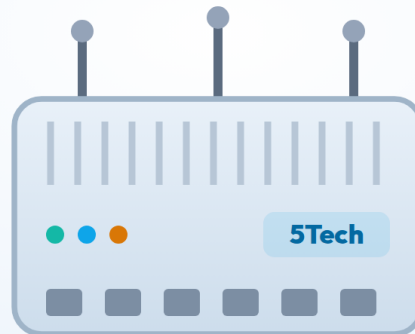


Sensorium™ Gateway — Universal IoT Gateway

Datasheet · [sensorium-gateway-datasheet](#) · Revision Draft (Preliminary) · 2026-07-18

PRELIMINARY — PROPOSED VALUES. Values marked ‡ are proposed, industry-typical figures for this product class, provided so no specification is left blank. They are **not measured and not final**, and no value in this document is a certification claim. Engineering must confirm every ‡ value before this datasheet is released as final. See §12 for change control.



SENSORIUM™

Sensorium™ Gateway

Sensorium™ Gateway — ruggedized edge connectivity hub.

Figure FIG-001 — Sensorium™ Gateway, the ruggedized Connect layer of the Sensorium™ family.

1. At a glance

The **Sensorium™ Gateway** is the *Connect* module of the 5Tech Sensorium™ family: a ruggedized edge gateway that serves as the local hub for a site. It aggregates data from Sensorium™ BLE sensor nodes — Zone Awareness sensors and SmartBolts — over Bluetooth Low Energy, applies edge processing, and transmits results to the **5Tech Platform** by MQTT over TLS on Wi-Fi or wired Ethernet, with LTE cellular as an ordered option. It is built for industrial and outdoor sites where connectivity can be intermittent.

Product	Sensorium™ Gateway (Universal IoT Gateway)
Family / role	Sensorium™ · Connect
Function	BLE sensor aggregation, edge processing, secure MQTT/TLS uplink to the 5Tech Platform
Uplink	Wi-Fi (2.4/5 GHz) · Gigabit Ethernet · LTE cellular option
Downlink (Sense)	Bluetooth Low Energy 5.x, up to 50‡ Sensorium™ nodes
Enclosure	Die-cast aluminium body with non-metallic antenna cap; IP65‡ (IEC 60529)
Power	Redundant 9–36 V DC inputs; 8 W typ‡ / 18 W max‡
Operating temperature	–40 °C to +70 °C‡ (derated above +55 °C‡)

Key features

- Local **BLE 5.x aggregation hub** for up to **50‡** Sensorium™ Zone Awareness and SmartBolt nodes.
- **Wi-Fi and Gigabit Ethernet** uplink with **MQTT over TLS 1.2/1.3‡** to the 5Tech Platform; **LTE Cat-4‡** cellular as an ordered option.
- **Edge processing**: filter, buffer, and pre-process data before uplink; **≥ 72 h‡** local store-and-forward buffer so data survives connectivity gaps.
- **Ruggedized IP65‡** die-cast aluminium enclosure with a non-metallic antenna cap so the internal BLE antenna radiates through the housing.
- **Redundant DC power** inputs (A/B) with reverse-polarity and surge protection for continuity.
- **Authenticated, encrypted** MQTT/TLS uplink with per-device X.509 identity‡.

Typical applications

- Site connectivity over Wi-Fi or Ethernet, with a cellular option where fixed networks are limited.
- Aggregating BLE safety and asset-monitoring sensors on a single site uplink.
- Edge buffering so no data is lost during connectivity gaps.

2. System context

The Gateway is the bridge between **Sense** (BLE sensor nodes) and **Decide** (the 5Tech Platform). Sensor data flows up through the Gateway to the Platform; monitoring, automation rules, and configuration flow back down.

