



## NB-IoT/CAT-M1/2G Intrinsically safe ultrasonic level sensor

Our Intrinsically safe ultrasonic 4G NB-IoT/CAT-M1 is a flexible and configurable battery operated liquid level sensor with an integrated Cellular modem supporting GSM (2G), LTE-CAT M1 & NB-IoT networks and GPS.

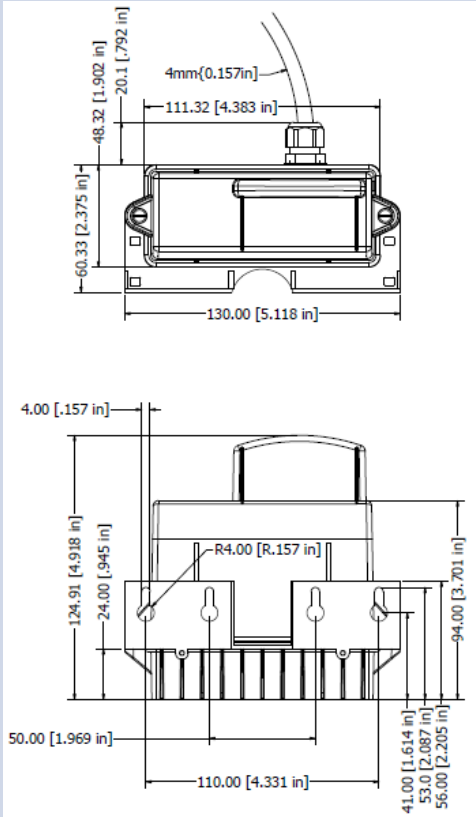
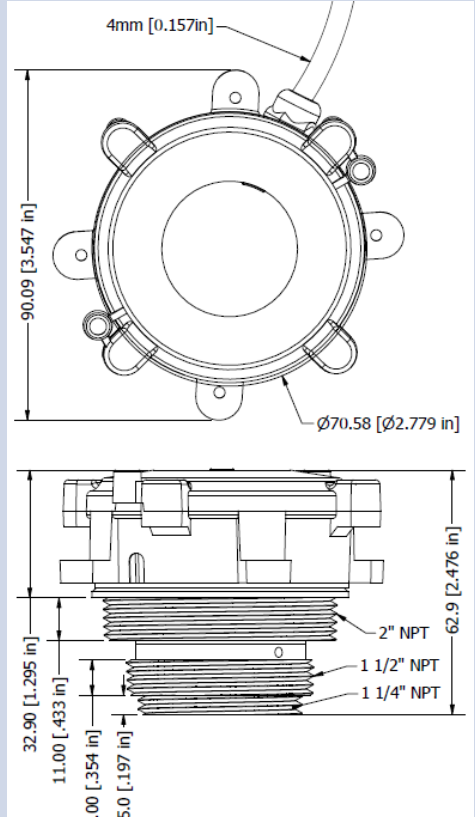
### Applications

- Liquid Level Ultrasonic level sensor
  - Fuel - oil, Kerosene, Diesel
  - Lubricants
  - Additives
  - Other hazardous/non hazardous
  - DEF / Adblue
  - Coolants
  - Water
  - Waste Oil
  - Wastewater
  - Chemicals - *\*This product may not be suitable for monitoring of certain corrosive and hazardous chemicals. List of product compatible chemicals to be verified with a Tekelek representative.*
- Fixed, portable and underground tanks
- Ensure continued supply
- Optimise delivery or collections
- Spot and continuous inventory measurement

### Benefits

- Accurate, reliable tank level monitoring
- Programmable data reporting interval
- Remote configurability
- 28 slot logger with configurable logging interval
- Easy to install
- Minimum 1 year warranty
- CE Conformance, ROHS and PTCRB Compliant
- International Approvals
- Programmable alarms
  - Full alert
  - Empty alert
  - Spill alert (bundled tanks)
  - Fill alert
  - Low and High levels
  - 24/7 Monitoring
- Reports local temperature, radio signal strength, and battery level
- External antenna option for underground locations
- Mounting/attachment options – wall/pole



