

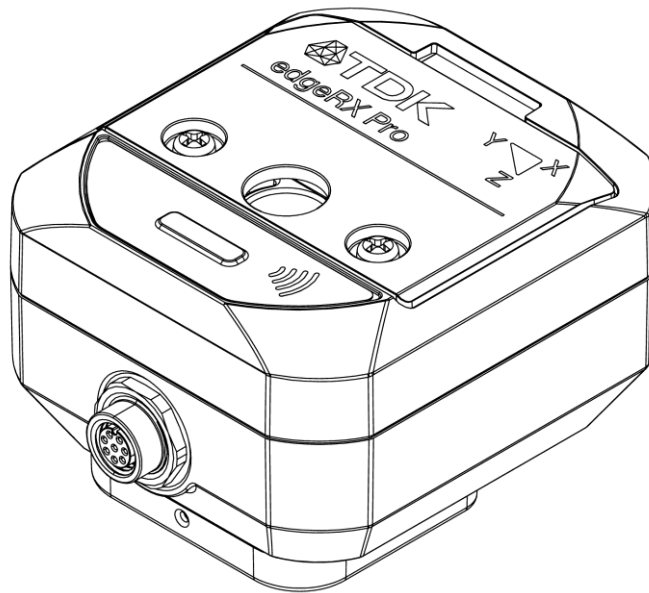


User Manual

edgeRX Pro

Model: SE3116308G-01

Edge AI Multi-Sensor Node for Advanced Condition Monitoring



Before using this product, please read this user manual carefully and keep it in a safe place for future reference.

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1. SAFETY INFORMATION

Please read this section carefully before using the product.

1.1. WARNING

Failure to follow these instructions may result in serious injury, fire, explosion, or device damage.

- This product contains a built-in lithium battery. Do not recharge, disassemble, crush, puncture, incinerate, or expose the product to fire.
- Do not expose the product to water, open flames, or temperatures above 85°C.
- Do not expose the product to extremely low-pressure environments that may cause battery rupture.
- Do not short-circuit battery terminals.
- Do not modify, repair, or disassemble the product yourself. Contact authorized service personnel for support.
- If the product becomes deformed, abnormally hot, emits smoke, unusual odor, or shows any abnormal condition, immediately stop using it and contact after-sales service.
- If battery leakage occurs and comes into contact with skin or eyes, rinse immediately with clean water and seek medical attention.
- Do not use this product in environments containing explosive, flammable, or corrosive gases.
- Do not expose the product to magnetic fields beyond the specified range.
- Keep this product out of reach of children and infants.

1.2. CAUTION

The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Failure to follow these instructions may result in minor injury or product malfunction.

- Operate and store this product within the specified temperature range.
- Avoid prolonged exposure to high humidity, condensation, direct sunlight, or rapid temperature changes.
- Do not drop, strike, or apply excessive force to the product or its connectors.
- Do not install or use any unit that has been dropped, as internal damage may not be visible. Safety and performance of dropped units are not guaranteed.
- Do not open the enclosure or remove screws during operation.
- The battery may only be replaced by authorized service personnel.
- Use only manufacturer-approved accessories and cables. Use of non-approved accessories may void warranty and violate local regulations.
- When powered via USB or AC adapter, use certified power supplies that comply with applicable safety standards.
- The external connector is not waterproof unless a cable or protective cap is properly attached.
- Secure the product using M6 screws with the specified tightening torque. Improper installation may result in device malfunction or detachment.

1.3. RF AND WIRELESS SAFETY

- Do not use wireless communication in locations where radio equipment is prohibited (e.g., aircraft or hospitals).
- Maintain at least 20 cm distance between this product and implantable medical devices such as pacemakers.
- This product operates in the 2.4 GHz ISM band, which is also used by Wi-Fi, microwave ovens, and other industrial, scientific, and medical devices.
- Wireless performance may be affected by radio interference, installation location, or environmental conditions.

1.4. INSTALLATION AND USAGE PRECAUTIONS

- This product is designed for industrial condition monitoring applications. It is not intended for consumer use.
- Install only on compatible machinery. Contact technical support for compatibility confirmation.
- Deployment location and mounting method directly affect measurement accuracy.
- Do not relocate or reinstall the device without proper evaluation.
- Avoid installation in environments with heavy oil exposure, organic solvents, strong acids, strong alkalis, ozone, salt spray, or excessive iron particles.
- Do not use beyond specified environmental limits.
- Always verify proper operation before full deployment.

1.5. BATTERY DISPOSAL

- Do not remove the battery yourself. Contact authorized service personnel for battery replacement or disposal.
- Dispose of the product and batteries in accordance with local regulations.
- Battery performance may degrade in extremely high or low temperature environments.

2. REGULATORY COMPLIANCE

2.1. Radio Equipment Compliance

This product is designed to comply with applicable radio equipment regulations in the regions listed below. Final certification status may vary by region.

United States (FCC)

This product is designed to comply with Part 15 of the FCC Rules.
Operation is subject to the following three conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.
3. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This device should be installed and operated with a minimum distance of 20 cm between the radiator and the user.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

European Union (CE)

This product is designed to comply with the essential requirements and other relevant provisions of the Radio Equipment Directive (RED).

