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HyQuant Edge – Frequently Asked Questions

The basics.

What is HyQuant Edge?

HyQuant Edge is an all-in-one, radar sensor-based station for quantitative hydrological monitoring. It combines sensing, data logging, edge processing, and communication in a single compact, externally powered unit. A traditional monitoring station relies on separate components (a sensor, a data logger, a modem, and power management) that are wired together on site. HyQuant Edge integrates all of this into one device, then adds smart edge processing, intelligent power management, and automatic cloud connectivity by default. The result is a complete hydrological monitoring station in the size of a sensor.

How is it different from a traditional monitoring station?

The difference is less about what HyQuant Edge measures and more about how a station is deployed and operated. A traditional station is assembled and integrated in the field, and depends on supporting infrastructure and regular site visits to keep running. HyQuant Edge arrives ready to operate: once it has power and, where needed, a SIM, it logs, processes, stores, and transmits on its own. In practice this changes how quickly a site can be brought online, how much maintenance a network needs, how easily it can be scaled, and where stations can be placed, including compact or hard-to-reach locations where a multi-component setup would not fit.

What can it measure?

HyQuant Edge measures water level and surface velocity using non-contact radar, and can calculate discharge on-device instantly. It is available in four versions so you can match the device to your monitoring need:

- L: Level
- V: Surface Velocity
- L+V: Combined Level and Velocity
- Q: Discharge (level, surface velocity, and calculated discharge)

What does “powered by KIPTEC” mean?

KIPTEC is the KISTERS Intelligence Platform for Embedded Connectivity. It is the embedded intelligence layer, built into a single chip, that makes the all-in-one design possible: dynamic logging, on-device data processing, intelligent power management, secure transmission, and cloud connectivity, all built in. HyQuant Edge is the first sensor-based station to use it.

Can I buy KIPTEC separately or add it to my existing sensors?

No. KIPTEC is not an add-on. It is embedded during manufacturing and is only available in select KISTERS Edge devices. It cannot be retrofitted to third-party sensors or to devices already deployed in the field.

Can I connect external or third-party sensors to it?

No. HyQuant Edge is a self-contained monitoring station with integrated sensing, processing, data logging, and communications. It is not intended to serve as a data logger or gateway for external sensors.

Where additional parameters are required, data from HyQuant Edge and other sensors can be combined within KISTERS datasphere or another monitoring platform.

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Deployment, use and accessories.

What do I need to get it running?

At a minimum, HyQuant Edge requires a power supply and, for cellular communications, a SIM card with an active data plan. Once installed and configured, the device operates autonomously without the need for external data loggers, telemetry hardware, or RTUs.

Configuration is performed on site via the integrated Wi-Fi hotspot using HyComm, the KISTERS configuration application available for Windows and Android (coming soon). HyComm guides users through device registration, sensor configuration, communication settings, firmware updates, and cloud connectivity.

For sites without mains power, the optional Solar Power Pack provides a self-sufficient power supply solution.

Where is HyQuant Edge a good fit?

It is well suited to:

- Remote or hard-to-access monitoring sites
- Temporary and emergency deployments
- Network densification projects
- Urban and space-constrained sites
- Permanent deployments

Its compact, all-in-one design minimizes installation footprint and reduces the need for additional field equipment, making it particularly suitable for open channels, bridges, culverts, and other constrained locations.

Are there any environments where it should not be used?

HyQuant Edge is designed for open water bodies such as rivers, channels, open canals, drainage ditches, and other accessible sites. It is not certified for use in potentially explosive atmospheres (no ATEX certification), so it should not be deployed in closed or hazardous environments such as enclosed channels where an explosion risk exists.

How does it handle remote sites and maintenance?

HyQuant Edge is designed for low-maintenance operation. Remote configuration, firmware updates, and device management reduce the need for site visits.