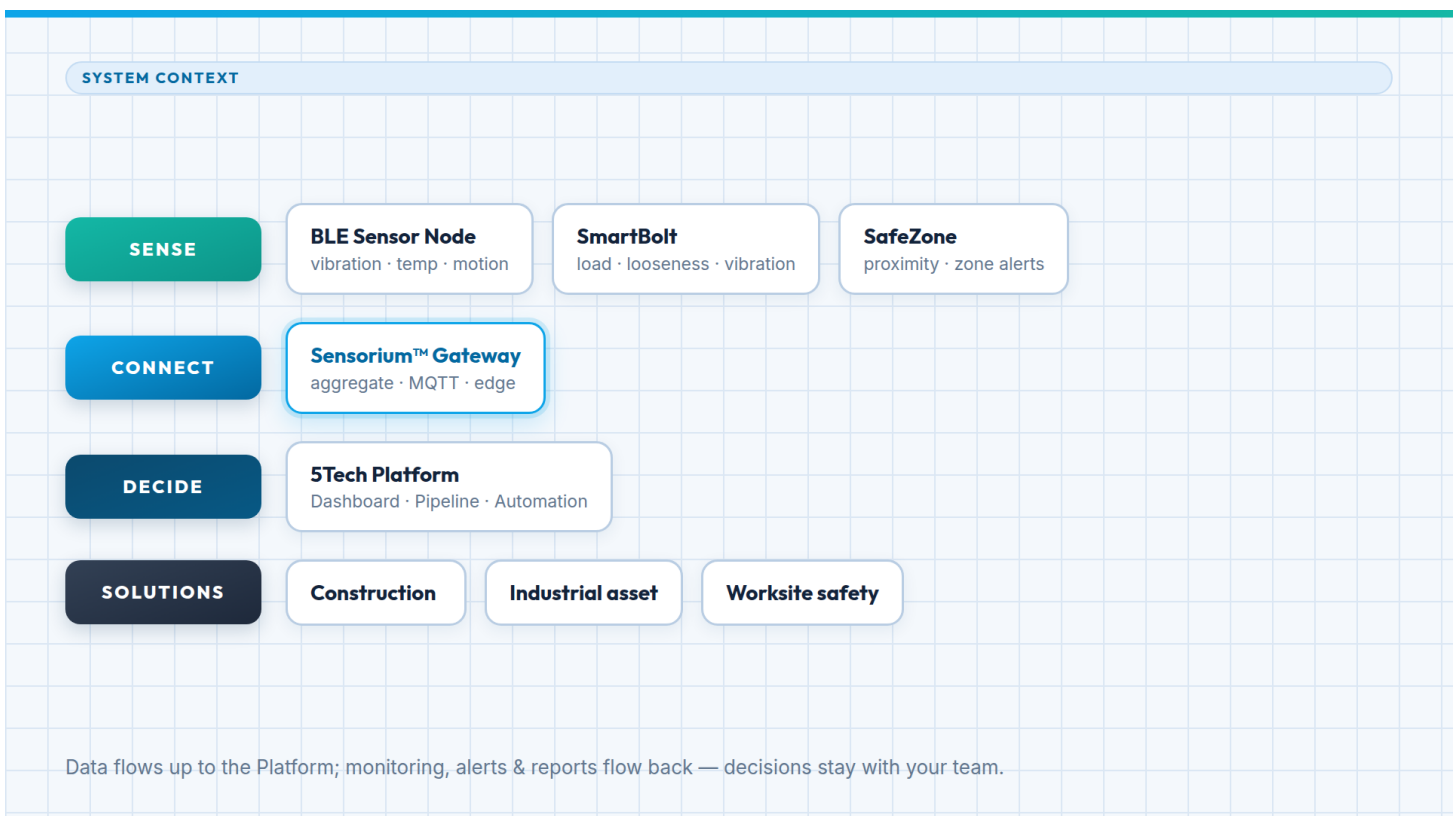


Figure FIG-002 — Sense → Connect → Decide. The Gateway is the Connect layer.

- **Sense** — Sensorium™ Zone Awareness (proximity / zone sensing) and SmartBolt (load / vibration sensing) BLE nodes.
- **Connect** — the **Sensorium™ Gateway** aggregates and pre-processes their data over BLE.
- **Decide** — the 5Tech Platform (Monitoring · Automation · AI assistance) turns data into monitoring, alerts, and recommendations.
- **Solutions** — Fleet Management and Construction Sites Monitoring are built on this chain.

