



# LIFT STATION LEVEL TRANSMITTER

# LEVELRAT

NON-FOULING DESIGN FOR WASTEWATER APPLICATIONS

Specifically designed for extended service in sewage lift station environments, the LevelRat by Keller America features a wide sensing diaphragm yet small overall size. Unlike similar, competing models which feature a fragile Teflon®-coated rubber diaphragm, the LevelRat incorporates a monolithic diaphragm which combines the non-stick quality of Teflon with superior toughness and abrasion resistance.

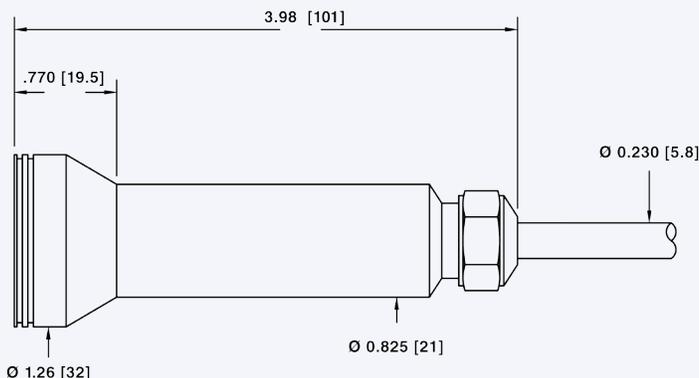
Perfectly suited for pump control applications, the LevelRat is compatible with any standard 2-wire, 4...20 mA current loop or 3-wire voltage systems.

Keller America's guaranteed lightning protection makes this transmitter ideal for installation in areas prone to chronic damage due to transients caused by lightning.

For more information on the LevelRat, or any other Keller product, please contact Keller America, or view the entire Keller catalog at <http://www.kelleramerica.com/datasheets.html>.

### FEATURES

- 4...20mA models include guaranteed lightning protection at no additional cost.
- 16-bit internal digital error correction for cost-effective low Total Error Band (TEB)<sub>3</sub>.
- 316L SS housing construction.
- Non-fouling diaphragm for superior resistance to puncture.
- 2-year warranty covers defects in materials and workmanship.
- User-rangeable analog output ensures compatibility as requirements change.
- RS485 modified-MODBUS compatible interface allows up to 128 transmitters on a single bus.
- Standard dual (analog & RS485) outputs simplify interface to controls, data collection, and telemetry systems.
- Built in the U.S.A. ARRA Section 1605 Compliant.
- Standard 3-day lead time.



Output	White	Black	Red	Blue	Yellow
2-wire (mA)	OUT / GND	+Vcc	N/A	RS485A	RS485B
3-wire (VDC)	GND	+VCC	+OUT	RS485A	RS485B

Braided shield wire connected to transmitter housing



### Pressure Ranges<sub>1,2</sub>

Relative                      Infinite between 0...5 thru 0...100 ft W.C.

- The LevelRat can be provided with custom calibration at no extra cost. For fluids other than water, the specific gravity must be given at the time the order is placed.
- Intermediate ranges are realized by deranging the analog output from the next highest basic range: 1, 3, and 10 bar (relative). Level range may be specified in units of lb/in2(psi), inches WC or feet WC. Keller America uses the International Standard conversion of 2.3067 feet WC/psi.

### Accuracy<sub>3</sub>

Static                              Standard  $\pm 0.2\%$  FS  
 Total Error Band              Standard  $\pm 0.5\%$  BR

- Static accuracy includes the combined effects of non-linearity, hysteresis, and non-repeatability at room temperature (25°C). Total Error Band (TEB) includes the combined effects of non-linearity, hysteresis, and non-repeatability as well as thermal dependencies, over the compensated temperature range, expressed as a percentage of the basic range (BR).

The calculation for maximum TEB on intermediate ranges (IR) is:  $TEB_{IR} = (BR/IR) \times TEB_{BR}$

### Output<sub>4</sub>

Current                            4...20mA + RS485  
 Voltage                           0...5, 0...10VDC + RS485  
 Resolution                      0.002%<sub>5</sub>

- Other voltage output options available on request.
- Resolution applies to digital output only. Analog resolution is continuous and limited by the process meter and not the instrument.

### Certifications

CE                                    EN50081-1, EN50082-2

### Electrical<sub>6</sub>

Supply (4-20mA)                11...32 VDC  
 Supply (0-5VDC)                8...32 VDC  
 Supply (0-10VDC)               13...32 VDC  
 Load Resistance (mA)         $< (\text{Supply}-11V)/0.022A$   
 Load Resistance (VDC)         $> 4k \text{ ohm}$

- Nominal values may be higher depending upon cable length. Internal lightning protection increases the minimum-required supply voltage from 8VDC to 11VDC, due to internal resistance of the surge protectors. In addition, cable resistance (~70Ω / 1000ft) adds to the supply requirement. In order to insure proper system operation, calculate the minimum required supply voltage (at the source) as follows:

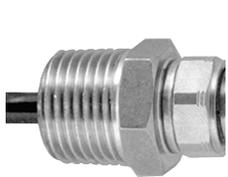
For two-part (internal+external) system (recommended):  
 MINIMUM SUPPLY VOLTAGE =  $11.6 + 0.022 (\text{CABLE LENGTH} \times 0.07) \text{ VDC}$

For internal only protector (standard with 4-20mA output):  
 MINIMUM SUPPLY VOLTAGE =  $11 + 0.022 (\text{CABLE LENGTH} \times 0.07) \text{ VDC}$

### Environmental

Protection Rating                IP68  
 Operating Temp.                 -10...60° C  
 Compensated Temp.             0...50° C  
 Wetted Materials                316 L Stainless Steel  
     Kynar  
     Fluorocarbon  
 Cable Options                    Polyethylene for general purpose  
     Hytrel for hydrocarbon  
     Tefzel for chemical interaction

### Optional Accessories



1/2" NPT Conduit Fitting



Drying Tube Assembly



Bellows Assembly



Cable Hanger



Termination Enclosure



Pressure Test Adapter



Stabilizing Weight



Interface Converter



Process Meter



Signal Line Surge Protector