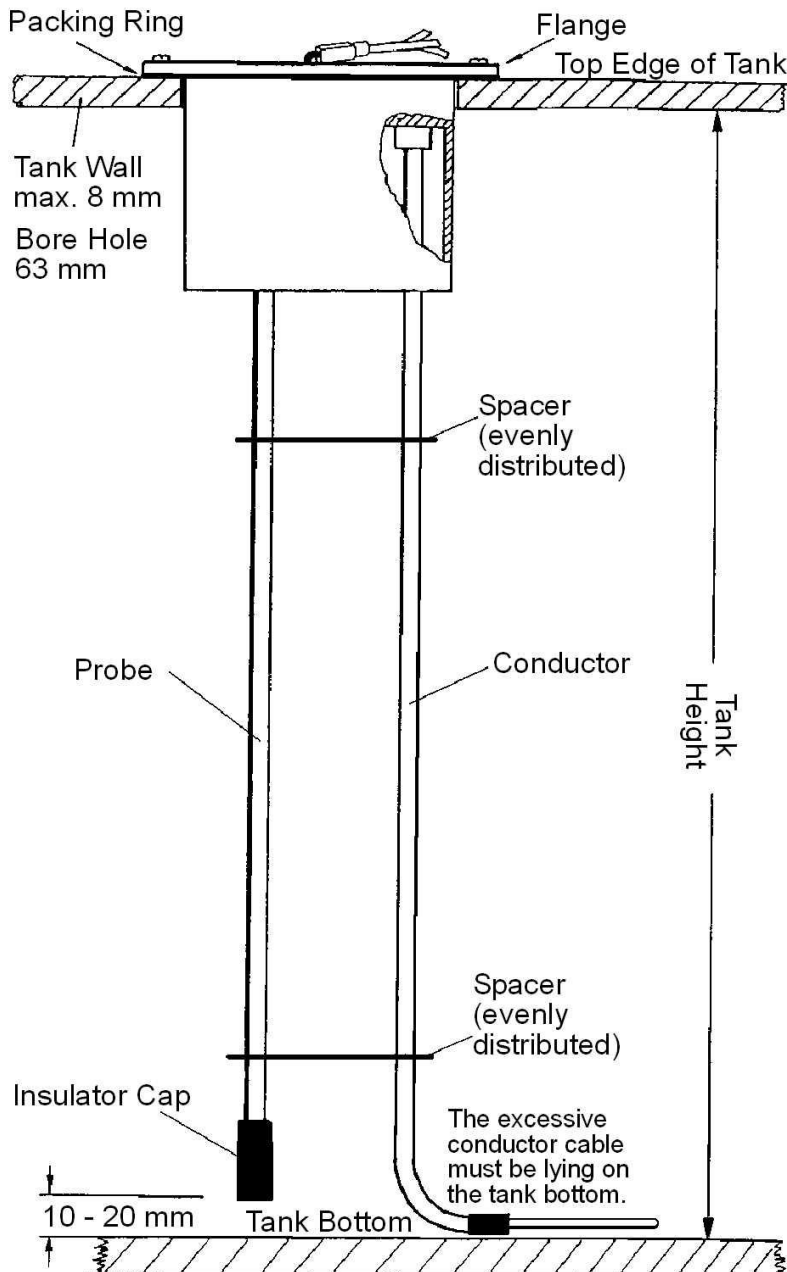
Sewage Water Tank Display
Feces Tank Display
Info Panel
LCD Tank Monitor Digital 4

Order No 12 V

5213
5215
5216
1241

Order No 24 V

6013
6115
6111
1241



Serving as measuring sensor (remote measurement), the Tank Electrode FL is installed directly at the tank and it is suitable for:

- Water, sewage water, grey water
- Plastic tanks
- Metal tanks (aluminium, steel, stainless steel, etc.)
- It is adjustable to tank heights from 30 cm to 110 cm.

Operating Mode:

The level in the tank is measured capacitively. The isolated probe forms with the surrounding water a "capacitor" whose size increases with the level and is measured by the electronics. The compound to the water as a "antipole" is produced here by the stainless steel bar of the conductor.