Characteristics	Liquid Level logger 4G NB-IoT/CAT-M1 /2G	Ultrasonic level sensor Exi
Dimensions	 <p>Technical drawings of the Liquid Level logger 4G NB-IoT/CAT-M1 /2G. The top drawing is a side view showing dimensions: 4mm (0.157 in) cable diameter, 20.1 (0.792 in) top height, 48.32 (1.902 in) total height, 111.32 (4.383 in) width, 60.33 (2.375 in) bottom height, and 130.00 (5.118 in) base width. The bottom drawing is a front view showing dimensions: 4.00 (0.157 in) top width, 124.91 (4.918 in) total height, 24.00 (0.945 in) mounting height, R4.00 (R.157 in) radius, 50.00 (1.969 in) base width, 110.00 (4.331 in) total width, 41.00 (1.614 in) sensor height, 53.0 (2.087 in) sensor diameter, and 56.00 (2.205 in) sensor length.</p>	 <p>Technical drawings of the Ultrasonic level sensor Exi. The top drawing is a top view showing dimensions: 4mm (0.157 in) cable diameter, 90.09 (3.547 in) diameter, and <math>\phi 70.58</math> (<math>\phi 2.779</math> in) mounting hole diameter. The bottom drawing is a side view showing dimensions: 62.9 (2.476 in) total height, 32.90 (1.295 in) sensor height, 11.00 (0.433 in) sensor diameter, 9.00 (0.354 in) sensor length, and 5.0 (0.197 in) sensor diameter.</p>
Safety	<p>Class I, Div 1, Gr C D CSA.16.70011285  Class I Zone 0 AEx ia IIB T4 Ga  Complies with UL 913  II 1 G-Ex ia IIB T4 Ga  SIRA15ATEX2103 X IECEx CSA 15.0006X</p>	<p>Class 1, Div 1, Group A,B,C &amp; D T4  Class I, Zone 0 AEx ia IIC T4 Ga  Complies with UL 913  SGSNA/20/CA/00003X  SGS20ATEX0009X IECEx BAS 20.0005X</p>
Housing Material	<p>Moulded plastic, 2-part, material Glass Reinforced Polyamide, UV resistant.</p>	<p>Moulded plastic, 3- Part, UV Stabilized Polypropylene</p>
Weight	<p>Weight 350g/12oz  (excluding cable &amp; gland/external connectors)</p>	<p>140g/5oz  (excluding cable &amp; gland/external connectors)</p>
Conformance	<p>ATEX/Hazloc/IECEX,  PTCRB (AT&amp;T) &amp; Verizon approvals,  RED, FCC, CE, RoHS.</p>	<p>ATEX/Hazloc/IECEX,  CE, RoHS.</p>
Manual Activation	<p>Magnetically activated reed switch / Audible buzzer</p>	<p>N/A</p>

Characteristics	Liquid Level logger 4G NB-IoT/CAT-M1 - Ultrasonic sensor Exi
Ultrasonic Range	>12cm to <4m / >4.7" to 157" at 20°C(-4°F) <b>(Note 1)</b>
Ultrasonic Resolution	±1cm / ±0.4"
Accuracy	Typically ±2cm from 12cm to 3m / ±0.78" from 4.7" to 118"
Communication	LTE CAT-M1 or NB-IoT or 2G
Signal Divergence	See polar plot <b>(Note3)</b>
Battery life	Up to 10 years <b>(Note 2)</b>
Altitude Range	<2Km/1.25miles above sea level
Battery technology	3.6V Lithium Thionyl Chloride Exi "Bobbin type" construction
Power requirements	Battery pack with standard cell sizes connected with a 2 wire harness included
Radio Frequency:	Cat M1/Cat NB1: LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28 LTE TDD: B39 (For Cat M1 Only) EGPRS: 850/900/1800/1900MHz
Humidity	0 – 100% RH
Operating Temperature	-4°F to 131°F (-20°C to 55°C)
Storage Temperature	32°F to 86°F (0°C to 30°C)
Environmental Protection	IP68 - Outdoors
Material compatibility	<b>(Note 4)</b>
Software Features	Includes Tekelek's advanced sonics with quality parameters
GNSS (GPS)	GPS, GLONASS, BeiDou/Compass, Galileo, QZSS
Tank mounting options	Sensor fits directly into 1 ¼", 1 ½" or 2" BSP existing tank connection

The Intrinsically Safe Exi ultrasonic sensor is suitable for Monitoring Liquid levels up to 4m / 13 ft depth. It has a 3m / 10 ft cable with an IP68 connector to facilitate mounting.

The Ultrasonic Exi sensor communicates to the logger via UART serial bidirectional communications TTL 3.3V level 1200 baud, no parity, 8 data bits.

