



## Transmitter type MT

The ideal flow meter for each application!

### Brief description

- wireless communication with the flow meter (WiFi)
- protection from unauthorized access due to individual user rights
- 16 GByte internal memory
- graphical menu-driven interface, for quick commissioning
- system diagnostic, remote maintenance
- flexible data visualization (e.g. time series, velocity profiles)



Q-Eye PSC MT: stationary Pulse-Doppler system



AquaProfiler® MT: stationary flow profiler



Q-Eye Radar MT: non-contact flow measurement

Kanalis TT MT: acoustic multi-path flow meter



## ... the new transmitter

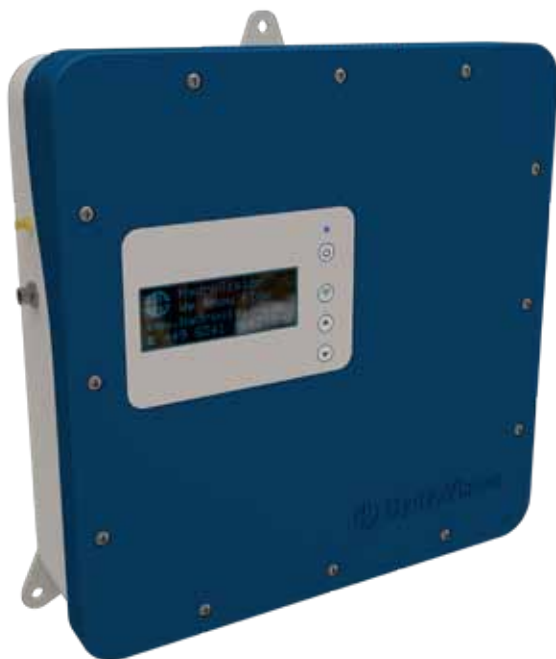


Image: HydroVision GmbH

Simple and user-friendly - the new transmitter type MT now allows to operate any measuring system of HydroVision's product family.

Whether it is **Transit-Time** or **Pulse-Doppler** - the new transmitter supports all measurement principles for water supply and waste water applications.

Parameterization of the measurement site and data visualization is easy using the standard web-browser of your smartphone, tablet PC or notebook – there is no need for any additional software or App.

### More advantages:

- wireless communication with the flow meter (WiFi)
- protection from unauthorized access due to individual user rights
- 16 GByte internal memory
- graphical menu-driven interface for rapid commissioning
- system diagnostic, remote maintenance
- flexible data visualization (e.g. time series, velocity profiles)

### The new transmitter also features a variety of communication interfaces:

- MODBUS TCP (RS232 or RS485)
- Ethernet (10/100 Mbits)
- RS485
- optional modem connection: analogue, ISDN, GPRS, EDGE, UMTS, LTE

### Further technical highlights:

- one central power supply 85-265 VAC or 9-36 VDC
- 4 analogue inputs (4-20 mA)
- 4 relay outputs
- 2 pulse outputs
- 4 analogue outputs (4-20 mA)

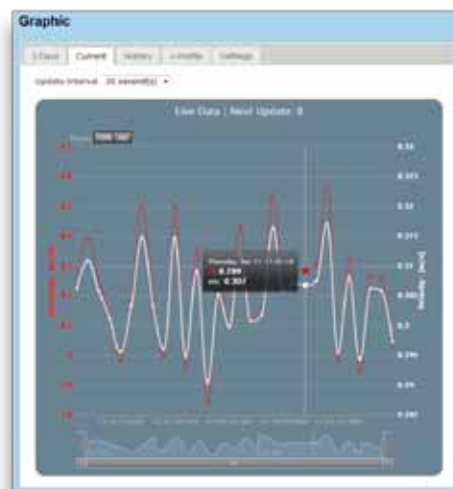


Image: HydroVision GmbH

### Technical data:

Handling:	keyboard
Display:	LC display, 4 lines, 20 characters
Software, setup and download:	via notebook, tablet or smartphone (iOS, Andoid, Windows, Blackberry)
Datalogger:	16 GB Micro SD-card
Communications:	RS485 MODBUS (RS232 or RS485), WLAN, GPRS, Ethernet 10/100 Mbps optional modem connection: analog, ISDN, GPRS, EDGE, UMTS, LTE
Inputs:	max. 4 x 4-20 mA, 2x digital
Outputs:	max. 4 x 4-20 mA, 2x digital, 4x relay
Power supply:	85-260 VAC (48-60 Hz) or 9-36 VDC
Operating temperature:	-20 °C ... +70 °C
Approval:	IP 65
Enclosure:	ABS, wall mounted
Dimensions:	338x333x92 mm (hxwxwd)

