LIQUID LEAK DETECTION SYSTEMS
OIL & GAS DIVISION

FG-ALS4-OD

Four-Zones Alarm & Location System Unit for Hydrocarbon Sense Cables

Installation Instructions

Installation Instructions FG-ALS4-OD

1 Panel Mounting

- Fix the panel to the wall using 4 screws (not included).
- Five push-through holes are provided for installing the PG11 glands.
  1. Power supply
  2. Relays
  3. Outputs 1&2
  4. Outputs 3&4
  5. JBUS/MODBUS
- Knock out the push-through holes from the outside.
- Connect all plug-in terminals (refer to step 2).
- Plug the terminals.
- Close the box, starting by inserting the top side, and then push the bottom down. Lock, using the two available screws.
- Power up from the circuit breaker.

2 Electrical Connections

- Connect the sense cables following this color code:
  B: White
  C: Black
  D: Red

  There is no need to terminate the unused outputs.
  The wiring diagram is on the back page.
- Connect the relays:
  COM: Common
  NC: Normally Closed
  NO: Normally Open
- Five relays are available on FG-ALS4-OD:
  Relay 1 = leak cable 1
  Relay 2 = leak cable 2
  Relay 3 = leak cable 3
  Relay 4 = leak cable 4
  Relay 5 = cable-break all cables
- Connect the power supply following the signs:
  Ground sign: Ground
  N: Neutral
  L: Live

  Power supply: 100-240 V AC 50/60 Hz 0.25 A

3 Capacity

- The FG-ALS4-OD panel is designed to receive up to 4 FG-OD sense cables per panel.

  The sense cables can be connected freely to each output without bypassing the 4 sense cables overall.

  It is possible to:
  - connect one FG-OD sense cable per output;
  - or two sense cables on the first output, one cable on the second output, one cable on the third output and no cable on the fourth output;
  - or four cables on the first output with all other three outputs left vacant.

  The cables are numbered (1 to 4) automatically based on the order of output wiring.

  The system will not detect additional sense cables.

4 Powering-on the System

- Power on from the circuit breaker:
  The panel will sound and show "SYSTEM TEST" for 10 seconds on the display, and will then show the "home" screen:

- Touch the first button (flag) to change the language:
  English
  French
  German

  The language setting will affect the bottom banner and the texts in the alarm screen.
- Touch the second button (arrows) to show the lengths installed in each of the 4 zones (please refer to step 5).
- Touch the third button (gears) to change the MODBUS slave number.

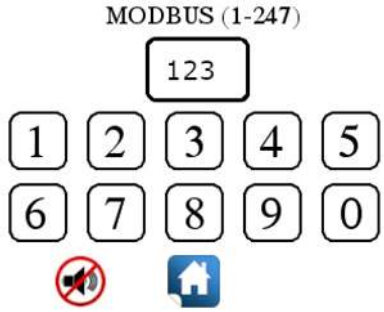
5 Settings

- Touch the second button (arrows), the touch screen shows the lengths installed on each of the four cables:

- Touch the "home" button to return to the main page.
- Touch the "refresh" button (arrows) to update the lengths displayed.

The system will return to the "home" screen after 30 seconds of inactivity.

- Touch the third button (gears) to change the Modbus slave number.



- Alarm screen:

  If a fault occurs (leak or cable-break), the leak alarms are represented by a drop of water followed by the word "leak".

  Cable-break alarms are represented by scissors and the word "bus" or "sensor" or "end" depending on the type of cable-break.

  - Break bus = OD BUS 8771 break
  - Break sensor = FG-OD cable damaged
  - Break end = end plug missed

The "home" button allows you to return to the main page. It displays the lengths or changes the MODBUS. The system will return to the "home" screen after 30 seconds of inactivity.

6 MODBUS

The MODBUS protocol implemented on the FG-ALS4-OD panel allows the current status of the system to be supervised. The two types of alarm (leak and cable-break) are coded using different Modbus registers for each individual zone.

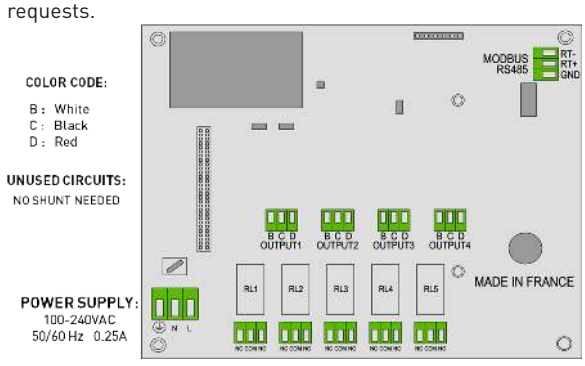
The physical support of the MODBUS is two-wire RS485.

