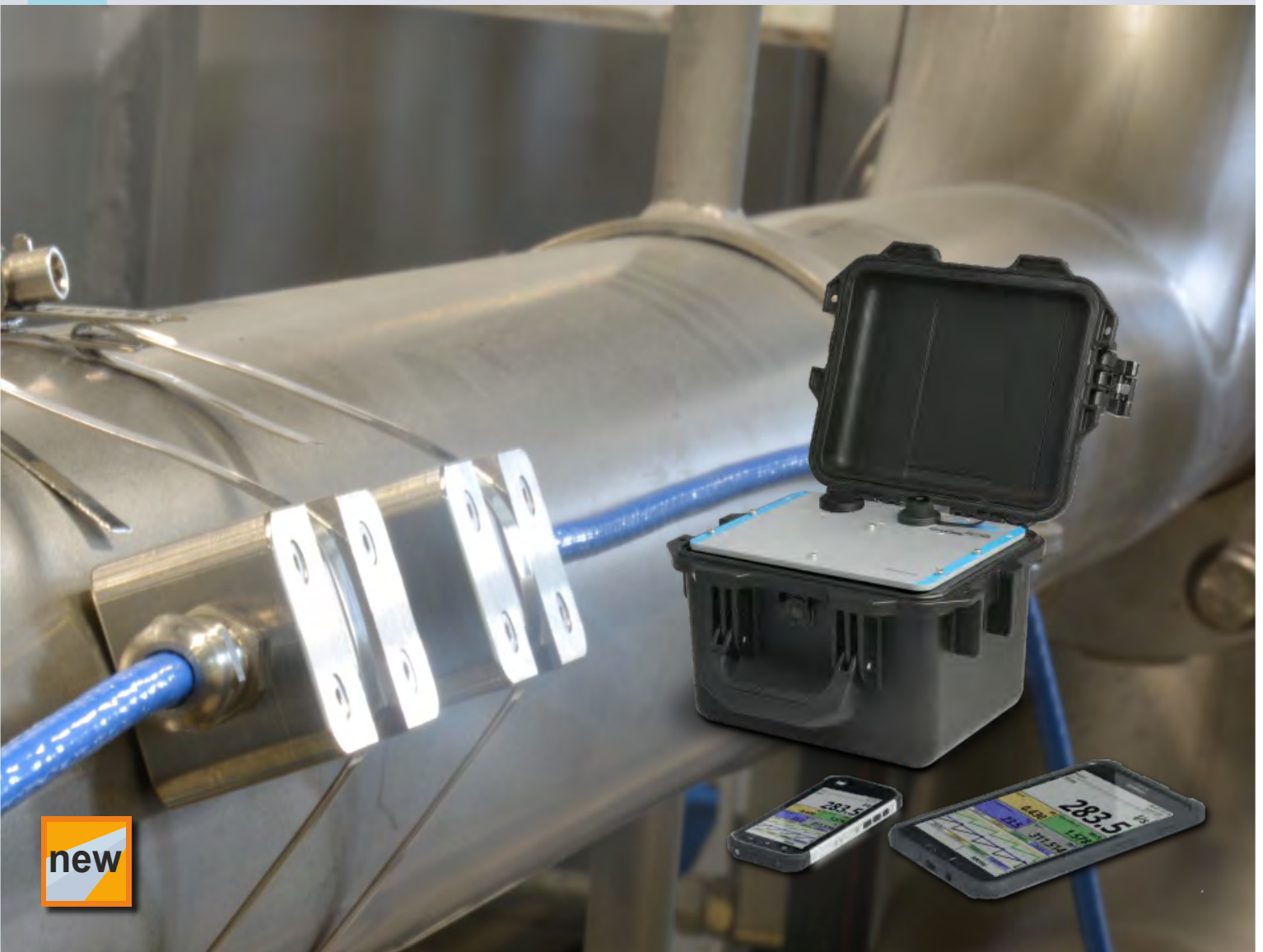NIVUS

ROYAL **Eijkelkamp**
Meet the difference

Nijverheidsstraat 9
6987 EN Giesbeek
Nederland
+ 31 313 880 200
info@eijkelkamp.com