3. Functional overview

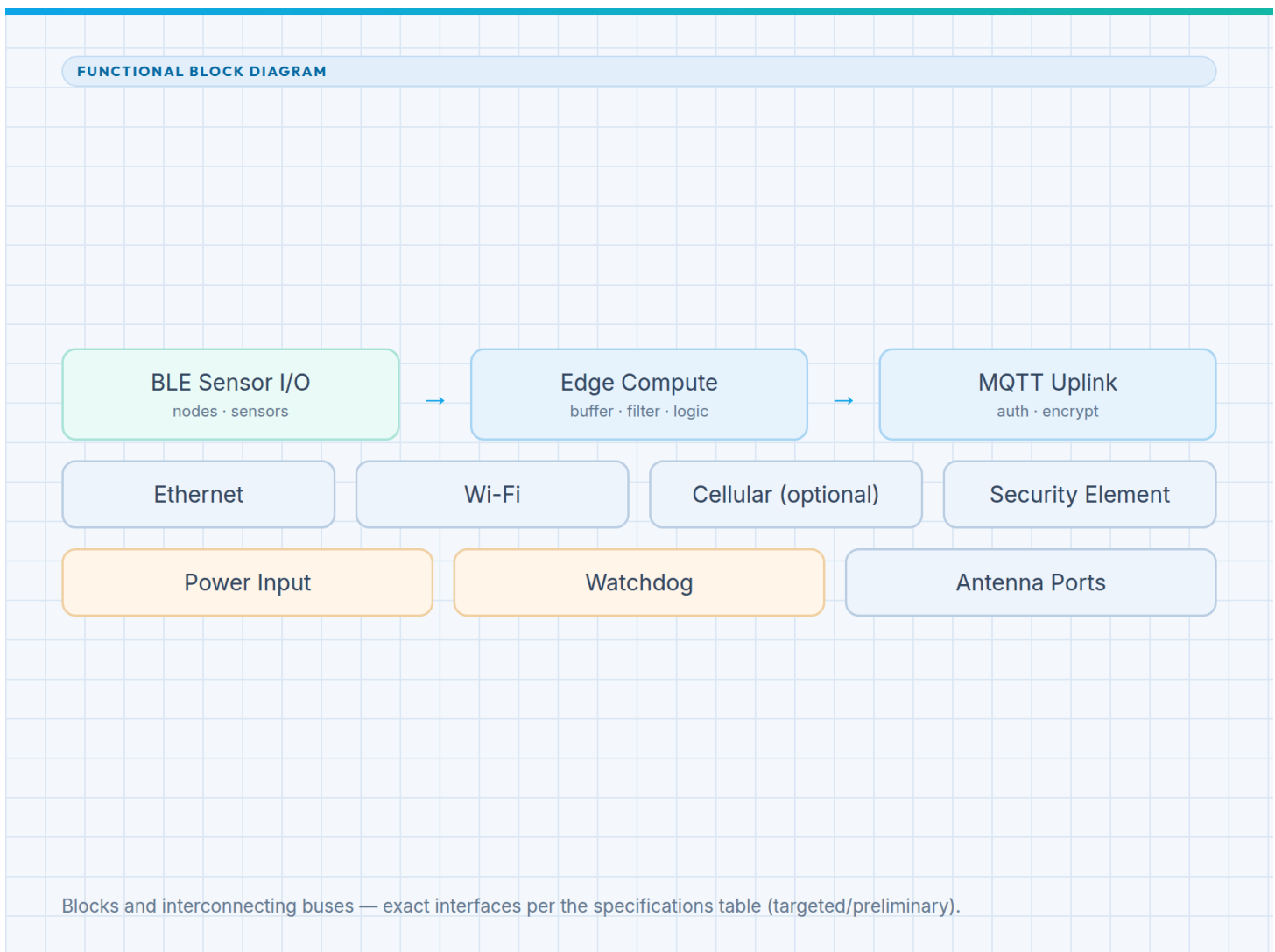


Figure FIG-003 — Functional blocks: field I/O, edge compute, network uplink (Wi-Fi/Ethernet, cellular option), switching, security, and redundant power.

The Gateway combines four functional groups:

1. **Field I/O** — a BLE 5.x central that aggregates Sensorium™ sensor nodes, plus an isolated RS-485 port and digital I/O for third-party sensors and PLCs.
2. **Edge compute** — buffers, filters, and pre-processes data at the edge; runs local logic so the site keeps functioning through connectivity gaps (≥ 72 h store-and-forward).
3. **Connectivity** — Wi-Fi and wired Gigabit Ethernet networking, with an LTE cellular modem as an ordered option, keeping the MQTT/TLS uplink to the 5Tech Platform available.
4. **Power & integrity** — redundant DC power conditioning, reverse-polarity/surge protection, and a hardware watchdog for continuity.

