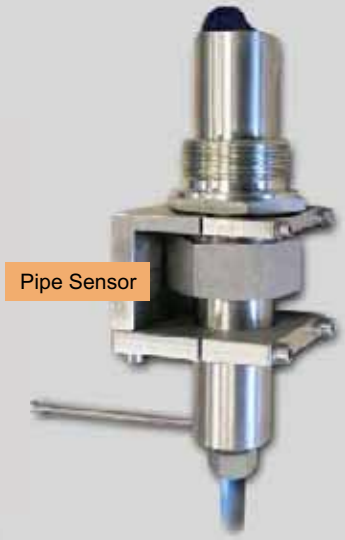
OCM F

Flow Meter for part filled and full Pipes, Channels and Flumes

- Latest fourth-generation and intelligent Doppler technology
- Sufficient for all channel shapes
- Easy mounting without additional constructions
- Cables can be easily extended
- Easy, multilingual programming in dialog mode
- All putputs can be simulated
- Measurement in heavily polluted and abrasive media
- Integrated 3-step controller
- Mechanically protected pressure measurement cell
- Reasonable purchase costs



Pipe Sensor

Wedge Sensor

OCM F

OCM F is a reliable flow meter designed for continuous flow measurement and controlling for slight to heavily polluted media in part filled and full pipes, channels and flumes.

General Discription

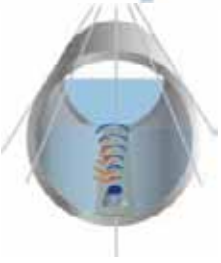
The OCM F flow metering system utilises a fully bidirectional ultrasonic velocity sensor.
Level measurement can be carried out either by a sensor-integrated pressure cell or by using an external sensor.
The transmitter can be powered with various voltages depending on the type used.

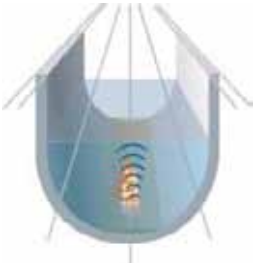
Operation / Programming

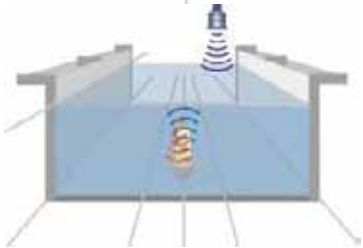
Thanks to the intuitive user interface it is very easy to set up the OCM F for the requirements of various applications.
Programmed settings are indicated clearly. This virtually eliminates malfunction due to faulty programming.
Current readings are indicated clearly on the large back-lit graphic display.

Typical Applications for OCM F

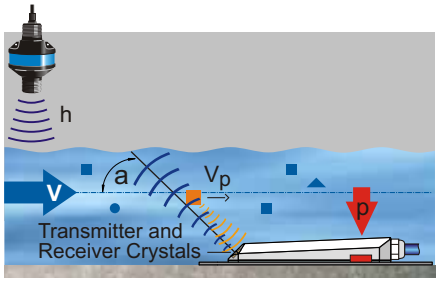
- wastewater treatment plants
- permanent measurements on storm water basin, storm water retention basin, storm water sedimentation tank
- direct discharger control, investigation of extraneous water or leakage
- industrial wastewater networks
- industrial flow measurements
- irrigation systems
- inlets and outlets conducting cooling water or circulation systems
- sluice stages in rivers
- hydroelectric and thermic power plants
- measurement campaigns in channel networks
- MCERTS applications
- and many more







How the OCM F measures



p = Level measurement with pressure (combi sensor)
h = Level measurement with ultrasound (external sensor)
V_p = Particle velocity
α = Transmission angle between ultrasound and flow direction

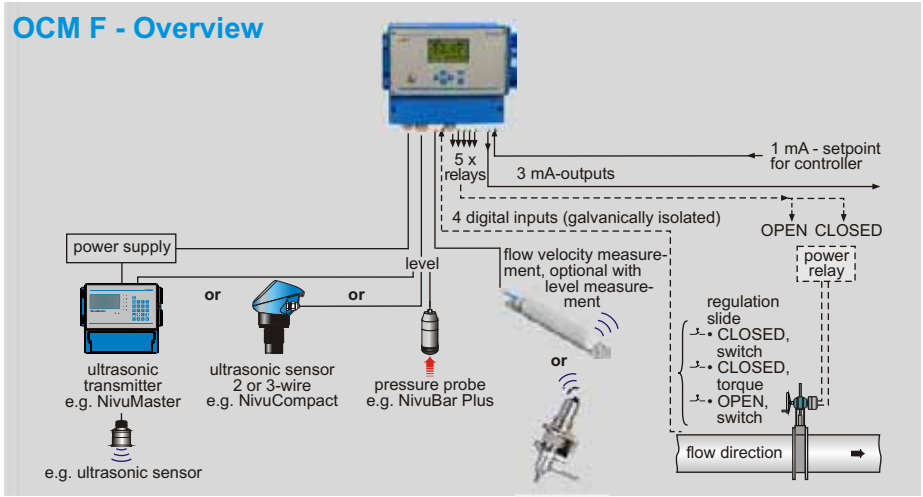
Measurement principle

The measurement principle is based on the classic Doppler method where an ultrasonic signal with a defined frequency is transmitted into a liquid with a known angle.
A portion of the ultrasound energy is reflected by the solid particles or gas bubbles carried with the liquid.
Due to the movement of the particles a frequency distortion occurs which is direct proportional to the particle velocity. The flow velocity can be determined from this frequency shift subsequently. From the flow profile and the multitude of reflecting particles a frequency spectrum results. This spectrum, suitable for hydraulic assessment of measurement places, can be indicated on the OCM F display. The newly developed intelligent Doppler sensor directly detects and evaluates the flow velocity.

