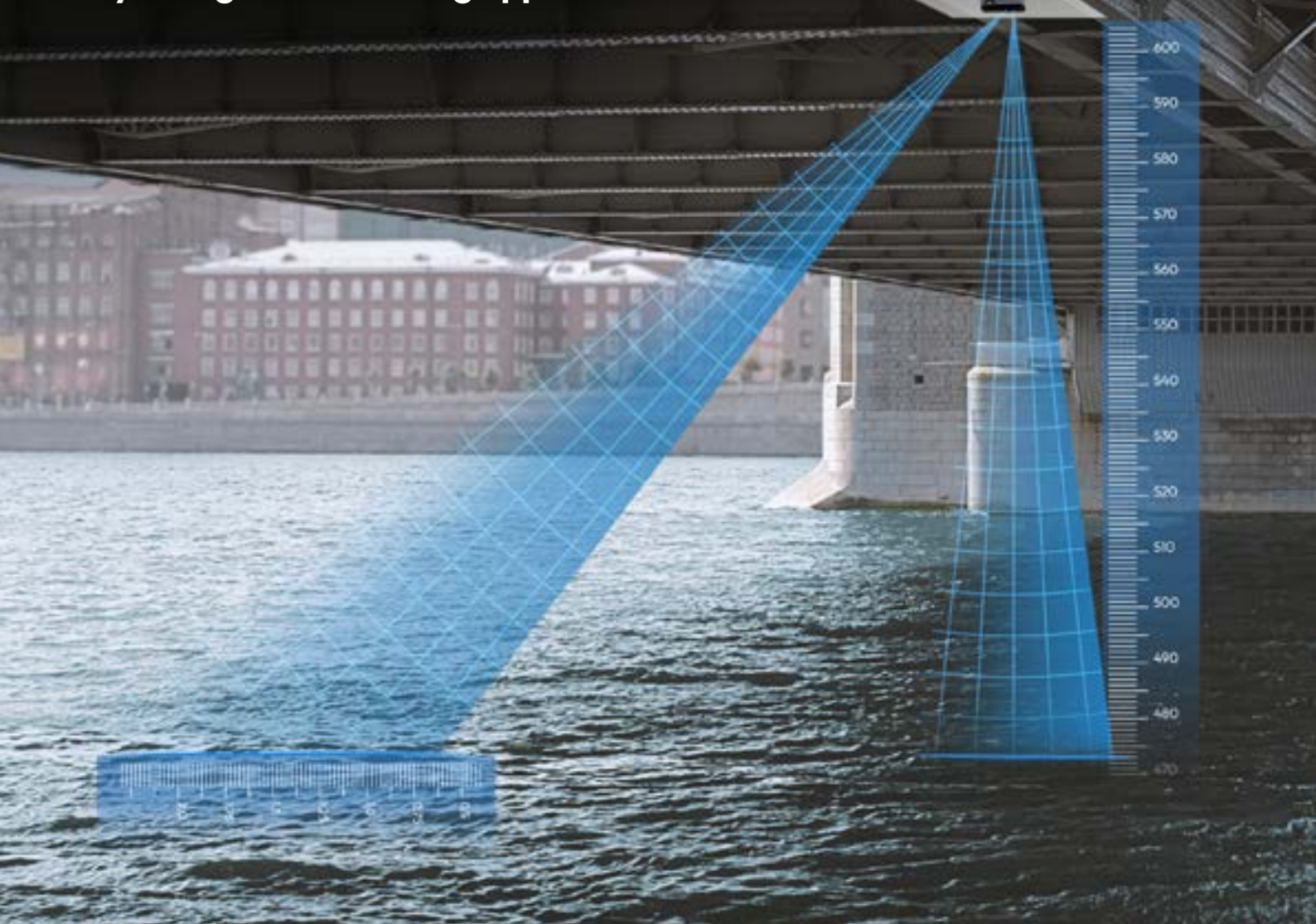




**HyQuant**

# Radar Level and Velocity Sensors

## Compact, affordable and easy-to-use water radar sensors for a wide range of hydrological monitoring applications.



The HyQuant series consists of small and compact water level and velocity radar sensors that are easy to use. They are suitable for a wide range of hydrological monitoring needs and effectively address common issues encountered by users in environmental monitoring. These sensors offer essential features at an affordable price point, providing a cost-effective solution for your hydrographic challenges.