Data path: *BLE sensor nodes* → *field I/O* → *edge compute (buffer/filter)* → *MQTT/TLS uplink* → *5Tech Platform*. Control and configuration flow back over the same secured channel.

4. Ordering information

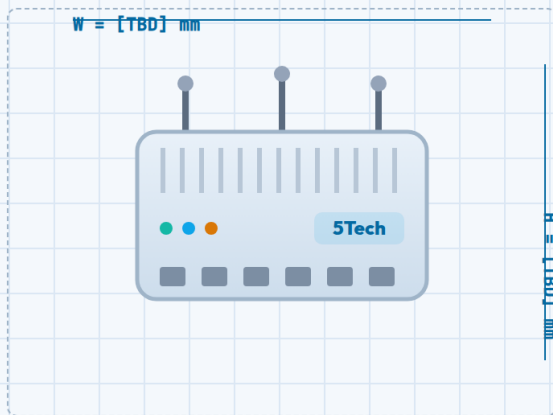
Order codes below are the proposed scheme; the base identifier and suffixes are ‡ pending confirmation. Configure = base + uplink option + I/O option.

ORDER CODE	CONFIGURATION	NOTES
SEN-GW-100 ‡	Base gateway	Wi-Fi + 2× GbE, BLE 5.x, RS-485, 2 DI / 2 DO
SEN-GW-100-C ‡	Cellular variant	Base + factory-fitted LTE Cat-4‡ modem
SEN-GW-100-X ‡	Extended-I/O variant	Base + additional isolated RS-485 / DI-DO

Accessories and spares: see §10.

5. Mechanical specifications

DIMENSION DRAWING



Orthographic outline with principal dimensions and mounting pattern — values indicative, confirm before use.

Figure FIG-004 — Front and side elevations with mounting pattern (mm). Values ‡ proposed.

PARAMETER	VALUE	CONDITION / NOTE
Dimensions (W × H × D)	180 × 130 × 60 mm‡	Enclosure only, excluding antennas/connectors
Weight	1.1 kg‡	Base configuration, no antennas
Mounting	DIN rail (35 mm) or wall bracket‡	Vibration-qualified per §8; see §10
Enclosure body	Die-cast aluminium, powder-coated graphite‡	External convection fins; no vents (fanless)
Antenna cap	Polycarbonate (RF-transparent)‡	Houses the internal BLE antenna
Ingress protection	IP65‡ (IEC 60529)	See §8

The internal BLE antenna radiates through the non-metallic polycarbonate cap; Wi-Fi and cellular use external SMA antennas (§7). This resolves the metal-enclosure / internal-antenna conflict.

6. Electrical specifications

All electrical values are ‡ proposed and stated with their measurement condition. Redundant inputs A and B share the range below; either input alone powers the unit.

PARAMETER	MIN	TYP	MAX	UNIT	CONDITION
Supply voltage (input A / input B)	9	24	36	V DC‡	Each redundant input, at the terminals
Power consumption	—	8‡	18‡	W	@ 24 V, 25 °C; typ = Wi-Fi + 20 BLE nodes; max = cellular TX + full I/O
Inrush current	—	—	15‡	A	@ 24 V, 25 °C, cold start, ≤ 150 µs
Reverse-polarity protection	—	—	—	—	Both inputs, continuous‡
Surge immunity (DC input)	—	—	±2‡	kV	Line-to-earth, per IEC 61000-4-5 (1.2/50 µs)‡
Digital output rating (each)	—	—	0.5‡	A	Solid-state, 24 V DC, short-circuit protected
Digital input threshold	11‡	—	30‡	V DC	Logic-high; opto-isolated, 24 V nominal
Internal RTC backup cell life	5‡	—	—	yr	Coin cell, −40 °C to +70 °C; see §8 disposal note

