

RP-30

Radar Profiler

Mobile, contact-free measurement of surface velocity profile on rivers specially under flood conditions



Properties and benefits

- » Portable mobile measurement system
- » For use on cable ways, bridge railings and tripods
- » For flood conditions and high flow velocities
- » No danger from flotsam and debris
- » Calculation of discharge with known water level and cross section profile
- » Easy user interface and handling
- » Wireless data transmission via Radio
- » Measurement range from 0.10 to 15 m/s (depending on flow conditions)

General

Introduction

The RP-30 Radar Profiler, a mobile measurement system, is used to measure the surface velocity profile of rivers and canals. To achieve maximum mobility we offer different mobile mounting devices that will suit any situation. The measurement data are transferred in real time to a laptop by an integrated Radio (2.4GHz) transmitter in the RP-30. The results can be viewed immediately on the computer screen during the measurement.

Contact-free = reliable

Due to the contact-free measurement the Radar Profiler is not exposed to damage inflicted by flotsam and debris. This results in low maintenance and improved reliability, especially in flood situations.

Mobile system

The conveniently sized radar sensor is easy to transport and designed for mobile measurements. The Radar Profiler is equipped with a battery that provides power for up to 40 hours of operation. The portable system enables measurements at sites where it is very difficult or impossible to set up alternative systems.



Applications

Cable way

It is easy and fast to mount the Radar Profiler on existing cable ways. Furthermore it is possible to perform a velocity measurement of the complete river profile according to your own requirements. For this purpose it is possible to measure at different and freely selectable horizontal positions across the river.



Traveler for hand rails

The traveler for rails enables the RP-30 to apply on hand rails. It is possible to perform measurements of the surface velocity at different positions in a short amount of time. The result is a complete velocity profile of the river.

Tripod Mount

An even more mobile setup can be achieved by using a standard tripod to mount the Radar Profiler. With such a setup it is easy to freely choose a position to perform measurements, as long as the tripod stands on solid ground.



RP-Commander

Profile measurement

The RP-Commander software supports you to measure the surface velocity profile. After the horizontal positions of the single measurements are defined, the RP-30 is moved across the river. At every defined position a velocity measurement is manually started. The measured values are saved, listed in a table and displayed in a velocity profile graph. Additional measurements for the reverse movement of the RP-30 are possible.



Calculation of discharge

To calculate the discharge the water level and the cross section profile have to be known and entered in the RP-Commander. For every single measurement the area of the wetted cross section is determined. Additionally the mean velocity of every section is calculated from the measured surface velocity by a hydraulic model. This results in an individual discharge for every section. By adding these up results in the total discharge.