The non-contact radar measurement principle eliminates sensor wear caused by debris, sediment, ice, or flooding. In addition, the radar-on-chip architecture provides exceptional long-term stability, minimizing measurement drift due to temperature variations and component ageing. As a result, HyQuant Edge does not require routine field recalibration.

Together, these features reduce maintenance effort and help keep operating costs low, particularly at remote or difficult-to-access monitoring sites.

How is HyQuant Edge powered?

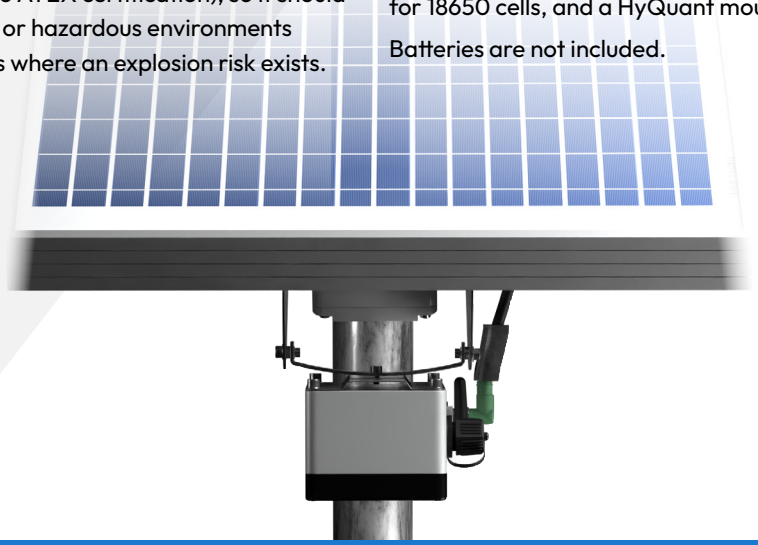
HyQuant Edge runs on an external DC power supply. It accepts a wide input range of 10 to 30 VDC through its M12 8-pin supply connector, so it can be powered from a mains-derived supply or any suitable DC source already available at the site. Power consumption is low, in the order of 7 mA in standby at 12 V, rising during measurement and Wi-Fi use.

What is the Solar Power Pack?

The Solar Power Pack is an optional accessory, not the standard power source. Where the site already has a power supply, the Solar Power Pack is not required.

This accessory enables autonomous operation at off-grid locations where no mains or other power supply is available. The package includes a pole- or wall-mounted solar panel assembly, an electronics enclosure with integrated charge controller and battery compartment for 18650 cells, and a HyQuant mounting bracket.

Batteries are not included.



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Data, connectivity, and security.

Do I need KISTERS datasphere to use HyQuant Edge?

No. HyQuant Edge operates fully autonomously and can transmit data directly to your existing monitoring systems, data platforms, or servers using standard communication protocols and data formats.

Datasphere is an optional cloud-based data management platform that integrates seamlessly with HyQuant Edge. When used together, datasphere provides data visualisation, device management, remote configuration, firmware updates, alerting, and centralized management of monitoring networks.

Will it work with the systems I already use?

HyQuant Edge is designed to integrate with a wide range of monitoring and data management systems using industry-standard communication protocols and data formats.

The level of integration depends on the capabilities and requirements of the receiving system. Configuration changes or integration work may be required to accommodate specific data formats, communication protocols, authentication mechanisms, or cybersecurity requirements.

What happens to my data during a connectivity outage?

HyQuant Edge uses a store-and-forward architecture with local data storage sized for months of observations under typical operating conditions. Operating in push mode, the device continues to record measurements during communication outages and automatically forwards any unsent data when connectivity is restored.

How does it manage power and data transmission?

HyQuant Edge transmits data in push mode at user-configurable intervals. Measurement and transmission settings can be adapted to site conditions, allowing users to balance power consumption, communication costs, and data availability.

For example, transmission frequency can increase automatically during rapidly changing water levels, providing more timely information during potential flood events. Velocity measurements can likewise be scheduled periodically or triggered by user-defined changes in stage.