With more than 60 years of experience in environmental applications and a team of expert scientists and engineers specializing in hydrology and radar technology, KISTERS has developed HyQuant sensors to provide robust, accurate, and field-proven solutions that you can trust to save time, energy, and money in the long run.

### Best suited for professionals working on:

- **Hydrology and water surface management** such as rivers, streams, open canals, channels (including irrigation), open flumes, lakes, reservoirs and inland waterways.
- **Risk management:** Early warning, forecasting, urban flooding, rain retention basins, water quality, maritime shipping, inland navigation, dam safety, water availability.
- **Agriculture:** irrigation, water allocation
- **Operational efficiency** in hydropower plants
- Other **industrial applications** such as mining
- **Research**



# Designed with versatile applications in mind.



## **Flood forecasting and early warning.**

Authorities monitor changes in water activity in real-time to identify potential flood risks. They implement mitigation measures, such as early warning and infrastructure planning, to enable communities to prepare and take timely action to protect lives and property.

## **Environmental balance.**

Water resources monitoring, which utilises water level, velocity, and discharge data, offers insights into hydrological dynamics during specific events over time. This approach supports conservation efforts and enhances understanding of aquatic life, water quality, and ecosystem health.



## **Management and use of water resources.**

Essential societal needs, including drinking, irrigation, hydropower, and cooling, often compete for water resources. Assessing actual water availability through parameters such as water level, surface flow velocity, and discharge is crucial. The collected data facilitates the integration of competing water uses, enabling informed decision-making, equitable resource access, enhanced revenues, cost reduction, and improved risk management.

### Linking quantity and quality.

Monitoring surface water flows and levels is vital for water quality, shaping river habitats and intervening the spread of pollutants. This understanding is key to protecting aquatic ecosystems and managing water resources effectively. By understanding and managing these aspects, we can better protect water resources and the ecosystems they support.



### Navigation and transport.

Assessing the flow and velocity of a river is crucial for monitoring and evaluating morphological changes in the river bed. Knowledge of these changes ensures safe navigation and shipping for larger vessels and cargo ships, especially during periods of low water.

### Engineering.

Engineers and infrastructure planners rely heavily on hydrological and hydraulic modelling for design purposes. They assess flow characteristics when designing bridges, culverts, dams and other river-related infrastructure. Key characteristics include stage, volume and velocity, especially under extreme weather conditions. The aim is to ensure that this infrastructure can withstand the forces and expected volumes of water. This approach helps to prevent flooding or structural damage.



### Research.

Scientists, researchers, hydrologists and climatologists use water level and velocity data to study climate patterns, environmental change and river behaviour, contributing to a better understanding of natural processes.



**The HyQuant Series is designed to allow for seamless upgrading from a basic level sensor to a combined level and velocity sensor and up to a discharge sensor. No technical intervention required – just software upgrades.**



## **Experience exceptional benefits.**



### **Global support. Local adaptation.**

Benefit from world-class support from KISTERS specialists across the globe, along with local certification and multilingual assistance, making KISTERS your reliable partner anywhere. Your HyQuant can be easily adapted to any scenario, from narrow streams to expansive water bodies. Designed with discretion in mind, being compact and visually unobtrusive, HyQuants are less attractive for vandals. They also feature low-power technology, making them suitable for both remote and urban settings.



### **High accuracy, anywhere, anytime.**

HyQuant uses advanced radar technology to improve user experience. Its key features include a small wavelength, specially designed antennas, and a narrow beam angle. These design elements collectively enhance the resolution and accuracy of measured results, whether determining water level or surface velocity across the entire measurement range. The advantage of the narrow radar beam and focussed detection area is the ease of positioning: natural obstacles and structures can be easily avoided.