A copy of the EU Declaration of Conformity is available upon request.

Japan (MIC)

This product is designed to comply with the technical standards specified in the Radio Law of Japan.

China (SRRC)

This product is designed to comply with radio transmission requirements regulated by the State Radio Regulation of China.

2.2. Bluetooth® Compliance

This product operates in the 2.4 GHz ISM band using Bluetooth® Low Energy (BLE).

Wireless performance may be affected by surrounding radio interference, installation environment, and distance to the receiving device.

2.3. RF Exposure Information

This product is designed to comply with applicable RF exposure requirements.

To maintain compliance:

- Maintain at least 20 cm distance between the device and the human body during operation.
- Do not operate the device in close proximity to implantable medical devices such as pacemakers.

2.4. Environmental Compliance

This product complies with applicable environmental regulations regarding electronic equipment.

Disposal of this product and its battery must be performed in accordance with local regulations.

2.5. Perchlorate Material Statement (USA – California Only)

This product contains a lithium battery that may contain perchlorate material.

Perchlorate Material – special handling may apply.

For more information, visit:

<https://dtsc.ca.gov/hazardous-waste/perchlorate/>

This statement applies to products distributed within the State of California, USA.

3. PRODUCT OVERVIEW

edgeRX Pro is a high-performance, battery-powered multi-sensor node designed for advanced industrial condition monitoring applications.

The device integrates multi-physics sensing capabilities, including high-resolution vibration measurement, acoustic monitoring, magnetic field detection, and temperature sensing, enabling comprehensive diagnostics of critical rotating and industrial assets.

Built around a dual-core MCU architecture, edgeRX Pro supports edge-level data processing, feature extraction, and anomaly detection to reduce communication load and enable efficient condition-based maintenance strategies.

With robust industrial enclosure design and long-life battery operation, the device is suitable for deployment in harsh industrial environments. In addition, optional USB external power supply is supported, enabling flexible power configurations for evaluation, permanent installation, or other operating conditions.

Key Capabilities

- 3-axis acceleration measurement
- 3-axis gyroscope measurement
- Magnetic field monitoring
- Acoustic sensing
- Temperature sensing
- Single channel Analog Input
- On-device feature extraction and anomaly detection
- Local data buffering via integrated flash memory
- Bluetooth® Low Energy communication
- Replaceable long-life lithium battery
- USB power supply option

Intended Use

This product is intended for industrial condition monitoring of rotating and critical machinery such as motors, pumps, gearboxes, and fans.

The product is designed for professional and industrial use. It is not intended for consumer applications.

Deployment location and installation method directly affect measurement performance and diagnostic accuracy.

edgeRX Pro is positioned as the high-performance model within the edgeRX product family, offering multi-physics sensing and edge AI capabilities

4. SYSTEM ARCHITECTURE

edgeRX Pro is designed as an integrated edge-sensing node combining multi-physics sensing, local processing, and wireless communication within a compact industrial enclosure.

The system architecture consists of the following functional blocks:

4.1. Sensing Subsystem

The sensing subsystem includes:

- 3-axis accelerometer
- 3-axis gyroscope
- 3-axis Magnetometer
- Digital microphone
- Temperature sensor
- Analog input

These sensors enable vibration, acoustic, magnetic, and thermal monitoring of industrial assets.

4.2. Processing Subsystem

The device is built around a dual-core MCU architecture.

- The processing subsystem performs:
- Sensor data acquisition
- Digital calibration and processing
- Feature extraction (KPIs)
- Raw data streaming
- Event detection and edge-AI based anomaly scoring
- Power management control

This edge-level processing reduces communication load and enables efficient condition-based monitoring.

4.3. Storage Subsystem

Integrated flash memory allows:

- Temporary buffering of raw or processed data
- Secure firmware update support

4.4. Communication Subsystem

The communication subsystem includes:

- Bluetooth® Low Energy (BLE 5) radio
- USB interface for configuration and service access
- NFC interface for device provisioning (supported in future)

Wireless data transmission performance depends on installation environment and radio conditions.