## NivuFlow Mobile 600

new

Temporary Flow Metering using Ultrasonic Transit Time

Robust portable flow meter
for long-term monitoring of full pipes

The NivuFlow Mobile 600 was developed particularly for long-term measurements in field operation without external power supply. Measurements for checking and verifying can be carried out with the self-sufficient and portable system even in harsh environments without any problems. Battery lifetimes of several weeks or even months reduce personnel costs for maintenance and data readout significantly.
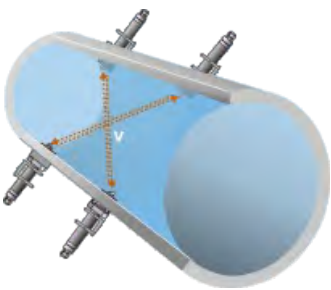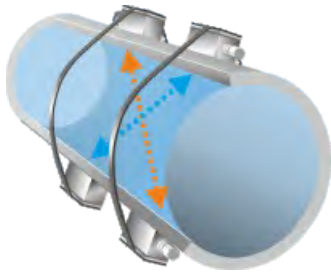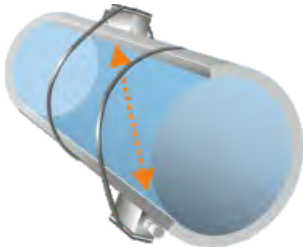
Your Benefits

- Monitoring of flow, temperature and pressure
- Ultrasonic transit time measurement
- Extremely long battery life
- Rechargeable battery can be replaced by user
- Operation via smartphone, tablet, notebook
- For extreme environmental conditions
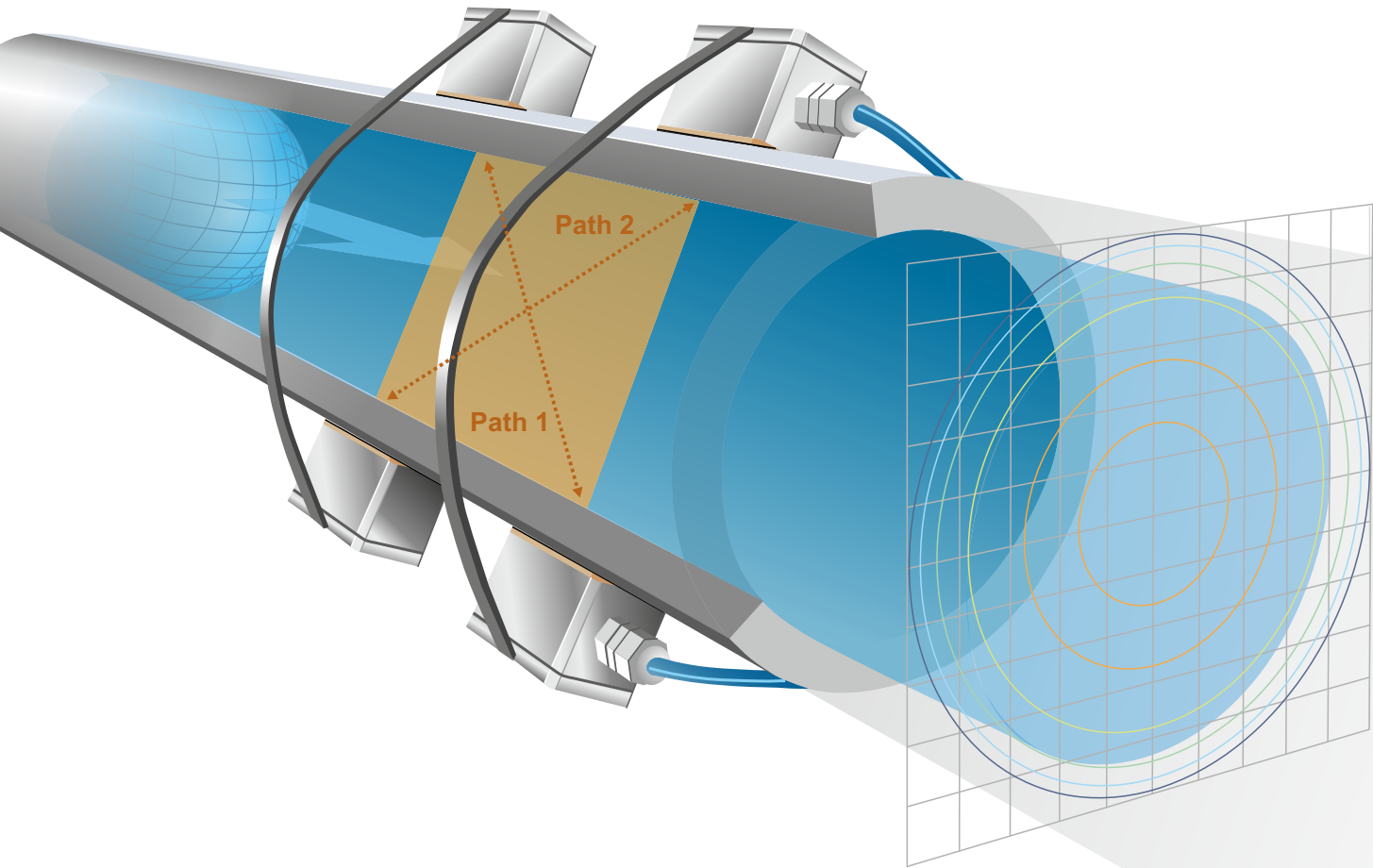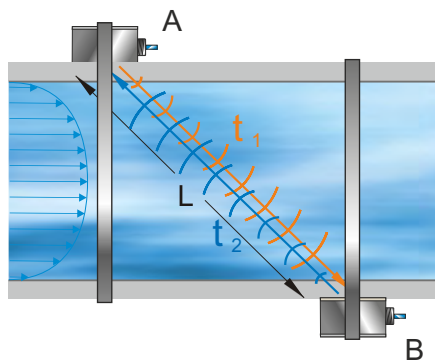- Up to 2 measurement paths

