



- ▶ FG-NET Satellite Device
- ▶ Monitoring up to 118 Lengths of Sense Cables
- ▶ Dynamic Leak Evolution Analysis
- ▶ Location of Faults on Cable
- ▶ Exclusive for Hydrocarbon Detection

## Description

The FG-BBOX-LL is a satellite device of the TTK FG-NET Digital Unit. It is designed to be connected with FG-OD oil leak detection range of sense cables, for industry Long Line application.

Similar to FG-BBOX, the FG-BBOX-LL is monitored by FG-NET via a standard Ethernet network. It expands FG-NET to manage two additional circuits of sense cables with up to 118\* (2 x 59) addresses of additional Sense Cables.

The FG-BBOX-LL detects multiple simultaneous leak locations to the concerned sense cables. All command and control is centralised to the FG-NET, FG-BBOX-LL is not equipped with display so it can be discretely located.

FG-BBOX-LL connects to the FG-NET through the facilities Ethernet network, eliminating the need for additional connections.

In the event of a fault on the sense cables connected to the FG-BBOX-LL, the relevant relay contact is activated and the LED on the relevant circuit switched to red.

On the FG-NET unit, the alarm appears on its touch screen, the responses are identical as a fault on the sense cable physically connected on the FG-NET unit.

\*: Calculated based on typical connection as: hydrocarbon sense cables at 12 metres each, connected with 1000m jumper cable (on one circuit) and Zener barrier MTL7760ac or equivalent. Other configurations are possible, consult us for details.

## Features & Benefits

### FEATURES

- Up to 118 FG-OD range of Sense Cables can be managed independently providing a maximum protected length of 1416m (118 x 12m) for both circuits.
- No physical jumper cable or distance limit between FG-NET unit and FG-BBOX-LL.
- Up to 16 FG-BBOX-LL can be connected to one FG-NET unit without exceeding a total number of 500 Digital Sense Cables per FG-NET.
- TCP/IP connection via standard RJ45 socket.
- Relay type: Volt Free Contact NO/NC.
- 4 Relay contacts: 2 leak relays (1 for each circuit), 1 cable break relay and 1 power failure relay.

### BENEFITS

- Dynamic Leak Evolution Analysis - The magnitude of a leak and its evolution in time can be analysed through the alarm logs. The number and sequence of addressable sections which report a leak, together with their timestamp, allow to monitor the leak's progression in time.
- Multiple simultaneous leaks can be detected and located (118 cables = 118 potential alarms).
- Each sense cable is addressable and can be assigned a specific name.
- Cable break faults can be detected (to the concerned cable). When a cable break occurs, the system maintains its integrity by continuing to monitor all preceding cables for faults.
- Extension and upgrade of the system is easy.

# Product Diagram



FG-BBOX-LL

## Technical Data

<b>Compatibility</b>	Digital units: FG-NET, FG-NET-LL Sense cables, Point sensor: FG-OD, FG-ODC, FG-ODR, FG-ODP
<b>Dimensions</b>	W: 175 mm H: 220 mm D: 55 mm
<b>Maximum Length of Sense Cable</b>	Up to 1416m (2 circuits x 59 lengths x 12m) per unit (connected with 1000m jumper cable and Zener barrier MTL7760ac or equivalent)
<b>Accuracy</b>	To the concerned sense cable
<b>System Capacity</b>	Up to 16 FG-BBOX-LL can be monitored by 1 FG-NET or FG-NET-LL
<b>Supply Voltage</b>	100-240VAC 0.35A 50/60Hz
<b>Maximum Power Consumption</b>	15W
<b>Working Temperature Range</b>	-15°C to 55°C
<b>Working Humidity Range</b>	5% to 80% non-condensing
<b>Relay Types</b>	Volt free contact (NO, NC, COM)
<b>Relay Numbers</b>	4
<b>Connectivity</b>	RJ45
<b>Maximum Relay Switching Voltage</b>	125 V AC and 220 V DC
<b>Maximum Relay Switching Capacity</b>	60 W (30W x 2A)
<b>Ingress Protection</b>	IP40 - indoor use only

## Identification Codes

<b>FG-BBOX-LL</b>	Long Line digital black box for hydrocarbon leak detection 100-240V
<b>FG-BBOX</b>	Digital black box 100-240V
<b>FG-NET (Wall mounted / Rack mounted)</b>	FG-NET digital unit wall mounted in plastic enclosure / rack mounted in 19" & 4U
<b>FG-NET-LL (Wall mounted / Rack mounted)</b>	Long line digital unit for hydrocarbon leak detection sense cables in wall mounted in plastic enclosure / in rack mounted in 19" & 4U
<b>FG-OD3, 7, 12, 20</b>	Hydrocarbon sense cable in 3, 7, 12, 20m
<b>FG-ODLxxy/xyy/xyy</b>	Customized Hydrocarbon sense cable, with connectors at each end xx= section length (3, 7, 12 or 20); yy= section numbers i.e.: FG-ODL2004: the mounting of 4 section cables FG-ODL : 4 sections of 20m
<b>Accessories</b>	
<b>FG-DEX</b>	ATEX bus diversion box for FG-OD hydrocarbon sense cable
<b>FG-NOD (x)</b>	"OD bus 8771" jumper cable x meters with connectors

## Certificates



FG-OD sense cables which are certified by ATEX can be connected to the FG-BBOX-LL digital black box.

All the connections in the FG-BBOX-LL must be done with the power supply switched off. Read carefully the installation guide for the FG-NET digital unit.

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- **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](http://www.ttk.fr) / [ventes@ttk.fr](mailto: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](http://www.ttk.fr) / [rrisi@ttk.fr](mailto:rrisi@ttk.fr)
- **TTK UK Ltd.** / 3 Luke Street / London EC2A 4PX / United Kingdom / T : 0207 729 6002 / F : 0207 729 6003 / [www.ttkuk.com](http://www.ttkuk.com) / [sales@ttkuk.com](mailto:sales@ttkuk.com)
- **TTK Pte Ltd.** / #09-05, Shenton House, 3 Shenton Way / Singapore 068805 / Tel.+65-6220.2068 / Mob: +65.9271.6191 / Fax: +65-6220.2026 / [www.ttk.sg](http://www.ttk.sg) / [sales@ttk.sg](mailto:sales@ttk.sg)
- **TTK Asia Ltd.** / 2107-2108 Kai Tak Commercial Building / 317 Des Voeux Road Central / Hongkong / Tel.+852.2858.7128 / Fax.+852.2858.8428 / [www.ttkasia.com](http://www.ttkasia.com) / [info@ttkasia.com](mailto: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](http://www.ttkuk.com) / [cgalmitche@ttk.fr](mailto:cgalmitche@ttk.fr)
- **TTK Deutschland GmbH** / Berner Strasse 34 / 60437 Frankfurt / Deutschland / T : +49(0)69-95005630 / F : +49(0)69-95005640 / [www.ttk-gmbh.de](http://www.ttk-gmbh.de) / [vertrieb@ttk-gmbh.de](mailto: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](http://www.ttkcanada.com) / [info@ttkcanada.com](mailto:info@ttkcanada.com)
- **Thomas Sales & Marketing Inc. TTK Master Distributor For USA** / 7200 W 66th St / Bedford Park, IL 60638 / The United States / T: +1 630-518-4724 / [www.ttkusa.com](http://www.ttkusa.com) / [dmolk@ttkusa.com](mailto:dmolk@ttkusa.com)