### **Make installation easy and straightforward.**

HyQuant's lightweight yet rugged design, comprehensive range of mounting accessories and compatibility with various support structures make installation and correct positioning easy for anyone, regardless of the operator's experience or site constraints.



### **Intelligent algorithms eliminate the need for expert manual tuning.**

HyQuant sensors are designed to adapt to local monitoring conditions using easy-to-configure filters. The user-interface is intuitive and wizard-driven, saving operators time by allowing hassle-free configuration without the need to consult manuals.



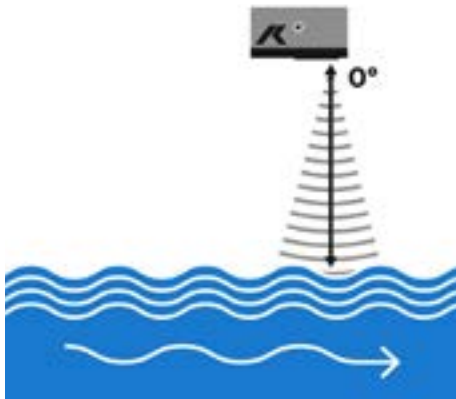
### **Reliable measurements.**

Every technical specification has undergone the necessary field testing to ensure consistent peak performance and reliability over long periods of time. The sensors are IP68 rated, housed in a rugged enclosure and manufactured from environmentally resistant materials.

## Meet the range.

### **K HyQuant L**

One of the most versatile and reliable non-contact level sensors.



KISTERS' HyQuant L sensor uses FMCW technology in the 60 GHz frequency band for water level measurement without direct contact. The HyQuant L radar water level sensor is compact, lightweight and IP68-rated with a narrow beam width, high accuracy and built-in filter algorithms.

Available in two measuring ranges:

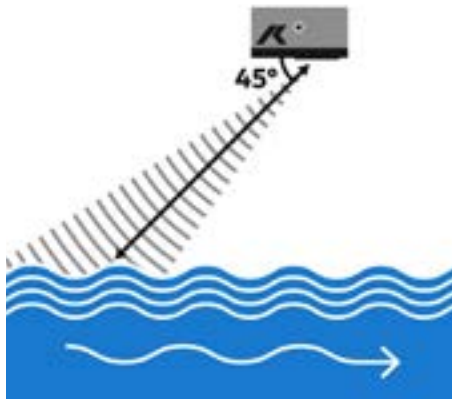
- 0.10 m ... 20 m (L20)
- 0.15 m ... 50 m (L50)

#### **Why HyQuant L?**

- The compact and visually unobtrusive design minimises vandalism, simplifies installation and reduces susceptibility to damage.
- Customisable filters for convenient adaptation to accommodate diverse monitoring conditions.
- Choose the sensor measurement range specific to your application.
- Highly focused sensing area and small wavelength ensure measurement accuracy of  $\leq 2$  mm.
- $8^\circ \times 8^\circ$  beam angle for high flexibility of installation at both wide and narrow bodies of water.

### **K HyQuant V**

An inventive yet affordable surface velocity radar with higher resolution.



KISTERS' HyQuant V sensor utilises Doppler technology within the 60 GHz frequency band to precisely measure water surface velocity without making contact. HyQuant V incorporates a small and easy-to-install IP68 sensor with a narrow beam width, exceptional accuracy, and pre-installed filter algorithms.

Maximum measurement distance: 20 m

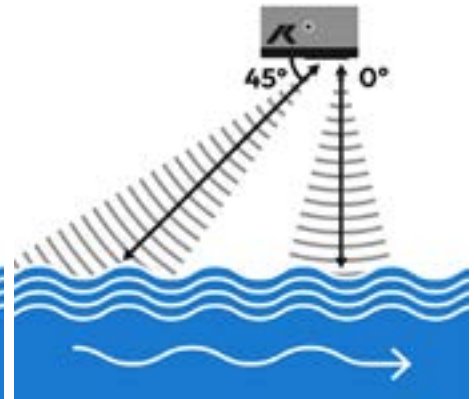
#### **Why HyQuant V?**

The HyQuant V sensor redefines surface velocity measurement standards.

