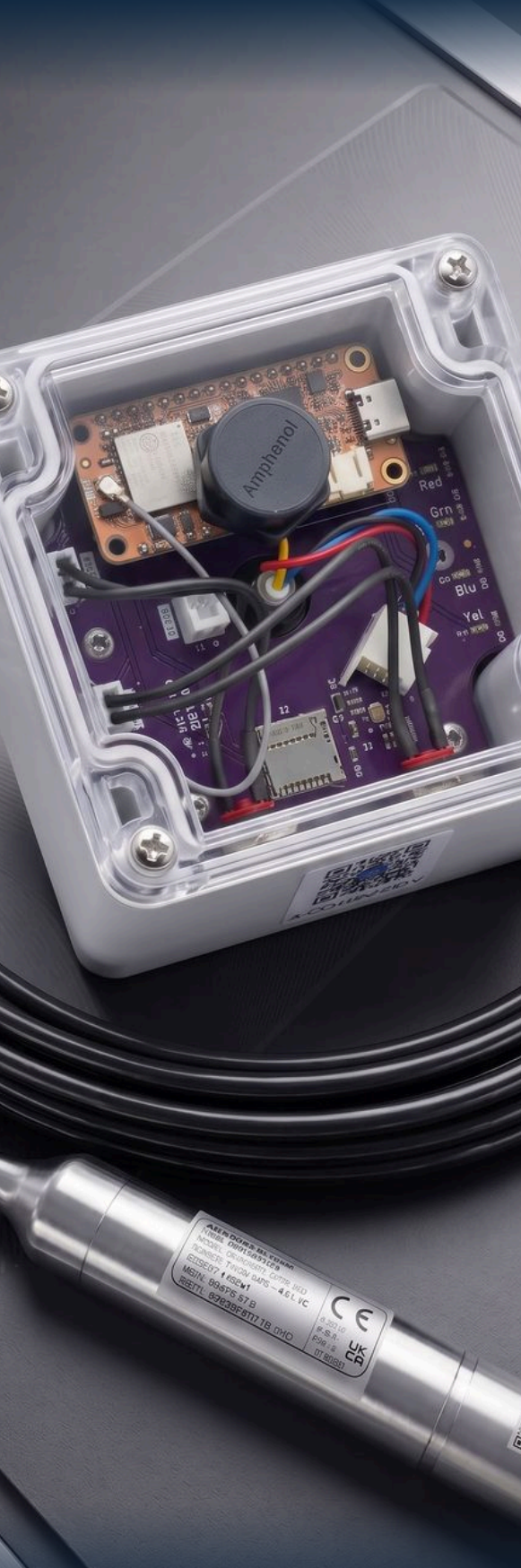




**BluCloud**

Cellular IoT Monitoring — Made in the USA



## PRODUCT CATALOG

# Cellular Monitoring Solutions

IoT telemetry for liquid level, pressure, flow,  
temperature, and industrial process measurement

## CONTENTS

### DEVICES

- BCL-DS-002 Cellular Monitoring Unit
- BCL-DS-003 Industrial Sensor Gateway
- BCL-DS-001 Remote Level Monitor

### NETWORK

- BCL-NET-001 Coverage & Carrier Information

### SENSORS

- BCL-EXT-SS-001 Deep Well Level Probe — Gauge
- BCL-EXT-SS-005 Deep Well Level Probe — Absolute
- BCL-EXT-SS-003 Environmental Level Probe
- BCL-EXT-SS-002 Chemical-Resistant Level Probe



# BluCloud Cellular Monitoring Unit

Cellular IoT Telemetry Platform · Made in the USA

A self-contained, long-life cellular telemetry unit that connects any compatible analog or digital sensor to the cloud over LTE-M or NB-IoT — with no WiFi, no gateway, and no site infrastructure required. Field-replaceable battery. IP65-rated polycarbonate enclosure with transparent lid. Remote configuration, OTA firmware updates, and SD card local data backup included.



CONNECTIVITY

**LTE-M / NB-IoT**

SENSOR INPUT

**0–5 V / 4–20 mA**

BATTERY (DEFAULT)

**3.6 V · 9000 mAh**

BATTERY LIFE

**3–5+ years**

ENCLOSURE

**IP65**

UNIT OP TEMP

**–40 to +85 °C**

LOCAL BACKUP

**SD Card**

## Works With Any Compatible Analog or Digital Sensor

The BluCloud Unit is sensor-agnostic. Any sensor that outputs within the voltage or current ranges below can be connected directly — turning it into a cellular-connected IoT device with cloud dashboard, alerts, and data logging. No custom firmware or hardware modification required.

● 0–5 V DC Analog

● 4–20 mA Current Loop

● MODBUS RTU / RS-485 — *coming soon*

● Max cable: 200 ft

● Gasket-sealed cable entry

**9000**

MAH

Default battery

**5+**

YEARS

Target battery life

**200**

FT

Max sensor cable

**550+**

NETWORKS

Global cellular reach

**190+**

COUNTRIES

Coverage footprint



## SENSOR INTERFACE & COMPATIBILITY

| PARAMETER            | VALUE                                                                     |
|----------------------|---------------------------------------------------------------------------|
| Analog voltage input | 0–5 V DC                                                                  |
| Analog current input | 4–20 mA current loop                                                      |
| Digital protocol     | MODBUS RTU / RS-485<br>(coming soon)                                      |
| Maximum cable length | 0–200 ft                                                                  |
| Sensor cable entry   | Gasket-sealed on underside of unit                                        |
| Sensor power supply  | Unit powers sensor via cable (0–5 V)                                      |
| Sensor power control | Power-gated — sensor energized only during readings for battery longevity |

## CELLULAR CONNECTIVITY

| PARAMETER       | VALUE                                                          |
|-----------------|----------------------------------------------------------------|
| Technology      | LTE-M (Cat-M1) / NB-IoT                                        |
| Generation      | 4G / 5G compatible                                             |
| SIM             | Multi-carrier eUICC — auto-selects strongest available network |
| Global coverage | 550+ networks · 190+ countries                                 |
| US coverage     | Verizon, T-Mobile, AT&T and all major US carriers              |
| OTA firmware    | Yes — full remote update capability                            |

## SECURITY

- Data protection in transit and at rest
- Device integrity safeguards
- OTA firmware signing (secure remote updates)
- Multi-carrier SIM with eUICC security profile management

## ENCLOSURE & PHYSICAL

| PARAMETER              | VALUE                                                                               |
|------------------------|-------------------------------------------------------------------------------------|
| Enclosure              | Rugged polycarbonate, IP65                                                          |
| IP67 option            | Available upon request                                                              |
| Dimensions             | 3.2 × 3.1 × 2.1 in (82 × 80 × 55 mm)                                                |
| Assembled weight       | 0.55 lbs (250 g)                                                                    |
| Impact rating          | NEMA 4X (UL certified)                                                              |
| Certifications         | FCC · IC · CE · GCF · PTCRB (cellular module) · UL/cUL E194432, NEMA 4X (enclosure) |
| Country of manufacture | United States                                                                       |
| Warranty               | 1 year                                                                              |

### IP67 UPGRADE AVAILABLE

Units requiring IP67 protection are available — same footprint, polycarbonate, clear cover. Contact BluCloud.

## OPERATING TEMPERATURE — COMPONENT SUMMARY

### TEMPERATURE RANGE BY COMPONENT

|                                  |                                                                                                                       |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Unit electronics                 |  -40 to +85 °C ← system limit    |
| ER26500 battery                  |  -55 to +85 °C                   |
| LiPo standard                    |  -20 to +60 °C (typical)         |
| LiPo low-temp option             |  -40 to +85 °C (variants avail.) |
| ← -60 °C      0 °C      +85 °C → |                                                                                                                       |

### SYSTEM OPERATING TEMPERATURE

The **system operating range is -40 °C to +85 °C**, limited by the cellular electronics. The default ER26500 battery exceeds this range and is never the limiting factor. For cold-climate rechargeable deployments, a low-temperature LiPo pack is recommended.



DATA COLLECTION, STORAGE & CLOUD

| PARAMETER             | VALUE                                                                               |
|-----------------------|-------------------------------------------------------------------------------------|
| Sampling rate         | User-configurable — sub-second to daily; typically 1 sec–1 hr for battery longevity |
| Transmission interval | User-configurable — hourly to daily                                                 |
| Local data backup     | SD card — stores readings locally; syncs on cellular reconnect                      |
| Cloud dashboard       | Web + iOS & Android mobile app                                                      |
| Alerts                | Email, SMS, push notification                                                       |
| Remote configuration  | Yes — OTA remote monitoring & config                                                |
| Tap-to-transmit       | 3 taps → reading transmitted 30 sec after last tap                                  |

BATTERY & POWER

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                 |               |          |           |      |                        |              |                  |                |                      |             |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |                        |              |                                            |        |                                                                                 |                 |                                                               |             |                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------|----------|-----------|------|------------------------|--------------|------------------|----------------|----------------------|-------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------|--------------|--------------------------------------------|--------|---------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------|-------------|-------------------|
| <div><b>Default Battery</b></div> <div>Default · 3.6 V · 9,000 mAh · Field-replaceable</div> <div>Default</div> <table><tr><td>Voltage</td><td>3.6 V nominal</td></tr><tr><td>Capacity</td><td>9,000 mAh</td></tr><tr><td>Size</td><td>C-size (26 mm × 50 mm)</td></tr><tr><td>Battery temp</td><td>–55 °C to +85 °C</td></tr><tr><td>Self-discharge</td><td>&lt;1% per year @ 20 °C</td></tr><tr><td>Replacement</td><td>Field-replaceable (primary cell)</td></tr></table> | Voltage                                                                         | 3.6 V nominal | Capacity | 9,000 mAh | Size | C-size (26 mm × 50 mm) | Battery temp | –55 °C to +85 °C | Self-discharge | <1% per year @ 20 °C | Replacement | Field-replaceable (primary cell) | <div><b>LiPo Pack Options</b></div> <div>Customer-supplied · External power deployments</div> <div>Optional</div> <table><tr><td>Chemistry</td><td>Lithium Polymer (LiPo)</td></tr><tr><td>Rechargeable</td><td>Yes — via USB-C or external DC power input</td></tr><tr><td>Supply</td><td>Customer-supplied — contact BluCloud for compatible voltage/size specifications</td></tr><tr><td>Low-temp option</td><td>Low-temperature rated LiPo packs available — specify at order</td></tr><tr><td>Replacement</td><td>Field-replaceable</td></tr></table> | Chemistry | Lithium Polymer (LiPo) | Rechargeable | Yes — via USB-C or external DC power input | Supply | Customer-supplied — contact BluCloud for compatible voltage/size specifications | Low-temp option | Low-temperature rated LiPo packs available — specify at order | Replacement | Field-replaceable |
| Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3.6 V nominal                                                                   |               |          |           |      |                        |              |                  |                |                      |             |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |                        |              |                                            |        |                                                                                 |                 |                                                               |             |                   |
| Capacity                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 9,000 mAh                                                                       |               |          |           |      |                        |              |                  |                |                      |             |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |                        |              |                                            |        |                                                                                 |                 |                                                               |             |                   |
| Size                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | C-size (26 mm × 50 mm)                                                          |               |          |           |      |                        |              |                  |                |                      |             |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |                        |              |                                            |        |                                                                                 |                 |                                                               |             |                   |
| Battery temp                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | –55 °C to +85 °C                                                                |               |          |           |      |                        |              |                  |                |                      |             |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |                        |              |                                            |        |                                                                                 |                 |                                                               |             |                   |
| Self-discharge                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <1% per year @ 20 °C                                                            |               |          |           |      |                        |              |                  |                |                      |             |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |                        |              |                                            |        |                                                                                 |                 |                                                               |             |                   |
| Replacement                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Field-replaceable (primary cell)                                                |               |          |           |      |                        |              |                  |                |                      |             |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |                        |              |                                            |        |                                                                                 |                 |                                                               |             |                   |
| Chemistry                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Lithium Polymer (LiPo)                                                          |               |          |           |      |                        |              |                  |                |                      |             |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |                        |              |                                            |        |                                                                                 |                 |                                                               |             |                   |
| Rechargeable                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Yes — via USB-C or external DC power input                                      |               |          |           |      |                        |              |                  |                |                      |             |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |                        |              |                                            |        |                                                                                 |                 |                                                               |             |                   |
| Supply                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Customer-supplied — contact BluCloud for compatible voltage/size specifications |               |          |           |      |                        |              |                  |                |                      |             |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |                        |              |                                            |        |                                                                                 |                 |                                                               |             |                   |
| Low-temp option                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Low-temperature rated LiPo packs available — specify at order                   |               |          |           |      |                        |              |                  |                |                      |             |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |                        |              |                                            |        |                                                                                 |                 |                                                               |             |                   |
| Replacement                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Field-replaceable                                                               |               |          |           |      |                        |              |                  |                |                      |             |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |                        |              |                                            |        |                                                                                 |                 |                                                               |             |                   |

| POWER PARAMETER               | VALUE                                                                  |
|-------------------------------|------------------------------------------------------------------------|
| Target battery life (default) | 3–5+ years (field conditions, standard check-in interval)              |
| External power input          | Supported — accepts external DC power (e.g. solar, grid)               |
| Charging port                 | USB-C (on-board)                                                       |
| Low-power mode                | Ultra-low standby — sensor and modem power-gated between transmissions |
| Low-battery indicators        | Low battery & critical battery LED alerts + cloud notification         |

