



## NB IoT – Cat-M1 Low Power Ultrasonic Distance and Level Sensor with Built-in GPS

- Compatible with most standard communication Protocols (UDP, LwM2M, MQTT, NIDD, etc.)
- Wide range of industrial applications
- High accuracy and repeatability
- Designed to meet outdoor applications
- Long-term durable performance in harsh environment
- Ultra-low power
- Suitable for liquid and solid media



## TECHNICAL SPECIFICATION

### Sensor

• Range:	5,10	m
• Accuracy: (combined linearity, hysteresis, repeatability)	±1 (typ.)	%Span
• Resolution:	1	mm
• Sensor Minimum Distance:	0 ~ 20cm for 5m range 0 ~ 50cm for 10m range	
• Reading-to-reading stability:	1mm in 1m (Typ)	
• Compensated Temperature:	-10 ~ +65	°C

### Power

• Power Supply:	Built-in Replaceable Lithium Battery, External Power (option)	
• Rated Voltage	3.6	V
• Battery Lifetime:	50,000+ readings and 10,000+ transmission (With UDP protocol/ More than 10 years for most applications)	

### Physical Specification

• Materials:	Enclosure: ASA/POM	
• Weight:	~500	g
• Protection Rate:	IP66	-

### Geo-location/ GNSS Performance (autonomous at open sky)

• Features	GPS, GLONASS, BeiDou/ Compass, Galileo, QZSS	
• Sensitivity:	<ul style="list-style-type: none"> <li>• Cold start: -146</li> <li>• Reacquisition: -157</li> <li>• Tracking: -157</li> </ul>	dBm
• Time to First Fix (TTFF):	<ul style="list-style-type: none"> <li>• Cold start at open sky: 31</li> <li>• Warm start: 21</li> <li>• Hot start: 2.7</li> </ul>	s
• GNSS Accuracy:	< 5 (typ.)	m

## Communication

• SIM Card Type	4FF Nano-SIM, from any Network Provider
• Firmware Update:	Over The Air, Locally via Wireless Connectivity
• Sampling Period:	Configurable via downlink (default 4 hours)
• Power Consumption:	Power Saving: < 5uA, Transmission: < 220mA
• Communication Standards	Cat-NB1 (NB-IoT) Cat-M1 (option of back support by GPRS)
• Communication Bands	B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28 and B39
• Data Rates:	Cat-M1: 375Kbps (DL)/375Kbps (UL) NB-IoT: 32Kbps (DL)/70Kbps (UL)
• TX Power:	23dBm
• Min Receiver Sensitivity:	Cat-M1: -107dBm NB-IoT: -113dBm
• Antenna:	Internal (Default)/ External (customised options available)
• Optional Features:	<ul style="list-style-type: none"><li>• Attach without PDN (Packet Data Network)</li><li>• Support for IPV6</li><li>• SMS communication</li><li>• Mobility support (Cat-M1 only)</li></ul>

## NETWORK CONNECTION AND VISUALISATION

### Network Integration

Pre-configured or configurable to all main narrow band networks (3, A1, AT&T, China Mobile, DU, Etisalat, KPN, M1 Singapore, Optus, Orange, Proximus, Spark, Sprint, Swisscom, Telefonica, Telstra, T-Mobile, Verizon, Vodafone, 1NCE, Emnify and any other network)

### Visualisation and Data Management

Ellenex white label microservice platform and Integratable to all main IIoT platforms directly or through the API(AWS, Azure, PTC ThingWorx, Bosch IoT, Cisco Jasper & Kinetic, Sierra Numerex, MathWorks ThingSpeak, GE Digital Predix, LandisGyr, Siemens MindSphere, Cumulocity, myDevices, Ubidots, TagoIO, AllThingsTalk Maker, HPE IoT and any other major IoT platform).

### Ellenex Platform Main Features

- Encrypted ultra-low power communication protocol
- Advanced device inventory
- Integration APIs for enterprise systems
- Multi-tenant role-based access control
- Data export and import
- White-label platform for enterprise runs on private account
- Variable alarm setting for high and low thresholds and multi-channel alerting
- Sampling and transmission interval configuration
- Transmission condition configuration
- Other configurations and customisation available on request

