

TEK 871 Cellular Ultrasonic Exi

Our Intrinsically safe TEK 871 Cellular Ultrasonic Exi (C1D1) is a flexible and configurable battery-operated liquid level sensor with an integrated Cellular modem supporting GSM (2G), LTE-CAT-M1/NNB-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

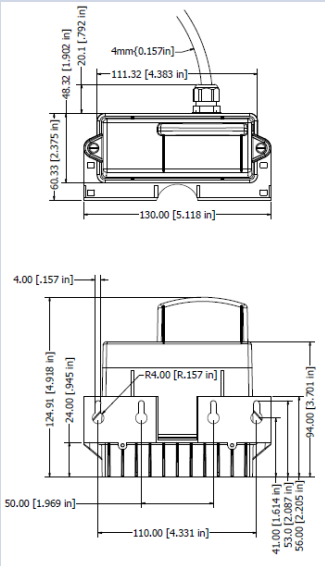
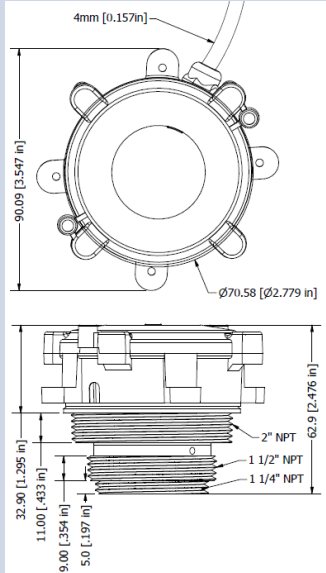
- Accurate, reliable tank level monitoring
- Programmable data reporting interval
- Remote configurability
- 28 slot logger with configurable logging interval
- Easy to install
- International Approvals
- Programmable alarms
 - Full alert
 - Empty alert
 - Spill alert (bundled tanks)
 - Fill alert
 - 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



DS-5068-09

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Since the suitability of these products depends upon a wide range of factors not in our control, Rochester Sensors expects and understands that you will conduct the testing and evaluation necessary to determine that these products are suitable for your application. Whilst every effort is made to ensure the above details are correct at the time of printing, Rochester Sensors reserves the right to make material changes, and or technical changes without notification

Characteristics	Liquid Level logger LTE CAT-M1/NB-IoT /2G	Ultrasonic level sensor Exi
Dimensions		
Safety	Class I, Div 1, Gr A D T4 Div 1, Gr C D T4 Class I Zone 0 AEx ia IIB T4 Ga Class I Zone 0 AEx ia IIC T4 Ga SGSNA/22/CA/00014X BA22UKEX0189X II 1G Ex ia IIC T4 Ga Ta = -30°C to +55°C II 1G Ex ia IIB T4 Ga Ta = -30°C to +55°C II 1G Ex ia IIC T4 Ga Ta = -30°C to +50°C II 1G Ex ia IIB T4 Ga Ta = -30°C to +50°C SGS22ATEX0060X & IECEx BAS 22.0034X Complies with UL 913	Class I, Div 1, Group A,B,C & D T4 Class I, Zone 0 AEx ia IIC T4 Ga Complies with UL 913 SGSNA/20/CA/00003X SGS20ATEX0009X IECEx BAS 20.0005X
Housing Material	Moulded plastic, 2-part, material Glass Reinforced Polyamide, UV resistant.	Moulded plastic, 3- Part, UV Stabilized Polypropylene
Weight	Weight 350g/12oz (excluding cable & gland/external connectors)	140g/5oz (excluding cable & gland/external connectors)
Conformance	ATEX/Hazloc/IECEX, PTCRB (AT&T) & Verizon approvals, RED, FCC, CE, RoHS, REACH	ATEX/Hazloc/IECEX, CE, RoHS
Ultrasonic Resolution	±1cm / ±0.4"	N/A
Communication	LTE CAT-M1 or NB-IoT or 2G	N/A
Operating Temperature	-4°F to 122°F (-20°C to 50°C)	-4°F to 122°F (-20°C to 50°C)
Storage Temperature	32°F to 86°F (0°C to 30°C)	32°F to 86°F (0°C to 30°C)