The result is an efficient monitoring strategy that provides additional information when conditions change while avoiding unnecessary measurements and transmissions during stable periods.

How does it keep velocity data reliable in the rain?

Advanced self-learning rain filters distinguish genuine surface-velocity readings from precipitation effects instantly. This preserves data integrity during rainfall and reduces the need for manual validation.

How is the data secured?

HyQuant Edge incorporates the following security features:

- Hardware root of trust, secure boot, and digitally signed firmware
- TLS 1.3 encryption and authentication for network communications
- Mutual TLS (mTLS) using device-specific certificates, with support for customer-managed certificates and public key infrastructures (PKI)
- Device-specific Wi-Fi credentials for local access. For enhanced security, KISTERS recommends changing the default password during commissioning.

Together, these measures support device integrity, secure communications, and authenticated access to network services.

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Models and accuracy.

Can I start with one parameter and upgrade later?

Yes. HyQuant Edge is built on a common hardware platform that supports software-enabled upgrades. A Level sensor can be upgraded to combined Level and Surface Velocity measurement, and subsequently to Discharge measurement, without requiring additional sensors or hardware modifications.

Upgrades are activated through HyComm using an activation file provided by KISTERS. While the hardware remains unchanged, the suitability of the installation location should be reviewed when enabling additional measurement functions. For example, locations selected primarily for level measurement may not always provide optimal conditions for surface velocity measurement.

How accurate is it?

HyQuant Edge uses the same proven radar measurement technology as the wider HyQuant range, delivering high measurement accuracy and long-term stability.

- Level: ≤ 2 mm (0.079 in); meets USGS HIF Hydrologic Instrumentation Facility requirements.
- Surface Velocity:
  - 0.02 ... 4.5 m/s (0.07 ... 14.8 ft/s): ±1 % of measured value
  - 4.5 ... 15 m/s (14.8 ... 49.2 ft/s): ±2 % of measured value

The accuracy of discharge measurements depends on site conditions and on the quality of the hydraulic information provided by the user, including cross-section surveys, velocity correction factors (k-values), and reference velocity measurements where applicable.

HyQuant Edge and HyQuant Classic.

What happens to the classic HyQuant sensor?

HyQuant Classic and HyQuant Edge are complementary products within the HyQuant range, each addressing different monitoring requirements. HyQuant Edge does not replace HyQuant Classic.

Both share the same proven radar measurement technology and are available with the same measurement capabilities and similar power options.

- HyQuant Classic is a sensor designed for integration into existing monitoring stations and telemetry networks. It communicates via industry-standard interfaces such as SDI-12 and Modbus RTU and is particularly suitable where data logging, communications, power management, or system integration are already provided by external equipment.
- HyQuant Edge is a self-contained monitoring station that integrates sensing, processing, data logging, communications, and device management into a single device. It is particularly well suited to remote sites, rapid deployments, and network densification projects where minimizing field infrastructure is important.

Both products are suitable for long-term monitoring applications. The choice depends primarily on whether the project requires a standalone sensor or a complete monitoring station.

Is HyQuant Edge the same size as a classic HyQuant sensor?

Yes. Despite its compact size, HyQuant Edge integrates sensing, processing, data logging, communications, and device management in a device no larger than a classic HyQuant sensor.

Getting started.

How can I see it in action or get help choosing?

The best way to discover what HyQuant Edge can do is to see it in action. Schedule a live demonstration with a KISTERS expert, discuss your monitoring requirements, or explore the datasheets and application resources available on the HyQuant Edge product pages.

What documentation and support are available?

Getting started is straightforward. Each HyQuant Edge is supplied with a Quick Installation Guide and a Factory Acceptance Test (FAT) document. Detailed datasheets, the product brochure, the full User Manual, and documentation describing the implementation of the WMO First Mile Protocol in KISTERS Edge sensors can be downloaded from the

KISTERS Online Product Catalogue.

Assistance is available through the KISTERS worldwide

Support team.

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