

KING-GAGE® Marine Systems

Tank Level and Draft Indicating Systems for the Marine and Offshore Industries

LevelBAR™ Marine Tank Level Indication

- Graphically Displays Draft or Tank Levels
- Rugged Corrosion Resistant Housing
- Individually Calibrated Indicator Scales

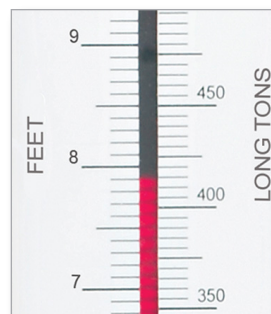
The KING-GAGE **LevelBAR (v2)** delivers a bright multi-segment LED column to graphically indicate tank level or monitor vessel draft. The system monitors tank level by reading the proportional 4–20 mA signal output from compatible two wire level transmitters. The available D/P option alternatively accommodates direct pneumatic pressure measurement.

This unit is well adapted for service on marine vessels and offshore rigs. A rugged stainless steel housing resists corrosion affording protection for the internal electronics and is intended to meet splash proof requirements. A backlighting feature makes the scale readable in the absence of ambient illumination while the red LED column is viewable even in bright daylight.

LevelBAR indicators can be used singly or in multiples to provide additional display locations simply by extending the signal loop circuit. This marine tank level display takes the guesswork out of installation and troubleshooting with practical elements such as loop circuit status (on/off/open) and fault (short) indicators. With the available differential pressure (D/P) option, the LevelBAR indicator can be used as a direct replacement for mercury tank gauges or other fluid-filled manometers.

LevelBAR Custom Scale

Scales are calculated for the individual tank geometry and product specific gravity permitting the LevelBAR system to be used for almost any kind and shape of tank, including wing or void tanks. Custom marked in any specified unit of measurement (gallons, liters, short tons, etc.), you may specify an optional 2-unit scale that combines any two different measurements of weight, volume, or depth. Factory calibration allows full scale ranging of the display when maximum input is less than 20 mA to eliminate field span adjustment of the level transmitter.



LevelBAR—Electronic Input (4–20 mA)

Local or remote indication of tank inventory is provided by the LevelBAR column display. At the tank, D/P LiquiSeal transmitter or D/P Purge Control provides a standard 4–20 mA signal which is proportional to the hydrostatic pressure created by liquid depth. 100–240 Vac 50/60 Hz power is required at the LevelBAR indicator which also provides power to the transmitter over the two wire signal loop circuit.

Dependable Operation

LevelBAR is simple to install and maintain. There are no extensive adjustments or calculations to perform. Its rugged stainless steel enclosure suits any environment. Highly visible graphic display for control room and/or engine room, whether there be subdued light conditions or even bright sunlight. Simply connect power and signal input to make the system operational.*

**The use of waterproof conduit hubs or fittings may be required during installation. Not rated for continuous explosion hazard areas. Compressed air source is required for Purge Control transmitters.*

