

Non-Contact Discharge Radar Sensor

WATER FLOW

General Description

HyQuest Solutions' LVQ-15 and LVQ-35 are sensors for **continuous discharge measurement** of rivers, open channels and canals with known cross-section profile. The sensors use **innovative radar technology** to measure velocity, water level and discharge. They enable **reliable, non-contact measurement** without the need for structural work in the water.

Thanks to the non-contact radar technology the LVQ is not susceptible to contamination, debris or driftwood in the water. Furthermore, the non-contact measurement ensures **very low maintenance** and fail-safe operation especially during high water or flooding.

The LVQ can be **simply mounted** on bridges, on the roofs of closed canals or channel superstructures. Depending on the properties of the water surface the device can be installed in a height of 0.5 to 35 m. LVQ is available in two versions:

- LVQ-15: water levels from 0 to 15 meters
- LVQ-35: water levels from 0 to 35 meters

The measurable velocity range is between 0.10 and 15 m/s. Additionally the direction of flow is detected, enabling the operation in tide influenced rivers.

Measuring principle

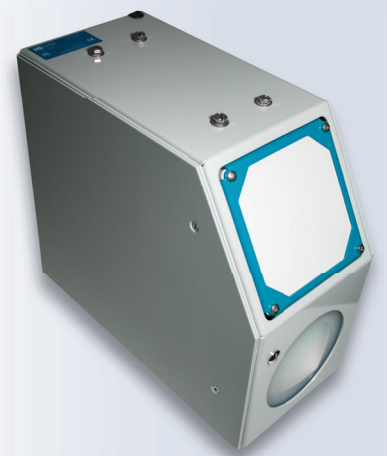
The non-contact radar technology determines the water surface flow velocity using the **Doppler frequency shift method** and furthermore the water level is established by a travel time measurement. With known cross section profile the discharge Q of the water is calculated.

Applications

LVQ enables discharge measurement for rivers, streams, open channels and canals for which continuous monitoring is desired. The bed of the water should be as stable as possible in order to warrant consistent measurement. A visible swell must be evident on the water surface.

Features

- Non-contact, maintenance-free measurement system
- No structural work in the water needed
- Fully operating even in flood water situations
- Low power consumption enables operation using solar cells
- Detection of flow direction
- Velocity range of 0.1 to 15 m/s (depending on the flow conditions)
- Recognition of hysteresis effects
- Measures in backwater situations
- Automatic installation angle correction
- Optional: analog outputs 4 to 20 mA



Technical Specifications

Dimensions and Weight	338 mm x 333 mm x 154 mm, 5.4 kg
Protection Class	IP 67
Power	<ul style="list-style-type: none">■ Supply: 6 to 30 V■ Consumption at 12 V: standby approx. 1 mA, with active operation approx. 140 mA■ Over voltage protection, reverse power protection, lightning protection
Temperature	<ul style="list-style-type: none">■ Operating temperature: -35 to 60 °C■ Storage temperature: -40 to 60 °C
Interface	<ul style="list-style-type: none">■ Digital Interface<ul style="list-style-type: none">- 1 x SDI-12; 1 x RS 485 or Modbus- Transfer rate: 1.2 to 115.2 kBd- Protocol: various ASCII-protocols- Output: discharge, flow velocity, level, quality parameters■ Optional analogue output (LVQ-15-A): 4 x output 4-20 mA for water level, velocity, discharge and AUX
Water Level Measurement	<ul style="list-style-type: none">■ Measurement range 0 to 15 m (standard LVQ-15), 0 to 35 m (extended version LVQ-35)■ Resolution 1 mm■ Accuracy: +/- 2 mm■ Radar: frequency 26 GHz (K-Band), opening angle 10°
Velocity Measurement	<ul style="list-style-type: none">■ Measurement range: 0.10 to 15 m/s (depending on flow conditions)■ Accuracy: +/- 0.01 m/s; +/- 1 % FS■ Resolution: 1 mm/s■ Direction recognition: +/-■ Measurement duration: 5 to 240 s, measurement interval: 8 s to 5 h■ Radar: frequency 24 GHz (K-Band), opening angle 12°■ Distance to water surface: 0.50 to 35 m■ Necessary minimum wave height: 3 mm
Automatic vertical angle compensation	Accuracy +/- 1°, resolution +/- 0.1°

Accessories

LVQCOMM: Commander software for parameterization and discharge calculation. The software is operated by means of a desktop or laptop that is connected to the LVQ sensor using the RS485/USB adaptor provided.



iRIS dataloggers and data modems:

- Robust housing
- IP over one or two channels of your choice: 4G with 3G fallback / GPRS, satellite, IoT

- I/O: analog, digital, SDI-12, Modbus
- iLink software
- Telemetry or cloud app

Please ask for details.

Reseller

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