4.5. Power Management Subsystem

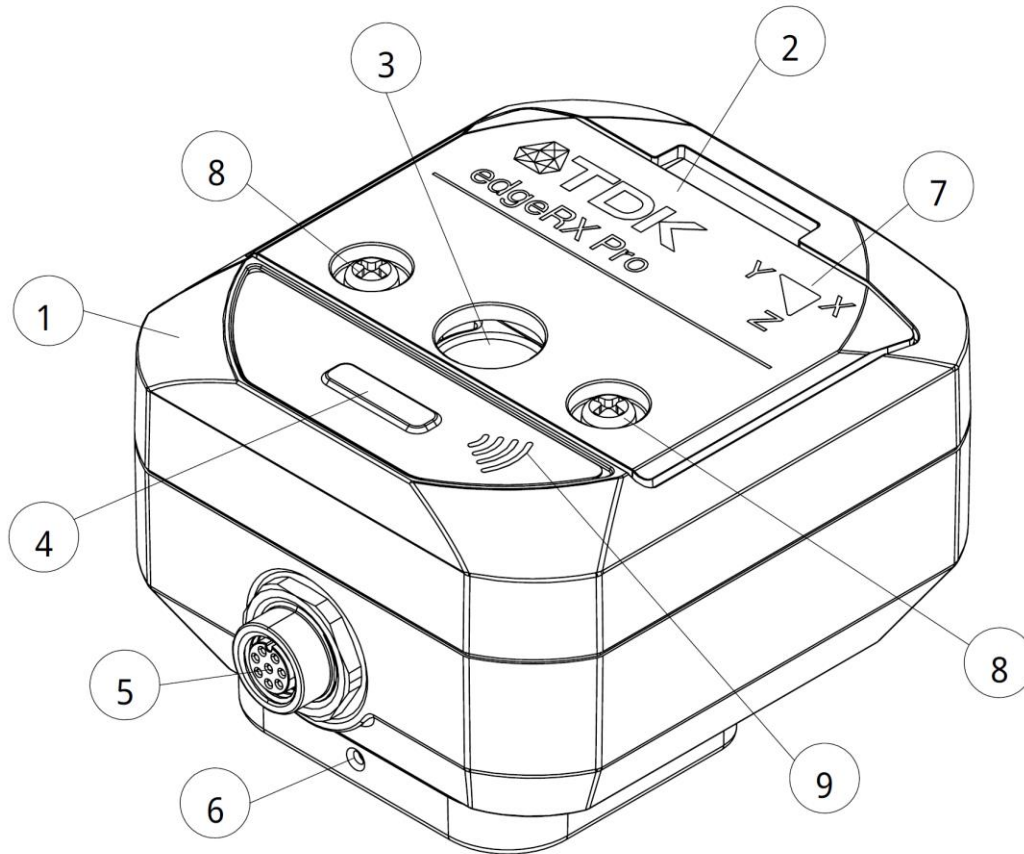
The power subsystem includes:

- Built-in replaceable lithium battery
- USB power input (USB power takes priority when connected)
- Low-power sleep control
- Wake-on-event capability

Power consumption is dynamically managed based on sensing interval, communication frequency, and event conditions.

5. PARTS DESCRIPTION

Refer to the external view diagram for component identification.



(1) Main Enclosure

Rugged industrial housing designed for harsh environments.
Provides protection against dust and water ingress (IP67).

(2) Battery Lid

Removable battery cover located on the top side of the device.

The battery lid allows access to the internal battery compartment for service replacement by authorized personnel only.

Do not remove the battery lid unless instructed by authorized service personnel.

(3) Mounting Holes (M6 Clearance Holes)

Through-holes for M6 bolts.

The holes are clearance holes and are not internally threaded.

Use appropriate M6 bolts and tighten to the specified torque to ensure secure mechanical coupling.

(4) LED Indicator and Push Button

This interface combines a multi-color LED indicator and a push button in the same physical location.

LED Indicator

Multi-color LED used to indicate device status.

Refer to the “**LED Status**” section for detailed behavior.

Push Button

Used for configuration and maintenance operations, including:

- Transmit BLE broadcast signal
- Factory reset
- Entering to and Recovering from Deep Shutdown Mode

Refer to the “**Button Operation**” section for detailed instructions.

Avoid accidental pressing during installation.

(5) M8 Connector

Industrial M8 connector used for:

- USB power supply
- USB configuration and service access
- Optional expansion interface (future support)

Through a separately sold expansion cable, extended interfaces such as Digital I/O and Analog Input may be supported in future configurations.

⚠ The connector is not waterproof unless a compatible cable or protective cap is properly attached.

(6) Acoustic Hole

Acoustic inlet for the built-in digital microphone.

The sound port is protected by a waterproof acoustic membrane that allows sound transmission while maintaining environmental protection performance.

- Do not block, puncture, or remove the membrane.
- Do not apply adhesive tape or labels over the sound port.
- Avoid contamination with dust, oil, or liquids.

Damage to the membrane may degrade acoustic performance and waterproof protection.

(7) Axis Direction Markings (X / Y / Z)

Indicates the orientation of the three sensing axes.

Proper alignment is critical for accurate vibration analysis.

(8) Battery Lid Screws (×2)

Two screws secure the battery lid.

- Do not loosen or remove these screws during normal operation.
- Battery replacement must be performed by authorized service personnel only.

Improper handling may affect waterproof performance.

(9) NFC Area (Future Support)

Designated area for Near Field Communication (NFC).

Future system updates may enable NFC-based device provisioning using smartphones or compatible tools.

Functionality may vary depending on system configuration.

6. INSTALLATION GUIDE

Proper installation is essential to ensure accurate measurement and safe operation.

6.1. Installation Requirements

Before installation, confirm the following:

- The target equipment is compatible with this product.
- The installation surface is clean, flat, and mechanically stable.
- The installation area is within the specified environmental conditions.
- The mounting location allows sufficient Bluetooth communication with the gateway.

Deployment location directly affects vibration measurement accuracy and diagnostic performance.

6.2. Orientation

edgeRX Pro measures vibration in three orthogonal axes (X, Y, Z).

- Install the device with correct axis orientation based on the monitoring objective.
- Ensure the sensing axes align appropriately with the direction of expected vibration.
- Incorrect orientation may result in inaccurate diagnostic results.

Refer to the axis markings on the enclosure.

6.3. Mounting Methods

Proper mounting is essential for measurement accuracy and device safety.

