

**KING-GAGE® LP2™**

## Single Tank Level Indicator

Tank Liquid Level

Inventory Monitoring

Process Integration

- Direct Reading by Volume or Weight
- Nonvolatile Datapack iButton Memory
- Provides 24 Vdc Transmitter Excitation
- Dual Serial Communications Ports

The new LP2 Tank Level Indicator combines intelligent signal processing and data acquisition for seamless integration in process control. LP2 indicators will provide continuous measurement of liquid inventory in storage or processing tanks. Calculating level on the basis of hydrostatic pressure created by liquid depth, the system measures total product mass for more precise material accounting.

LP2 indicator accepts the proportional 4-20 mA signal from a liquid level transmitter. The actual sensor used to detect hydrostatic pressure (created by liquid depth) can be either electronic or pneumatic. With the latter, an electronic pressure transmitter is used to convert the sensor's pneumatic signal into 4-20 mA output (using a KING-GAGE® D/P Module or D/P Transmitter).

LP2 indicators express tank level directly in engineering units. The indicator references a capacity profile to correlate transmitter output to actual tank geometry. The indicator then formats the resulting value directly as the total weight or volume of liquid in the tank. There are no user conversion factors involved or scaling points to enter. All application details are factory programmed into an innovative nonvolatile modular memory called the **Datapack iButton**.



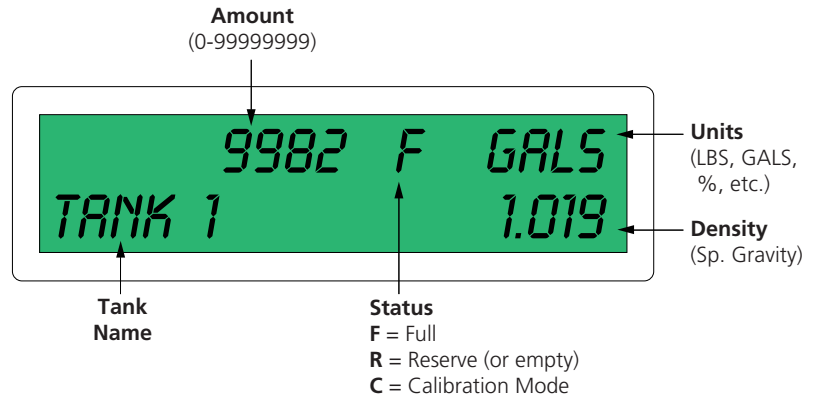
**LP2 Single Tank Indicator  
with LCD Readout**

Whether mounted at the tank as a local display or networked to a central control station, LP2 indicators offer a complete system solution. Their rugged design incorporate many valuable features that simplify installation while ensuring long-term reliability.

### Tank Level Display

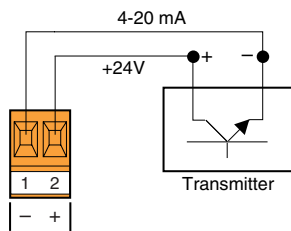
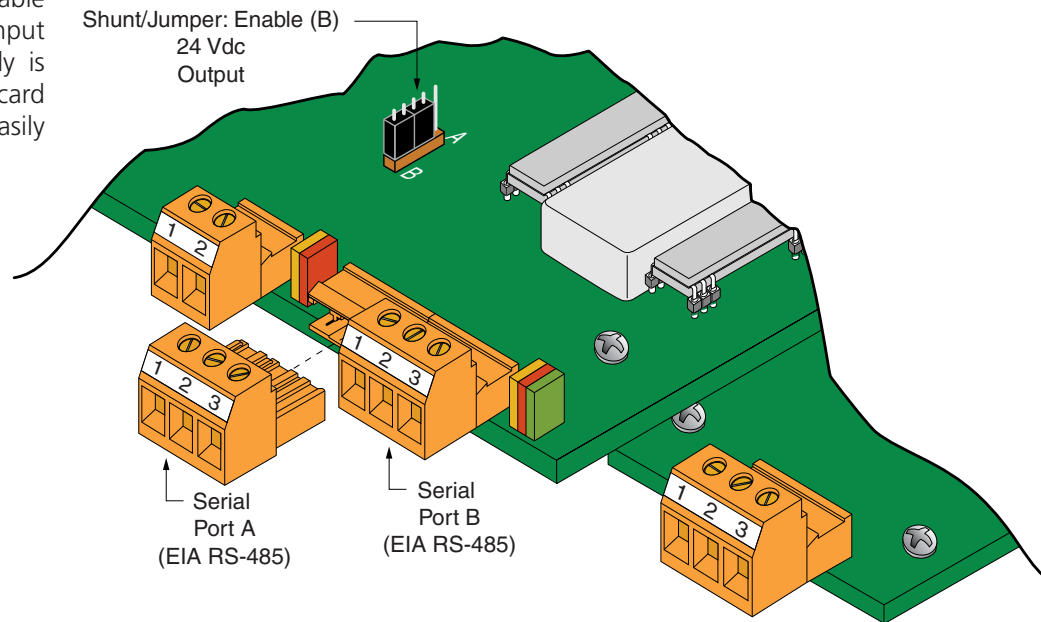
The LP2 single tank indicator features an alphanumeric LCD panel providing up to 10-characters for tank identification. Tank level is shown with up to an 8-digit display value directly in the unit of weight or volume (as specified) together with the current density selection.