*Subject to change in accordance with technical advances!*

# Q-Eye PSC MT - stationary Pulse-Doppler system

## Description:

The Q-Eye PSC is a combined sensor for water level and flow velocity measurement. Because of the small construction of the combined sensor, disruptions of the flow profile can be minimized and an exact velocity measurement is possible – especially for low flow velocities. Ideal application areas for the Q-Eye PSC are defined measuring sections and partially filled tubes. The sensor can be installed vertical on the floor as well as horizontal, e.g. on a sheet pile. In this case, an additional pressure sensor (e.g. DS 22) for water level detection is necessary.

Optionally the Q-Eye PSC can be combined with the portable, battery-powered flow meter Q-Eye MIII.

## Measurement principle:

Pulsed wave Doppler systems use a transducer to transmit short acoustic pulses. The received echo is rangedated to provide velocity measurements selectively from a small segment along the acoustic beam, step by step over the entire velocity profile.

Reflections of particles in other areas have no influence on the velocity measurement. Additionally, the 1 MHz sensor provides a higher data resolution by detecting smaller particles.

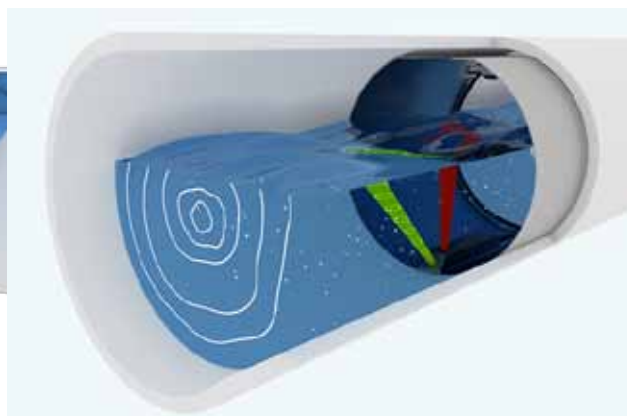
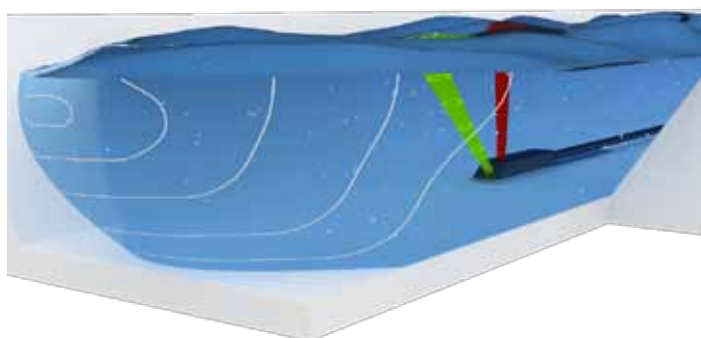


Image: HydroVision GmbH

## Technical data for combined water level and velocity sensor (ultrasound):

Sensor:	1x flow velocity, 1x water level
Opening angle:	12°
Acoustic frequency:	1 MHz
Number of cells:	max. 18 cells
Measuring range v:	+/- 5.3 m/s
Measurement accuracy:	> 0.5 % FS (v > 1 m/s)
Measurement accuracy:	< 0.5 % FS +/- 0.0025 m/s (v < 1 m/s)
Particle concentration:	> 50 ppm
Measuring range h (ultrasound):	0.035 bis 1.0 m
Measurement accuracy water level:	0.25 % FS +/-1 mm (water level < 0.20 m)
Measurement accuracy water level:	0.10 % FS +/-1 mm (water level > 0.20)
Dimensions:	108x25x15 mm (LxBxH)
Weight:	incl. 10 m cable: 1.0 kg

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# Q-Eye Radar MT - non-contact flow measurement

The Q-Eye Radar MT is a non-contact open channel flow meter. It consists of a radar-based velocity sensor and an ultrasonic or radar based water level sensor.