EXAMPLE COMPATIBLE SENSOR TYPES (0–5 V & 4–20 mA)

Submersible Level / Pressure

Any 0–5 V or 4–20 mA submersible pressure transducer. Suitable for wells, tanks, and open water monitoring.

Ultrasonic Level

Non-contact ultrasonic level sensors with 4–20 mA output (e.g. LV-MaSonar-EZ style). Suitable for tanks, open channels, lift stations.

Flow Sensors

4–20 mA electromagnetic, vortex, or turbine flow transmitters. Suitable for pipe flow monitoring and irrigation.

Temperature Transmitters

4–20 mA RTD or thermocouple transmitters for ambient or process temperature monitoring.

Pressure / Differential Pressure

General-purpose 4–20 mA pressure transmitters for tanks, reservoirs, or process lines.

MODBUS Instruments — coming soon

MODBUS RTU / RS-485 support is in active development. Multiparameter sensors, smart sensors, and SCADA-compatible instruments.

DIAGNOSTIC LED INDICATORS & PHYSICAL CONTROLS

| FAULT CONDITION                        | LED COLOR    |
|----------------------------------------|--------------|
| Low battery                            | ● Red        |
| Critical battery                       | ● Red        |
| Low connectivity                       | ● Red Flash  |
| Radio not responding                   | Lights Flash |
| SIM absent                             | Lights Flash |
| No tower / registration failed         | Lights Flash |
| TCP server issue                       | None         |
| Call aborted (AT command / power loss) | None         |

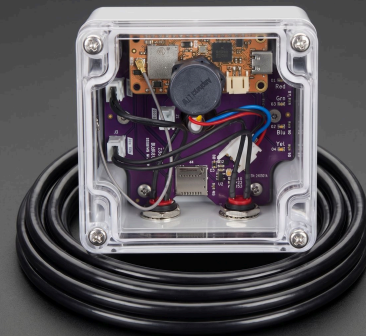
| CONTROL FEATURE             | SPECIFICATION                                                            |
|-----------------------------|--------------------------------------------------------------------------|
| External switch connections | 2 switch connections                                                     |
| Tap-to-transmit             | 3 external taps → transmit reading 30 sec after last tap                 |
| Water ingress prevention    | Tap mechanism prevents water from shorting contacts                      |
| LED visibility              | Visible through transparent lid — no lid removal needed for status check |

| ELECTRONICS          | VALUE                                 |
|----------------------|---------------------------------------|
| SoC sleep current    | <2.5 μA (PSM mode)                    |
| System sleep current | <10 μA                                |
| LTE TX peak current  | 490 mA                                |
| On-board flash       | NOR flash (firmware & config storage) |

# Industrial Sensor Gateway

Universal 4–20 mA / 0–5 V Cellular Interface · LTE-M / NB-IoT · Made in the USA

A plug-and-play cellular interface for any compatible industrial analog sensor. Connect a 4–20 mA or 0–5 V field instrument, mount the unit, and data flows to the cloud over LTE-M or NB-IoT — no WiFi, no gateway, no site infrastructure. Remote configuration, OTA firmware updates, and SD card local data backup are included as standard.



## SENSOR INPUTS

**4–20 mA · 0–5 V**

## CONNECTIVITY

**LTE-M / NB-IoT**

## BATTERY

**9,000 mAh**

## MAX CABLE

**200 ft (61 m)**

## ENCLOSURE

**IP65 · NEMA 4X**

## OP TEMP

**–40 to +85 °C**

## WARRANTY

**1 Year**

## Connect Any Compatible 4–20 mA or 0–5 V Field Instrument

BluCloud is signal-agnostic. Any industrial sensor that outputs a standard 4–20 mA current loop or 0–5 V analog voltage can be wired directly — no custom firmware, no signal conditioning, no hardware modifications. A drop-in cellular upgrade for legacy data loggers and wired SCADA endpoints.

0–5 V DC Voltage

4–20 mA Current Loop

MODBUS RTU / RS-485 — *coming soon*

Max cable: 200 ft

Power-gated sensor supply

## SENSOR INTERFACE SPECIFICATIONS

| PARAMETER             | VALUE                                        |
|-----------------------|----------------------------------------------|
| Voltage input         | 0–5 V DC <b>0–5 V</b>                        |
| Current input         | 4–20 mA current loop<br><b>4–20 mA</b>       |
| Digital protocol      | <i>MODBUS RTU / RS-485 — coming soon</i>     |
| Sensor power supply   | 0–5 V via cable, power-gated during readings |
| Maximum cable length  | 200 ft (61 m)                                |
| Cable entry           | Gasket-sealed port, underside of enclosure   |
| Sampling rate         | Sub-second to daily — user-configurable      |
| Transmission interval | Configurable — near real-time to daily       |
| Local data backup     | SD card — retained through connectivity loss |

## CELLULAR CONNECTIVITY

| PARAMETER            | VALUE                                                     |
|----------------------|-----------------------------------------------------------|
| Technology           | LTE-M (Cat-M1) / NB-IoT                                   |
| Generation           | 4G / 5G compatible                                        |
| SIM                  | Multi-carrier eUICC — auto-selects best available network |
| US coverage          | Verizon, T-Mobile, AT&T and all major US carriers         |
| Global coverage      | 550+ networks · 190+ countries                            |
| Remote configuration | Yes — sampling rate, thresholds, reporting interval       |
| OTA firmware updates | Yes — full remote update, no site visit required          |

## COMPATIBLE SENSOR TYPES



### Pressure

Gauge, differential & absolute pressure transducers with 4–20 mA or 0–5 V output



### Level

Hydrostatic probes, radar / ultrasonic level transmitters — any analog output type



### Flow

Flow transmitters & open-channel flow meters with 4–20 mA analog output



### Temperature

RTD & thermocouple transmitters, temperature loops outputting 4–20 mA



### Environmental

Humidity, CO<sub>2</sub>, air quality, soil moisture — any 0–5 V or 4–20 mA output sensor



### Custom / OEM

Any field instrument with a standard 4–20 mA or 0–5 V analog output signal

Water &amp; Wastewater

Oil &amp; Gas

Agriculture

Mining

Environmental Monitoring

Industrial Process

Smart Infrastructure

## DEPLOYMENT — 3 STEPS

**1**

**Wire your sensor.** Connect the 4–20 mA or 0–5 V cable from your field instrument to the gasket-sealed port on the underside of the enclosure. No signal conditioning required.

**2**

**Mount and power on.** Install the enclosure at the measurement point. The unit self-registers to the strongest available carrier — no SIM provisioning, no gateway, no WiFi.

**3**

**Configure remotely.** Set sampling rate, engineering units, alert thresholds, and reporting interval from the BluCloud cloud dashboard — with no site visit required, ever.



POWER

| PARAMETER                 | VALUE                                                      |
|---------------------------|------------------------------------------------------------|
| Default battery           | 3.6 V Li-SOCl <sub>2</sub> · 9,000 mAh · field-replaceable |
| Charging                  | USB-C onboard port                                         |
| Low-temp option           | LiPo variants available for extreme cold deployments       |
| Customer-supplied battery | Compatible — bring your own LiPo option available          |
| Battery temperature range | –55 to +85 °C                                              |

ENCLOSURE & PHYSICAL

| PARAMETER              | VALUE                                                   |
|------------------------|---------------------------------------------------------|
| Enclosure material     | Rugged polycarbonate · transparent lid                  |
| Ingress protection     | IP65 standard · IP67 available upon request             |
| Impact rating          | NEMA 4X (UL certified)                                  |
| External dimensions    | 3.2 × 3.1 × 2.1 in (82 × 80 × 55 mm)                    |
| Assembled weight       | 0.55 lbs (250 g)                                        |
| Operating temperature  | –40 to +85 °C                                           |
| Status LEDs            | 4-color diagnostic LEDs visible through transparent lid |
| Certifications         | FCC, IC, CE (cellular) · UL/cUL E194432, NEMA 4X        |
| Country of manufacture | United States                                           |
| Warranty               | 1 year                                                  |

# BluCloud Remote Level Monitor

Cellular Liquid Level Monitoring Device · Made in the USA

All-in-one cellular liquid level monitoring device. Integrates a submersible pressure sensor, cellular modem (LTE-M / NB-IoT), long-life internal battery, and cloud connectivity into a single IP65-rated rugged polycarbonate enclosure — no WiFi, no gateway, no site visits required.

| CONNECTIVITY   | BATTERY LIFE | ENCLOSURE | UNIT OP TEMP  | SENSOR INPUT  | OTA UPDATES |
|----------------|--------------|-----------|---------------|---------------|-------------|
| LTE-M / NB-IoT | 3–5+ years   | IP65      | –40 to +85 °C | 0–5V / 4–20mA | Yes         |

## ORIGIN

**Made in USA**

## CORE ELECTRONICS & PROCESSING

| PARAMETER                     | VALUE                                                               |
|-------------------------------|---------------------------------------------------------------------|
| Cellular SoC                  | LTE-M / NB-IoT cellular SoC                                         |
| SoC operating temp            | –40 °C to +85 °C                                                    |
| SoC PSM sleep current         | <2.5 µA (PSM mode)                                                  |
| Device sleep current (system) | <10 µA @ 3.6 V                                                      |
| LTE TX peak current           | 490 mA                                                              |
| External flash                | On-board NOR flash                                                  |
| Local data backup             | SD card — stores readings locally; syncs when connectivity restored |

### ⓘ SYSTEM TEMPERATURE LIMIT

The cellular SoC is the thermal ceiling for the complete device unit, capping system operation at **+85 °C**. Compatible submersible sensors are typically rated well above this.

## ENCLOSURE & PHYSICAL

| PARAMETER              | VALUE                                                                               |
|------------------------|-------------------------------------------------------------------------------------|
| Enclosure              | Rugged polycarbonate, IP65                                                          |
| IP67 option            | Available upon request                                                              |
| Ext. dimensions        | 3.2 × 3.1 × 2.1 in (82 × 80 × 55 mm)                                                |
| Impact rating          | NEMA 4X (UL certified)                                                              |
| Country of manufacture | United States                                                                       |
| Certifications         | FCC · IC · CE · GCF · PTCRB (cellular module) · UL/cUL E194432, NEMA 4X (enclosure) |
| Unit operating temp    | –40 °C to +85 °C                                                                    |
| Sensor element op temp | Per sensor datasheet (typically –10 to +70 °C or higher)                            |
| Assembled weight       | 0.55 lbs (250 g)                                                                    |
| Warranty               | 1 year                                                                              |

### ⓘ IP67 UPGRADE AVAILABLE

Units requiring IP67 protection are available — same footprint, polycarbonate, clear cover. Contact BluCloud.