Note: The specific gravity (density) displayed is either the preprogrammed default or a value that can be downloaded to the indicator over the serial network. Refer to section on **Data Acquisition and Network Connectivity**.



### 24 Vdc Output (Transmitter Excitation)

The LP2 tank indicator incorporates an internal 24 Vdc supply that can be used to power the signal loop. A pair of shunt/jumpers are used to enable or disable this voltage supply across the signal input terminals. If an external power supply is used (occasionally tied through the I/O card of a PLC), the internal 24 Vdc can be easily disabled at the LP2.



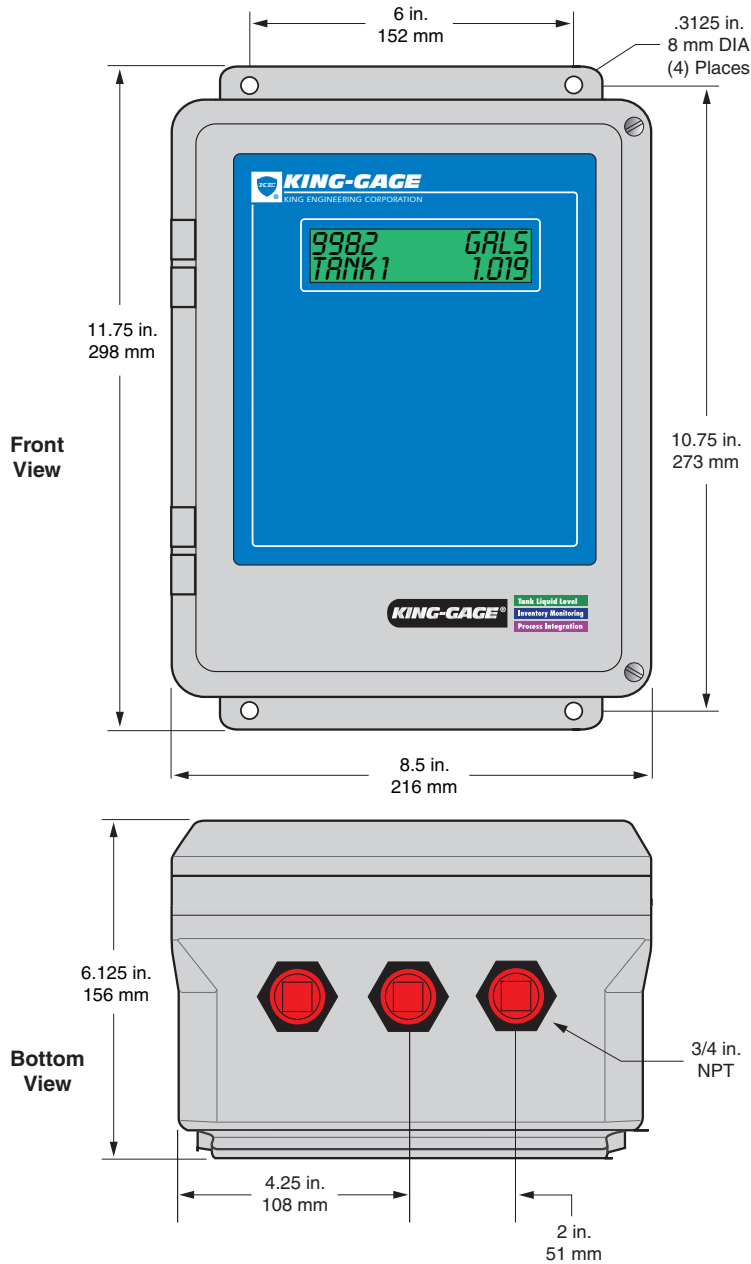
**Transmitter Signal Loop**  
Onboard 24 Vdc Power Supply Enabled