## Versatile flow measurement system

In some applications it is an advantage to have a non-contact measurement. When combining both radar and water level transmitter, they provide a revolutionary approach to open channel and sewer flow monitoring. Combined are pulse wave radar velocity sensing technology with ultrasonic or radar pulse echo level sensing to remotely measure open channel flows.

The system is designed for continuous operation and suitable for measurements of flows not only in rivers and open channels, but also in municipal waste water and storm water sewers. A compact construction combined with the contact-free measurement principle enables an easy installation and use.

The velocities on the water surface are typically within 10 % of the average velocity. HydroVision has developed a Finite-Difference-Algorithm that yields an accurate determination of the average velocity from the measurement of the surface velocity at a know point of the flow surface.



Image: HydroVision GmbH

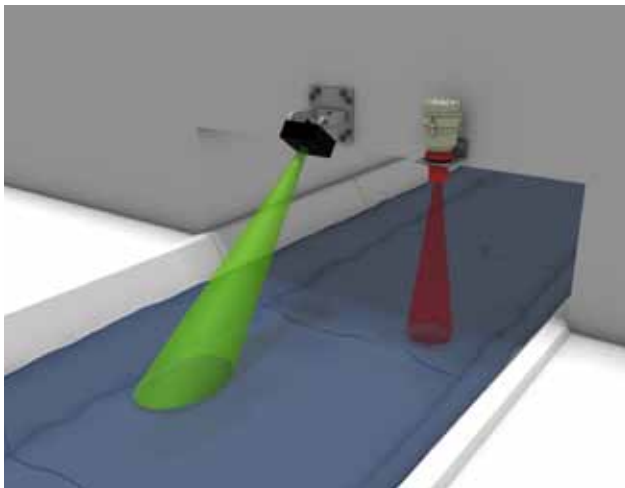


Image: HydroVision GmbH



## Technical data:

V-Sensor:	bi-directional
Frequency:	24 GHz
Sensor:	1x velocity 1x water level (optional)
Measuring range:	+/- 0,05 ... +/- 15 m/s
Resolution:	1 mm/s; min. wave height 3mm
Min. distance sensor/water surface:	0.3 m
Max. distance sensor/water surface:	up to 30 m
Measurement accuracy:	< +/-0,5 % of the measured value
Radiation angle at -3dB:	11°
Range of application:	-20 ... +60 °C
Power supply:	16 VDC
Current consumption:	max. 200 mA
Approval:	IP 68
Dimensions:	100x100x42 mm (hxwxd)

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# AquaProfler® MT - stationary flow profiler

The AquaProfler® is a line of acoustic flow meters for permanently installed and portable applications. The AquaProfler® precisely measures water velocities in open channels and pipes. With its high accuracy and competitive cost, the AquaProfler® is a perfect choice for long-term real-time monitoring or to obtain instantaneous measurements where time savings are an important aspect. It uses advanced Doppler technology to establish the velocity in many separate space points (cells) along the measurement axis and to develop the flow profile. The 2-dimensional velocity sensors type 2L or 2XL are installed either uplooking or sideloooking. The velocity profile is measured in max. 64 cells. Depending on the requested range, cell depths of 0,25 m to 2,0 m are parameterized.



Image: HydroVision GmbH

## Application of AquaProfler®

With its 2-dimensional velocity sensor and a resolution of max. 64 measuring cells, the AquaProfler® sets new standards. It scans the velocity profile and calculates the discharge together with the measured water level.