Typical Applications

Leakage detection
Pump verification
Analysis of users behaviour in water supplies
Intakes and outlets conducting cooling water or circulation systems
Monitoring of process water and service water

Transit Time – how the NivuFlow Mobile 600 measures

The NivuFlow Mobile 600 measurement principle is based on the detection of the transit time of ultrasonic signals between two sensors (A and B).

Here, the signal run time in flow direction t_1 is shorter than the signal run time towards the flow direction t_2. The difference between both run times is proportional to the average flow velocity along the measurement path v_m. The NivuFlow Mobile 600 computes the average flow velocity v_A from the measured path velocities v_m.

The flow within the full pipe is calculated by utilising the general continuity equation:

$$Q = A \cdot v_A$$

A = Cross-sectional area
v_A = Average flow velocity within cross section

Easy and convenient operation

The operation of the measurement system is password-protected by using a web browser installed on units such as smartphones, tablets or notebooks. Additional software or special apps are not required. Since the transmitter can be used without the need to open the enclosure it is possible to operate the unit comfortably even under poor conditions or in bad weather. The connection to the unit is set up via WLAN.
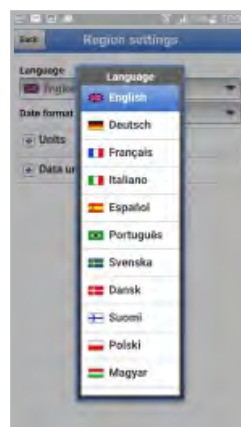
Contactless or in the Medium

The transit time method based on ultrasound permits reliable and accurate measurements in clean to slightly polluted media.

There are clamp-on sensors as well as pipe sensors available. The system automatically detects the type of sensor connected.

A key feature of the clamp-on sensors is the very quick installation since the sensors are installed on the outside of the pipe due the contactless measurement principle. Perfectly matched mounting accessories also enable the quick and easy installation of the medium-contacting sensors.

By connecting extra sensors it is possible to additionally measure process parameters such as pressure and temperature at the same time.

Pressure Sensor

Your Benefits

- ■ Contactless or measurement directly within the medium
- ■ Sensors are absolutely zero point stable and drift-free
- ■ Low installation efforts due to perfectly matched mounting accessories
- ■ Installation under process conditions
- ■ Various sensor types guarantee the best solution for each application
- ■ Stable signal transmission over long distances