# DUG2-N Spec-sheet



Encrypted & ultra-low power



Integratable



Dynamic alerting



Multi-tenant

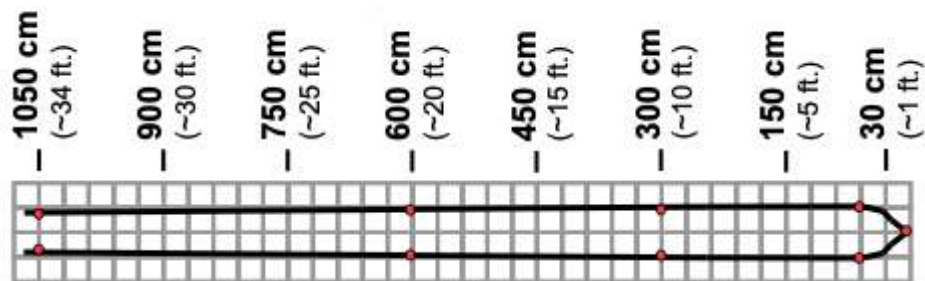


Scalable




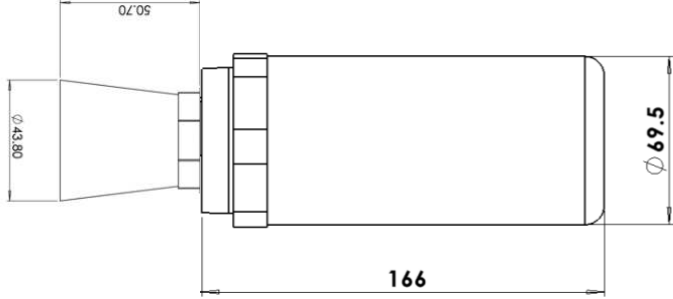

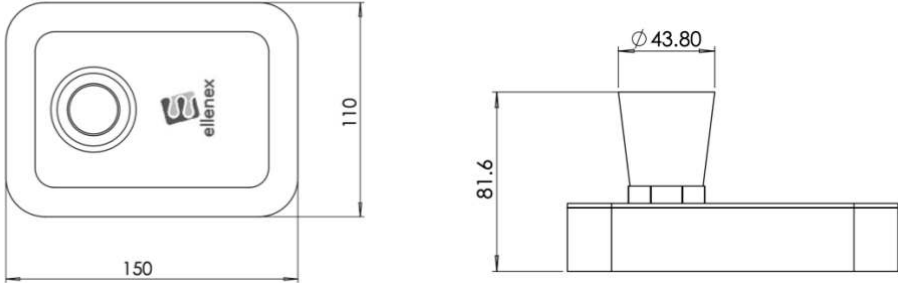
Composable & API first

## Beam pattern



Typical beam patter for 30cm target mover left and right with the board parallel to the sensor face

## MODEL GUIDE

Model	Options:
<p>C Model:</p> 	 <p>Cylindrical compact, POM enclosure</p>
<p>E Model:</p> 	 <p>Rectangular ASA enclosure with on/off switch</p>

# DUG2-N Spec-sheet



## INDUSTRIES



Water & Environment



Agriculture & Farming



Oil & Gas



Marine & Oceanography



Mining & Construction



Smart Building & HVAC

## APPLICATIONS

- Water Tank Level Monitoring
- Diesel Tank Level Monitoring
- Flood Monitoring
- Open Channel Level Monitoring
- Corrosive Liquid Storage Level Monitoring
- Distance Measurement
- People Counting
- Long Range Object Detection

## ORDERING CODE

<b>DUG2-N</b>						
<b>Communication Type</b>						
<b>B: NB-IoT</b>			<b>C: Cat-M1</b>			
<b>Measurement Range</b>						
<b>5, 10 meters</b>						
<b>Enclosure</b>						
<b>C5: Cylindrical housing, IP65</b>			<b>E5: Rectangular housing, IP65</b>			
<b>Device Activation</b>						
<b>S: on/off switch</b> (Only E Type)					<b>X: No switch</b> (always on)	
<b>Antenna</b>						
<b>I: Internal</b>				<b>E: External</b>		
<b>Options</b>						
(On request) <sup>1</sup>						
<b>DUG2-N</b>	<b>B</b>	<b>5m</b>	<b>C5</b>	<b>X</b>	<b>I</b>	

### Sample Product Code:

- **DUG2-N-B-5m-C5-X-I**

NB-IoT ultrasonic distance sensor, range of 5m, with C5 housing (compact and IP65 rated), always on and with internal antenna, with built-in GPS.

### 1) Product Options:

- **EP:** sensor with external power supply connector for 12V supply (only for E type enclosure, adaptor is not included)
- **EPB:** connector for 12V supply with internal battery backup (only for E type enclosure)
- **HG:** high-gain external antenna
- **WF:** Active WiFi module on device for communication/ firmware update through Mobile phone NFC module (only for E type enclosure)
- **HCB:** high-capacity battery (only for E type enclosure)

All details are subject to change without prior notice  
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