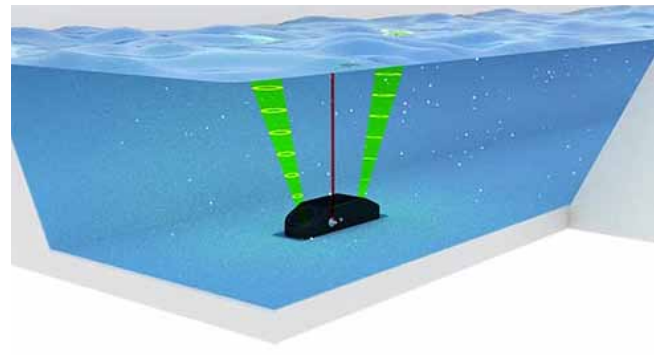
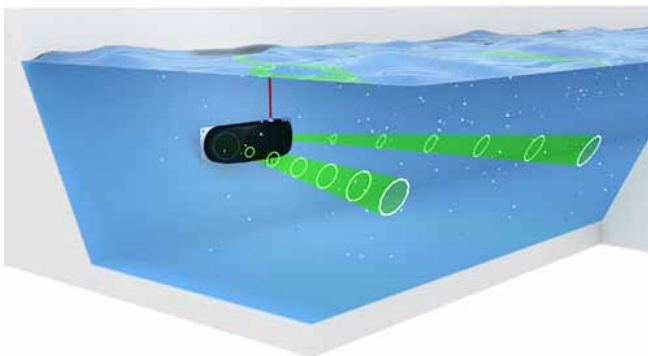


Image: HydroVision GmbH

## Technical data:

	AquaProfler® sensor 2L:	AquaProfler® sensor 2XL:
<b>Application:</b>	vertical and horizontal	vertical and horizontal
<b>2-D speed sensor</b>		
Measuring range:	+/- 5 m/s	+/- 5 m/s
Measurement accuracy:	0.5 % of the measurement, +/- 0.25 cm/s	0.5 % of the measurement, +/- 0.25 cm/s
Acoustic frequency:	2 MHz	600 kHz
Max. number of cells:	64	64
Max. profiling range:	0.25 to 20 m	0.50 to 120 m
Particle concentration:	50 ... 1500 ppm	50 ... 1500 ppm
Min. number of cells:	0.25 m	0.50 m
Min. blanking:	0.25 m	0.50 m
<b>Integrated temperature sensor</b>		
Range:	-5 °C ... 40 °C	-5 °C ... 40 °C
Measurement accuracy:	+/- 0.1 °C	+/- 0.1 °C
<b>Integrated ceramic pressure sensor</b>		
Range:	0 bis 10 m	0 bis 10 m
Measurement accuracy:	0.1 % final value of the measuring range	0.1 % final value of the measuring range
Max. cable length:	80 m	80 m
Dimensions:	350x140x65 mm (dxwxh)	500x140x90 mm (dxwxh)

*Subject to change in accordance with technical advances!*

# Kanalis TT MT - acoustic multi-path flow meter

Kanalis TT MT is a velocity area open channel flow meter, which uses the acoustic "traveltime" method. This method assumes no relation between level and flow, as in weirs or flumes. It determines flow throughout a defined range by measuring water velocity and depth. For installation in open channels or closed conduits, Kanalis TT MT operates over the fully bi-directional flow range without causing obstruction or head loss. On-site characteristics such as varying water levels, skew flow or complex channel shapes are taken into account via specific path configurations.

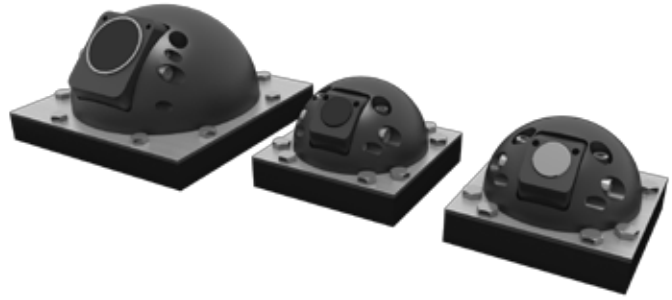


Image: HydroVision GmbH

## Typical flowmeter applications include:

Rivers, irrigation channels, industrial discharges, sewage treatment plants (WWTP), hydroelectric power plants