Serial port configuration	9600 B, 8 data bits, 1 stop bit, no parity
Communication protocol	MODBUS or JBUS, functions 3 or 4
Maximum number of FG-ALS4-OD connected to the same controller	31
Slave number	1 to 255
Maximum number of reading registers	16
MODBUS Addresses in the memory	Register 1 = length cable 1 Register 2 = leak cable 1 Register 3 = cable-break cable 1 Register 4 = leak location cable 1 (Always 1m) Register 5 = length cable 2 Register 6 = leak cable 2 Register 7 = cable-break cable 2 Register 8 = leak location cable 2 (Always 1m) Register 9 = length cable 3 Register 10 = leak cable 3 Register 11 = cable-break cable 3 Register 12 = leak location cable 3 (Always 1m) Register 13 = length cable 4 Register 14 = leak cable 4 Register 15 = cable-break cable 4 Register 16 = leak location cable 4 (Always 1m)

Format of the solution:

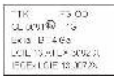
slave number	function	no. of bytes read	byte 1	byte 2	...	byte N	CRC 16
1, 2, ..., 255	3 or 4	up to 32	XXh	XXh	...	XXh	XXXXh

- Remarks:
  - The last panel on the serial link should be terminated by a 120 Ohms / 1W resistor between points RT- and RT+. The shielding of the data transmission cable should be connected to the controller's earth and to the terminal COM of each FG-ALS4-OD panel.
  - Slave number 0 inhibits the MODBUS operation.
  - It is advisable to leave at least 200 ms between the successive requests.



FG-ALS4-OD wiring diagram

TTK's FG-OD cables are certified ATEX / IECEx according to the marking mentioned above, according to EN / IEC 60079-0, EN / IEC 60079-18 and EN / IEC 80079-34.
Special installation precautions are required when working in explosive atmospheres, such as use of zener barriers, specific location of alarm and/or satellite panels etc.
The client is responsible for verifying that the design and installation of the detection system in an ATEX / IECEx classified zone is consistent with the classification of that zone.
The client alone is responsible for its use of TTK's products.



-30°C (-22°F) ≤ T(amb) ≤ +100°C (+212°F)

- **TTK Headquarters** / 19 Rue du Général Foy / 75008 Paris / France / T: +33.1.56.76.90.10 / F: +33.1.55.90.62.15 / **www.ttk.fr** / **ventes@ttk.fr**
- **TTK Oil & Gas Division** / 19 Rue du Général Foy / 75008 Paris / France / T: +33.1.56.76.90.10 / F: +33.1.55.90.62.15 / **www.ttk.fr** / **rrisi@ttk.fr**
- **TTK UK Ltd.** / 3 Luke Street / London EC2A 4PX / United Kingdom / T: 020 7729 6002 / F: 020 7729 6003 / **www.ttkuk.com** / **sales@ttkuk.com**
- **TTK Pte Ltd.** / #10-08, Shenton House, 3 Shenton Way / Singapore 068805 / Tel. +65 6220.2068 / Mob: +65.9271.6191 / Fax. +65-6220.2026 / **www.ttk.sg** / **sales@ttk.sg**
- **TTK Asia Ltd.** / 2107-2108 Kai Tak Commercial Building / 317 Des Voeux Road Central / Hong Kong / Tel.+852 2858.7128 / Fax.+852 2858.8428 / **www.ttkasia.com** / **info@ttkasia.com**
- **TTK Middle East FZCO** / Building 6EA, Office 510 PO Box 54925 / Dubai Airport Free Zone / UAE T: +971 4 70 17 553 / M: +971 50 259 66 29 / **www.ttkuk.com** / **cgalmiche@ttk.fr**
- **TTK Deutschland GmbH** / Berner Strasse 34 / 60437 Frankfurt / Germany / T: +49 (0)69-95005630 / F: +49(0)69-95005640 / **www.ttk-gmbh.de** / **vertrieb@ttk-gmbh.de**
- **TTK North America Inc** / 1730 St. Laurent Boulevard, Suite 800 / Ottawa, ON K1G 5L1 / Canada / T : +1 613 566 5968 / **www.ttkcanada.com** / **info@ttkcanada.com**
- **Thomas Sales & Marketing Inc. TTK Master Distributor For USA** / 7200 W 66th St / Bedford Park, IL 60638 / USA / T: +1 630-518-4724 / **www.ttkusa.com** / **dmolk@ttkusa.com**