

Fuel Sentry Tank Gauge

Model TG-EL-D4B

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The **TG-EL-D4B Tank Gauge/Fuel Management System** with Leak Detection System monitors one or two tanks. The D4B tracks fuel deliveries and daily/weekly fuel consumption. It is a powerful accounting tool. The leak-detection system is designed for use with double wall tanks, vaulted tanks, single wall tanks with spill basins, and double wall piping. The TG-EL-D4B is designed for use with all fuel oils (No. 2 – No. 6), diesel, kerosene, jet fuel, and most other petroleum products.

Tank gauges are required by NFPA 30 Flammable and Combustible Liquids Code and NFPA 31 Standard for the Installation of Oil-Burning Equipment, and NFPA 110 Standard for Emergency and Standby Power Systems.

Features Include

- Automatic delivery report and data logging
- Easy-to-read bar-graph touchscreen display
- Printer option with automatic report printing
- Daily/weekly usage report and data logging
- Daily HD-A2-C automatic leak sensor testing
- Overfill alarm
- Idle tank theft alarm
- Eight Intrinsically Safe (I.S.) sensor inputs
- RS485 and Ethernet Modbus
- Fully field-configurable
- Customizable tank and sensor names
- TG_Edit PC based configuration via USB

Monitors one or two tank volumes via any combination of sensors

- TG-EL-WF-(7 or 12)-C wire float level sensor
- TG-EL-HLT-(7 or 15)-C drop-in head level sensor
- TG-EL-ULT-18-C ultrasonic level sensor
- Most other 4-20 mA level, head, bubbler, ultrasonic, or magnetostrictive sensors

Leak Detection Sensor Inputs

- HD-A2-C discriminating leak sensor
- RBS or PS-LDS float leak switch
- Most other contact closure leak sensors
- Leak sensor wiring fault detection

The TG-EL-D4B system consists of the indicator/monitor, optional printer, level sensor(s), leak sensor(s), and optional delivery flow meter. The TG-EL-D4B accepts up to 6 sensors in any combination.

For example:

- Single tank: (1) level, (1) head level, (4) leak
- Single tank: (1) head level, (1) flow meter, (4) leak
- Dual tank: (2) level, (4) leak (2 per tank)

Capabilities

Leak Sensor Testing

All leak detection systems must be tested periodically over the 20-30 year life of the tank. The Fuel Sentry can automatically test each HD-A2-C discriminating leak sensor every day and print the result. Inspectors can remotely initiate HD-A2-C testing from the Fuel Sentry at any time.

Non-discriminating (wet/ dry) leak sensor wiring faults (opens or shorts) can be monitored, and alarmed, by the TG-EL-D4B if a model WFTN-1 network is installed at each sensor.

Oil Delivery Verification

With the high price of oil, it is important to pay only for the oil that is actually delivered. With a single level (or head) sensor, the TG-EL-D4B can automatically detect a delivery and print a time/date stamped 'gallons delivered' report which is used to verify the invoice before payment.

The TG-EL-D4B can also accept a flow meter signal, in addition to a level sensor, for higher accuracy delivery reporting.

Delivery 'shorting' by air injection, or waste fluid blending, changes oil density which makes the oil truck delivery meter reading inaccurate. With two sensors per tank: head plus either level or delivery flow, the TG-EL-D4B can note suspicious oil density changes on the 'gallons delivered' printed report.



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Specs found here



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Idle Tank Theft Alarm

If the gallons in an idle tank drop excessively, the TG-EL-D4B can activate a time/ date stamped "theft alarm." An external "tank is idle" contact closure (from an emergency generator, pump set, or...) input detects small, slow volume changes. If this input is not available, the Fuel Sentry can trigger a theft alarm based on a higher than normal fuel consumption rate.

Overfill Alarm

The TG-EL-D4B can activate an FA-AV-x-D3-SS audible/ visual overfill alarm located near the tank fill pipe to warn the driver to stop filling the tank. The audible alarm silences itself.

Data Logging, Printer, Communications

For a single tank configuration, the TG-EL-D4B automatically logs the following data into non-volatile memory:

- Last 2 inventories at midnight
- Last 14 deliveries with time/ date
- Last 14 daily consumptions (midnight to midnight)
- Last 10 weekly consumptions (Sunday midnight to Sunday midnight)

For dual tank configurations, the data quantities are half of the above for each tank. The last 10 alarm (or status) messages are displayed with time/ date stamp. Reports based on the above data can be automatically printed after every delivery, at midnight, after an alarm, or manually on demand. The data can also be read via RS485 Modbus (standard) or Ethernet Modbus TCP/ IP (optional).

Fully Field Configurable

The TG-EL-D4B can be completely field configured from its LCD menus and keypad, or with the TG-EL-D4B_Edit PC-based software via the TG-EL-D4B USB port.

Sensor type, function, channel, and calibration data can be configured. Relay functions can be assigned (high, overfill alarm, low, leak, theft, pump start, system error, ..., common alarm).

The 51-point stick chart (volume versus level) can be generated in three ways:

1. Based on tank dimensions for standard shapes.
2. Manually entered values from the tank manufacturer's stick chart.
3. 'Auto-Stick' based on TG-EL-D4B data logging of flow meter and level sensor signals during a reduced rate tank fill. The flow meter can be temporary or permanent.

The resulting stick chart can be printed on the optional printer.