7. Interfaces & protocols

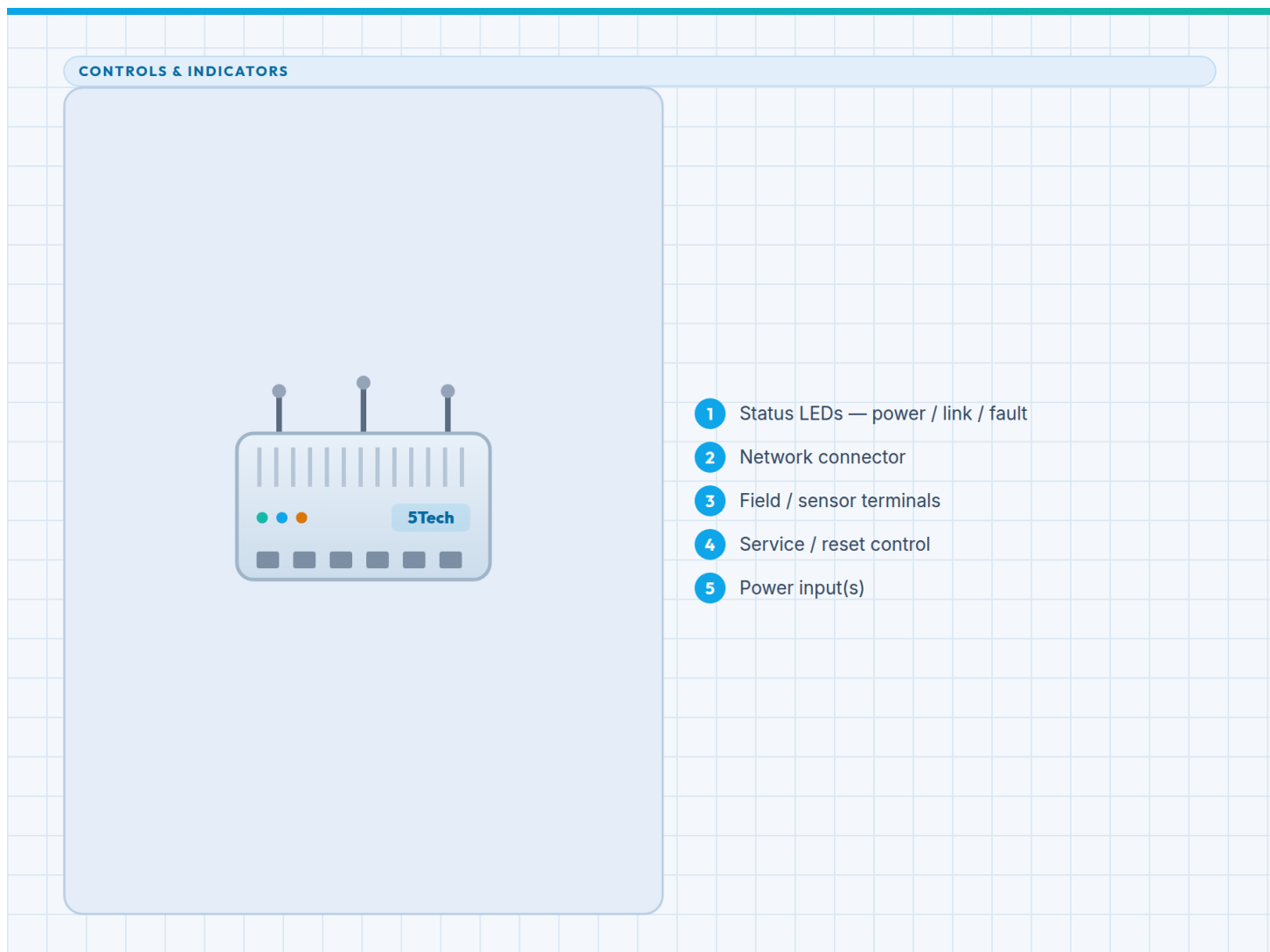


Figure FIG-005 — Connector-panel callout. Port types ≠ proposed.

INTERFACE	SPECIFICATION	CONNECTOR	NOTES
Wi-Fi uplink	802.11 a/b/g/n/ac, 2.4/5 GHz‡	2× external RP-SMA‡	Primary MQTT/TLS uplink
Ethernet	2× 10/100/1000 Mbit/s (non-PoE)‡	2× M12 X-coded, sealed‡	One port assignable as wired WAN; other as LAN/service
Cellular uplink (option)	LTE Cat-4‡ (Cat-1 fallback)‡, multi-band	1× external SMA‡	Ordered -C variant only; not fitted on base
BLE — sensor nodes	Bluetooth Low Energy 5.x, 2.4 GHz, +8 dBm‡	Internal antenna (behind PC cap)	BLE central; up to 50‡ nodes
Field / fieldbus	Isolated RS-485, 2.5 kV‡, Modbus RTU‡	M12, sealed‡	Sensor & PLC integration
Digital I/O	2× input (opto-isolated), 2× output (solid-state)‡	M12, sealed‡	Local status / control; ratings in §6
SIM / eSIM (option)	4FF nano-SIM + eSIM‡	Gasketed hatch (retains IP65 closed)‡	Cellular provisioning, -C variant
PoE	Not fitted. Optional PoE PD (802.3at)‡ powering	—	Alternative to DC input, not simultaneous

Security. Uplink to the 5Tech Platform is **MQTT over TLS 1.2/1.3‡** with a **per-device X.509 client certificate‡** for mutual authentication. No plaintext MQTT is offered.