### Flush Mount Package

The LP2 single tank indicator is also available in a flush panel mounted housing. All connections are situated at the rear of the housing to facilitate installation in a control console or instrument enclosure. The front display panel has a low rise profile of less than 3/16 inch (4.7 mm) when installed.



**Flush Mount LP2 Indicator**



## Specifications

### Power Requirements

100-240 Vac, 50-60 Hz, 25 watts (fused internally for 2.5 A 120/250 V)

**Temperature Range** (Environmental)  
30°F to 120°F (0°C to 50°C) operating range

### Signal Input

4-20 milliampères (mAdc)

### Power Output

24 Vdc nominal; fused @ 0.5 Amp

### Input Impedance

 (Resistance)

120 ohm nominal (2.4 Vdc drop @ 20 mAdc)

### Memory

Nonvolatile 64kbit memory iButton\*

### Digital Readout

Alphanumeric 0.3173 in. (8 mm) 16-character x 2-line LCD; numeric 8-digit (0-99999999 maximum)

### Accuracy

±0.048% FS (±0.024% FS, typical)

### Resolution

±0.024% FS maximum (±0.004 mA)

### Communications

Two (2) serial EIA RS-485 ports; two wire multidrop

### Enclosures

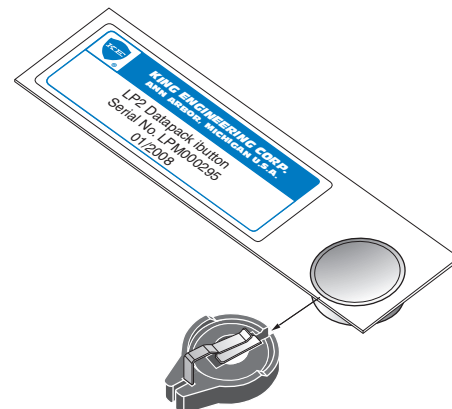
**Shown:** Engineered thermoplastic (NORYL) enclosure; UL 50, NEMA type 3, 3S, 4, 4X, 12; hinged cover with dual latching screws.