Diagnostics / Simulation

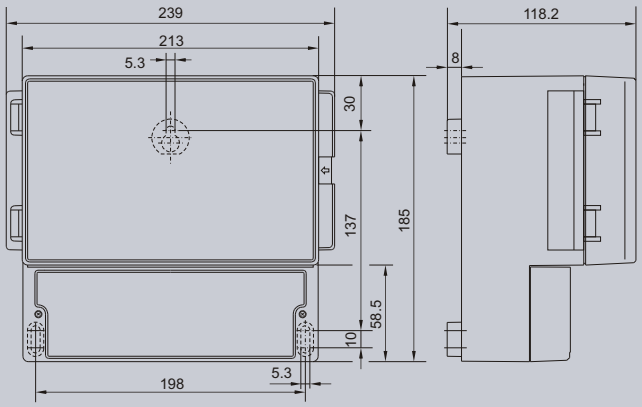
The status of analog and digital inputs and outputs can be requested and indicated directly.
The variety of simulation options allows optimum commissioning and the best possible system diagnostics.
Errors which might occur will be saved and can be recalled and indicated directly on the unit display.

OCM F - Overview



Specifications

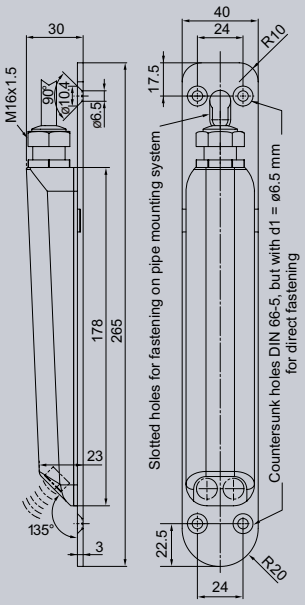
Transmitter



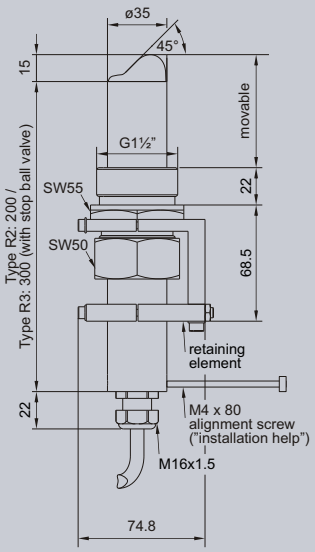
Wall mount enclosure also suitable for DIN-rail mounting.

Dimensions in **mm**

Wedge Sensor



Pipe Sensor



Dimensions in **mm**

Transmitter

Power supply	• 100 to 240 V AC, +10 % / -15 %, 47 to 63 Hz or • 24 V DC ±15 %, 5 % residual ripple
Power consumption	18 VA (7 VA typical)
Wall mount enclosure	• material: Polycarbonate (NEMA 4) • weigth: approx. 1200 g • protection: IP 65
Ex approval (option)	II(2)G [Ex ib] IIB
Operating temperature	-20 °C to +60 °C
Storage temperature	-30 °C to +70 °C
Max. humidity	90 %, non-condensing
Display	LCD, 128 x 64 pixel, back-lit graphic display
Operation	6 button keypad menus in German, English, French and Polish
Input	• 1 x 4–20 mA for external level (2-wire-sensor) • 2 x 0/4–20 mA with 12 bit resolution for external level and external setpoint • 4 x digital input • 1 active compact Doppler sensor connectable (flow velocity; combi sensor with additional level measurement)
Outputs	• 3 x 0/4–20 mA, load 500 Ohm, 12 bit resolution, deviation 0.1 % • 5 relays (SPDT) loadable up to 230 V AC / 2 A (cos ϕ 0.9)
Regulator	3-step controller, quick-close control, adjustable slide position at disturbance, auto flush function in case of blocked slide valve

Sensors

Measurement principle	• Doppler (flow velocity) • piezo-resistive pressure measurement (level measurement)
Measurement frequency	• wedge sensors 1 MHz • pipe sensors 750 kHz
Protection	IP 68
Ex approval (option)	II 2 G Ex ib IIB T4
Operation temperature	-20 °C to +50 °C (-20 °C to +40 °C in Ex zone 1)
Operating pressure	• combi sensor with pressure measurement (only wedge sensor): max. 1 bar • sensors without pressure measurement: max. 4 bar
Cable length	10/15/20/30/50/100 m pre-configured; special length upon request
Constructions	• wedge sensor for installation on channel bottom • pipe sensor incl. retaining element for installation in pipes
Flow Velocity Measurement	
Measurement range	-600 cm/s to +600 cm/s
Measurement uncertainty	±1 % of final values of measurement range
zero point drift	absolutely stable zero point
Sonic lobe	±5 degrees
Temperature Measurement	
Measurement range	-20° C to +60° C
Measurement uncertainty	±0.5 K
Level Measurement - Pressure	
Measurement range	0 to 350 cm
Zero point drift	max. 0.75 % of final value (0 - 50° C)
Measurement uncertainty	(standing medium) <0.5 % of final value

You can find more information in the instruction manual or on **www.nivus.com**

Specifications subject to change. 31.03.2010

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