Fig. 1: Tank Installation

The assembly is done by a central hole (diameter 63 mm) at the tank top, also subsequently

Preliminary Installation:

The tank electrode FL is designed for vertical installation from the tank top (Fig. 1). The tank probe should be placed at the topmost location and in the tank centre. Use a conventional circular cutter to drill a hole with a diameter of 63 ± 0.5 mm at this location.

Insert a folding rule into the mounting hole to measure the exact tank depth (inside width) and shorten the **PROBE CABLE** (with insulator cap) to this length, minus 10-20 mm (clearance between tank bottom and probe cable). Push half of the length of the delivered shrink hose (approx. 2 cm length) over the cable end and heat it up using a lighter or hot air blower until the shrink hose had wrapped round the cable. Immediately after that, the shrink hose, which is still hot, must be pressed together using flat pliers until the material has cooled-down.

Thorough sealing is decisive for proper operation of the tank electrode FL!

The length of the **CONDUCTOR** (with stainless steel bar) will not be changed. The excessive conductor cable must be lying on the tank bottom!

The delivered spacers must now be evenly distributed along the probe length and probe as well as conductor must be carefully pressed into the grooves. Probe and conductor must be evenly spaced and must lead parallel to the tank bottom. They should not be twisted. **Probe and conductor must hang freely in the tank! Never fasten them at hoses, walls etc. in the tank!**

Connection:

Configuration of Connections Tank Electrode (Fig. 2 and Fig. 3):

| | |
|---|---|
| No. 1 = Battery — (Minus) or Body Ground, | Cable Cross Section 0.5 - 1 mm ² |
| No. 4 = Tank Pulse , to the Display Unit Connection 4 | Cable Cross Section 0.5 - 1 mm ² |
| No. 5 = Tank + (Plus), to the Display Unit Connection 5 | Cable Cross Section 0.5 - 1 mm ² |

Observe to attaching the female connectors carefully to the cables: All single wires of the strand have to be crimped and the insulation of the strand has also to be crimped. Fig. 4 shows a female connector being correctly attached. Prior to crimping, the enclosed 3 pieces insulating bushes have to be pushed on the female connectors to avoid the risk of short-circuits between two adjacent contacts!

The VOTRONIC Tank Electrode FL is protected against wrong polarization. It is recommendable to use connection cables of different colours to avoid malfunctions due to mixed up connections.

As soon as the display unit has been installed according to the operating manual, the battery can be connected.

Start-up and Adjustment:

2 adjusting devices are located at the upper side of the tank electrode FL (Fig. 3). **One of the adjusting devices is protected with red paint and should never be changed.** The second adjusting device is used to adjust the tank electrode FL to the tank height.

Insert a folding rule into the mounting hole of the tank to measure the exact tank depth (inside width) and set the adjusting device for the "water depth" to this value. The adjustment procedure is completed. The functions of the display can now be simulated with several water levels in the tank (or in a bucket being filled with water!) or by withdrawing the tank electrode FL out of the full tank (or bucket).

The adjusted water depth (tank "full") can also be corrected at any time in installed condition and with full tank.

Final Installation:

Insert before attaching the tank probe the packing ring between flange and tank wall (Fig. 1)! It is essential to clean the gasket contact face for a good seal.

In case of underfloor installation of the tank, the electric connections (plug-type connections) and the adjusting devices have to be protected against environmental pollution by means of sealant (e.g. Sikaflex).

ATTENTION: Neither use silicone separating acetic acid in connection with metal (rust formation), nor resisting agent containing carbon! The above-mentioned sealant has been proved to be very suitable in practice.

Tips and Tricks:

No reaction of display:

- Cable **4** = *Tank Pulse* withdraw connector by way of trial: The display should increase to 100 %! **Otherwise:**
- Battery connection or fuse defective → check!
- Cable **5** = *Tank Plus* interrupted → check!
- Cable **4** = *Tank Pulse*: Short-circuit to ground → check!

Constant display of 100 % on the display unit:

- Cable 4 = *Tank Pulse* withdraw it and direct it to ground: No display! **Otherwise:**
- Cable 4 = *Tank Pulse* interrupted → check!
- Cable 1 = *Battery Minus / Ground* is interrupted or does not have any contact due to paint residues at the body → check!
- The insulated probe has contact with water: The cap is leaky or the cable insulation is damaged → check!