## Technical data hemispherical converter TD-200/8: converter with mounting device

Direction:	30° up to 70°
Channel width:	0.3 to 20 m
Frequency:	200 kHz
Radiation angle at -3dB:	18°
Cable length:	10 m
Material:	stainless steel and polyamide
Dimensions:	Æ = 218 mm, high = 109 mm

*Subject to change in accordance with technical advances!*

## Technical data hemispherical converter TD-200/18: converter with mounting device

Direction:	30° up to 70°
Channel width:	0.3 to 5 m
Frequency:	200 kHz
Radiation angle at -3dB:	18°
Cable length:	10 m
Material:	stainless steel and polyamide
Dimensions:	Æ = 140 mm, high = 70 mm

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# Kanalis TT MT - Single-, Crossed- & Multi-path Systems

## Single-path system

In its most basic form, the ultrasonic gauge operates with a single pair of transducers. However, it relies upon a relatively stable velocity profile, essentially unaffected by changes in the relation between water level and flow. The main flow has to be parallel to the bank. The relationship between measured velocity and discharge is established by hydrometric calibration.

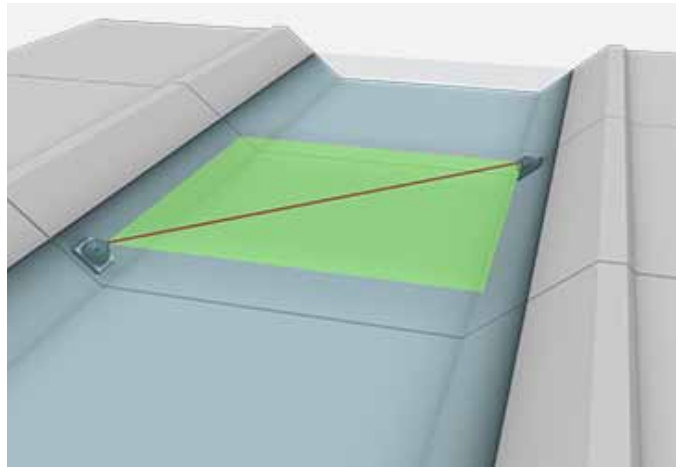


Image: HydroVision GmbH

## Crossed-path system

In rivers there is a high risk of cross flow. Its intensity depends mainly on the river's geometry and if there is an upstream bend in the river. Although the cross flow does not influence the quantity of the discharge, it may affect the measurement. A second pair of transducers will be necessary. By crosswise arrangement of four transducers, effects of changing flow direction can be eliminated.

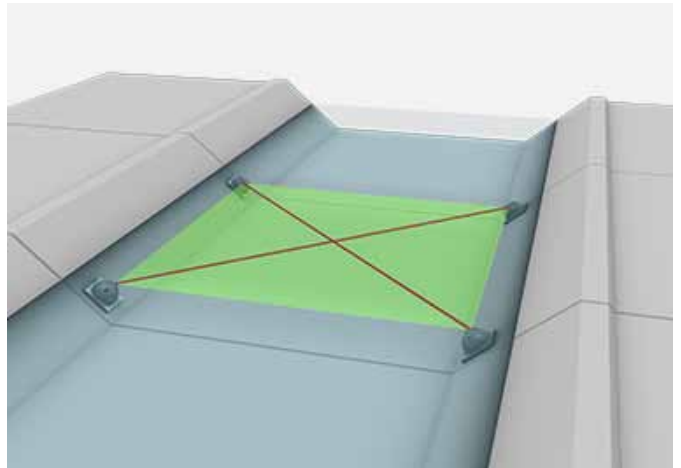


Image: HydroVision GmbH

## Multi-path system

An even more accurate discharge measurement can be obtained with systems using several planes. The measured result can be further improved by using a multi path system layering each of the acoustic paths in parallel planes one above the other. This negates having an expensive hydrometric calibration. This type of system is suitable for applications with large water level fluctuations, reverse flow or a vertical velocity distribution outside the theoretical normal.