Clamp-On Sensor

Pipe Sensor
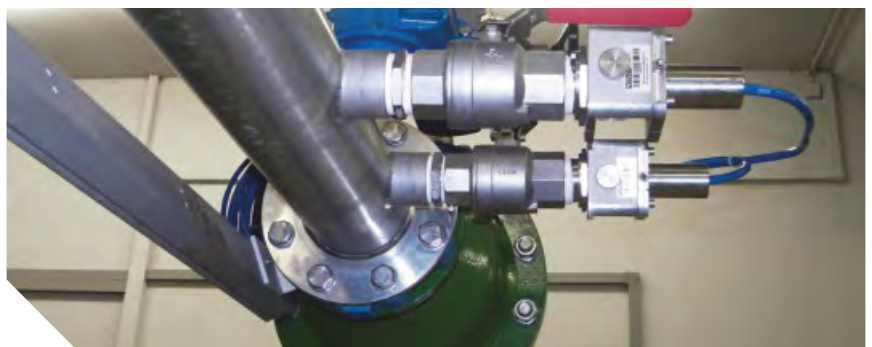
Tough Performer

The high protection degree of sensors and transmitters (IP68) permits use even under the harshest conditions. Even with its lid open the transmitter features IP 67 protection. The rechargeable batteries can be replaced also in wet environments such as during heavy rain.

Sophisticated Power Management

The NivuFlow Mobile 600 is designed for long-term operation and easiest handling. Equipped with two rechargeable battery packs the transmitter features a very long service life including simultaneous sensor power supply.

The rechargeable battery packs can be replaced by the user quick and easy on site to operate long-term measurements. This is why extra units or additional battery compartments are not required.
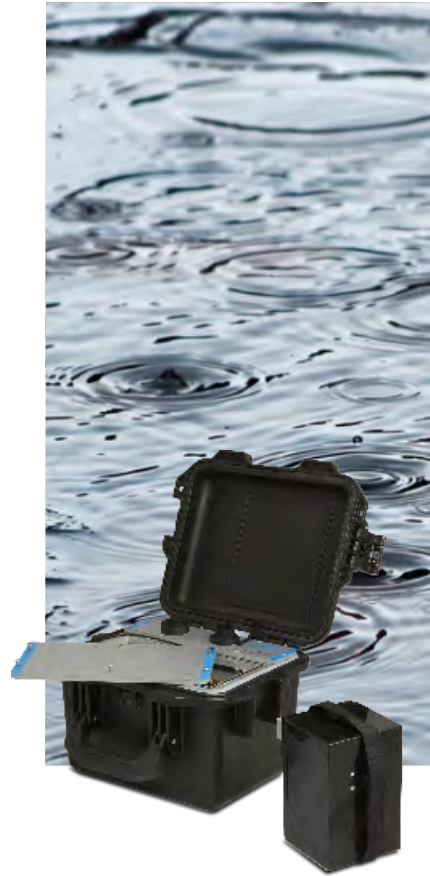
- Up to one year of battery life with 5 minutes measurement interval
- NivuFlow can be used also as permanent measurement using a mains battery charger
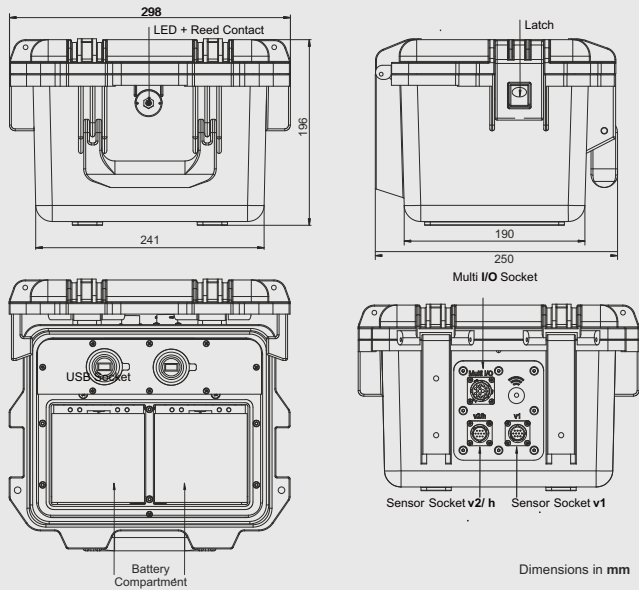
On Site from Anywhere

The measurement data can be transmitted via mobile phone network if necessary. The readings are transmitted and can be then called up from anywhere in the world.

