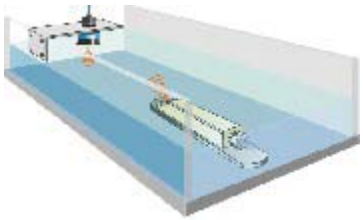
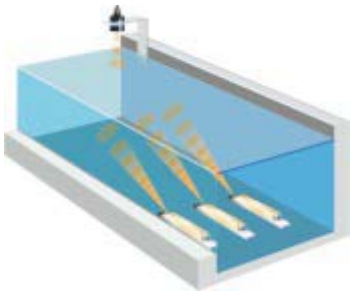
NivuFlow 750

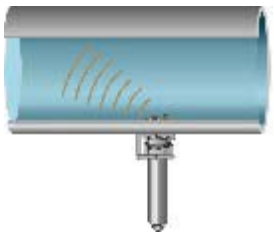
High accurate flow measurement for slightly polluted and dirty media in part filled and full pipes, channels and more

The consequent further development of our proven transmitter family

Flow measurement systems by NIVUS stand for innovation, reliability and highest accuracy.
NivuFlow 750 is a fixed transmitter for continuous flow measurement, flow control as well as for storage of measurement values recorded in slight to heavily polluted media featuring various consistencies.
It is designed for use in open channels, closed and part full pipes with various shapes and dimensions.







Flow measurement systems at the highest technical level

- Very high measurement accuracy
- Suitable even for very difficult applications
- Real-time measurement of real flow velocity profiles
- Intuitive, modern operating concept for quick and easy initial start-up
- Integrated numeric flow models
- Measurement in channels, part filled and full pipes as well as flumes
- Weatherproof version for outdoor use
- Ex approval Zone 1
- MCERTS (in preparation)
- High-resolution graphic daylight display
- Extensive diagnostic functions for reliable initial start-up and quick maintenance
- Compact construction for narrow switching cabinets
- Quick wiring thanks to easily accessible connection points
- Universal, standardised interfaces for easy integration
- Online connection/data transmission and remote maintenance via Internet

Typical Applications

WWTPs, channel networks, discharge constructions, industrial wastewater networks, measurement places for billing, intakes, drainage lines, return sludge lines, recirculation lines and many more

The right sensor for each application

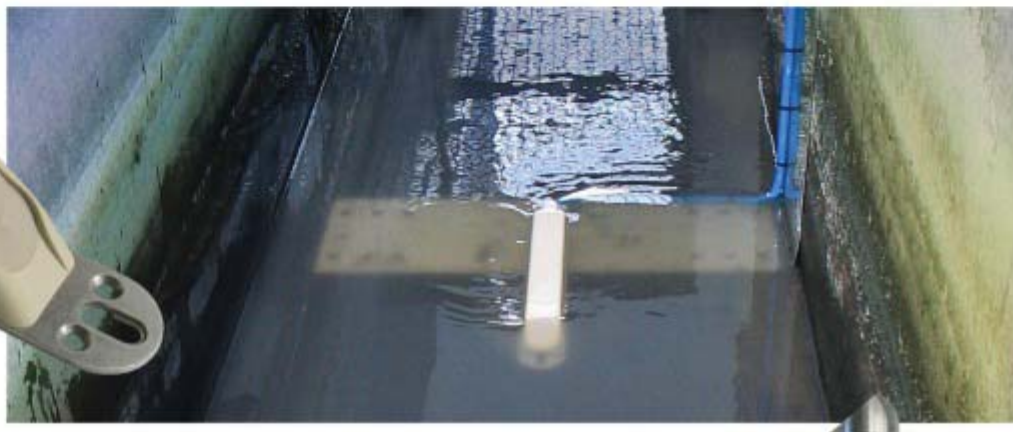
The complete flow measurement system consists of the NivuFlow 750 transmitter and the appropriate sensors.
For flow velocity measurement starting at flow levels as low as 3 cm up to several meters in pipes, flumes and channels of various shapes and dimensions there is a wide selection of sensors available: flow velocity sensors with and without integrated flow level measurement as well as air-ultrasonic flow level sensors.