Specifications

Instrument

Input Power: 120 VAC +/-15%, 50/60

Case Size: Hz, 21 VA

TG-EL-D4B-00-x: 8" H x 3.5" W x 7.7" D
TG-EL-D4B-Ex-x: 16.5" H x 14.75" W x 9" D

Enclosure: NEMA 4 faceplate

Ambient Temp: 32° F to 122° F

Display: High contrast LCD
4" high, 0.5% resolution
bargraph Inputs (9 total)

Multi-purpose (6): 6 channels, I.S. Class I,
Division 2, Group D

Contact Closure (3): 28.4 VDC, 26 mA

2 wire 4-20 mA: 13 VDC @ 21 mA for
each transmitter + wiring.
0.006% resolution,
0.1% accuracy

Contact Closure (3): 3 channels, non-I.S., non
WFTN-1

1 channel: 120 VAC, 10 mA

2 channel: 15 VDC, 30 mA

Outputs

Relays (8 total): 2 channels SPDT, 10 A res.,
½ HP, 120 VAC 4 channels
SPST NO, 1.5 A pilot, 120
VAC

4-20 mA: 2 channels 650 ohms max,
volume or depth

Communications

USB: TG-EL-D4B_Edit PC
software

RS485: Modbus, ASCII or RTU
1200-38400 baud
Optional, Modbus TCP/IP
Optional, Custom Protocol

Printer Specifications

Input Power: 120 VAC +/-15%, 50/60 Hz,
20 VA

Case Size: 4.6" H x 4" W x 2.8" D

Enclosure: NEMA 1

Ambient Temperature: 32° to 122° F

Paper: 2.3" W, thermal, 30 columns

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Ordering Information

Description	Catalog Number
Tank Gauge Chassis Options:	
Tank Gauge, no enclosure, no printer	TG-EL-D4B-00-x-0
Tank Gauge, with wall mount enclosure, no printer	TG-EL-D4B-E0-x-0
Tank Gauge, with wall mount enclosure, with printer	TG-EL-D4B-EP-x-0
Communication Options:	
RS485 Modbus	replace X with 0
Level Sensors:	
Wire Float level sensor, 4-20 mA output, 7 ft maximum depth	TG-EL-WF-7-C
Wire Float level sensor, 4-20 mA output, 12 ft maximum depth	TG-EL-WF-12-C
Submersible Head Level sensor, 4-20 mA, 7 ft depth	TG-EL-HLT-7-C
Submersible Head Level sensor, 4-20 mA, 15 ft depth	TG-EL-HLT-15-C
Ultrasonic level sensor, 4-20 mA, 18 ft maximum depth	TG-EL-ULT-18-C
Leak Sensors:	
Discriminating Leak Sensor, Dry-H ₂ O - Oil, 4-20 mA	HD-A2-C
Additional Options:	
Ship loose printer for panel mounting (for use only with JC-TGD-00-X-0 tank gauge)	JC-TGD-PRINTER
Two wire direct burial cable (for use with TG-EL-WF, TG-EL-ULT, RBS, and HLS devices)	26302
Detector Guard for HD-A2-C for sumps, vault floors, bright areas	HD-HSG
Wiring Fault Test Network (field-mounted at RBS, HLS, and other non-discriminating (wet/dry) contact closure leak or level sensors)	WFTN-1
Four wire vented direct burial cable (for use with TG-EL-HLT-X-C)	26000

Suggested Specifications

Provide a microprocessor-based tank gauging, leak detection, and overflow prevention system per NFPA 30 Flammable and Combustible Liquids Code, NFPA 31 Standard for the Installation of Oil-Burning Equipment, and NFPA 110 Standard for Emergency and Standby Power Systems. The tank gauge shall be provided complete with printer and RS-485 Modbus interface to the BAS for each storage tank indicated on the drawings. The indicator, printer, level sensors, leak sensors, and overflow alarm station shall be supplied by one manufacturer. The indicator and sensors shall be intrinsically safe for Class 1, Division 1, Group D hazardous locations as defined by the National Electric Code. The system shall be a Preferred Utilities Mfg Corp Model TG-EL-D4B with printer, HD-A2-C leak sensors, FA-AV-x-D3 Fil-A-Larm, and TG-EL-WF-x-C, or TG-EL-HLT-x-C, or TG-EL-ULT-x-C level sensor, as appropriate.

The indicator shall have a bright 4" bargraph display that is clearly visible from 20 foot viewing distance and shall be able to monitor either 1 or 2 tanks. All sensor signals shall be either 4-20 mA or contact closure for easy interchangeability of field devices. All leak sensors shall be automatically tested by the indicator on a daily

basis with the result shown on the printed reports. Continuous sensor wiring fault detection (open or shorted) shall be provided. Automatic delivery detection logic shall trigger a printed, and data logged, report displaying the time, date, and amount delivered for delivery verification. The system shall be field upgradeable to dual sensors for higher accuracy delivery reporting and/or density shift detection in the event that delivery 'shorting' is suspected. Provide idle tank theft alarming capability for standby tanks or emergency generator tanks as required.

The printer shall automatically, or manually, print:

- Current inventory
- Time/ date
- Gallons of the last 7 deliveries
- Last 7 daily consumptions
- Last 5 weekly consumptions
- Last 10 time/ date stamped alarms

The tank gauge system shall be fully field configurable. It shall be able to automatically generate a stick chart based on measured delivery flow and measured level if an accurate stick chart is not available for the tank.