## CELLULAR CONNECTIVITY

| PARAMETER            | VALUE                                                                        |
|----------------------|------------------------------------------------------------------------------|
| Technology           | LTE-M (Cat-M1) / NB-IoT                                                      |
| Generation           | 4G / 5G compatible                                                           |
| SIM support          | Multi-SIM / multi-carrier                                                    |
| Antenna              | Integrated; substantial antenna space in enclosure                           |
| OTA firmware updates | Yes — remote configuration & monitoring                                      |
| LTE-M bands          | B1, B2, B3, B4, B5, B8, B9, B12, B13, B17, B18, B19, B20, B25, B26, B28, B66 |
| NB-IoT bands         | B1, B2, B3, B4, B5, B8, B12, B13, B17, B18, B19, B20, B25, B26, B28, B66     |
| US key bands         | B2, B4, B12, B66 (T-Mobile) · B12, B13 (AT&T) · B13 (Verizon)                |

## SENSOR INTERFACE

| PARAMETER            | VALUE                                                                |
|----------------------|----------------------------------------------------------------------|
| Analog input         | 0–5 V and 4–20 mA                                                    |
| Digital protocols    | 0–5 V / 4–20 mA (current) · MODBUS RTU / RS-485 — coming soon        |
| Max cable length     | 0–200 ft                                                             |
| Sensor cable entry   | Gasket-sealed on underside of unit                                   |
| Sensor power control | Power-controlled supply (ultra-low-power)                            |
| LED indicators       | 4-color diagnostic (see LED table)                                   |
| Conformal coating    | Coming soon — PCB-level moisture protection for extreme environments |
| External controls    | 2 switch connections; tap mechanism                                  |

## POWER &amp; BATTERY

| PARAMETER           | VALUE                                                                                                                                                                                                        |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Battery (default)   | 3.6 V · 9,000 mAh · field-replaceable                                                                                                                                                                        |
| Battery temp range  | –55 °C to +85 °C (exceeds electronics range)                                                                                                                                                                 |
| Battery options     | Customer-specified — compatible LiPo packs can be customer-supplied. Contact BluCloud for guidance on compatible voltage/size specifications. Low-temperature rated LiPo packs available — specify at order. |
| Target battery life | 3–5+ years (field conditions, standard check-in interval)                                                                                                                                                    |
| Battery replacement | Field-replaceable — no depot return required                                                                                                                                                                 |
| External power      | Supported (recharges LiPo option; can power unit independently)                                                                                                                                              |
| Charging port       | USB-C (on-board)                                                                                                                                                                                             |

## BATTERY NOTE

Default battery: 3.6 V · 9,000 mAh · field-replaceable. The ER26500 temperature range (–55 to +85 °C) exceeds the electronics ceiling — the battery is never the thermal limiting factor. LiPo pack options are customer-supplied; contact BluCloud for compatible voltage/size guidance.

## HARDWARE CONFIGURATION OPTIONS

- All-in-one board or modular design
- Module-based designs preferred for repairability
- Electronics-only delivery option available
- PCB from scratch or existing hardware + firmware
- External flash storage on board
- Four-color LED indicators (panel-visible through enclosure lid)
- Two external switch connections

DIAGNOSTIC LED INDICATORS

| FAULT CONDITION                                | LED COLOR             |
|------------------------------------------------|-----------------------|
| Low battery                                    | <div></div> Red       |
| Critical battery                               | <div></div> Red       |
| Low connectivity                               | <div></div> Red Flash |
| Radio not responding                           | Lights Flash          |
| SIM absent                                     | Lights Flash          |
| No tower / registration failed                 | Lights Flash          |
| TCP server issue                               | None                  |
| Call aborted (power loss / AT command failure) | None                  |

SECURITY

- Data protection in transit and at rest
- Device integrity safeguards
- OTA firmware signing (remote update security)

DATA COLLECTION & CLOUD

| PARAMETER                | VALUE                                                                               |
|--------------------------|-------------------------------------------------------------------------------------|
| Check-in interval        | Configurable: hourly to daily                                                       |
| Sampling rate            | User-configurable — sub-second to daily; typically 1 sec–1 hr for battery longevity |
| Remote configuration     | Yes — OTA & remote monitoring                                                       |
| Tap-to-transmit          | 3 taps → reading transmitted 30 sec after last tap                                  |
| Water contact protection | Tap mechanism prevents water from shorting contacts                                 |
| Dashboard                | Web dashboard + iOS & Android mobile app                                            |
| Alerts                   | Email, SMS, push notification                                                       |

i TEMPERATURE NOTE

Unit (electronics enclosure) is limited to –40 to +85 °C by the cellular SoC. Compatible submersible sensors typically exceed this range — the sensor element is not subject to the unit's thermal ceiling.

DEPLOYMENT CONFIGURATIONS

Below-Grade Well Deployment

- Lower submersible sensor**  
into well casing or vessel to desired depth.
- Route cable**  
up through well cap to BluCloud enclosure above grade.
- Connect sensor**  
to waterproof BluCloud device connector.
- Device activates**  
and connects over cellular — readings begin automatically.

Existing Infrastructure Retrofit

- Disconnect existing sensor**  
from legacy data logger or SCADA system.
- Connect existing 0–5V / 4–20 mA sensor**  
to BluCloud sensor input port.
- Mount BluCloud**  
enclosure at existing sensor head location.
- Cellular link**  
established automatically — data streams to BluCloud dashboard.

# Deep Well Level Probe

Model: LMP633-NLN · Piezoresistive Silicon · High Range

Compact 28 mm Ø submersible level probe based on a piezoresistive silicon pressure sensor with SUS316 stainless steel isolated diaphragm. Eight selectable pressure ranges cover 0–20 kPa up to 0–3.5 MPa (≈ 0–204 m H<sub>2</sub>O). Available with 4–20 mA, 4–20 mA + HART, or 0.5–4.5 VDC outputs. Rated IP68 with optional intrinsic safety certification (ExiallCT4). Custom PUR or PTFE cable lengths up to 200 m.



i GAUGE PRESSURE (VENTED CABLE) VERSION

This model measures pressure relative to atmosphere via a vent tube in the cable. For sealed (non-vented) cable deployments — such as long-term submersion in wells where a vent tube could trap moisture — see the **Deep Well Level Probe (Absolute Pressure)** model.

|                  |           |         |            |               |                |
|------------------|-----------|---------|------------|---------------|----------------|
| PRESSURE RANGE   | ACCURACY  | PROBE Ø | PROTECTION | MEDIA TEMP    | CERTIFICATIONS |
| 20 kPa – 3.5 MPa | ±0.2% URL | 28 mm   | IP68       | –10 to +70 °C | CE · IS · RoHS |

SENSOR & CONSTRUCTION

| PARAMETER           | VALUE                                                 |
|---------------------|-------------------------------------------------------|
| Sensor type         | Piezoresistive silicon pressure sensor                |
| Pressure type       | Gauge pressure                                        |
| Isolated diaphragm  | Stainless steel SUS316                                |
| Filling fluid       | Silicone oil (–45 to 205 °C process range)            |
| Sensor seal options | O-ring FKM (–20 to 200 °C) or stainless steel welding |
| Probe housing       | SS304 (code 4) or SS316 (code 6) — select at order    |
| Probe diameter      | 28 mm (≈ 1.10 in)                                     |

ENVIRONMENTAL

| PARAMETER                   | VALUE                                               |
|-----------------------------|-----------------------------------------------------|
| Ambient working temperature | –10 to +70 °C                                       |
| Media temperature           | –10 to +70 °C                                       |
| Storage temperature         | –30 to +80 °C                                       |
| Protection class            | IP68                                                |
| IS explosion-proof          | ExiallCT4 (4–20 mA output only) · NEPSI GYB16.1963X |



### MEASURING RANGES — SELECT AT ORDER

| ORDER CODE | NOMINAL URL | MEASUREMENT RANGE | WATER DEPTH EQUIV.                        | OVERLOAD LIMIT |
|------------|-------------|-------------------|-------------------------------------------|----------------|
| L203G      | 20 kPa      | 0 – 20 kPa        | ≈ 0 – 2 m H <sub>2</sub> O                | 30 kPa         |
| L353G      | 35 kPa      | 0 – 35 kPa        | ≈ 0 – 3.6 m H <sub>2</sub> O              | 52.5 kPa       |
| L104G      | 100 kPa     | 0 – 100 kPa       | ≈ 0 – 10.2 m H <sub>2</sub> O             | 150 kPa        |
| L204G      | 200 kPa     | 0 – 200 kPa       | ≈ 0 – 20.4 m H <sub>2</sub> O             | 300 kPa        |
| L704G      | 700 kPa     | 0 – 700 kPa       | ≈ 0 – 71.4 m H <sub>2</sub> O             | 1050 kPa       |
| L105G      | 1 MPa       | 0 – 1 MPa         | ≈ 0 – 102 m H <sub>2</sub> O              | 1.5 MPa        |
| L175G      | 1.7 MPa     | 0 – 1.7 MPa       | ≈ 0 – 173 m H <sub>2</sub> O              | 2.55 MPa       |
| L355G      | 3.5 MPa     | 0 – 3.5 MPa       | ≈ 0 – 204 m H <sub>2</sub> O <sup>1</sup> | 5.25 MPa       |

<sup>1</sup> Water depth equivalents calculated at 4 °C (1 MPa = 102 m H<sub>2</sub>O). · All ranges are gauge pressure.

### OUTPUT SIGNALS & ELECTRICAL — SELECT AT ORDER

| ORDER CODE | OUTPUT SIGNAL           | WIRING | POWER SUPPLY | MAX CURRENT / LOAD | LOAD RESISTANCE            |
|------------|-------------------------|--------|--------------|--------------------|----------------------------|
| F          | 4–20 mA                 | 2-wire | 10–30 VDC    | ≤20.8 mA           | < (U – 10) / 0.0208 Ω      |
| H          | 4–20 mA + HART          | 2-wire | 16.5–55 VDC  | ≤20.8 mA           | 250–600 Ω (HART)           |
| 5          | 0.5–4.5 VDC             | 3-wire | 6–15 VDC     | ≤3.5 mA            | ≥5 kΩ (100 kΩ recommended) |
| 6          | 0.5–4.5 VDC ratiometric | 3-wire | 5 VDC        | ≤3.5 mA            | ≥5 kΩ (100 kΩ recommended) |



PERFORMANCE

| PARAMETER                          | VALUE                                 |
|------------------------------------|---------------------------------------|
| Reference accuracy (linear output) | ±0.2% URL typical · ±0.5% URL max     |
| HART output accuracy               | ±0.1% URL                             |
| Long-term stability                | ±0.2% URL / year                      |
| Ambient temperature effect         | ±0.2% URL / 10 K (over -20 to +80 °C) |
| Vibration resistance               | 20 g, 5–2000 Hz (per IEC 61298-3)     |
| Pressure cycle durability          | 10 million cycles @ 25 °C             |
| Damping (adjustable)               | 0–100 s                               |
| Max sampling rate                  | Sub-second (user-configurable)        |
| Insulation resistance              | ≥20 MΩ @ 100 VDC                      |

WIRE COLOUR CODING

|                                                                                     |               |                                    |
|-------------------------------------------------------------------------------------|---------------|------------------------------------|
|  | <b>Red</b>    | Power + (supply positive)          |
|  | <b>Black</b>  | Power – (supply negative / common) |
|  | <b>Blue</b>   | Signal + (3-wire outputs only)     |
|  | <b>Yellow</b> | Signal – (3-wire outputs only)     |

PHYSICAL & CABLE

| PARAMETER                | VALUE                                                 |
|--------------------------|-------------------------------------------------------|
| Probe diameter           | 28 mm (H28 · ≈ 1.10 in)                               |
| Weight (without cable)   | 340 g                                                 |
| Cable pressure reference | Vented — atmospheric reference via vent tube in cable |
| Cable length             | Custom — specify at order (5 m to 200 m)              |

BLUCCLOUD COMPATIBILITY

✓ DIRECT BLUCCLOUD INTEGRATION

**Output codes 5 and 6** (0.5–4.5 VDC, 3-wire) connect directly to the BluCloud Unit's 0–5 V analog input — no signal conditioning required.