Indication Errors:

- In case of underfloor installation of the tank: Insufficient protection of the electric connections (humidity, soiling) → seal!
- Intense soiling and furring of the insulated probe by solids in the sewage water tank and feces tank → clean tank !

Fig. 2: Top View:

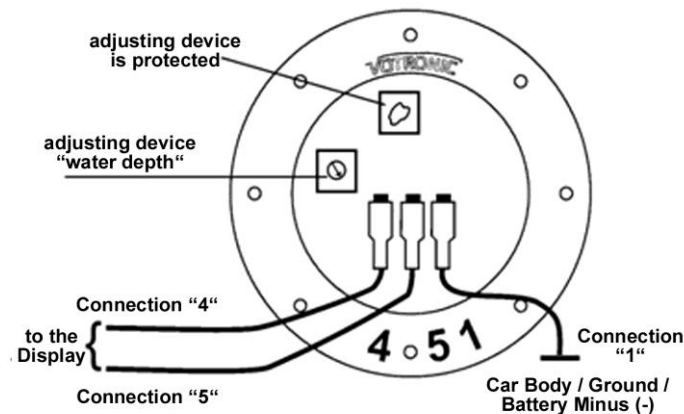


Fig. 3: Connection Plan

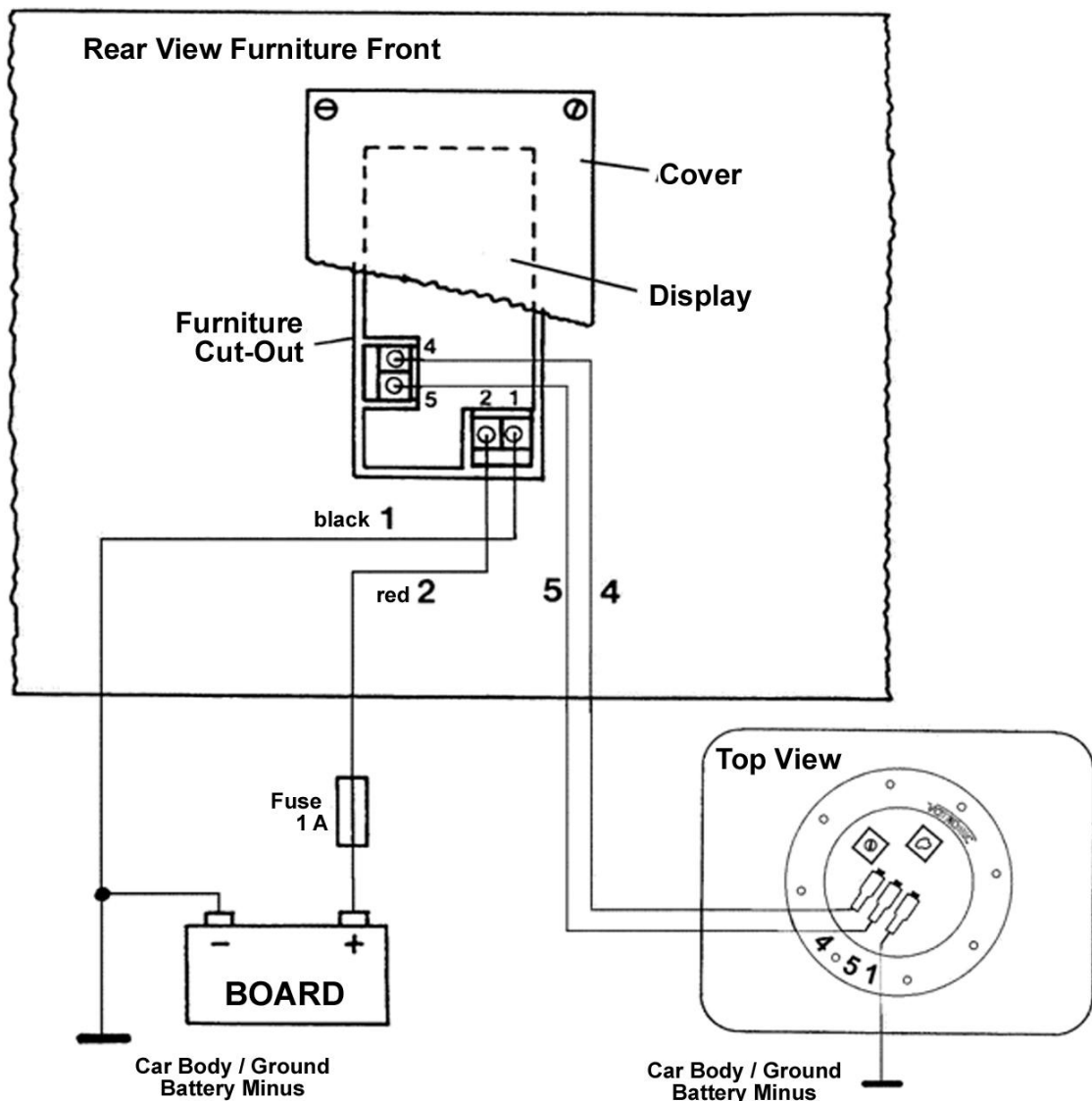
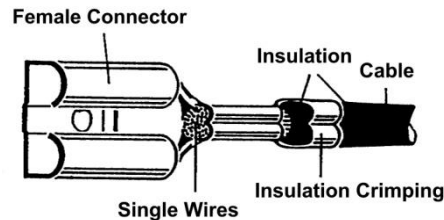