**Optional:** 14 gauge stainless steel enclosure; UL 50 type 4, 4X, 12, 13; hinged cover with dual latching screw lugs.

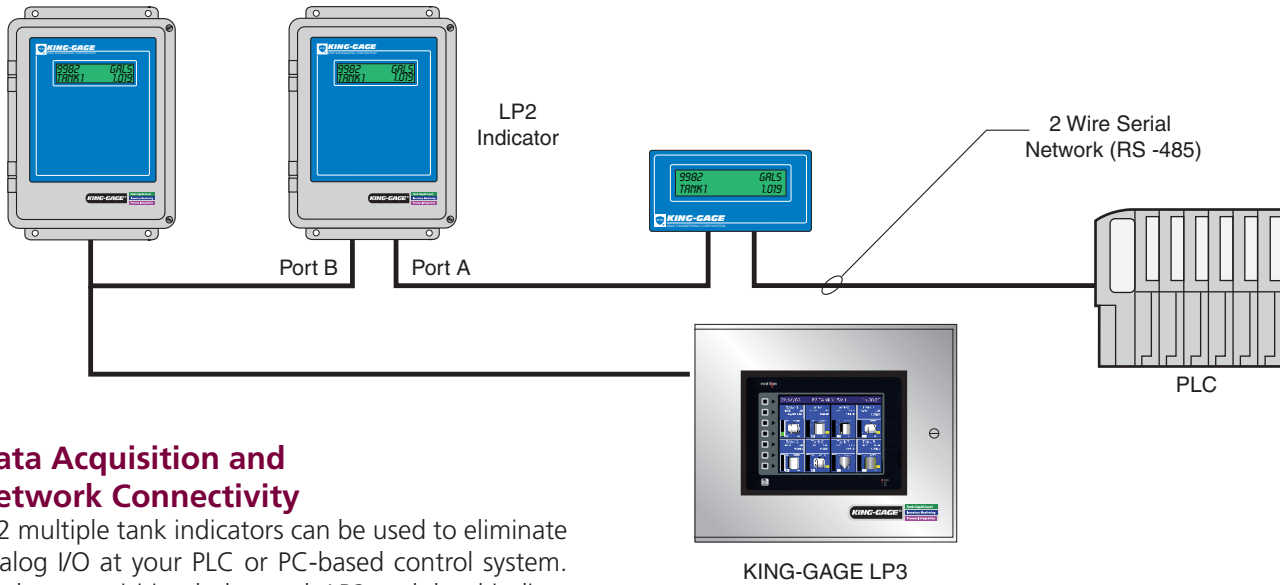
**Optional:** Flush mount extruded aluminum housing; polycarbonate front panel w/gasket to meet NEMA 4 when installed.

## Application Programming

The LP2 indicator references a capacity profile to correlate transmitter output to actual tank geometry. This profile plus additional application details are factory programmed into an innovative nonvolatile Datapack iButton memory module. Different units of measurement and/or specific gravity values can be assigned to each tank in the system. LP2 stores all the user selections in its Datapack iButton memory. The more critical data is restricted to read only access to prevent any possible corruption of the original factory programming.



Datapack iButton

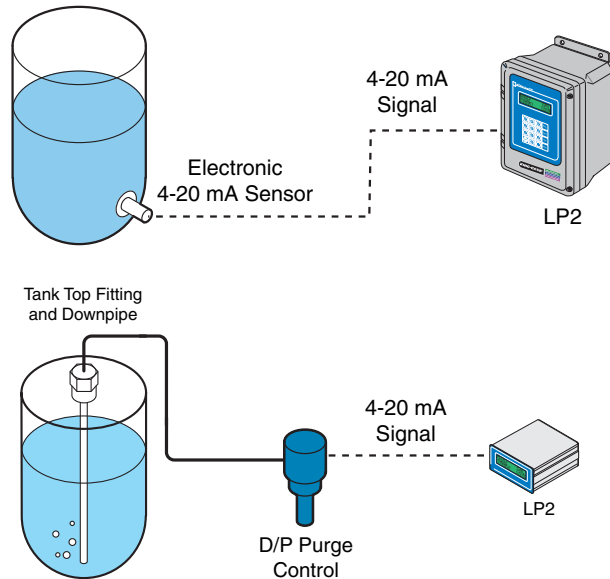


### Data Acquisition and Network Connectivity

LP2 multiple tank indicators can be used to eliminate analog I/O at your PLC or PC-based control system. As data acquisition hubs, each LP2 tank level indicator resides on an expandable multidrop network. Any combination of up to 32 discrete single channel or multiple channel indicators can be installed on a simple two wire network (RS-485).

Dual serial communications ports (RS-485) can be configured for different protocols such as master/satellite, ASCII data exchange or Modbus-RTU emulation. This flexibility means that LP2 indicators can be linked to different data networks. This allows for multiple simultaneous protocols including query-response communications with a computer (or PLC), remote satellite displays or interface to a KING-GAGE LP3 system.

LP2 indicators can be used as basic stand alone tank level indication. Combining both accuracy and reliability, they provide a complete tank level gauging solution where precise accounting of liquid inventory is needed. LP2 indicators also simplify future upgrades requiring system interconnectivity for industrial networks.



\* iButton is a trademark of Dallas Semiconductor.

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Specifications subject to change without notice.



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