**Output code F** (4–20 mA, 2-wire) is compatible with the BluCloud Unit's 4–20 mA analog input.

**Output code H** (4–20 mA + HART) provides the same current loop signal as code F, with the HART layer available for advanced configuration via a HART communicator.

ORDERING — MODEL CODE STRUCTURE

|                         |                       |                                                |                                     |                                  |                              |                                        |                                 |
|-------------------------|-----------------------|------------------------------------------------|-------------------------------------|----------------------------------|------------------------------|----------------------------------------|---------------------------------|
| <b>LMP633</b><br>SERIES | <b>NLN</b><br>VARIANT | <b>L203G ...</b><br><b>L355G</b><br>RANGE CODE | <b>F / H / 5 / 6</b><br>OUTPUT CODE | <b>4 / 6</b><br>HOUSING MATERIAL | <b>N1 / N2</b><br>CABLE TYPE | <b>L5 ... L200</b><br>CABLE LENGTH (M) | <b>P1-P4 / —</b><br>ACCESSORIES |
|-------------------------|-----------------------|------------------------------------------------|-------------------------------------|----------------------------------|------------------------------|----------------------------------------|---------------------------------|

Housing codes: **4** = SS304 · **6** = SS316. Cable: **N1** = PUR · **N2** = PTFE. Accessories: **P1** = Counter weight · **P2** = Cable clamp · **P3** = G1-1/2 SS304 thread connector · **P4** = M22×1 SS304 thread connector. Contact BluCloud to confirm full model string and availability.

CERTIFICATIONS & STANDARDS

- CE
- IS EXIICT4
- ISO 9001
- ROHS

| CERTIFICATION    | DETAILS                                                                                                                                |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| CE               | ISET · Reg. IT021353LG161207 · EN 61326-1:2013                                                                                         |
| Intrinsic Safety | ExiallCT4 · NEPSI GYB16.1963X<br>Amb. temp: -40 to +60 °C<br>Max input: 28 VDC / 100 mA / 0.7 W<br><i>(4-20 mA output code F only)</i> |
| ISO 9001:2008    | Intertek · Reg. 110804039                                                                                                              |
| RoHS             | Confirmed                                                                                                                              |

TYPICAL APPLICATIONS

- Groundwater & Well Monitoring
- Water Supply Tanks & Reservoirs
- Wastewater & Drainage Systems
- Industrial Process Liquid Level
- River, Lake & Open Water
- Irrigation & Agricultural Water

DEPLOYMENT NOTE

The 28 mm (≈ 1.10 in) probe diameter fits standard 2 in (50 mm) well casings with adequate annular clearance for the cable and counter weight. Use accessory P2 (cable clamp) to secure the cable at the wellhead and prevent strain on the sensor.

# Deep Well Level Probe — Absolute Pressure

Model: LMP633-NLN (Non-vented) · Piezoresistive Silicon · Absolute Reference

Compact 28 mm Ø submersible level probe with a sealed, non-vented cable. Absolute pressure measurement with piezoresistive silicon sensor and SUS316 stainless steel diaphragm. Six selectable ranges cover 8–204 m H<sub>2</sub>O depth. Available with 4–20 mA, 4–20 mA + HART, or 0.5–4.5 VDC outputs. Rated IP68 with optional intrinsic safety certification (ExiallCT4). Custom PUR or PTFE cable up to 200 m.



### ✓ WHY NON-VENTED? SEALED CABLE FOR LONG-TERM DEPLOYMENT

The sealed cable eliminates the risk of vent tube blockage or moisture ingress during long-term deployment — especially important for deep monitoring wells and permanent installations. A separate barometric pressure reading is used to correct the absolute measurement to water depth. For vented (gauge pressure) deployments, see the **Deep Well Level Probe (Gauge Pressure)** model.

|                   |             |           |         |            |                |
|-------------------|-------------|-----------|---------|------------|----------------|
| PRESSURE RANGE    | DEPTH RANGE | ACCURACY  | PROBE Ø | PROTECTION | CERTIFICATIONS |
| 250 kPa – 3.5 MPa | 8 – 204 m   | ±0.2% URL | 28 mm   | IP68       | CE · IS        |

### SENSOR & CONSTRUCTION

| PARAMETER           | VALUE                                                          |
|---------------------|----------------------------------------------------------------|
| Sensor type         | Piezoresistive silicon pressure sensor                         |
| Pressure type       | Absolute (non-vented) — atmospheric correction required        |
| Application         | Depth / level in wells and open waters; groundwater monitoring |
| Isolated diaphragm  | Stainless steel SUS316                                         |
| Filling fluid       | Silicone oil (–45 to +205 °C process range)                    |
| Sensor seal options | O-ring FKM or stainless steel welding                          |
| Probe housing       | SS304 (code 4) or SS316 (code 6) — select at order             |
| Probe diameter      | 28 mm (H28 · ≈ 1.10 in)                                        |

### ENVIRONMENTAL

| PARAMETER                   | VALUE                                               |
|-----------------------------|-----------------------------------------------------|
| Ambient working temperature | –10 to +70 °C                                       |
| Media temperature           | –10 to +70 °C                                       |
| Storage temperature         | –30 to +80 °C                                       |
| Protection class            | IP68                                                |
| IS explosion-proof          | ExiallCT4 (4–20 mA output only) · NEPSI GYB16.1963X |



### MEASURING RANGES — SELECT AT ORDER (ABSOLUTE PRESSURE)

| ORDER CODE | NOMINAL URL | WORKING RANGE    | WATER DEPTH EQUIV. <sup>1</sup>             | LOWER LIMIT | OVERLOAD LIMIT |
|------------|-------------|------------------|---------------------------------------------|-------------|----------------|
| L254A      | 250 kPa     | 80 – 250 kPa     | ≈ 8.2 – 25.5 m H <sub>2</sub> O             | 80 kPa      | 400 kPa        |
| L404A      | 400 kPa     | 80 – 400 kPa     | ≈ 8.2 – 40.8 m H <sub>2</sub> O             | 80 kPa      | 600 kPa        |
| L604A      | 600 kPa     | 80 – 600 kPa     | ≈ 8.2 – 61.2 m H <sub>2</sub> O             | 80 kPa      | 900 kPa        |
| L105A      | 1 MPa       | 80 kPa – 1 MPa   | ≈ 8.2 – 102 m H <sub>2</sub> O              | 80 kPa      | 1.5 MPa        |
| L165A      | 1.6 MPa     | 80 kPa – 1.6 MPa | ≈ 8.2 – 163 m H <sub>2</sub> O              | 80 kPa      | 2.4 MPa        |
| L355A      | 3.5 MPa     | 80 kPa – 2 MPa   | ≈ 8.2 – 204 m H <sub>2</sub> O <sup>2</sup> | 80 kPa      | 5.25 MPa       |

<sup>1</sup> Water depth equivalents calculated at 1000 kg/m<sup>3</sup> and 9.81 m/s<sup>2</sup> (1 MPa ≈ 102 m H<sub>2</sub>O). <sup>2</sup> L355A nominal URL is 3.5 MPa; working upper limit is 2 MPa (≈ 204 m).

### OUTPUT SIGNALS & ELECTRICAL — SELECT AT ORDER

| ORDER CODE | OUTPUT SIGNAL           | WIRING | POWER SUPPLY | MAX CURRENT / LOAD | LOAD RESISTANCE            |
|------------|-------------------------|--------|--------------|--------------------|----------------------------|
| F          | 4–20 mA                 | 2-wire | 10–30 VDC    | ≤20.8 mA           | < (U – 10) / 0.0208 Ω      |
| H          | 4–20 mA + HART          | 2-wire | 16.5–55 VDC  | ≤20.8 mA           | 250–600 Ω (HART)           |
| 5          | 0.5–4.5 VDC             | 3-wire | 6–15 VDC     | ≤3.5 mA            | ≥5 kΩ (100 kΩ recommended) |
| 6          | 0.5–4.5 VDC ratiometric | 3-wire | 5 VDC        | ≤3.5 mA            | ≥5 kΩ (100 kΩ recommended) |

PERFORMANCE

| PARAMETER                          | VALUE                                    |
|------------------------------------|------------------------------------------|
| Reference accuracy (linear output) | ±0.2% URL typical<br>· ±0.5% URL max     |
| HART output accuracy               | ±0.1% URL                                |
| Long-term stability                | ±0.2% URL / year                         |
| Ambient temperature effect         | ±0.2% URL / 10 K<br>(over -20 to +80 °C) |
| Vibration resistance               | 20 g, 5–2000 Hz                          |
| Pressure cycle durability          | 10 million cycles @<br>25 °C             |
| Damping (adjustable)               | 0–100 s                                  |

WIRE COLOUR CODING

|                    |                                    |
|--------------------|------------------------------------|
| <div></div> Red    | Power + (supply positive)          |
| <div></div> Black  | Power – (supply negative / common) |
| <div></div> Blue   | Signal + (3-wire outputs only)     |
| <div></div> Yellow | Signal – (3-wire outputs only)     |

PHYSICAL & CABLE

| PARAMETER                | VALUE                                                      |
|--------------------------|------------------------------------------------------------|
| Probe diameter           | 28 mm (H28 · ≈ 1.10 in)                                    |
| Weight (without cable)   | 340 g                                                      |
| Cable pressure reference | Sealed (non-vented) —<br>barometric correction<br>required |
| Cable length             | Custom — specify at order<br>(up to 200 m)                 |

BLUCLOUD COMPATIBILITY

✓ DIRECT BLUCLOUD INTEGRATION

**Output codes 5 and 6** (0.5–4.5 VDC, 3-wire) connect directly to the BluCloud Unit's 0–5 V analog input — no signal conditioning required.

**Output code F** (4–20 mA, 2-wire) is compatible with the BluCloud Unit's 4–20 mA analog input.

**Barometric correction** for absolute-to-depth conversion can be applied automatically by BluCloud firmware when a co-located pressure reference is configured.



ORDERING — MODEL CODE STRUCTURE

|                  |                |                                  |                                 |                              |                       |                   |                                    |
|------------------|----------------|----------------------------------|---------------------------------|------------------------------|-----------------------|-------------------|------------------------------------|
| LMP633<br>SERIES | NLN<br>VARIANT | L254A ...<br>L355A<br>RANGE CODE | F / H / 5 / 6<br>OUTPUT<br>CODE | 4 / 6<br>HOUSING<br>MATERIAL | N1 / N2<br>CABLE TYPE | H28<br>PROBE CODE | L5 ... L200<br>CABLE<br>LENGTH (M) |
|------------------|----------------|----------------------------------|---------------------------------|------------------------------|-----------------------|-------------------|------------------------------------|

Range codes use **A** suffix (absolute): L254A, L404A, L604A, L105A, L165A, L355A. Housing: **4** = SS304 · **6** = SS316. Cable: **N1** = PUR · **N2** = PTFE. Contact BluCloud to confirm full model string and availability.