Screw mounting is the recommended installation method for industrial applications.

(1) Screw Mounting (Recommended)

- Use M6 screws. (clearance holes, not threaded).
- Apply the specified tightening torque.
- Ensure rigid mechanical coupling between the device and the target equipment.

Loose installation may reduce measurement accuracy.

(2) Magnetic Mount (Optional – Attachment Required)

Magnetic mounting requires a separate magnetic attachment.

- The magnetic attachment must be secured to the device using M6 bolts or industrial adhesive.
- Ensure the target surface is ferromagnetic and clean.

- Verify that the magnetic holding force is sufficient under expected vibration conditions.
Not recommended for high-vibration or high-impact environments.

(3) Adhesive Mount (if applicable)

For direct adhesive installation:

- Apply industrial-grade adhesive directly to the base surface of the device.
- Ensure the adhesive is compatible with the operating temperature range.
- Clean the mounting surface thoroughly before application.
- Allow adequate curing time before operation.

Adhesive mounting may provide lower mechanical rigidity compared to screw mounting.

(4) Motor Fin Mount (Optional – Attachment Required)

Motor fin mounting requires a separate motor fin attachment.

- The motor fin attachment must be secured to the device using M6 bolts or industrial adhesive.
- Ensure proper alignment and secure fastening before operation.

Verify that the installation maintains sufficient mechanical rigidity for accurate vibration analysis.

6.4. Environmental Considerations

Do not install the device in environments with:

- Prolonged exposure to oil or chemicals
- Organic solvents, strong acids, or strong alkalis
- Heavy salt exposure
- Excessive iron particles
- Condensation or rapid temperature fluctuations

Installation outside specified environmental conditions may reduce product lifetime or waterproof performance.

6.5. Post-Installation Verification

After installation:

- Confirm the device is securely attached.
- Verify LED indication and normal startup.
- Confirm Bluetooth® connectivity with the gateway.
- Perform functional test measurement before full deployment.

6.6. Important Notes

- Do not relocate the device without reassessing mounting stability and orientation.
- Improper installation may result in measurement errors or device detachment.
- Always follow local safety regulations when working near rotating machinery.
- Magnetic field measurements may be affected by nearby ferromagnetic structures or high-current conductors. Avoid installation near strong magnetic sources unless intended.

7. POWER & BATTERY HANDLING

7.1. Power Sources

edgeRX Pro operates using the following power sources:

- Built-in replaceable lithium battery
- USB power input

USB is primarily intended as an external power supply source.

It may also be used for configuration, maintenance, and service communication.

When connected, USB power takes priority over battery power.

7.2. Built-in Battery

This product contains a non-rechargeable lithium battery.

- Do not attempt to recharge the battery.
- When replacing the battery, always follow the specified replacement procedure.
- Do not use unspecified batteries, install the battery incorrectly, or perform battery replacement in an improper manner.
- If you have any questions about the replacement procedure, contact authorized service personnel or the designated support contact.

Improper handling may result in fire, explosion, or product damage.

7.3. Battery Life

Typical battery life is up to 5 years under low-duty monitoring conditions.

Battery life depends on:

- Measurement frequency and reporting interval
- Sensor configuration
- Environmental temperature

- Installation conditions

Battery life may be significantly reduced in extremely high or low temperature environments.

7.4. USB Power Usage

edgeRX Pro is equipped with an industrial M8 connector.

It does not use a standard USB connector.

When powered via USB:

- Use only the dedicated cable supplied or approved by the manufacturer.
- Do not connect standard USB cables directly to the device.
- Use a certified power supply compliant with applicable safety standards.
- Ensure the M8 connector is properly sealed when not in use to maintain waterproof performance.

⚠ The external connector is not waterproof unless a compatible cable or protective cap is properly attached.

Use of non-approved cables may result in device malfunction, loss of waterproof performance, or safety hazards.

7.5. Storage Conditions

For long-term storage:

- Store within -40°C to 85°C .
- Avoid high humidity and condensation.
- Avoid direct sunlight or heat sources.

If the device will not be used for an extended period, place the device into **Deep Shutdown Mode** to minimize battery consumption.

Refer to the “**Button Operation**” section for instructions on entering Deep Shutdown Mode.

Improper storage conditions or prolonged storage without shutdown may reduce battery performance.

7.6. Battery Disposal

- Do not remove the battery by yourself.
- Dispose of the product and battery in accordance with local regulations.
- Contact authorized service personnel for battery replacement or disposal support.

8. COMMUNICATION & CONNECTIVITY

edgeRX Pro supports wireless and wired communication interfaces for configuration, monitoring, and service access.

8.1. Bluetooth Low Energy (BLE)

The primary communication method is Bluetooth Low Energy (BLE 5).

BLE is used for:

- Device provisioning and pairing
- Sensor data transmission to compatible edgeRX Gateway systems
- Configuration updates
- Status monitoring
- FOTA (Over the Air device firmware update)

Wireless communication performance depends on:

- Distance to the gateway
- Installation environment
- Presence of obstructions, especially metal structures
- Radio interference in the 2.4 GHz band

For stable communication, install the device within recommended communication range of the gateway.

8.2. USB Interface

The device is equipped with an industrial M8 connector that supports USB functionality.