Your benefits

- Absolutely zero point stable and drift-free sensors
- Low installation expenses through perfectly matched mounting accessories
- Installation under process conditions
- Various sensor constructions guarantee the best solution for each application
- Digital signal transmission for error-free connections over long distances
- Ex approval Zone 1

Air-ultrasonic sensor
for level measurement, installed in flume crown

Flow velocity sensors
for installation on the channel bottom or channel walls

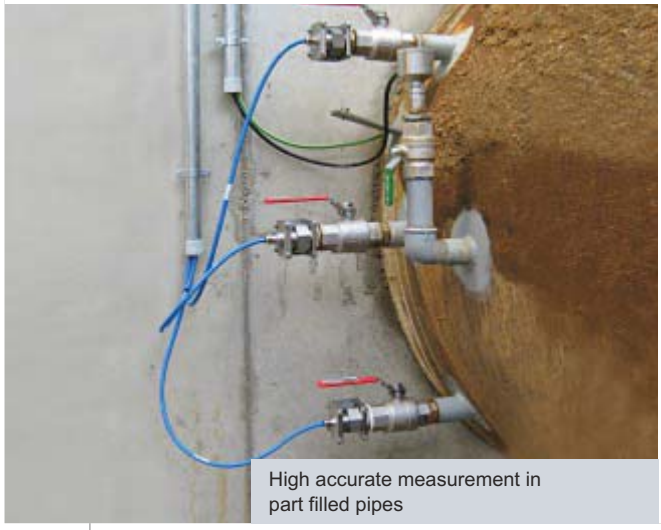


Flow velocity sensors
for installation in pipes and in the NIVUS Pipe Profiler

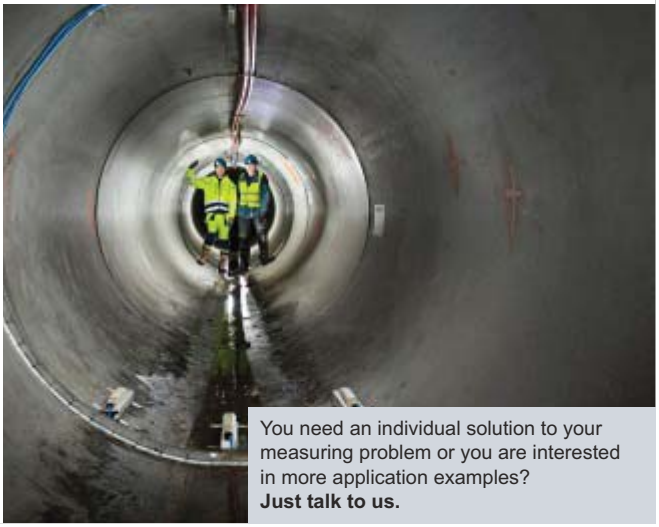
Perfect solutions
even under diffcult conditions

The alternative to EMFs.
Installation without removing the EMF.

Patented float solution for
detection of flow and sedimentation



High accurate measurement in
part filled pipes



You need an individual solution to your measuring problem or you are interested in more application examples?
Just talk to us.

NivuFlow is available as unit for installation in control cabinet or with a robust field enclosure

Nivu Flow 750 - Universal transmitter

The intuitive one-hand operation and the bright high-resolution colour display allow quick, easy and cost-efficient commissioning on site. Additional input devices or software are not required.

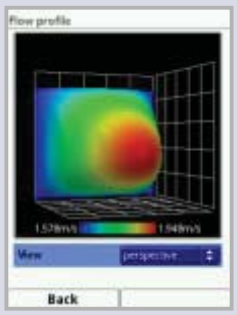
The latest integrated numeric discharge models enable more accurate, more stable and more reliable determination of flow rates even under very difficult measurement conditions.
The 3D flow profile is calculated in real time and is reproducibly and verifiably indicated on the transmitter display.

Factors influencing the calculation results such as channel shapes, discharge behaviour and wall roughness are considered during flow calculation.

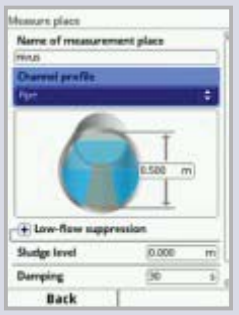
In addition to the compact DIN rail version there is a weatherproof field unit available featuring appropriate connection space for outdoor installation