Fig. 4:



Safety Regulations:

Appropriate Application:

The VOTRONIC Tank Electrode FL has been designed according to the valid safety regulations.

Application is only allowed, if the unit is in technically faultless condition, in fixed installed 12 V / 24 V DC (direct current) systems / on-board power supply systems and only for the measurement of water or water-containing media.

- Never use the unit at locations where the risk of gas or dust explosion exists!
- The unit is to be disconnected from any connection prior to execution of electrically welding or work on the electric system
- Basically: red cable = "+" (plus), black cable = "-" (minus)
- Cables are always to be laid in such a way that damage is excluded. Observe to fasten them tightly.
- Never lay 12 V (24 V) cables and 230 V mains supply cables into the same cable conduit (empty conduit).
- Check live cables or leads periodically for insulation faults, points of break or loosened connections. Occurring defects must be remedied immediately.
- If the non-commercial end-user is not able to recognize the characteristic values being valid for a unit or the regulations to be observed, a specialist is always to be consulted.
- The user/buyer is obliged to observe any construction and safety regulations.
- The unit contains no user-serviceable parts.
- The warranty period is 24 months from the purchase date (against presentation of the sales slip or invoice).
- The warranty will be void in case of any inappropriate utilisation of the unit, if it is used beyond the technical specification, in case of improper operation or external intervention. We do not assume any liability for any damage resulting hereof. The liability exclusion is extended to any service being executed by third, which has not been ordered by us in writing. Service is to be effected exclusively by VOTRONIC Lauterbach / Germany.



Disposal of the product in the normal household waste is not allowed.



2002/95/EC
with the directives for Reduction of Hazardous Substances in Electrical and Electronic Equipment.

The product conforms to RoHS. Thus, it complies

Quality Management System
DIN EN ISO 9001



Declaration of Conformity:

According to the stipulations of the regulations 2006/95/EG, 2004/108/EG, 95/54/EG this product corresponds to the following standards or standardized documents:

EN55014; EN55022 B; DIN14685; DIN40839-1; EN61000-4-2; EN61000-4-3; EN61000-4-4

Technical Data:

Operating Voltage: 12 V-/ 24 V–DC Board mains supply
(from display unit)
Measuring Method: capacitive
Built-in Diameter: 63 mm
Flange Diameter: 89 mm
For Tank Heights: 30 – 110 cm

Delivery Scope:

- Tank Electrode FL
- 3 ea. Female Connectors 2.8 mm
- 3 ea. Insulating Bushes
- 8 ea. Fastening Screws
- 3 ea. Spacers
- 1 ea. Shrink Hose, Length 2 cm
- 1 ea. Packing Ring
- Mounting Instructions

Subject to misprints, errors and technical modification without notice.

All rights reserved, particularly the right of reproduction. Copyright © VOTRONIC 11/12.

Made in Germany by VOTRONIC Electronic-Systeme GmbH & Co. KG, Johann-Friedrich-Diehm-Str. 10, 36341 LAUTERBACH / GERMANY

Phone: +49 (0)6641/91173-0 Fax: +49 (0)6641/91173-20 E-mail: info@votronic.de Internet: www.votronic.de