Wired uplink note: Ethernet is not listed twice — one of the two Gigabit ports is software- assignable as the wired WAN; there is no separate WAN RJ45.

8. Environmental & ratings

PARAMETER	VALUE	STANDARD / CONDITION
Ingress protection	IP65‡	IEC 60529; gasketed SIM hatch retains rating closed
Operating temperature	−40 °C to +70 °C‡	Ambient; power derated linearly above +55 °C‡
Storage temperature	−40 °C to +85 °C‡	
Max enclosure surface temp	+80 °C‡	@ +70 °C ambient, 18 W — burn-hazard note in manual §1
Humidity	5–95 % RH‡	Non-condensing
Altitude	≤ 2000 m‡	Operating
Pollution degree	2‡	IEC 61010-1
Overvoltage category	II‡	IEC 61010-1
Vibration	10–150 Hz, 1 g‡, 20 sweeps/axis	IEC 60068-2-6, DIN-rail mounted
Shock	15 g‡, 11 ms half-sine, 3 shocks/axis/direction	IEC 60068-2-27

All environmental figures are ‡ proposed targets, not yet verified by test.

9. Compliance & standards

No certification is currently held. The table lists the intended certification programme; no mark below may be shown on the product, packaging, or marketing until certified with a report on file (recorded in [references.md](#)).

AREA	INTENDED STANDARD	STATUS
Radio / telecom (per region)	FCC Part 15 / ISSED RSS / RED (EU)‡	Planned — not yet submitted
EMC	EN 55032 / EN 55035 / EN 61000-6-2/-6-4‡	Planned — not yet tested
Electrical safety	IEC/EN 62368-1‡	Planned — not yet tested
Environmental (materials)	RoHS (EU 2011/65) / REACH‡	Planned — declaration pending

Radio type-approval is required before the product may be sold in any market; it is not yet held.