Screen display menu

Screen display main screen



Screen display 3-D flow profile

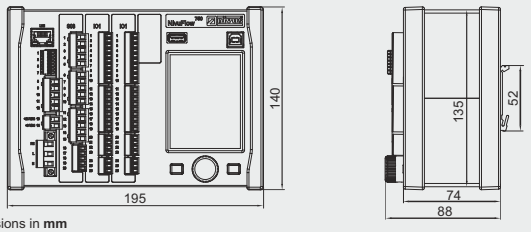


Screen display measuring place

Screen display Level sensors

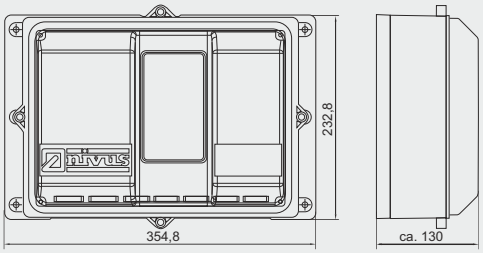
Technical Information NivuFlow 750

DIN rail enclosure for easy installation in switching cabinet



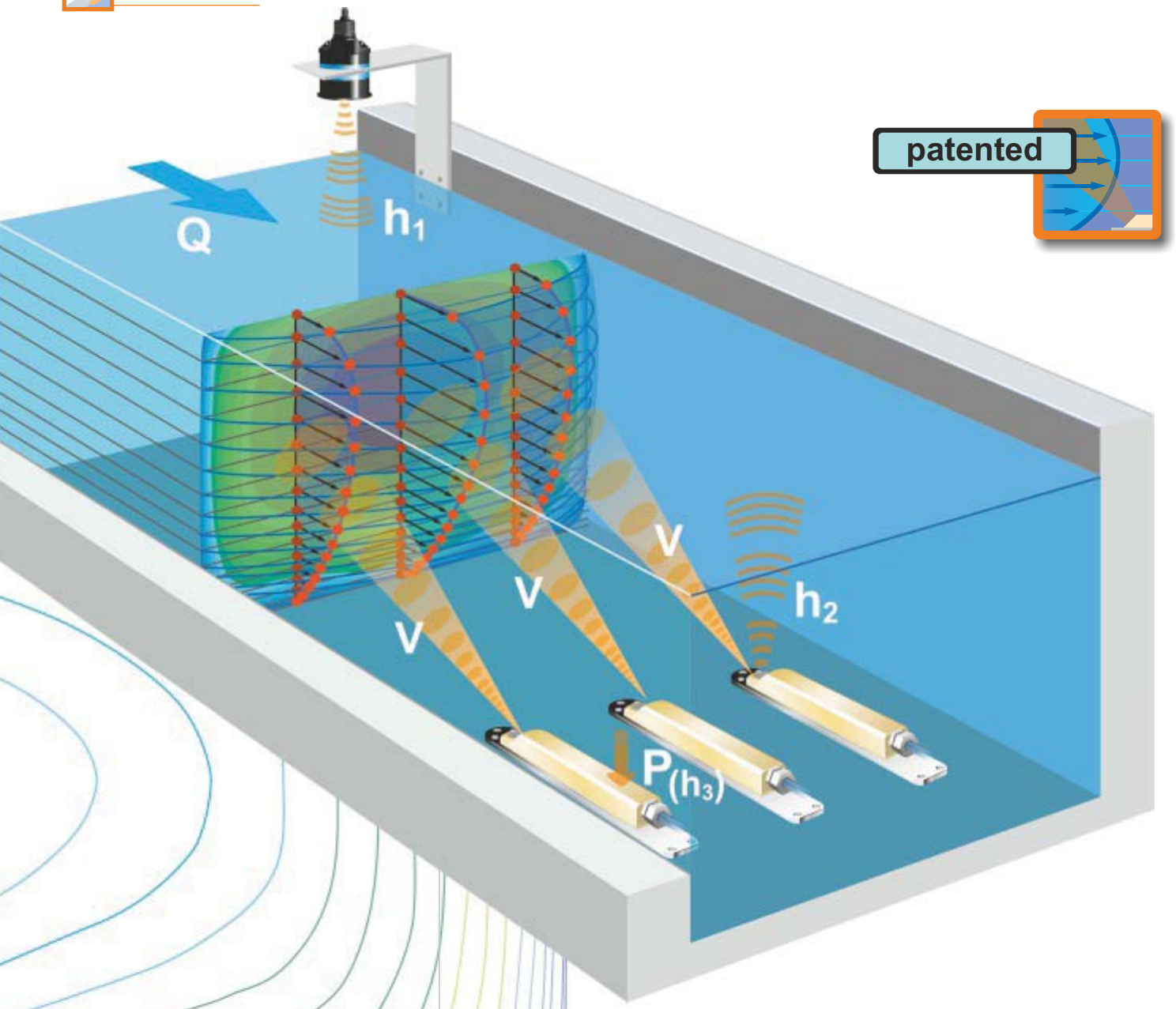
Dimensions in **mm**

Field enclosure



Power supply	85 to 240 V AC, +10 % /-15 %, 47 to 63 Hz or 9-36 V DC
Power consumption	typical 14 VA
Enclosure	Aluminium, plastic (installation in switching cabinet), plastic (field enclosure)
Protection	IP 20 (installation in switching cabinet), IP 68 (field enclosure)
Operating temperature	-20°C to +70°C
Storage temperature	-30°C to +75°C
Max. humidity	80%, non-condensing
Display	240 x 360 pixel, 65536 colours
Operation	rotary pushbutton, 2 function keys, menus in German, English, French, Swedish and other languages
Connection	plug with cage clamp terminals
Inputs	up to 7 x 4 - 20 mA, up to 4 x RS 485 for connection of up to 9 flow velocity sensors (via multiplexer)
Outputs	up to 4 x 0/4 – 20 mA, up to 5 x relays (SPDT)
Controller	3-step controller, quick close control, adjustable valve position in case of error
Data memory	1.0 GB internal memory, readout on faceplate via USB stick
Communication	Modbus, HART

You can find the complete specifications in the instruction manual or on www.nivus.com



How the NivuFlow 750 measures

The flow measurement principle as video under: ***www.nivus.com***

Flow cannot be measured directly. Multiple factors are required to detect the flow Q: average flow velocity and the flow cross section. This leads to the general formula:

$$Q = v_{(average)} \bullet A$$

The flow cross section A is investigated by continuously measuring the filling level considering the channel shape.