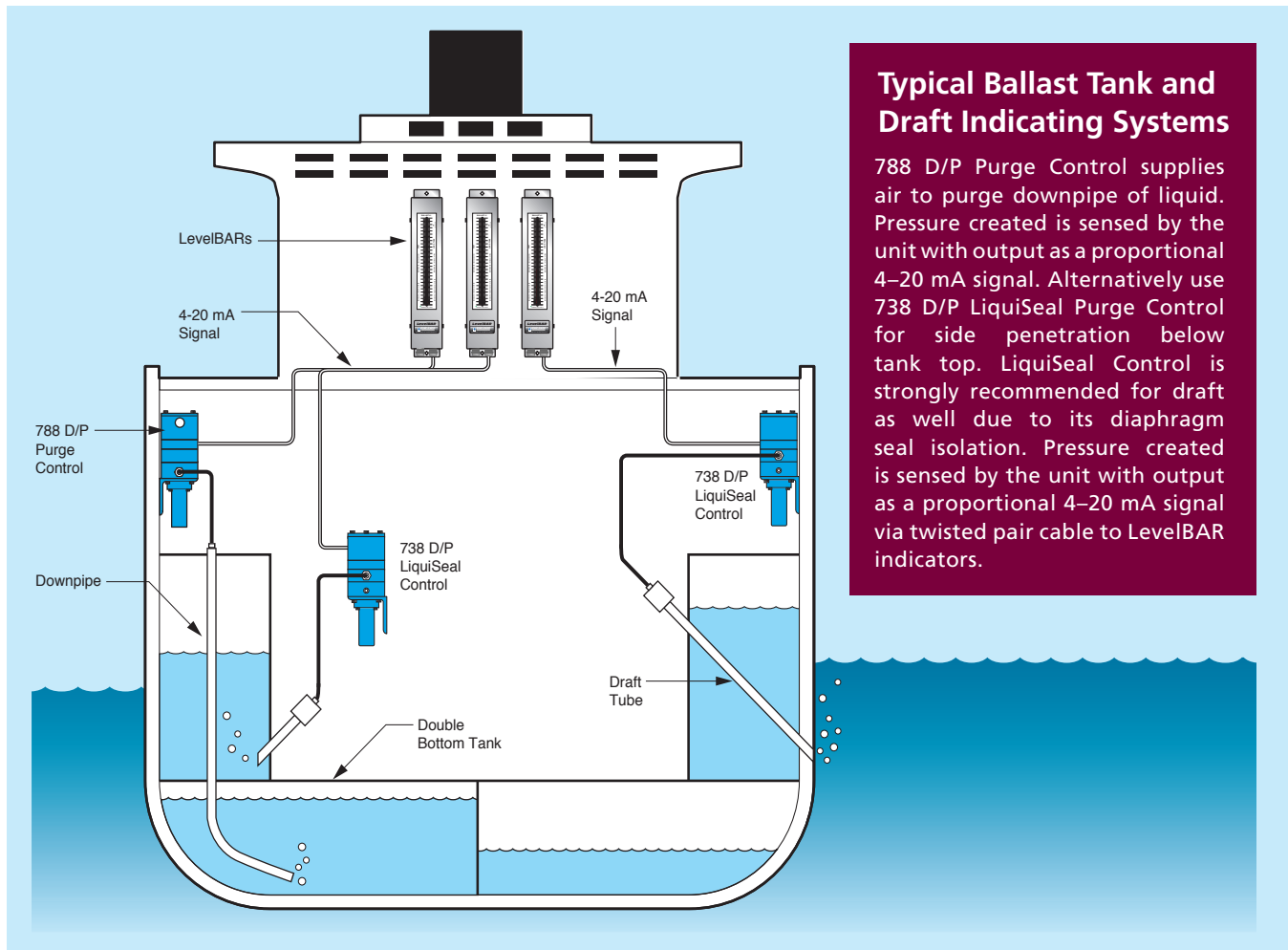
Extensively used by Ferries, Cargo Vessels, Support Ships, Dry Docks, Drill Rigs for applications including:

- Ballast Tanks
- Ship's Draft
- Fuel Oil Tanks
- Double Bottom Tanks
- Wing Tanks
- Day Tanks

LevelBAR Indicator Model 5111-10

electronic input (4–20 mA two wire)

The electronic input version accepts a standard 4–20 mAdc signal from typical two wire pressure transmitters. These models include watertight cord grip (strain relief) connectors, factory calibration and custom marked scale.



Typical Ballast Tank and Draft Indicating Systems

788 D/P Purge Control supplies air to purge downpipe of liquid. Pressure created is sensed by the unit with output as a proportional 4–20 mA signal. Alternatively use 738 D/P LiquiSeal Purge Control for side penetration below tank top. LiquiSeal Control is strongly recommended for draft as well due to its diaphragm seal isolation. Pressure created is sensed by the unit with output as a proportional 4–20 mA signal via twisted pair cable to LevelBAR indicators.

- Simple graphic display of level
- LED column viewable in direct sunlight
- Backlit scale for nighttime viewing
- Signal fault diagnostic alert