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Characteristics		Liquid Level logger LTE CAT-M1/NB-IoT/2G - Ultrasonic sensor Exi
Accuracy		Typically ±2cm from 12cm to 3m / ±0.78" from 4.7" to 118"
Ultrasonic Resolution		±1cm / ±0.4"
Signal Divergence		See polar plot (Note3)
Battery life		Up to 10 years (Note 2)
Manual Activation		Magnetically activated reed switch / Audible buzzer
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
BG96	Radio Frequency	LTE FDD (Cat M1 & Cat NB1): B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28 LTE TDD (Cat M1): B39 EGPRS: 850/900/1800/1900MHz
	GNSS (GPS)	GPS, GLONASS, BeiDou/Compass, Galileo, QZSS
BG95	Radio Frequency	LTE FDD (Cat M1): B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/B66/B85 LTE FDD (Cat NB2): B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B28/B66/B71/B85 EGPRS: 850/900/1800/1900MHz
	GNSS (GPS)	GPS, GLONASS, BeiDou, Galileo, QZSS
Humidity		0 - 100% RH
Environmental Protection		IP68 - Outdoors
Software Features		Includes Tekelek's advanced sonics with quality parameters
Tank mounting options		Sensor fits directly into 1 ¼", 1 ½" or 2" BSP existing tank connection
RoHS 2 Directive (2011/65/EU) & Delegated Directive RoHS 3 (EU) 2015/863		This Directive lays down rules on the restriction of the use of hazardous substances in electrical and electronic equipment (EEE) with a view to contributing to the protection of human health and the environment, including the environmentally sound recovery and disposal of waste EEE.
Reach Compliance		ICES-003 Issue 6 Class B Digital Apparatus emissions requirement (Canada) CFR 47 FCC Part 15 Subpart B Class B emissions requirements (USA)
FCC Compliance		ICES-003 Issue 6 Class B Digital Apparatus emissions requirement (Canada) CFR 47 FCC Part 15 Subpart B Class B emissions requirements (USA)

Operation

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.

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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.

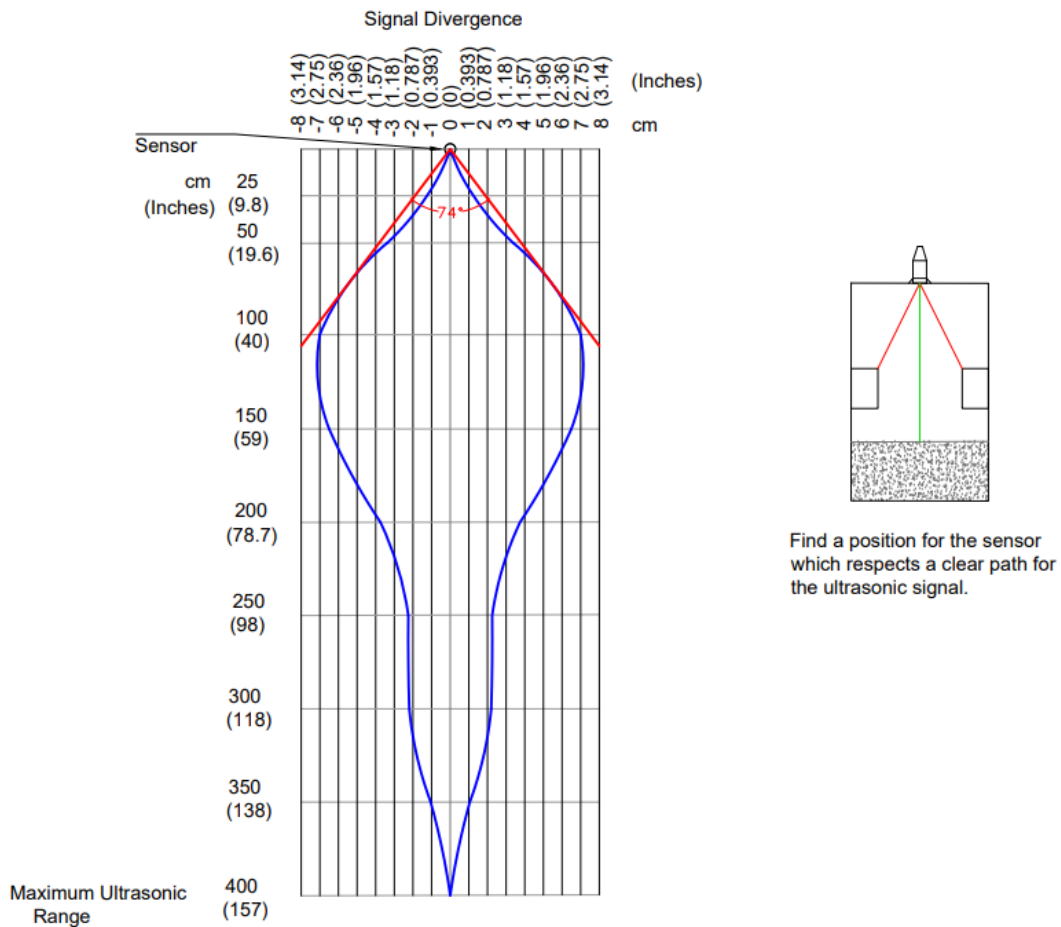
Note 1: Note: range de-rates to 30cm / 8" < 0°C

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 Plot



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