10. Accessories & related products

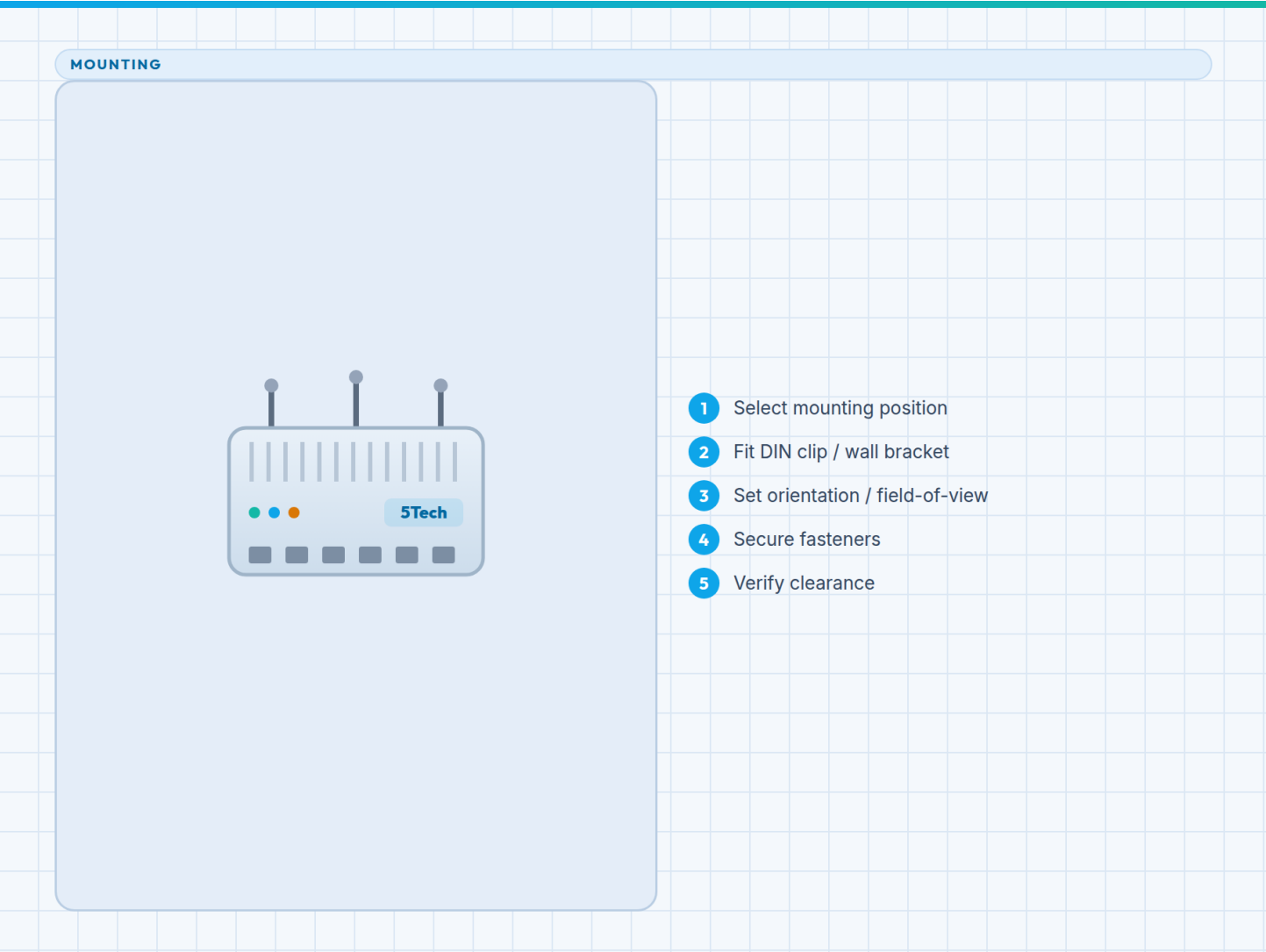


Figure FIG-006 — DIN clip, wall bracket, antennas, and sealed connectors.

ITEM	ORDER CODE	PURPOSE
DIN-rail clip (35 mm)	SEN-GW-ACC-DIN ‡	Rail mounting
Wall-mount bracket	SEN-GW-ACC-WALL ‡	Surface mounting
Wi-Fi antenna (RP-SMA, 2.4/5 GHz)	SEN-GW-ACC-WIFI ‡	Wireless uplink
Cellular antenna (SMA, LTE)	SEN-GW-ACC-LTE ‡	For the -C cellular variant
Sealed M12 connector set	SEN-GW-ACC-M12 ‡	Field wiring

Related documents

- **Manual:** [manuals/sensorium-gateway-manual/](#) — operation, configuration, maintenance.
- **Installation:** [installation/sensorium-gateway-installation/](#) — mount, wire, commission.
- **Aggregates:** Sensorium™ Zone Awareness, Sensorium™ SmartBolt, Sensorium™ Sensor Node datasheets.
- **Works with:** 5Tech Platform (Monitoring · Automation · AI assistance).