CERTIFICATIONS & STANDARDS

- CE
- IS EXIAIICT4
- ISO 9001

| CERTIFICATION    | DETAILS                                                                                                               |
|------------------|-----------------------------------------------------------------------------------------------------------------------|
| CE               | ISET · Reg. IT021353LG161207 · EN 61326-1:2013                                                                        |
| Intrinsic Safety | ExiaIICT4 · NEPSI GYB16.1963X<br>Amb. temp: -40 to +60 °C<br>Max medium temp: +120 °C<br>(4-20 mA output code F only) |
| ISO 9001:2008    | Intertek · Reg. 110804039                                                                                             |

TYPICAL APPLICATIONS

- Deep Groundwater Monitoring Wells
- Permanent Long-Term Installations
- Water Supply Boreholes
- Sealed-Casing Well Deployments
- River & Lake Level Monitoring
- Industrial Process Liquid Level

DEPLOYMENT NOTE

The sealed cable makes this model ideal for wells where a vent tube would be impractical or where moisture ingress over long deployments is a concern. The 28 mm probe fits standard 2 in (50 mm) well casings. Ensure a co-located barometric reference is available for accurate depth calculation.

# Environmental Level Probe

Model: LMP633-NSN-S · Monosilicon Piezoresistive · Submersible · Gauge Pressure

Submersible gauge-pressure level probe built on a monosilicon piezoresistive sensing element with SUS316L stainless steel diaphragm and silicon oil fill. Gauge pressure (GP) ranges span 40 kPa to 3 MPa ( $\approx$  4–204 m H<sub>2</sub>O), with stainless steel welded sensor seal and 28 mm probe diameter. Available with 4–20 mA, 4–20 mA + HART, or 0.5–4.5 VDC (standard or ratiometric) outputs. Rated IP68 with intrinsic safety (IS) and CE certifications. Reference accuracy:  $\pm 0.1\%$  URL (typical). Suited to environmental monitoring, municipal waterworks, irrigation, groundwater wells, and reservoirs.



|                |                            |                       |               |            |
|----------------|----------------------------|-----------------------|---------------|------------|
| GP RANGE       | EQUIV. DEPTH               | ACCURACY              | MEDIA TEMP    | PROTECTION |
| 40 kPa – 3 MPa | 4 – 204 m H <sub>2</sub> O | $\pm 0.1\%$ URL (typ) | –10 to +70 °C | IP68       |

CERTIFICATIONS

IS · CE · HART

## SENSOR & CONSTRUCTION

| PARAMETER          | VALUE                                                             |
|--------------------|-------------------------------------------------------------------|
| Sensor type        | Monosilicon piezoresistive (silicon oil fill, SUS316L diaphragm)  |
| Pressure type      | Gauge (GP)                                                        |
| Diaphragm material | SUS316L or Hastelloy C (specify at order)                         |
| Filling fluid      | Silicon oil (–45 to +205 °C) or Fluorocarbon oil (–45 to +160 °C) |
| Sensor seal        | Stainless steel welding                                           |
| Probe diameter     | 28 mm (model code H28)                                            |

## ENVIRONMENTAL

| PARAMETER           | VALUE                                                                        |
|---------------------|------------------------------------------------------------------------------|
| Media temperature   | –10 to +70 °C                                                                |
| Working temperature | –10 to +70 °C                                                                |
| Storage temperature | –30 to +80 °C                                                                |
| Protection class    | IP68                                                                         |
| EMC standard        | EN61326-1:2013                                                               |
| IS (4–20 mA output) | ExiallCT4 · NEPSI<br>GYB16.1963X · ambient –40 to +60 °C; medium max +120 °C |

**MEASURING RANGES — SPECIFY AT ORDER (GAUGE PRESSURE, GP)**

| RANGE CODE | NOMINAL URL | WORKING RANGE | DEPTH EQUIVALENT              | OVERLOAD LIMIT |
|------------|-------------|---------------|-------------------------------|----------------|
| S403G      | 40 kPa      | 0 – 40 kPa    | ≈ 0 – 4.1 m H <sub>2</sub> O  | 1 MPa          |
| S254G      | 250 kPa     | 0 – 250 kPa   | ≈ 0 – 25.5 m H <sub>2</sub> O | 4 MPa          |
| S105G      | 1 MPa       | 0 – 1 MPa     | ≈ 0 – 102 m H <sub>2</sub> O  | 6 MPa          |
| S305G      | 3 MPa       | 0 – 2 MPa     | ≈ 0 – 204 m H <sub>2</sub> O  | 15 MPa         |

1 MPa ≈ 102 m H<sub>2</sub>O @ 4 °C. All ranges are gauge pressure (referenced to atmosphere). Minimum calibratable span: 40 kPa (S403G / S254G); 250 kPa (S105G / S305G). Note: S305G nominal URL is 3 MPa; working measurement range is 0–2 MPa.

**OUTPUT SIGNALS & ELECTRICAL — SPECIFY AT ORDER**

| OUTPUT SIGNAL           | WIRING | POWER SUPPLY | BLUCLLOUD COMPATIBLE INPUT      | NOTES                                                            |
|-------------------------|--------|--------------|---------------------------------|------------------------------------------------------------------|
| 4–20 mA                 | 2-wire | 10–30 VDC    | BluCloud 4–20 mA analog input ✓ | Standard current loop; IS-rated option available                 |
| 4–20 mA + HART          | 2-wire | 16.5–55 VDC  | BluCloud 4–20 mA analog input ✓ | Digital HART layer for configuration; requires HART communicator |
| 0.5–4.5 VDC             | 3-wire | 6–15 VDC     | BluCloud 0–5 V analog input ✓   | Direct connection — no signal conditioning required              |
| 0.5–4.5 VDC ratiometric | 3-wire | 5 VDC        | BluCloud 0–5 V analog input ✓   | Ratiometric output; supply must be stable regulated 5 V          |

## PERFORMANCE

| PARAMETER                          | VALUE                                 |
|------------------------------------|---------------------------------------|
| Reference accuracy (linear output) | ±0.1% URL (typical) / ±0.5% URL (max) |
| Reference accuracy (HART output)   | ±0.1% URL                             |
| Long-term stability                | ±0.2% URL / year                      |
| Ambient temperature effect         | ±0.2% URL / 10 K (over -20 to +80 °C) |
| Vibration                          | 20 g (5–2000 Hz, per IEC61298-3)      |
| Pressure cycle durability          | 10 million cycles @ 25 °C             |
| Damping (adjustable)               | 0–100 s                               |

## WIRE COLOUR CODING

|                                                                                     |               |                                    |
|-------------------------------------------------------------------------------------|---------------|------------------------------------|
|  | <b>Red</b>    | Power + (supply positive)          |
|  | <b>Black</b>  | Power – (supply negative / common) |
|  | <b>Blue</b>   | Signal + (3-wire outputs only)     |
|  | <b>Yellow</b> | Signal – (3-wire outputs only)     |

Verify wire colours against actual cable label before installation.

## PHYSICAL & CABLE

| PARAMETER                          | VALUE                                                 |
|------------------------------------|-------------------------------------------------------|
| Probe diameter                     | 28 mm (model code H28)                                |
| Total body length                  | 114.5 mm                                              |
| Distance: top to sensing diaphragm | 105 mm                                                |
| Body weight (without cable)        | 340 g                                                 |
| Cable length                       | Custom — specify at order (L5 = 5 m ... L200 = 200 m) |

## BLUCLLOUD COMPATIBILITY

### ✓ DIRECT BLUCLLOUD INTEGRATION

**0.5–4.5 VDC output** (3-wire) connects directly to the BluCloud Unit's 0–5 V analog input — no signal conditioning required.

**4–20 mA output** (2-wire) is compatible with the BluCloud Unit's 4–20 mA analog input channel.

**4–20 mA + HART output** carries the same current-loop signal as the standard 4–20 mA output. The HART digital layer is available for advanced sensor configuration via a HART communicator and does not affect BluCloud data acquisition.

LMP633-NSN VS LMP633-NLN — VARIANT SELECTION GUIDE

The **LMP633-NSN-S** and **LMP633-NLN** share the same piezoresistive silicon sensor platform, IP68 rating, IS certification option, and PUR/PTFE cable. The NSN-S features a **monosilicon sensing element with stainless steel welded seal** and delivers **better accuracy** (±0.1 % URL typical vs ±0.2 % for NLN):

| FEATURE              | LMP633-NSN-S (THIS DOCUMENT)                                                                       | LMP633-NLN (BCL-EXT-SS-001)                   |
|----------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------|
| Pressure type        | Gauge (GP) only                                                                                    | Gauge (GP) only                               |
| GP measuring range   | 40 kPa – 3 MPa (≈ 4–204 m H <sub>2</sub> O)                                                        | 2 – 357 m H <sub>2</sub> O (20 kPa – 3.5 MPa) |
| Reference accuracy   | ±0.1% URL (typ) — better than NLN                                                                  | ±0.2% URL (typ)                               |
| Diaphragm            | SUS316L or Hastelloy C (welded seal)                                                               | SUS316 (O-ring or welded)                     |
| Best-fit application | Environmental monitoring, wells & tanks (≤4.1–204 m)                                               | Deep wells, high-pressure industrial (>100 m) |
| Common platform      | Silicon piezoresistive · IP68 · IS / CE · PUR or PTFE cable · 4–20 mA / HART / 0.5–4.5 VDC outputs |                                               |

For environmental protection, municipal water, irrigation, and groundwater monitoring applications, the NSN-S is the recommended selection where its superior accuracy and welded sensor seal are valued. Use the NLN for applications requiring ranges below 40 kPa or beyond 204 m H<sub>2</sub>O working depth.

CERTIFICATIONS & STANDARDS

CE

IS

ISO 9001

HART

| CERTIFICATION         | DETAILS                                                                        |
|-----------------------|--------------------------------------------------------------------------------|
| Intrinsic Safety (IS) | ExialICT4 · NEPSI Reg. GYB16.1963X · Ambient –40 to +60 °C; medium max +120 °C |
| CE                    | ISET · Reg. IT021353LG161207 · EN61326-1:2013                                  |
| Quality management    | ISO 9001:2008 · Intertek · Reg. 110804039                                      |
| HART compatible       | 4–20 mA + HART output variant (output code H)                                  |

TYPICAL APPLICATIONS

Environmental Monitoring

Municipal Waterworks

Irrigation Systems

Groundwater Wells

Reservoirs & Tanks

River & Lake Level

- Environmental protection and compliance water level monitoring
- Municipal water supply and distribution infrastructure
- Irrigation canal, pump station, and field water level sensing
- Groundwater well monitoring and drawdown measurement
- Storage tank and reservoir inventory management
- Open-channel river and lake level telemetry



ORDERING — MODEL CODE STRUCTURE

|        |         |                    |                            |            |                  |          |            |                 |
|--------|---------|--------------------|----------------------------|------------|------------------|----------|------------|-----------------|
| LMP633 | NSN-S   | S403G ...<br>S305G | Diaphragm<br>/ Fill / Seal | N1 / N2    | F / H / 5 /<br>6 | 4 / 6    | H28        | L5 ...<br>L200  |
| SERIES | VARIANT | RANGE<br>CODE      | SENSOR<br>OPTIONS          | CABLE TYPE | OUTPUT<br>CODE   | MATERIAL | PROBE DIA. | CABLE<br>LENGTH |

**Range codes:** S403G (40 kPa) · S254G (250 kPa) · S105G (1 MPa) · S305G (3 MPa). **Output codes (BluCloud-compatible):** F = 4–20 mA (2-wire) · H = 4–20 mA + HART (2-wire) · 5 = 0.5–4.5 VDC (3-wire) · 6 = 0.5–4.5 VDC ratiometric (3-wire). *Modbus output not stocked for BluCloud configurations.*  
**Cable:** N1 = PUR · N2 = PTFE. **Material:** 4 = SUS304 · 6 = SUS316. **Cable length:** L5 = 5 m ... L200 = 200 m (specify at order). Accessories and approval codes appended at end of model string.