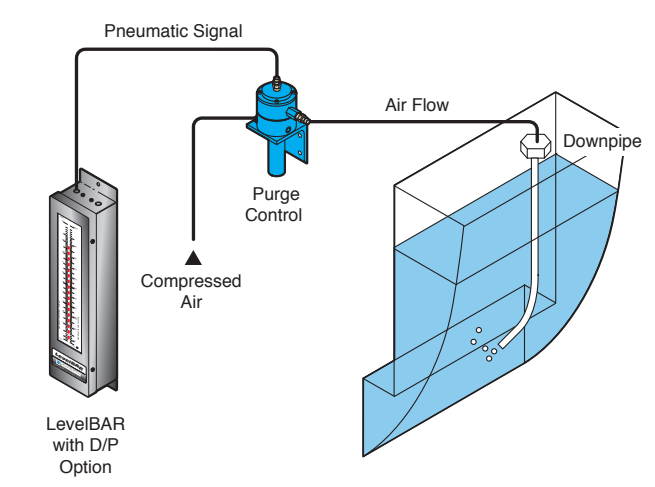
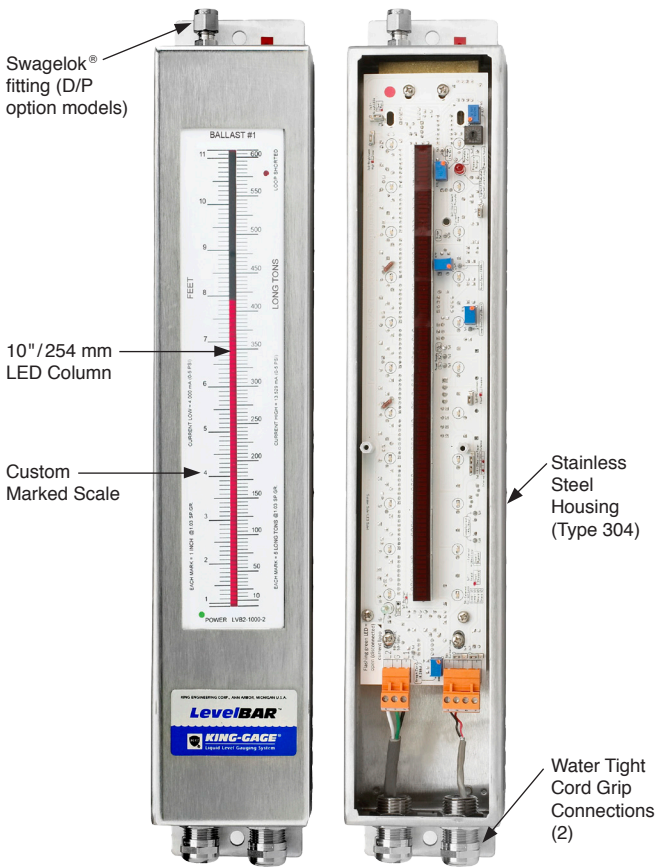
LevelBAR—Direct Pressure Input (D/P Option)

The available LevelBAR D/P option incorporates a precision pressure transducer for pneumatic-to-current (P/I) conversion, allowing the unit to read pressure directly. This available feature permits bubbler systems to be retrofitted with an electronic LevelBAR indicator, eliminating older manometer type gages. Additionally, the indicator generates a compatible 4–20 mA_{dc} output signal* that may be transmitted to a ship’s management or control component.

**In some instances, the maximum applied pressure may not provide full scale output and result in less than 20 mA_{dc}.*

Bubbler (Downpipe) System—uses compressed air to purge an open ended pipe extending down into the tank. A regulator or purge control supplies the air which fills the pipe. The resulting pressure created (within the pipe) is directly proportional to liquid depth. When the LevelBAR D/P option is specified, the pressure signal is directed into the internal transducer which generates a milliamp output in response to the applied pressure. Individual LED segments on the scale illuminate as the tank depth increases. The scale itself is custom marked for the actual tank dimensions and pressure range of the gauging application.

The LevelBAR can be used to retrofit many vessels originally outfitted with mercury gauges or other fluid filled tank level gauges. It offers a standardized mounting footprint when installing the indicators even when depths vary from tank to tank. Other advantages include reduced maintenance and eliminating concerns about reliability.



LevelBAR D/P option—used for systems providing a pneumatic pressure output. (Also as direct replacement for mercury/fluid gauges.)

LevelBAR Indicator Model 5111-2x

These versions incorporate the D/P option with an internal pressure transducer. Select the pressure range based on the depth and density of liquid contents. A factory calibration scaling adjustment provides full scale display for most applications. These models include 1/4" tube fitting, watertight cord grip (strain relief) connectors, factory calibration, and custom marked scale.