11. Monitored signals & alert behaviour (illustrative)

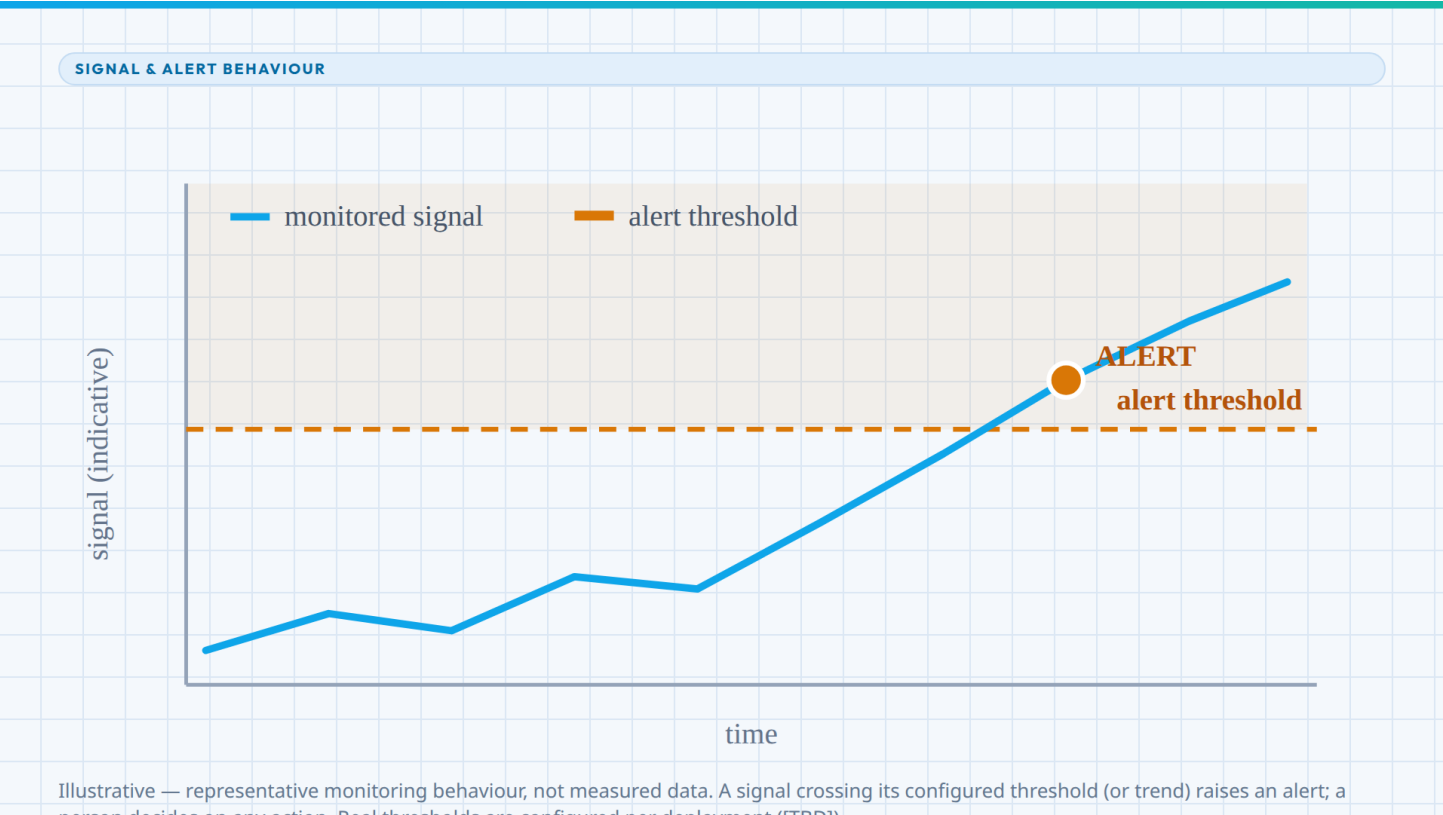


Figure FIG-007 — Illustrative — a monitored signal crossing its configured alert threshold (or an

abnormal trend) raises an alert; a person decides on any action. Representative behaviour, not measured data.

The Gateway reports its own health signals — uplink status, sensor-node connectivity, and power health — to the 5Tech Platform; when a signal crosses a configured threshold or shows an abnormal trend, the Platform raises an **alert** and a person decides on any action. Thresholds are configured per deployment.

SIGNAL	EXAMPLE ALERT TRIGGER‡	RESPONSE
Platform uplink (MQTT/TLS)	Uplink lost > 60 s‡	Alert + notify (person decides)
BLE sensor-node link	A paired node stops reporting beyond 3× its interval‡	Alert + notify (person decides)
Redundant DC power input	One of inputs A/B drops below 9 V‡	Alert + notify (person decides)

Illustrative — representative, not measured; trigger values ‡ proposed and configurable.

12. Revision & change control

REVISION	DATE	CHANGE	AUTHOR
Draft (Preliminary)	2026-07-07	Initial authored content; values [TBD] .	Documentation
Draft (Preliminary, PROPOSED)	2026-07-18	Resolved enclosure/antenna, PoE, IP/hatch, and thermal contradictions; filled all specs with conditioned ‡ proposed values and specific test standards; added revision block.	Documentation

Full change history: `revision.md` . Sources and cited standards: `references.md` .

Specifications are preliminary; ‡ values are proposed and subject to engineering confirmation and change. Web publication target: `/resources/datasheets/gateway` .