# Chemical-Resistant Level Probe

Model: LMP633-NCN · Capacitive Ceramic · Submersible Probe

Submersible hydrostatic level probe featuring an all-ceramic capacitive sensing element (Al<sub>2</sub>O<sub>3</sub>, 99.9% purity) with no filling fluid and no metal contact with the media. Suited to aggressive and corrosive liquids — including wastewater, acids, lyes, and process chemicals — where metallic diaphragm sensors may degrade. Available in two distinct probe variants: H39 (SUS316, 39 mm) for general industrial duty, and H46 (PP or PVDF, 46 mm) for strongly corrosive media.



|                   |                           |                    |                     |
|-------------------|---------------------------|--------------------|---------------------|
| MEASURING RANGE   | PROBE VARIANTS            | REFERENCE ACCURACY | LONG-TERM STABILITY |
| 20 kPa – 2 MPa    | H39 (39 mm) · H46 (46 mm) | ±0.2% URL          | ±0.2% / yr          |
| HOUSING MATERIAL  | MEDIA TEMPERATURE         | CERTIFICATIONS     |                     |
| PP / PVDF / SS316 | –10 to +70 °C             | CE · ISO 9001      |                     |

PROBE VARIANTS — SELECT AT ORDER

| PARAMETER              | H39 — STANDARD                         | H46 — ANTI-CORROSIVE                 |
|------------------------|----------------------------------------|--------------------------------------|
| Body material          | SUS316 stainless steel                 | PP or PVDF (specify at order)        |
| Outer diameter         | 39 mm                                  | 46 mm                                |
| Weight (excl. cable)   | 270 g                                  | 650 g                                |
| Max operating pressure | 2 MPa                                  | 2 MPa                                |
| Ordering code suffix   | H39                                    | H46                                  |
| Typical media          | Water, industrial process fluids, oils | Acids, alkalis, aggressive chemicals |

Cable: N1 = PUR, 7.5 mm OD, 0.32 kg/5 m · N2 = PTFE, 7.5 mm OD, 0.41 kg/5 m · Length: custom at order, up to 200 m

**SENSOR & MEASUREMENT**

| PARAMETER                   | VALUE                                                              |
|-----------------------------|--------------------------------------------------------------------|
| Sensing technology          | Capacitive ceramic (Al <sub>2</sub> O <sub>3</sub> , 99.9% purity) |
| Diaphragm material          | Ceramic — no metal contact with media                              |
| Filling fluid               | None (dry ceramic sensor)                                          |
| Pressure type               | Gauge (vented cable)                                               |
| Available ranges            | 20 kPa – 2 MPa (7 sub-ranges — see table)                          |
| Reference accuracy (linear) | ±0.2% URL typical ·<br>±0.5% URL max                               |
| HART accuracy               | ±0.1% URL                                                          |
| Long-term stability         | ±0.2% URL / year                                                   |
| Ambient temp. effect        | ±0.2% URL / 10 K (–20 to +80 °C)                                   |
| Vibration                   | 20 g (5–2 000 Hz)                                                  |
| Damping                     | 0–100 s (adjustable)                                               |
| Sensor seal                 | O-ring, FKM (–20 to +200 °C)                                       |

**OUTPUT SIGNALS & ELECTRICAL**

| OUTPUT TYPE             | WIRING | POWER SUPPLY |
|-------------------------|--------|--------------|
| 4–20 mA                 | 2-wire | 10–30 VDC    |
| 4–20 mA + HART          | 2-wire | 16.5–55 VDC  |
| 0.5–4.5 VDC             | 3-wire | 6–15 VDC     |
| 0.5–4.5 VDC ratiometric | 3-wire | 5 VDC        |

**MEASURING RANGES**

| CODE         | NOMINAL URL | WORKING RANGE                           | OVERLOAD LIMIT |
|--------------|-------------|-----------------------------------------|----------------|
| <b>C203G</b> | 20 kPa      | 0–20 kPa (≈ 0–2 m H <sub>2</sub> O)     | 600 kPa        |
| <b>C403G</b> | 40 kPa      | 0–40 kPa (≈ 0–4.1 m H <sub>2</sub> O)   | 600 kPa        |
| <b>C104G</b> | 100 kPa     | 0–100 kPa (≈ 0–10.2 m H <sub>2</sub> O) | 1 MPa          |
| <b>C204G</b> | 200 kPa     | 0–200 kPa (≈ 0–20.4 m H <sub>2</sub> O) | 1.8 MPa        |
| <b>C404G</b> | 400 kPa     | 0–400 kPa (≈ 0–40.8 m H <sub>2</sub> O) | 2.5 MPa        |
| <b>C105G</b> | 1 MPa       | 0–1 MPa (≈ 0–102 m H <sub>2</sub> O)    | 4 MPa          |
| <b>C205G</b> | 2 MPa       | 0–2 MPa (≈ 0–204 m H <sub>2</sub> O)    | 4 MPa          |

Max operating pressure limited by body material: PP and PVDF max 2 MPa; SUS316 max 2 MPa for this model.

## ENVIRONMENTAL & CERTIFICATIONS

| PARAMETER             | VALUE                           |
|-----------------------|---------------------------------|
| Working temperature   | −10 to +70 °C                   |
| Storage temperature   | −30 to +80 °C                   |
| Media temperature     | −10 to +70 °C                   |
| Ingress protection    | IP68                            |
| EMC standard          | EN 61326-1:2013                 |
| CE certification      | ISET · Reg. IT021353LG161207    |
| ISO 9001:2008         | Intertek · Reg. 110804039       |
| Intrinsic Safety (IS) | Not certified — see safety note |

## SAFETY CLASSIFICATION

### ⚠ NO INTRINSIC SAFETY (IS) CERTIFICATE

The LMP633-**NCN** does **not** carry Intrinsic Safety (IS) certification. It must not be installed in Zone 0, Zone 1, or Zone 2 hazardous areas without additional approved protective apparatus.

For IS-required installations, select the **NSN-S** or **NLN** model.

## TYPICAL APPLICATIONS

- Sewage treatment plants and municipal wastewater systems
- Level measurement in tanks containing aggressive liquids (acids, alkalis, lyes)
- Chemical process tanks and reaction vessels
- Oil storage tanks and fuel reservoirs
- Industrial sumps with corrosive or contaminated media

Wastewater

Chemical Tanks

Oil Storage

Acids & Lyes

Industrial Sumps

Sewage Treatment

BLUCLOUD COMPATIBILITY

✓ COMPATIBLE WITH BLUCLOUD UNIT

The LMP633-NCN's **4–20 mA** and **0.5–4.5 VDC** outputs are directly compatible with the BluCloud Unit's analogue sensor inputs.

- 4–20 mA · Compatible

● 0.5–4.5 VDC · Compatible

4–20 mA + HART · Loop compatible (HART ignored)

The BluCloud Unit does not support digital bus protocols. Specify analogue output variants (codes F, H, 5, or 6) when ordering for BluCloud integration.

ORDERING INFORMATION

| FIELD             | DESCRIPTION / OPTIONS                                 |
|-------------------|-------------------------------------------------------|
| Model             | LMP633-NCN                                            |
| Range code        | C203G · C403G · C104G · C204G · C404G · C105G · C205G |
| Sensor type       | C = Ceramic (Al <sub>2</sub> O <sub>3</sub> )         |
| Fill              | N = No fill fluid                                     |
| Seal              | S = FKM O-ring                                        |
| Cable             | N1 = PUR · N2 = PTFE                                  |
| Output (BluCloud) | F · H · 5 · 6 (analogue only — no Modbus)             |
| Probe code        | H39 = SUS316, 39 mm · H46 = PP/PVDF, 46 mm            |
| Length            | L[xxx] — specify metres at order (max 200 m)          |



# BluCloud Cellular Network Coverage

BCL-NET-001 · Version 1.0 · August 2026

The BluCloud unit connects over a global multi-carrier cellular network, automatically selecting the strongest available signal. Coverage spans 550+ networks across 190+ countries, with all major US carriers including Verizon, T-Mobile, and AT&T.

GLOBAL NETWORKS

550+

COUNTRIES COVERED

190+

SIM TECHNOLOGY

eUICC

SIM NETWORK PROFILES

470+

RADIO TECHNOLOGIES

LTE-M · NB-IoT · LTE

US CARRIERS

Verizon · T-Mobile · AT&T

SIM TECHNOLOGY — EUICC (EMBEDDED UNIVERSAL IC CARD)

| PARAMETER               | DETAIL                                                                          |
|-------------------------|---------------------------------------------------------------------------------|
| SIM form factor         | eUICC — embedded, programmable over-the-air (no physical SIM swap required)     |
| Consumer equivalent     | "eSIM" concept applied to IoT applications                                      |
| Compliance standard     | GSMA Remote SIM Provisioning (RSP)                                              |
| Network profiles stored | 470+ carrier credentials held on a single SIM simultaneously                    |
| Network auto-switching  | Yes — selects strongest available network automatically; no manual intervention |
| OTA reprogramming       | Yes — profiles can be updated remotely without physical access to device        |
| Roaming model           | Permanent roaming on all standard plan networks                                 |

KEY ADVANTAGE OF EUICC

A single physical SIM dynamically attaches to whichever of 470+ pre-loaded network profiles offers the best signal at the device's current location — eliminating the need to swap SIMs when deploying across regions, or as carrier coverage evolves over time.



RADIO ACCESS TECHNOLOGIES (RATS)

| TECHNOLOGY           | CHARACTERISTICS & IOT RELEVANCE                                                                                                                                                                                                                         |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LTE-M (Cat-M1)       | Low Power Wide Area (LPWA) standard purpose-built for IoT and small data payloads. Low power draw, wide area coverage, supports device mobility. Designed for sensors transmitting periodic small data bursts. <b>Primary RAT for BluCloud devices.</b> |
| NB-IoT (Narrow Band) | Similar profile to LTE-M with even lower power consumption. Not yet widely adopted globally. Best suited for stationary, low-data, fixed sensors. <i>Less suitable for mobile or roaming deployments.</i>                                               |
| LTE (4G)             | Standard 4G broadband. Widely available and higher bandwidth, but not IoT-optimized — higher power draw than LTE-M. Used as a fallback when LTE-M is unavailable in a given location.                                                                   |

CONNECTIVITY PLAN TIERS — SUMMARY COMPARISON

| FEATURE / ATTRIBUTE        | US-ONLY <span>TYPICAL</span>      | CANADA-ONLY                | GLOBAL                            | CUSTOM                                  |
|----------------------------|-----------------------------------|----------------------------|-----------------------------------|-----------------------------------------|
| Geographic Coverage        | United States                     | Canada                     | 190+ countries                    | Configurable                            |
| US Carrier Access          | Verizon, AT&T, T-Mobile + roaming | —                          | Verizon, AT&T, T-Mobile + roaming | Verizon, AT&T, T-Mobile + expanded pool |
| Canada Access              | —                                 | Canadian standard carriers | Yes (global plan)                 | Yes — native high-performance           |
| 5G Access                  | ✗ Not available                   | ✗ Not available            | ✗ Not available                   | ✓ US & Canada 5G                        |
| Brazil (permanent roaming) | N/A                               | N/A                        | ✗ Custom plan required            | ✓ Available                             |
| Turkey                     | N/A                               | N/A                        | Temporary roaming only            | Temporary roaming only                  |
| Expanded Network Pool      | Standard                          | Standard                   | Standard                          | ✓ Larger carrier pool                   |



UNITED STATES COVERAGE

| PARAMETER         | DETAIL                                                                  |
|-------------------|-------------------------------------------------------------------------|
| Plan available    | US-Only standard plan                                                   |
| Primary carriers  | Verizon, AT&T, T-Mobile                                                 |
| Additional access | Roaming on other US carriers                                            |
| Verizon           | Verizon-certified — available via multi-carrier SIM on standard US plan |
| 5G availability   | Custom plan (US & Canada 5G networks)                                   |

CANADA COVERAGE

| PARAMETER            | DETAIL                                                       |
|----------------------|--------------------------------------------------------------|
| Plan available       | Canada-Only standard plan                                    |
| US + Canada combined | Custom plan available — contact your BluCloud representative |
| 5G in Canada         | Custom plan — native high-performance 5G networks            |

GLOBAL / INTERNATIONAL

| PARAMETER            | DETAIL                                                              |
|----------------------|---------------------------------------------------------------------|
| Countries covered    | 190+ (most of the world)                                            |
| Global networks      | 550+ carrier networks                                               |
| SIM profiles loaded  | 470+ simultaneously on eUICC                                        |
| Roaming model        | Permanent roaming on all standard plan networks                     |
| Plan required        | Global standard plan                                                |
| Expanded coverage    | Custom plan unlocks additional carrier pool                         |
| Sanctioned countries | Cuba, Belarus, Iran, N. Korea, Russia, Syria — blocked on all plans |

US CARRIER AVAILABILITY

| CARRIER           | STATUS                                                                                                                              |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Verizon           | <b>Available</b> — the BluCloud unit is Verizon-certified, enabling connection to the Verizon network through the multi-carrier SIM |
| T-Mobile USA      | <b>Available</b> — live on LTE and LTE-M                                                                                            |
| AT&T              | <b>Available</b> on US standard plan                                                                                                |
| Other US carriers | Accessible via roaming on standard US plan                                                                                          |

EUICC NETWORK SELECTION — AUTO-SWITCHING LOGIC

eUICC auto-selects from 470+ pre-loaded carrier profiles. Switching is automatic and transparent — no SIM swap or manual reconfiguration. LTE-M is preferred for IoT power efficiency; LTE used as fallback.