The USB interface is primarily intended for external power supply.

USB communication is limited to service and diagnostic purposes only.

Supported functions may include:

- Device configuration
- Firmware update (service use)

- Diagnostic access

When connected, USB power takes priority over battery power.

⚠ The external connector is not waterproof unless a compatible cable or protective cap is properly attached.

USB communication is not supported by edgeRX Gateway systems.

The gateway communicates with the device exclusively via Bluetooth Low Energy (BLE). Future system updates may provide dedicated tools for configuration or service operations via USB.

Availability and functionality may vary depending on system version.

8.3. NFC (Planned Feature)

The device includes a designated NFC area.

NFC functionality is not currently supported.

Future firmware and system updates may enable NFC-based device provisioning through compatible tools, such as a smartphone application.

Planned NFC functionality may include:

- Device identification
- Simplified provisioning

Availability and functionality may vary depending on firmware version and system configuration.

8.4. Wireless Communication Considerations

This product operates in the 2.4 GHz ISM band.

Wireless performance may be affected by:

- Wi-Fi networks
- Microwave ovens
- Industrial radio systems
- Metal enclosures or obstacles

Communication stability should be verified after installation.

8.5. Connectivity Limitations

- Wireless communication may not function correctly in high-interference environments.
- Data transmission intervals depend on configuration and system design.
- Temporary communication interruptions do not necessarily indicate device malfunction.

9. OPERATING BEHAVIOR

edgeRX Pro operates based on configurable triggering mechanisms designed to optimize monitoring performance and power consumption.

The device supports scheduled operation and event-triggered operation, which may be used independently or in combination.

9.1. Scheduled Operation (Normal Monitoring)

In scheduled operation, the device performs sensing at predefined time intervals.

At each scheduled interval, the device:

- Acquires sensor data
- Performs edge-level signal processing
- Extracts diagnostic features (KPIs)
- Executes AI inference (if enabled)
- Reports processed data to the gateway

The following reporting intervals are configurable independently:

- KPI reporting interval
- Raw data reporting interval
- AI inference result reporting interval

Between scheduled operations, the device automatically transitions to a low-power state.

The device wakes automatically at the next scheduled timing.

This mechanism is typically used for routine condition monitoring.

9.2. Event-Triggered Operation (Wake-on-Event)

When enabled, the device can wake from low-power state upon detecting specific events, such as vibration activity.

Event-triggered operation is suitable for:

- Intermittently operating machinery
- Reducing unnecessary scheduled measurements
- Improving energy efficiency

Event sensitivity and trigger conditions are configurable.

Event-triggered operation can be combined with scheduled operation.

In such configurations, scheduled intervals may be extended, while events trigger additional measurements when necessary, improving overall power efficiency.

9.3. Automatic Low-Power Transition

To extend battery life, the device automatically enters a low-power sleep state when no measurement or communication activity is required.

In low-power state:

- Most subsystems are powered down
- Only essential circuits remain active
- Standby power consumption is minimized

The device wakes automatically based on scheduled timing or detected events.

10. BUTTON OPERATION

The push button is used for configuration and maintenance purposes.
Accidental operation during normal monitoring should be avoided.

10.1. Short Press

Press and release the button briefly.

Function:

- Transmits a broadcast signal (only when the device is powered on)
- Used to establish a connection with the gateway

If necessary, detect and register the sensor on the gateway side.

10.2. Long Press (Factory Reset)

Press and hold the button for more than 5 seconds.

Function:

- Restore device to factory default settings
- Clear user configuration parameters
- Erase the edge AI models

⚠ Factory reset will erase configuration settings.
Reconfiguration is required before returning to normal operation.

10.3. Entering and Recovering from Deep Shutdown Mode

Deep Shutdown Mode completely powers down the device.

To enter Deep Shutdown Mode:

- Press the button five times consecutively within a short interval.

To recover from Deep Shutdown Mode:

- Press the button five times consecutively again.

LED indication confirms entry into and recovery from Deep Shutdown Mode.

In Deep Shutdown Mode:

- All device functions are stopped
- Wireless communication is disabled
- NFC functionality is disabled
- The device is in a fully powered-off state

The device is shipped in Deep Shutdown Mode.

Before first use, the device must be activated by performing the recovery procedure described above.

10.4. Operational Notes

- Avoid pressing the button during installation.
- Do not press the button using sharp or metallic objects.
- Excessive force may damage the button mechanism.
- Button operation may be disabled depending on system configuration.

10.5. Safety Considerations

Perform configuration or reset procedures only when it is safe to do so.

Do not operate the button while working near moving machinery unless appropriate safety precautions are taken.

11. LED STATUS

The multi-color LED indicator provides visual feedback on device status and operation.

LED behavior may vary depending on configuration and system state.

11.1. LED Color Overview

Color	Function
OFF	Idle / Deep Shutdown
Cyan	Power-on / Recovery from Deep Shutdown
Blue	BLE Broadcasting
Green	BLE connection / Data Transmission
Magenta	Entering Deep Shutdown
Yellow	Flash Erase Operation
Red	Factory Reset

11.2. Power-On Indication (Cyan)

When the device powers on or recovers from Deep Shutdown, the LED lights in Cyan.