The flow velocity is detected via the velocity of the particles. Most media contain a certain load of dirt particles or gas bubbles which move in the same velocity as the liquid itself.

Level measurement (h)

Accurate flow measurements require precise and reliable level detection under all hydraulic conditions. The development of a level measurement system with multiple redundancy is a result of our many years of experience. Combining hydrostatic measurement, water-ultrasound and air-ultrasound provides solutions for all measurement tasks.

External 4- 20 mA level sensors such as "i-Series" sensors or NivuBar Plus can be connected additionally.

Your benefits

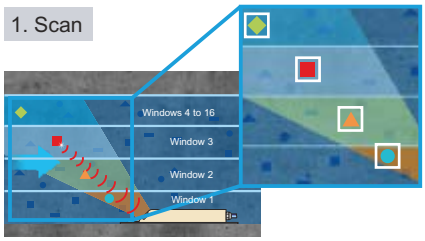
- Highest measurement accuracy
- Stable readings
- No calibration required
- Determination and indication of flow profiles

Flow velocity measurement (v) using cross correlation

The measurement method used for flow velocity determination is based on the principle of ultrasonic reflection. One of the most modern and most efficient measurement methods for flow velocity detection is the cross correlation method by NIVUS.

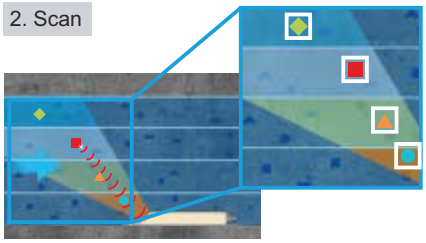
Existing reflectors within the medium (particles, minerals or gas bubbles) are scanned using an ultrasonic impulse with a defined angle.
The resulting echoes are saved subsequently as images or echo patterns.

1. Scan



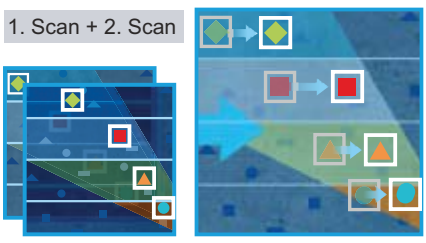
A few milliseconds later a second scan follows. The resulting echo patterns are saved as well.

2. Scan



By correlating/comparing the saved signals, the positions of unambiguously identifiable reflectors can be identified. Since the reflectors have moved with the medium, they can be identified at varying positions in the images.

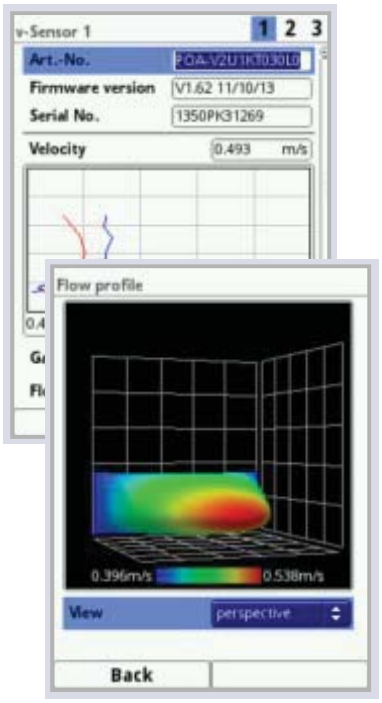
1. Scan + 2. Scan



Overlay of image patterns

Considering the beam angle it is possible to directly compute the particle velocity and hence the medium flow velocity from the temporal shift of the reflectors.