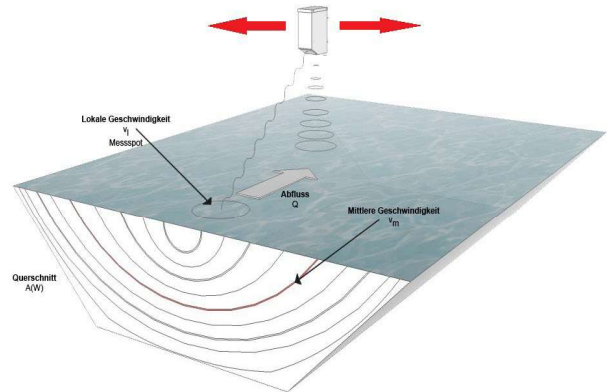
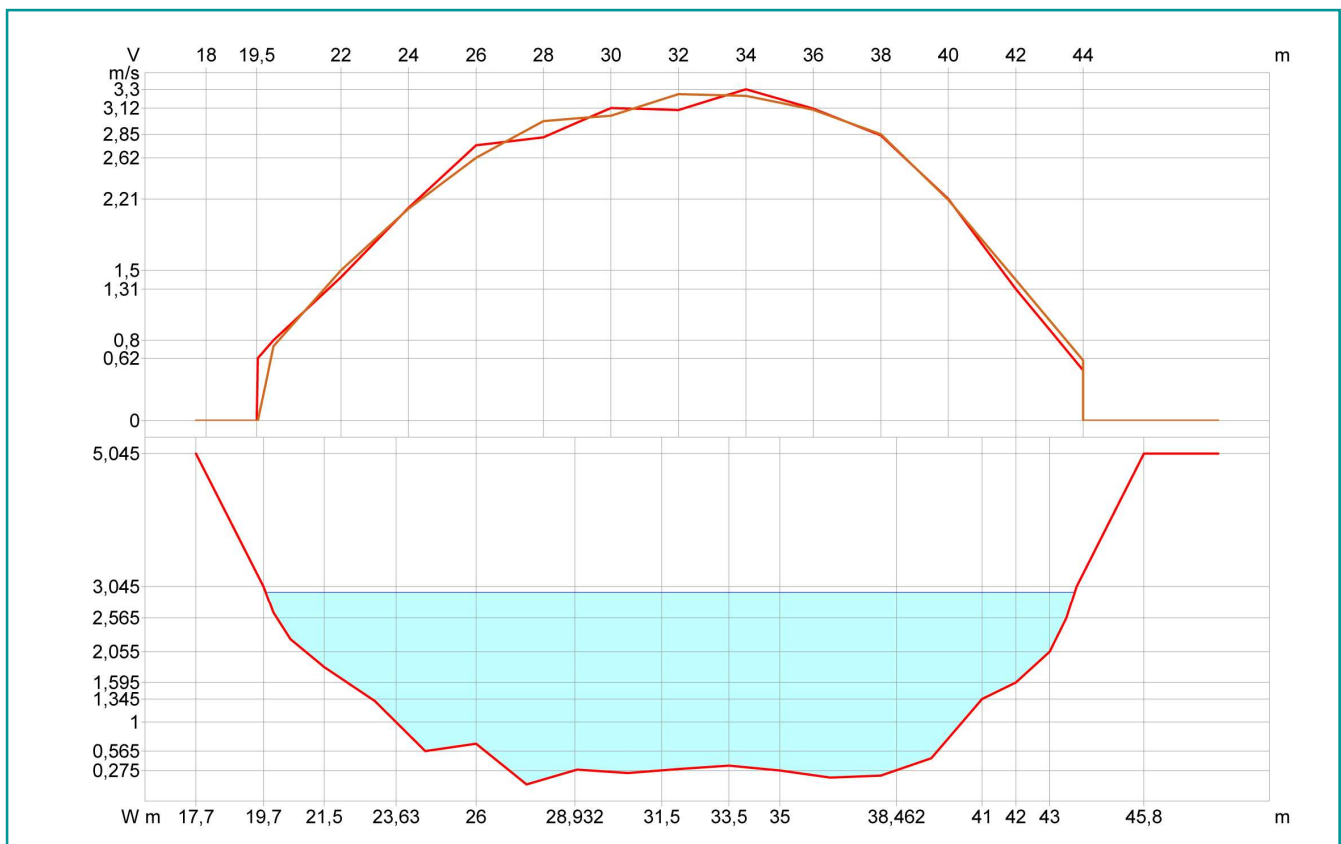


Diagram: Velocity profile / Cross section



Water level	Area	Discharge measurement 1	Discharge measurement 2
2.96 m	52.3 m ²	125171 l/s	127328 l/s

Technical Data

General	
Dimensions	445 x 154 x 226 mm
Weight without traveler	6.60 kg
Weight with traveler	8.00 kg
Protection	IP 67
Battery	12 V / 4,5 Ah
Operation time	up to 40 hours
Power consumption inactive state	10 mA
Power consumption measurement	110 mA
Operation temperature	-35° ... 60° C
Storage temperature	-40° ... 60° C

Velocity measurement	
Detectable measurement range	0.10 ... 15 m/s (depending on flow conditions)
Accuracy	+/- 0.01 m/s; +/- 1 % FS
Resolution	1 mm/s
Measurement duration	5 ... 240 sec.
Measurement frequency	24 GHz (K-Band)
Radar opening angle	12°
Distance to water surface	0.50 ... 130 m
Necessary minimum wave height	3 mm

Internal slope measurement	
Accuracy	+/- 1°
Resolution	+/- 0.1°

Data transfer	
Radio	Radio 2,4GHz (Transfer distance up to 150m)