- Attractive pricing
- Customizable filters
- Improved power efficiency
- Compact design
- Versatile mounting bracket

### **K HyQuant L+V**

Level and Velocity in the same small-format housing (also available as a simple upgrade from L or V sensors).















The all-in-one, non-contact radar sensor, where velocity meets level for the first time in a single and compact instrument, integrated in the smallest yet robust housing ever, is finally available. Maximum measurement distance: 20 m

#### **Why HyQuant L+V?**

No need to compromise on size or features anymore, with HyQuant L+V, you can have it all.

- Radar-on-chip concept that integrates two antenna pairs to acquire level and velocity data simultaneously.
- Eliminates the need for additional housings to accommodate independent level and velocity sensors
- Compact design
- Attractive pricing; also available as a simple upgrade from L or V sensors
- Optional upgrade to Q (discharge calculation) available

## Technical specifications.

HyQuant Series						
 <b>60 GHz</b> V-Frequency Band	 Auto-correction filters	 <b>IP68</b> Rated	 <b>CE, FCC Class B, UL, RoHS</b> Compliance		 160 mm x 97 mm x 91 mm	
					 1.15 kg	
 SDI-12, Modbus, Wi-Fi	 Output rate	 Imperial and Metric units	 10 to 30 VDC	 -40 °C to 80 °C	 Mounting bracket, 10 m cable and torx key	
	HyQuant L	HyQuant V	HyQuant L+V			
Radar	60 GHz FMCW Level	60 GHz FMCW Doppler Velocity	All-in-one 60 GHz Level and Velocity			
Ranges	<b>L:</b> 0.10 m to 20 m and 0.15 m to 50 m	<b>V:</b> 0.05 m/s to 15 m/s	<b>L:</b> 0.10 m to 20 m <b>V:</b> 0.05 m/s to 15 m/s			
Accuracy	<=2 mm	<b>V: 1% of measured value:</b> (in a range from 0.02 m/s to 4.5 m/s)  <b>V: 2% of measured value:</b> (in a range from 4.5 m/s to 15 m/s)	<b>L: &lt;=2 mm</b>	<b>V: 1% of measured value</b> (in a range from 0.02 m/s to 4.5 m/s)	<b>V: 2% of measured value</b> (in a range from 4.5 m/s to 15 m/s)	
Resolution	<b>1 mm</b>	<b>1 mm/s</b>	<b>L: 1 mm</b>		<b>V: 1 mm/s</b>	
Power consumption at 12 V	typ. ~ 15 mA, Wi-Fi activated: ~ 90 mA (incl. optional upgrade to Q)	typ. ~ 50 mA, Wi-Fi activated: ~ 90 mA (incl. optional upgrade to Q)	typ. ~ 50 mA, Wi-Fi activated: ~ 90 mA (incl. optional upgrade to Q)			
Minimum ripple	—	2 to 3 mm				
Blanking distances	<b>0.1 m and 0.15 m</b>	<b>0.1 m</b>				
Beam angle	8° x 8°	8° x 12° beam angle	<b>L:</b> 8° x 8° <b>V:</b> 8° x 12°			

Specifications are subject to change without notice. Weights and dimensions are indicative. - © KISTERS 03.2024

## Enjoy the benefits of non-contact radar technology.



Impervious to  
environmental conditions  
and external influences  
typically affecting  
contact technologies.



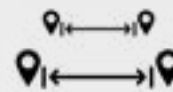
Measures up to the  
sensor cover, even in  
flood situations.



Immune to dirt  
and debris,  
reducing maintenance.



The sensors can be  
concealed to prevent  
vandalism.



Enhanced signal  
propagation improves  
accuracy across  
different distances.

Reseller

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