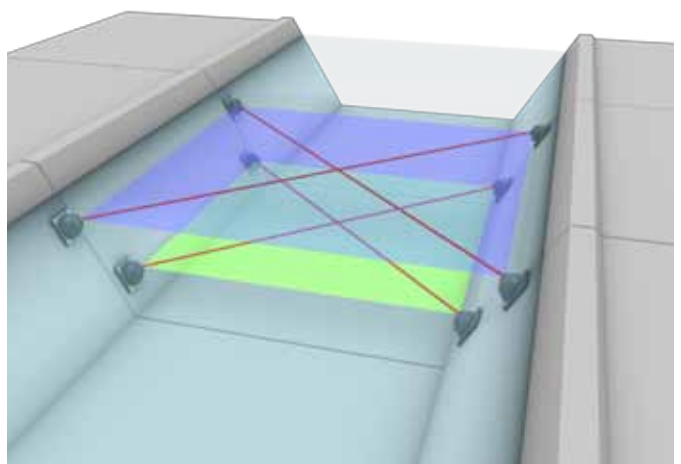


Image: HydroVision GmbH

# Sensors for water level measurement

## Pressure sensor pneumatic gauge PS-Light2

Accuracy:	< 0.05 % of the measuring range (<1 cm at 10 m measuring range)
Measuring ranges:	0 ... 10 m, 0 ... 15 m, 0 ... 20 m, 0 ... 40 m, 0 ... 70 m
Operating temperature:	-20 °C ... +50 °C
External supply:	11 ... 15 VDC
Output:	optional 1 from 7, 0..1 V, 0..5 V, RS232, 0/4...20 mA, BCD-Code, Binary-Code, Gray-Code
Measurement cycle:	1, 2, 5, 15, 30, 60, 120 or 180 minute(s), by an internal activation in the PS-Light resp. free programmable (from one minute) in combination with SEBA data loggers



## Pressure and temperature sensor: DS(T) 22

Output:	0 ... 1 V	0/4 ... 20 mA	RS485 Interface (SHWP-Protokoll)
Accuracy:	± 0.1 % (at 25 °C)	± 0.1 % (at 25 °C)	± 0.1 % (at 25 °C)
Operating temperature:	-5 °C ... +60 °C	-5 °C ... +60 °C	-5 °C ... +60 °C
Supply:	7-30 VDC stabilized	7-30 VDC stabilized	9-35VDC stabilized
Material:	Niro steel	Niro steel	Niro steel
Dimensions:	Ø 22 mm, length 182 mm		
Cable:	multicore transmission cable, screened with atmospheric pressure compensation tube		
Measuring ranges:	0 ... 2 m, 0 ... 10 m, 0 ... 20 m, 0 ... 40 m, 0 ... 100 m, 0 ... 200 m, more measuring ranges on request		



## Radar sensor types: SEBA-Puls 15/35/70

	SEBAPULS 15	SEBAPULS 20	SEBAPULS 30	SEBAPULS 70
Accuracy:	± 2 mm	± 2 mm	± 3 mm	± 15 mm
Measuring ranges:	01 ... 5 m	0 ... 35 m	0 ... 35 m	0 ... 75 m
Operating temperature:	-40 °C ... 80 °C			
Horn antenna:	plastic	plastic	stainless steel	stainless steel
Output:	4 ... 20 mA or 0.4 ... 2 V			
Dimensions:	Ø 72 mm	Ø 116 mm	Ø 116 mm	Ø 116 mm



## Angle encoder Levelsense

Dimensions:	143x85x38 mm (LxBxH)
External supply:	9 ... 15 V (typ. 12 V) required with supplied sensors
D/A converter:	14 bit
Flash controller:	3R2C 32 Bit with integrated watchdog
Display:	3 lines, each 16 characters, 3.65 mm
Serial Interface:	RS232
Operating temperature:	-30 °C ... +70 °C
Inputs:	up/down-counter, encoder input, impuls (rain) 2 contact inputs (control, recording)
Outputs:	1 analog output for norm signals analog U/I, SDI-12, Modbus, RS485



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