## Configuration/Specification Options

External connection	IP68 Cable gland / IP68 bulkhead connector
Antenna	Internal with option for antenna coupler with SMA connector to allow connection of an external GSM antenna
Data Communications	Makes a TCP connection to the server over 2G, NB-IoT or CAT-M1 cellular network and delivers its payload using a proprietary Tekelek binary
Fixing/Mounting	Screw mounts (4), tie wrap, & pole mount features are standard.

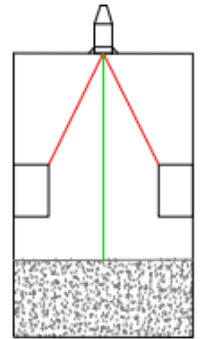
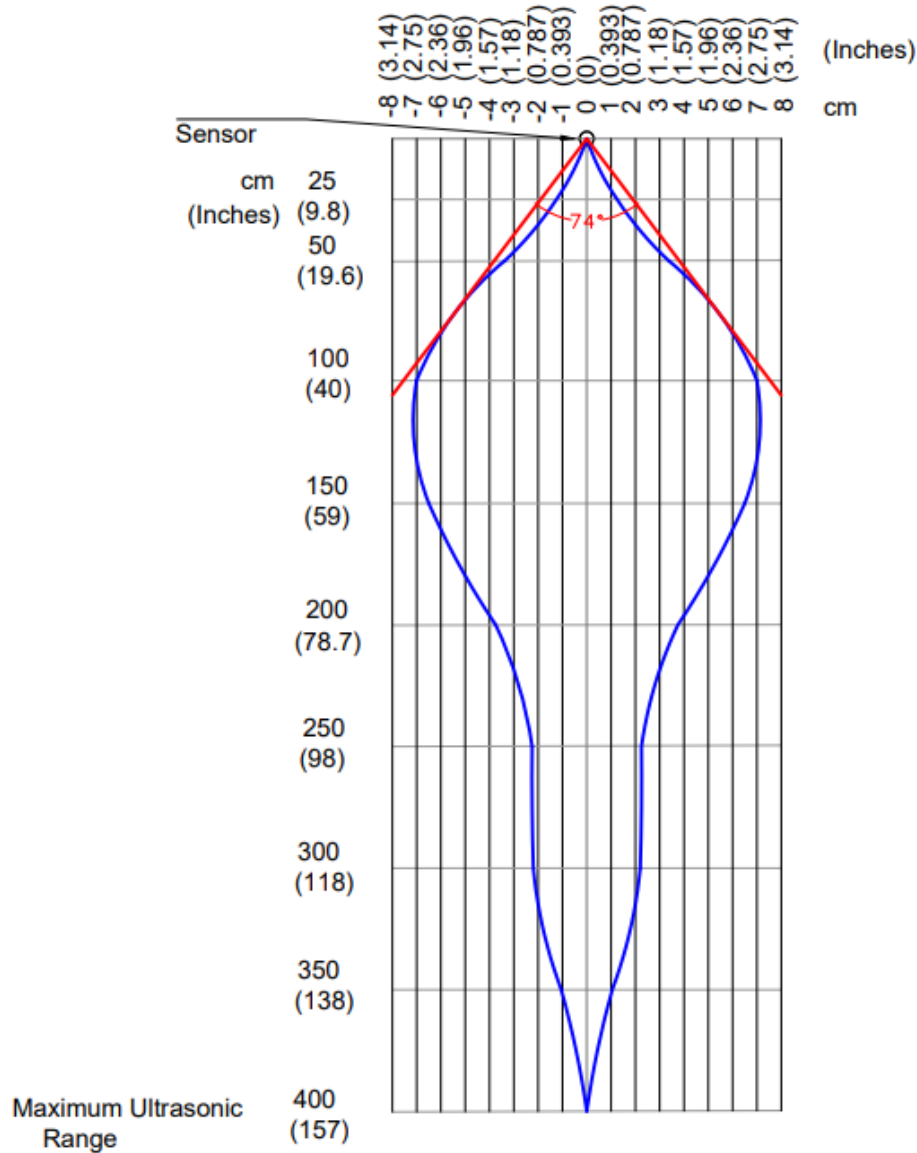
**Note 1:** Note: range de-rates to 30cm / 8" < 0°C

**Note 2:** Based on 1 communication per day and good network coverage

**Note 3:** The maximum spatial diversion of the ultrasonic signal is shown on a polar plot included with this datasheet.

**Note 4:** Suitable for use in tanks for the storage of water diesel fuel, kerosene, oil types A2,C1,C2 and D as defined by BS2869.

Signal Divergence



Find a position for the sensor which respects a clear path for the ultrasonic signal.