SPECIAL COUNTRY REQUIREMENTS

| COUNTRY | RESTRICTION & NOTES                                                                                                                                                                                             |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Brazil  | <b>Custom plan required</b> for permanent roaming. Standard and Global plans do not support long-term device deployment stationed in Brazil. Contact your BluCloud representative for custom plan availability. |
| Turkey  | <b>Temporary roaming only</b> on all plan tiers. Devices may pass through or operate in Turkey temporarily (e.g. during transit), but cannot be permanently stationed there on any plan.                        |

BLOCKED COUNTRIES — US SANCTIONS COMPLIANCE

The following countries are **blocked on all plan tiers** due to US government sanctions regulations. No connectivity can be established regardless of plan, device, or configuration.

- Cuba
- Belarus
- Iran
- North Korea
- Russia
- Syria

COMPLIANCE NOTE

Connectivity to sanctioned countries is prohibited under US export control and sanctions regulations. This restriction applies to all BluCloud devices and plan tiers without exception.

VERIZON NETWORK — CERTIFIED & READY

| PARAMETER                    | DETAIL                                                                                                       |
|------------------------------|--------------------------------------------------------------------------------------------------------------|
| Verizon certification status | <b>Certified</b> — the BluCloud unit is Verizon-certified, enabling direct connection to the Verizon network |
| Connection method            | Accessed through the multi-carrier eUICC SIM — no separate SIM or plan required                              |
| Availability                 | All major US carriers — Verizon, T-Mobile, and AT&T — are available on the standard US plan                  |
| Network selection            | Automatic — the eUICC SIM selects the strongest available carrier signal at the device's location            |

ALL MAJOR US CARRIERS INCLUDED

The BluCloud unit is Verizon-certified, enabling connection to the Verizon network through the multi-carrier SIM. All major US carriers including Verizon, T-Mobile, and AT&T are available. The eUICC SIM automatically selects the strongest available signal — ensuring reliable connectivity regardless of which carrier has the best coverage at any given location.



DOCUMENT REVISION HISTORY

| VERSION | DATE        | DESCRIPTION                                        | AUTHOR               |
|---------|-------------|----------------------------------------------------|----------------------|
| 1.0     | August 2026 | Initial issue — BluCloud Cellular Network Coverage | BluCloud Engineering |

Network counts, country coverage figures, and plan availability are subject to change. Contact your BluCloud representative or visit [www.blucloud.tech](http://www.blucloud.tech) for the latest information.



# BluCloud Cloud Platform

Web Dashboard · Included With Every BluCloud Device

Every BluCloud device connects to a cloud software platform that turns raw sensor readings into actionable liquid-level intelligence. Monitor a single device or an entire fleet in real time, drill into device-level analytics, configure alerts, and manage per-device settings — all from a web dashboard, no on-site software installation required.

ACCESS

Web Dashboard

REFRESH

Real-Time

FLEET SIZE

Unlimited Devices

ALERTING

Email · SMS · Slack

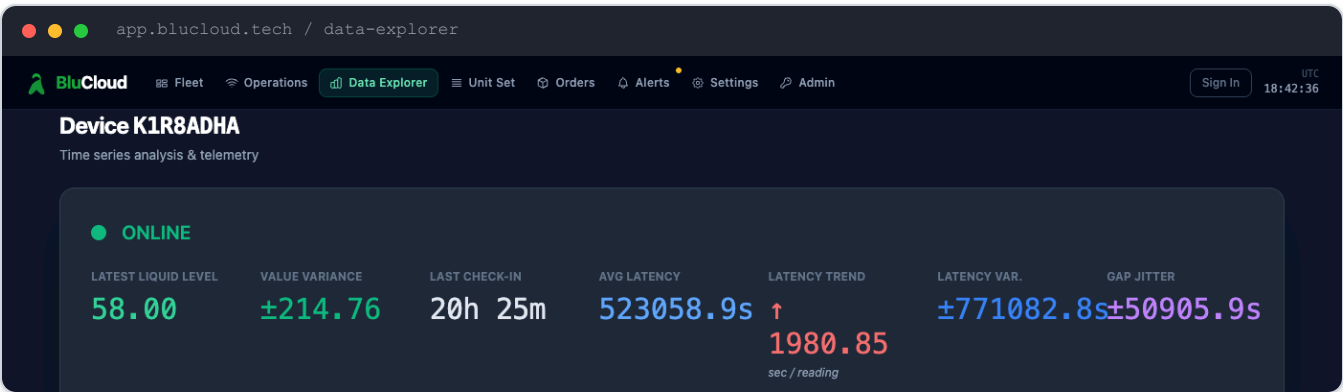
AUTOMATION

Custom Rules + Webhooks

MAPPING

3D GPS Topography

DEVICE EXPLORER — LIVE STATUS & TELEMETRY



Data Explorer: per-device status header with live liquid-level reading and connection health metrics.



PLATFORM MODULES

**Fleet**

Organization-wide device roster and status overview. Requires account sign-in.

**Operations**

Live cellular network operations view across the fleet — node connectivity and session data usage.

**Data Explorer**

Deep-dive telemetry analytics for a single device: trend overlays, spectral analysis, and raw reading history.

**Unit Set**

The full single-device analytics suite, stacked across every device in a set — for side-by-side comparison.

**Orders**

Order and manufacturing status, tracked via a unique link provided at time of purchase.

**Alerts**

Custom alert rules scoped to a device or the whole fleet, routed to email, SMS, Slack, or webhook — with a delivery trigger log.

**Settings**

Per-device configuration: check-in interval, data retention, alert thresholds, and a custom formula editor for calibrating raw sensor readings.

**Admin**

BluCloud-staff console for manufacturing and unit provisioning. Gated separately — not a customer-facing feature.

LIVE DEVICE STATUS METRICS

| METRIC            | DESCRIPTION                                                                   |
|-------------------|-------------------------------------------------------------------------------|
| Connection status | Online / offline indicator based on most recent successful check-in           |
| Latest reading    | Most recent liquid-level value received from the device                       |
| Value variance    | Statistical spread of recent readings — flags noisy or unstable sensor data   |
| Last check-in     | Time elapsed since the device last reported in                                |
| Average latency   | Mean delay between a reading's measurement time and its arrival at the server |
| Latency trend     | Direction and rate of change in reporting latency over the recent window      |
| Latency variance  | Spread of reporting latency — highlights inconsistent network conditions      |
| Gap jitter        | Variability in the interval between successive check-ins                      |

CELLULAR & SIM VISIBILITY

app.bluccloud.tech / data-explorer

CELLULAR / SIM

Live data via Hologram

SIM LIVE Expires 29 Sep 2026

|                           |                     |                        |               |
|---------------------------|---------------------|------------------------|---------------|
| SIM STATUS                | NETWORK             | LAST SESSION           | DATA (PERIOD) |
| SIM LIVE                  | AT&T Mobility · LTE | 9.9 KB · 20h ago · 5s  | 250.5 KB      |
| PLAN                      | PLAN EXPIRES        | CELL TOWER             |               |
| Global Standard Flat Rate | 29 Sep 2026         | 43.6150° N, 71.4920° W |               |

Per-device cellular health: SIM status, active carrier, data usage, plan expiration, and cell-tower location.

3D LOCATION & SITE MAPPING

app.bluccloud.tech / data-explorer

LOCATION OVERVIEW

229 Berkeley Street | 3D Topography

GPS Locked

SITE CONTEXT

TARGET COORDINATES

42.3508° N, 71.0732° W

TELEMETRY ORIGIN

Device K1R8ADHA

Interact with the map view using right-click to adjust pitch and bearing. Buildings are extruded based on local OpenStreetMap.

Interactive 3D building-extruded map (OpenStreetMap topography) plots each device's GPS-locked position alongside its configured target coordinates for drift detection. Right-click drag adjusts pitch and bearing.

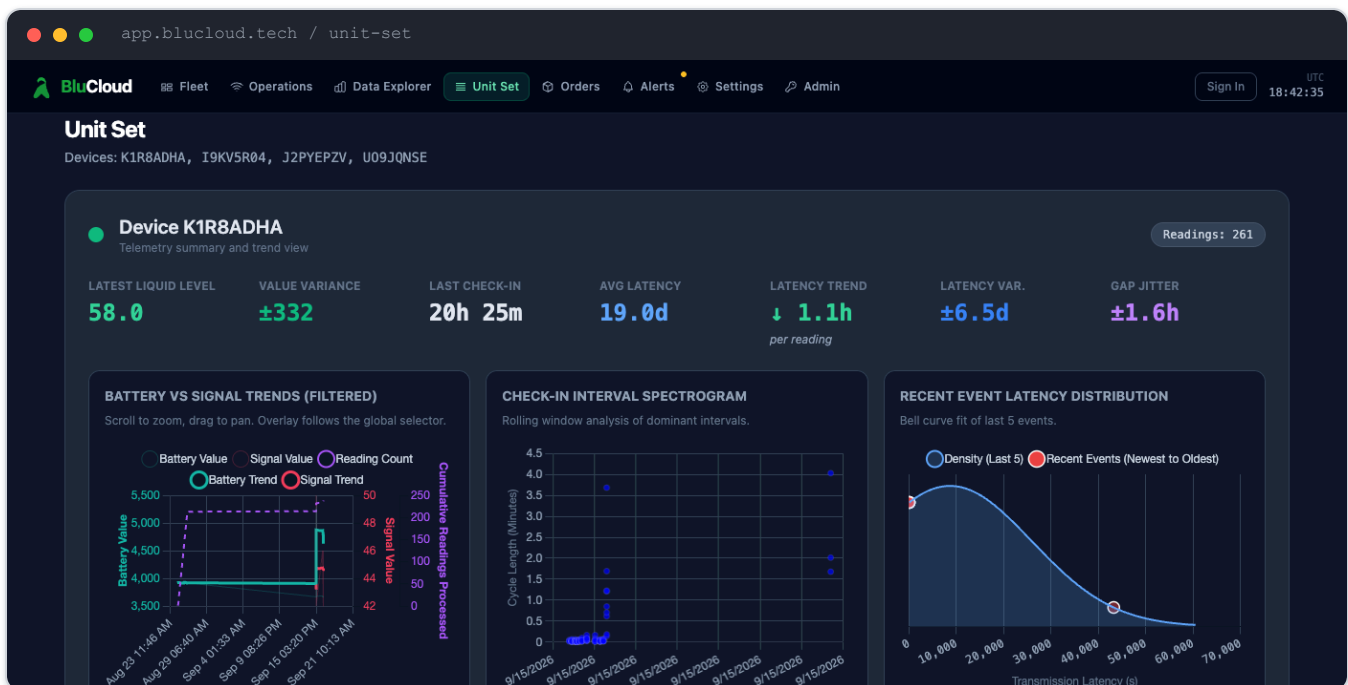
## HISTORICAL TREND ANALYSIS



Battery vs. signal trend chart with selectable analysis overlays; zoom/pan supported, with independent axes for battery, signal, and cumulative reading count.