- Unlimited access to your measurement data via Internet
- Free adjustable measurement and transmission cycles
- Lower personnel requirements for data readout

Specifications

Transmitter

LED + Reed Contact
298
196
241
Latch
190
250
Multi I/O Socket
USB Socket
Sensor Socket **v2/ h**   Sensor Socket **v1**
Battery Compartment
Dimensions in **mm**

Clamp-On Sensor

76,5
55
16
33
Ø6
Dimensions in **mm**

Pipe Sensors

45°
Ø22
40
SW36
300
279
260
177
SW36
Ø18

Transmitter

Measurement principle	Ultrasonic transit time (time of flight)
Power supply	• 2 x rechargeable battery 12V/15 Ah, lead gel • Charger 100 - 240 V AC / 50 .. 60 Hz / 50 VA
Enclosure	• Material: HPX high performance synthetic resin • Weight: approx. 2.2 Kg (without batteries and hoop guard) • Protection: IP68 closed / IP67 open
Operating temperature	- 20°C … + 50°C
Storage temperature	- 20°C … + 70°C
Max. humidity	90 %, non-condensing
Display	Status LED (RGB)
Operation	Solenoid switch, via WLAN using Smartphone, Tablet, Notebook…
No. of meas. paths	2
Inputs	• 2 x 0/4 - 20 mA (active/passive) • 1 x 0/4 -20 mA (passive) • 1 x active digital input • 1 x connection socket for power adapter or alternative power supply
Outputs	• 1 x analog output 0 - 10 V • 1 x potential-free digital output as SPDT / bistable • 1 x USB for value readout via USB stick
Storage cycle	1 - 60 minutes, time-cyclic or event-based
Data memory	Internal memory, capacity 1.5 years with measurement interval of 5 minutes
Data transmission	• via plug-in USB stick • via WLAN • via GPRS, UMTS, LTE
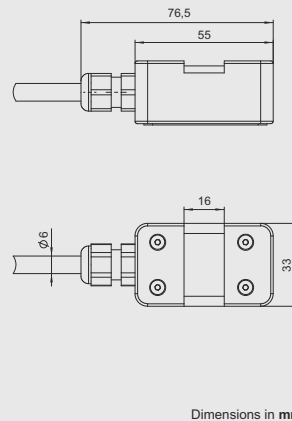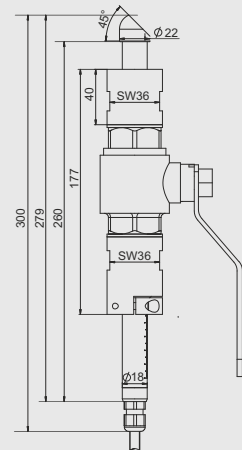
Sensors

Measurement principle	Ultrasonic transit time (time of flight)
Measurement uncertainty	Flow velocity (v average) within path ± 0.1 % of measurement value
Zero point drift	absolutely zero point stable
Sensor connection	via plug and socket
NIC Clamp-On Sensor	
Measurement range	-10 m/s to +10 m/s
Protection	IP 68
Operating temperature	-30°C to +80°C, medium meas. range 0°C to +80°C
Storage temperature	-30°C to +80°C (non-condensing)
Cable lengths	7 m, other lengths (max.100 m) upon request
Materials	Stainless steel 1.4301 (AISI 304), PEEK
Pipe diameters	50 - 2500 mm
NIS Pipe Sensor	
Measurement range	-15 m/s to +15 m/s
Protection	IP 68 (front side)
Operating temperature	-20°C to + 50°C
Storage temperature	-30°C to + 70°C
Operating pressure	max. 16 bar (other pressures upon request)
Cable lengths	10 m, other lengths (max.100 m) upon request
Materials	Stainless steel 1.4571 (AISI 316 Ti), carbon
Accessories	
Display/Operation	IP67-certified 8" outdoor tablet
Power supply	rechargeable battery pack, nominal voltage: 12 V; capacity: 15 Ah, power adapter and battery charger
Fastening system	Tensioning system and turnbuckles for sensor fastening hoop guards to protect the connection sockets suspension brackets for fastening on step irons
Connector Box	for the connection of additional sensors (pressure/temperature)
Pressure transmitter	UniBar E (II) screw-in sensor
Wall thickness meter	for determination of pipe wall thickness

The complete specifications can be found in the according instruction manual or on **www.nivus.com**