- The LED remains active for a short duration (a few seconds).
- After initialization, the LED transitions to the appropriate operational state.

This confirms that the device has successfully powered on.

11.3. BLE Broadcasting (Blue)

When broadcasting is initiated by a button operation, the blue LED starts flashing.

- Indicates that the device is transmitting signals to establish a connection with the gateway
- Available only when the device is powered on (not functional during deep shutdown mode)

The Blue LED stops blinking when:

- BLE Broadcasting is exited, or
- A successful BLE connection is established.

11.4. BLE Connection & Data Transmission (Green)

When a BLE connection is established and data transmission is active:

- The Green LED lights blinking.

The Green LED returns to idle state when:

- The BLE connection is lost, or
- Data transmission stops.

11.5. Entering Deep Shutdown (Magenta)

When five consecutive short presses are detected:

- The Magenta LED lights up.

After indication:

- All LEDs turn off.
- The device enters Deep Shutdown state.
-

11.6. Flash Erase Operation (Yellow)

When a flash erase operation is initiated:

- The Yellow LED blinks continuously during the erase process.

During this period:

- The flash erase operation may take several minutes to complete.
- All other user operations are disabled.
- Button inputs and communication commands are ignored.

After completion:

- The Yellow LED turns off.
- The device returns to its normal operational state.

This blinking indication informs the user that a time-consuming flash erase process is in progress and that the device is temporarily unavailable for other operations.

11.7. Factory Reset (Red)

When a valid long press is detected:

- The Red LED blinks during reset.

During this period:

- The flash erase operation may take several minutes to complete.
- All other user operations are disabled.
- Button inputs and communication commands are ignored.

After completion:

- The LED may remain solid briefly before reboot.
- The Red LED turns off.
- The device returns to its normal operational state.

Factory reset clears user configuration settings.

12. MAINTENANCE & DISPOSAL

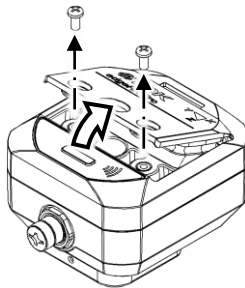
Proper maintenance and correct end-of-life handling ensure reliable operation, user safety, and environmental protection.

12.1. Battery Handling and Replacement

The device contains a built-in non-rechargeable lithium battery.

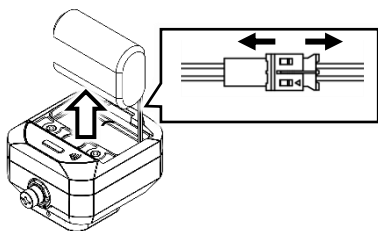
- When replacing the battery, take care not to damage the battery lid.
- Do not attempt to disassemble the battery.

1



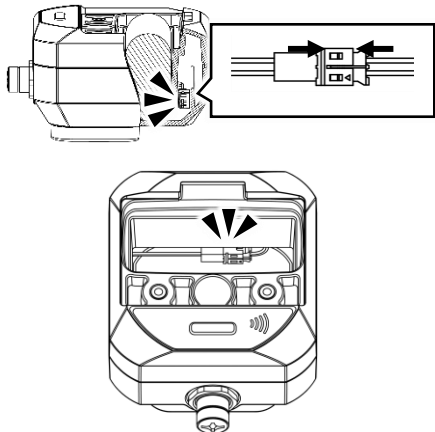
Remove 2 screws and take off the battery lid.
Please open the lid upward and remove it.

2



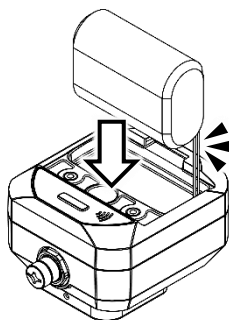
Remove the old battery from edgeRX Pro and disconnect the cable connector.
When disconnecting it, hold the connector to avoid breaking wires.

3



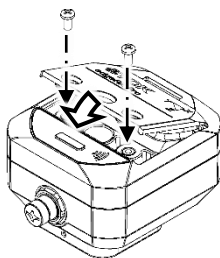
Please connect the new battery and cable connector.
Then, tuck the cable connector into the gap in the lower back wall.

4



Install the new battery in edgeRX Pro.
Please insert the battery so that the cable comes out from the right side.

5



Attach the battery lid and fasten 2 screws.
Make sure to attach the lid so that there are no gaps or lifting, to ensure waterproofing.
Screw tightening torque : 0.3 N · m (0.22lbf · ft).

Battery life depends on configuration, usage conditions, and environmental temperature.

Contact authorized service personnel if battery replacement is required or if battery performance appears significantly degraded.

Improper battery handling may result in fire, explosion, or injury.

12.2. Handling Abnormalities

Contact authorized service personnel if:

- The device becomes abnormally hot
- The enclosure is cracked or damaged
- Communication failure continues after restart
- Battery performance appears significantly degraded
- Internal malfunction is suspected

Do not attempt to disassemble or repair the product yourself.

Unauthorized modification may void the warranty and compromise safety.

12.3. Disposal and Recycling

This product contains electronic components and a built-in lithium battery.

Proper disposal is required to prevent environmental contamination and safety hazards.

- Do not dispose of this product as household waste.
- Dispose of the product in accordance with local regulations for electronic equipment.
- Follow applicable environmental and recycling laws in your region.