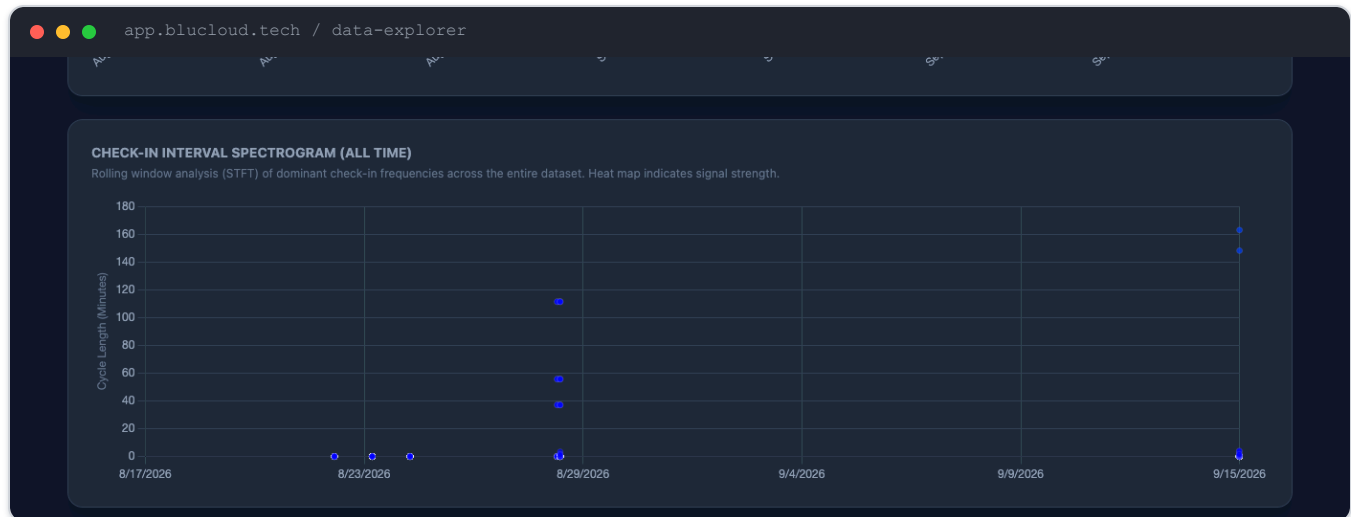
- Overlay modes: raw data, Simple Moving Average (SMA 20), Bollinger Bands (20, 2), Ichimoku Cloud, top Fourier cycle overlay
- Scroll-to-zoom and drag-to-pan across the full reading history

## MULTI-DEVICE COMPARISON (UNIT SET)



A named set of devices renders the same full analytics suite shown in Data Explorer for each member, stacked in one continuous page — useful for comparing several devices at a glance.

## CHECK-IN INTERVAL SPECTROGRAM



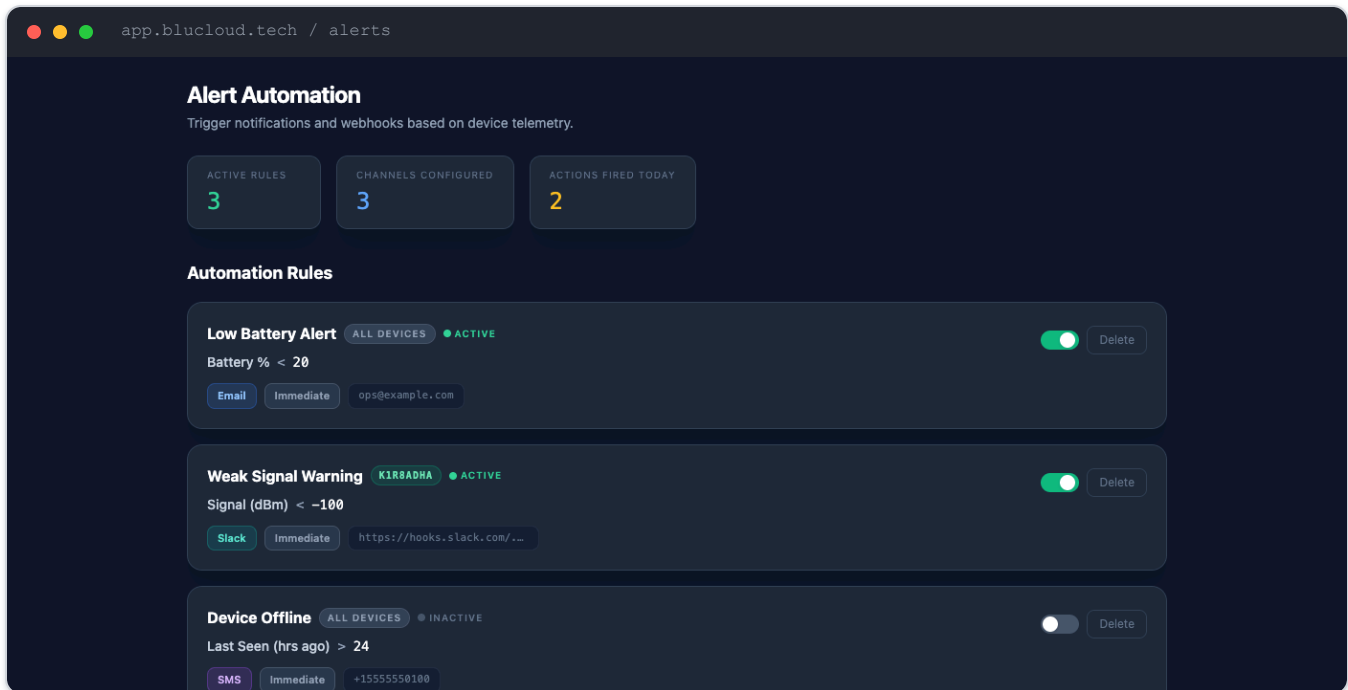
Rolling-window (STFT) analysis of dominant check-in frequencies across the full device history — surfaces drift in reporting cadence over time.

## FREQUENCY DECOMPOSITION (FFT)



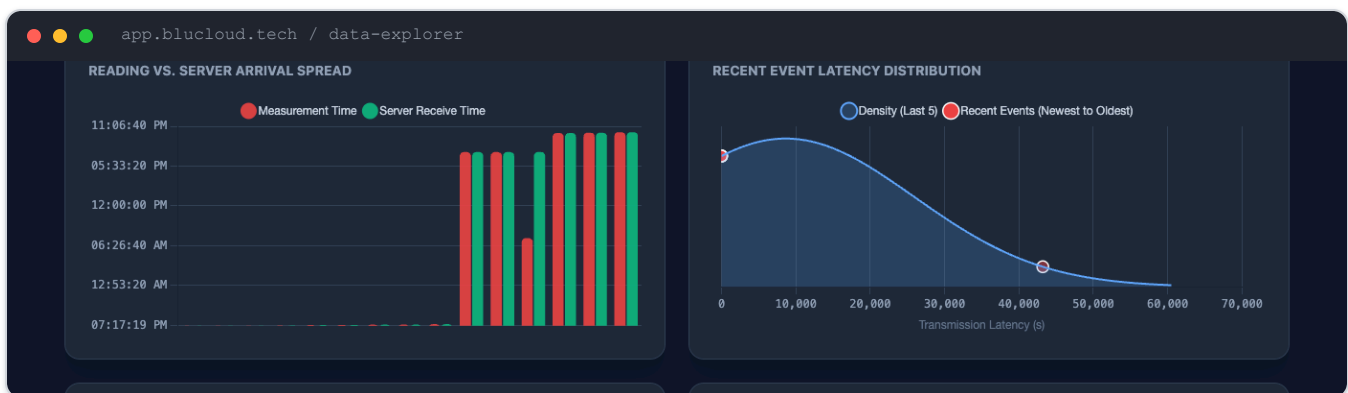
Top 5 underlying cycles isolated from transmission interval and physical reading value via FFT, each normalized around zero for pattern comparison.

## ALERT AUTOMATION



Custom rules combine a metric, operator, and threshold with an action (email, SMS, Slack, or webhook) and a delivery frequency. Rules can target all devices or a single unit; a trigger log records each firing with delivery status.

## LATENCY DISTRIBUTION



Measurement-to-arrival spread across recent readings, plus a density curve of recent-event transmission latency — useful for diagnosing network or buffering issues.

## PER-DEVICE CONFIGURATION & CALIBRATION

app.bluccloud.tech / settings

 [Fleet](#) [Operations](#) [Data Explorer](#) [Unit Set](#) [Orders](#) [Alerts](#) [Settings](#) [Admin](#)

[Sign In](#) UTC 18:42:37

### Device Settings

Configure monitoring preferences, alert thresholds, and metadata for each device.

SELECT DEVICE

K1R8ADHA — Unit Alpha

K1R8ADHA Active

IDENTITY

DISPLAY NAME

Unit Alpha

OWNER / TEAM

Field Ops

LOCATION DESCRIPTION

Site A — Roof

TAGS (comma-separated)

outdoor, critical

MONITORING

EXPECTED CHECK-IN INTERVAL

60 minutes

DATA RETENTION WINDOW

90 Days

Monitoring Enabled

ALERT THRESHOLDS

Override global defaults for this device.

BATTERY CRITICAL THRESHOLD

15 %

BATTERY WARNING THRESHOLD

30 %

SIGNAL CRITICAL THRESHOLD

-110 dBm

OFFLINE ALERT AFTER

24 hours

SENSOR & FORMULA

Define how raw device readings are interpreted and displayed.

SENSOR TYPE

Voltage / Battery

PRE-BUILT FORMULA

Voltage → Battery % (3.0–4.2V Li)

FORMULA

$$\text{clamp}(((\text{value} / 1000 - 3.0) / 1.2) * 100, 0, 100)$$

Maps mV reading (3000–4200) to battery percentage.

UNIT

%

TEST RAW VALUE

e.g. 3700

RESULT

— %

DISPLAY UNIT (override preset default)

%

LAST KNOWN STATUS K1R8ADHA

LAST SEEN

2h 14m ago

BATTERY

67%

SIGNAL

-89 dBm

FIRMWARE

v2.3.1

ICCID

8901260...

CHECK-INS (30D)

1,247

AVG INTERVAL

58.3 min

Read-only · Static placeholder data

Per-device identity, monitoring cadence, and alert-threshold overrides, plus a custom formula editor that maps raw sensor readings (e.g. mV) to displayed engineering units (e.g. battery %) with a live test/preview.



DATA & INTEGRATION

| CAPABILITY           | DETAILS                                                                                              |
|----------------------|------------------------------------------------------------------------------------------------------|
| Raw reading log      | Full history per device: reading ID, measurement time, value, server receive time, transit latency   |
| Local buffering      | Readings continue to be logged on-device and sync once connectivity is restored                      |
| Alerting channels    | Email, SMS, Slack, and webhook — configurable per rule, with a delivery trigger log                  |
| Custom calibration   | Per-device formula editor maps raw sensor values to engineering units, with live test/preview        |
| Per-device overrides | Check-in interval, data retention window, and alert thresholds can be tuned independently per device |
| Multi-device sets    | Group devices into a Unit Set for side-by-side comparison across the full analytics suite            |