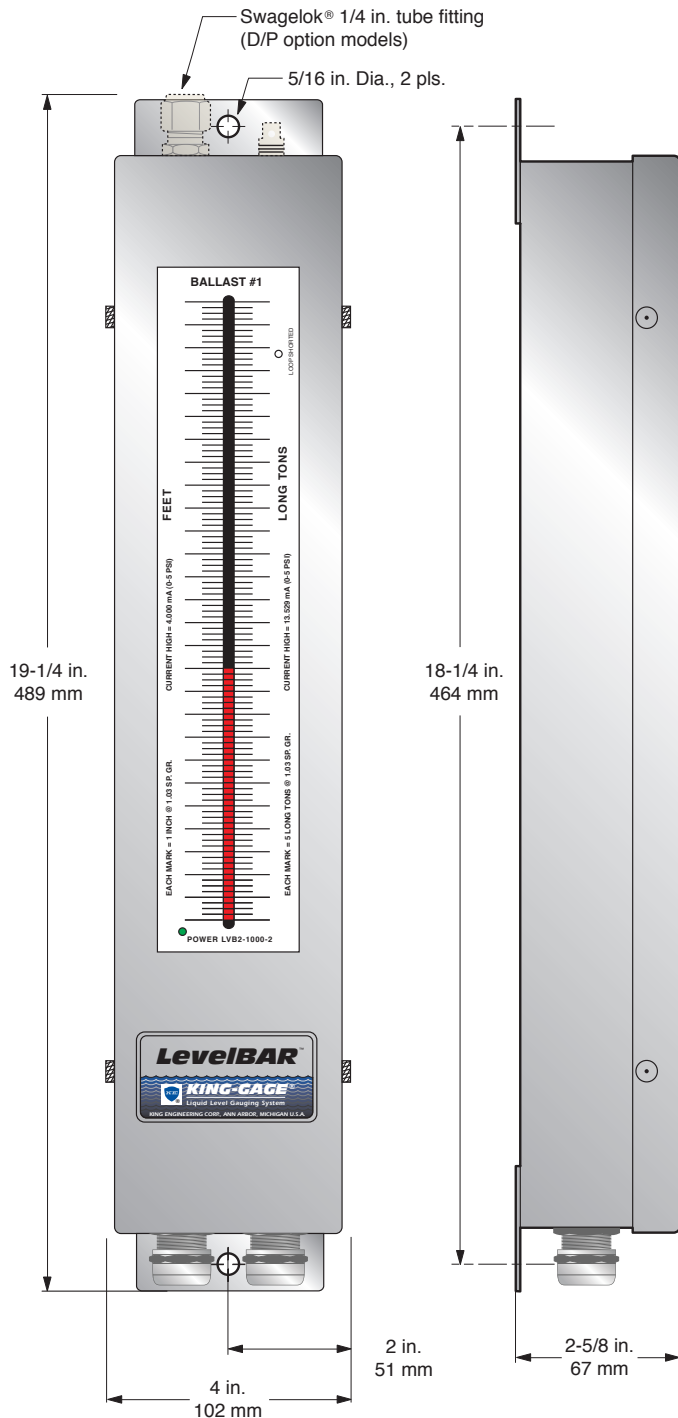
Model No. Designations

5111-2

- 0 = pneumatic D/P input (0–5 psid pressure range)
- 1 = pneumatic D/P input (0–10 psid pressure range)
- 2 = pneumatic D/P input (0–15 psid pressure range)
- 3 = pneumatic D/P input (0–30 psid pressure range)
- 4 = pneumatic D/P input (0–50 psid pressure range)

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LevelBAR Tank Level Indicator



Specifications

Display Accuracy/Resolution

1%

Display Type

100-segment LED (light emitting diode)

Display Length

10"/254 mm

Input Power

100–240 Vac, 50/60 Hz

Output Power

24 Vdc (transmitter excitation)

Input Impedance (Resistance)

150 ohm nominal (3.0 Vdc drop @ 20 mA)

Current Limiting (Overload)

Automatic trip/reset circuit using PTC (positive temperature coefficient) resistor holds maximum current level within operating range of internal components.

Temperature Range (Environmental)

30°F to 120°F (-1°C to 49°C) operating range

Signal Input (Electronic Input Model)

4–12 mAdc (min.) to 4–20 mAdc full scale range

Pressure Ranges (D/P Option Models)

0–5, –10, –15, –30, –50 psid fixed range transmitter element (accepts clean, dry air/gas pressure input). Maximum pressure rating is 300% FS.

Minimum pressure range for proper operation is 50% of nominal. The lowest acceptable input pressure range is 0–2.5 psid using the 0–5 psid transducer element.

Transmitter Accuracy (D/P Option Models)

0.5% FS

Output (D/P Option Models)

4–20 mAdc (assumes FSO)

Maximum Load Capacity (D/P Option Models)

1400 ohms @ 40 Vdc (external power)

600 ohms @ 24 Vdc (internal power)

Physical Data

304 stainless steel housing and cover with gasket seal, transparent polycarbonate display window is intended to meet splash proof requirements. The use of waterproof conduit hubs or fittings may be required during installation. Not rated for continuous explosion hazard areas.



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