The internal battery must not be removed by the user.

At the end of product life:

- Contact authorized service personnel for disposal guidance.

13. SPECIFICATIONS

The following specifications describe the typical performance characteristics of edgeRX Pro.

Specifications are subject to change without notice.

Sensor	Range	Max ODR
3-Axis Accelerometer	± 2 , ± 4 , ± 8 and $\pm 16g$	8kHz
3-Axis Gyroscope	± 250 , ± 500 , ± 1000 , and ± 2000 dps	8kHz
3-Axis Magnetometer	± 2.4 mT	290Hz
Microphone	-	51.2kHz
Skin Temperature Sensor	-40 ~ 85 °C	-

Items	Specification
Internal Storage	512 Mbit local data storage
Communication Interface	• Bluetooth low energy • USB 2.0 • NFC
Extension	• Digital I/O • Analog Input (1ch)
Indicator	Full Color LED
Button	Push Button x 1
Power Supply	5400mAh Li battery
Battery life	Up to 5 years
Optional Power Supply	DC 5V USB Bus-power
Certification	FCC / CE / SRRC / MIC
IP Rating	IP67
Operating temperature	-40 ~ 85 °C
Mounting	• Screw mounting (M6 Screw) • Magnet mount • Adhesive mount • Motor fin mount
Dimensions	Approx. 64.0 × 75.0 × 48.0 mm
Weight	165 g (including battery)

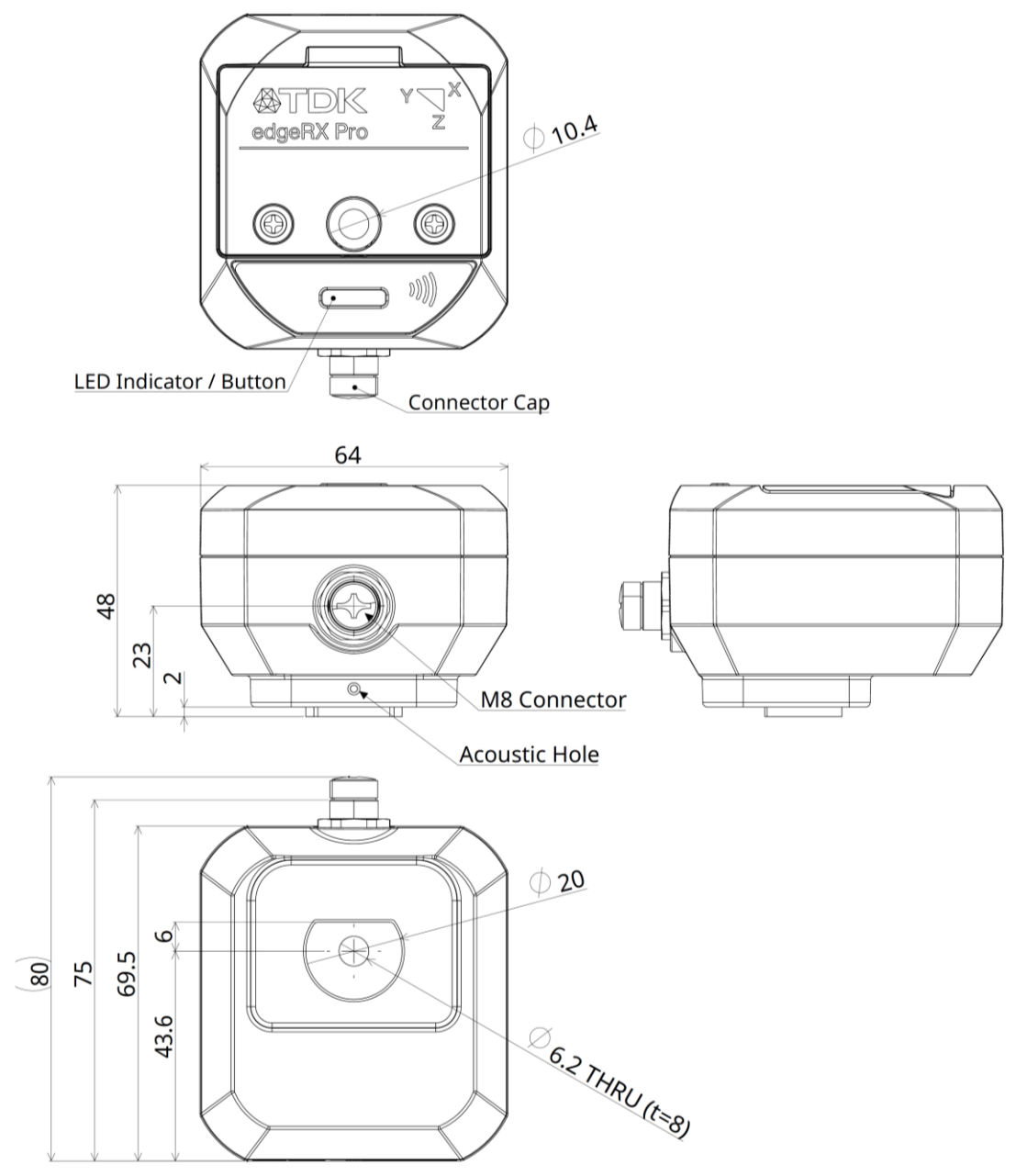
*1. Communication distance varies depending on obstructions between communication devices and the condition of radio waves, as well as the usage conditions of the product.