This allows to obtain highly accurate readings without the need to perform additional calibration measurements.



The NivuFlow 750 uses up to 9 x 16 gates for flow measurement.
A flow profile can be directly indicated on the display.

On site from anywhere

- Integrated data logger for high data security
- Saved data can be recalled at any time
- Online operation and online setting of parameters (remote control)
- Quick and comprehensive remote diagnostics of entire measurement places

Latest Technologies

Based on the latest hydraulic models, the NIVUS-COSP system from the individual measurement spots computes a dense measurement network covering the entire flow cross section.

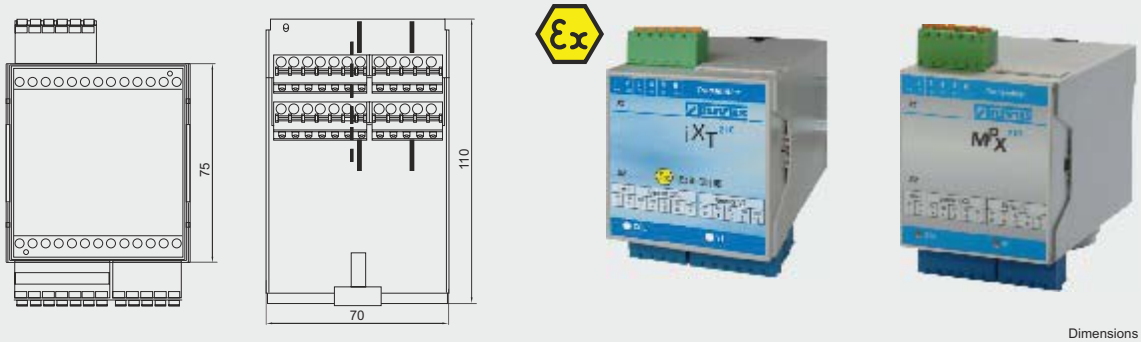
The NivuFlow 750 provides options for remote maintenance, remote diagnostics and the flexible integration into process conducting systems and telecontrol networks.

- Scientifically tested, channel-specific mathematical real-time flow models.
- Calculation of flow velocity distributions in proximity to walls and horizontal velocity profiles.
- Velocity integration covering the entire cross section.
- Ideal to investigate average flow velocities in flumes with hydraulic disturbances.

EX Separation Module iXT / Multiplexer MPX

The Ex separation module iXT is a Multiplexer used for sensor connection in Ex zone 1.
The Multiplexer Type MPX allows the electronic combination of up to 3 flow velocity sensors and 3 level sensors on site.

Technical Information



Dimensions in **mm**

Power supply	12 V DC, max. power consumption 9 W (typ. 7 W), supplied by transmitter
Protection	IP20
Ex approval iXT	ATEX and IECEx, ATEX: TÜV14ATEX142076, IECEx: TUN14.0014
Inputs	1 (optional 2) x analog 4-20 mA loop-powered sensor connection Ex ib Gb IIB, one of them HART compatible 2 (optional 4) x sensor connection Ex ib Gb IIB with RS485 interface
Outputs	RS 485 to transmitter

You can find the complete specifications in the instruction manual or on www.nivus.com

NIVUS - Instrumentation for Water Industry

The suitable solution for each application. Tried and tested measurement systems to perfectly fit your needs. Measurement systems which measure right what they should, reliably and accurately - even under difficult conditions. This is our claim!

Wide Range of Measurement Systems

We provide the suitable method for each application and each medium

Cross Correlation | Transit Time | Radar | Doppler | Hydraulics

Variety of Sensors

Suitable for each application - we offer the widest range of sensors in various designs.

Measurement Systems and System Control

We provide the entire portfolio from easy-to-operate transmitters with integrated numeric models through complete process control systems.

Competent Advice

Our experts are able to draw on many years of experience of measuring in the water and wastewater area. This allows to develop the best possible solutions for your applications.

Your benefits

- Accurate and reliable measurement results
- Perfectly dimensioned measurement systems
- Saves costs thanks to quick and easy installation and commissioning procedures
- Low personnel expenses through integrated systems
- One competent contact person for all components

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Specifications subject to change. 30.07.2015 / FA2000