



- ▶ 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 39 ft (12 m) each, connected with 3280 ft (1000 m) 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 4602 ft (1416 m) (118 x 39 ft) 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>	6.89" W x 8.66" H x 2.17" D (175 mmW x 220 mmH x 55 mmD)
<b>Maximum Length of Sense Cable</b>	Up to 4602 ft (1416 m) [2 circuits x 59 lengths x 39 ft] per unit (connected with 3280 ft (1000 m) 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>	5° to 131°F [-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 9, 22, 39, 65 ft (3, 7, 12, 20 m)
<b>FG-ODLxxyy/xyyy/xyyy</b>	Customerized 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 (65 ft)
<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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