*2. Battery life varies depending on communication environment, report intervals, and other product operational settings and usage conditions.

*3. Measurement accuracy may vary depending on installation conditions, mechanical coupling, environmental noise, and temperature. The device is not intended for precision metrology applications.

14. OUTLINE DIMENSIONS

(Unit: mm)



Mounting Screw: M6 Cap Screw

Tightening torque - Minimum 2.0 N·M, Maximum 12.0 N·M

15. TROUBLESHOOTING

If the device does not operate as expected, refer to the table below before contacting service personnel.

15.1. Device Does Not Power On

Possible Cause	Action
Battery depleted	Contact authorized service personnel for battery replacement
In Deep Shutdown mode	Press the button five times consecutively within a short interval
USB power not properly connected	Verify USB cable and power source
Internal malfunction	Contact service personnel

15.2. No Bluetooth Communication

Possible Cause	Action
Out of communication range	Move device closer to gateway
In Deep Shutdown mode	Press the button five times consecutively within a short interval
Radio interference	Check for nearby 2.4 GHz devices (Wi-Fi, etc.)
Gateway not powered	Verify gateway operation
Device not provisioned	Confirm device provisioning status

Wireless performance may vary depending on installation environment.

15.3. Intermittent Data Transmission

Possible Cause	Action
Weak signal due to metal obstruction	Adjust installation location
High radio interference	Improve communication environment
Sleep mode operation	Confirm configured transmission interval

Temporary communication interruptions do not necessarily indicate malfunction.

15.4. Abnormal Measurement Data

Possible Cause	Action
Improper mounting	Verify rigid mechanical coupling
Incorrect axis orientation	Check X/Y/Z alignment
Loose mounting screws	Retighten to specified torque
Installation on unsuitable surface	Re-evaluate mounting location

Accurate measurement depends on proper installation conditions.

15.5. Factory Reset Required

If configuration is lost or communication repeatedly fails:

- Perform a factory reset (press and hold the button for more than 5 seconds).
- After factory reset, the device must be reconfigured before resuming operation.

Note:

Factory reset restores the device to its default configuration.

Firmware integrity is not affected. However, any stored edge AI models will be erased and must be reloaded if required.

15.6. When to Contact Service

Contact authorized service personnel if:

- The device becomes abnormally hot
- The enclosure is cracked or damaged
- Battery performance is significantly reduced
- Communication cannot be restored after troubleshooting

Do not attempt to disassemble or repair the product.

16. LEGAL & DISCLAIMER

16.1. General Disclaimer

The information contained in this document is provided for reference purposes only and is subject to change without notice due to product improvements or other reasons.

The manufacturer reserves the right to modify specifications or discontinue the product without prior notice.

While reasonable efforts have been made to ensure accuracy, no warranty is made regarding the completeness or correctness of the information.

16.2. Limitation of Liability

The manufacturer shall not be liable for any indirect, incidental, special, or consequential damages arising from the use or inability to use this product.

The user is responsible for ensuring that the product is suitable for the intended application.

Improper installation, operation, or maintenance may result in reduced performance or equipment damage.

The manufacturer shall not be liable for any loss or damage to stored or transmitted data resulting from product use or malfunction.

16.3. Industrial & Restricted Applications

This product is designed for professional and industrial applications only.

It is not intended for consumer use or for applications requiring a higher level of safety or reliability, including but not limited to:

- Aerospace or aviation systems
- Transportation control systems
- Medical life-support equipment
- Nuclear facilities
- Military equipment
- Other safety-critical systems where failure may cause serious damage to society, persons, or property

Use in such applications is not permitted unless explicitly approved by the manufacturer.

16.4. Export Control

Export of this product may be subject to applicable export control laws and regulations. The user is responsible for complying with such laws when exporting the product.

16.5. Installation Responsibility

The user is responsible for:

- Proper installation
- Compliance with local safety regulations
- Ensuring safe operation near rotating machinery

Failure to follow installation and safety guidelines may result in inaccurate measurements or device damage.

16.6. Intellectual Property

All trademarks and registered trademarks mentioned in this document are the property of their respective owners.

Bluetooth is a registered trademark owned by Bluetooth SIG, Inc., and any use of such marks by TDK Corporation is under license.

16.7. Certification Status

This product is designed to comply with applicable regional regulations.

Final certification status may vary depending on region and production stage.

16.8. Warranty Notice

Warranty terms are defined separately in the official warranty documentation.

Use of non-approved accessories, modification, or disassembly may void warranty.

17. SERVICE CONTACT

For after-sales support, technical assistance, or service inquiries, please contact:

Service Website: <https://sensei.tdk.com/contact-us-2/>

After-Sales & Technical Support Email: support@tdk-sensei.com

Working Hours: Monday to Friday, 09:00–18:00 (Local Time)

18. COMPANY INFORMATION

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Official Website: <https://www.sensei.tdk.com>

19. Revision History

Revision	Contents	Date	Updated by
1	Initial Release	July 5, 2026	N.Ueda
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