

NIVUMASTER



Measurement On Stormwater Tanks With Overflow

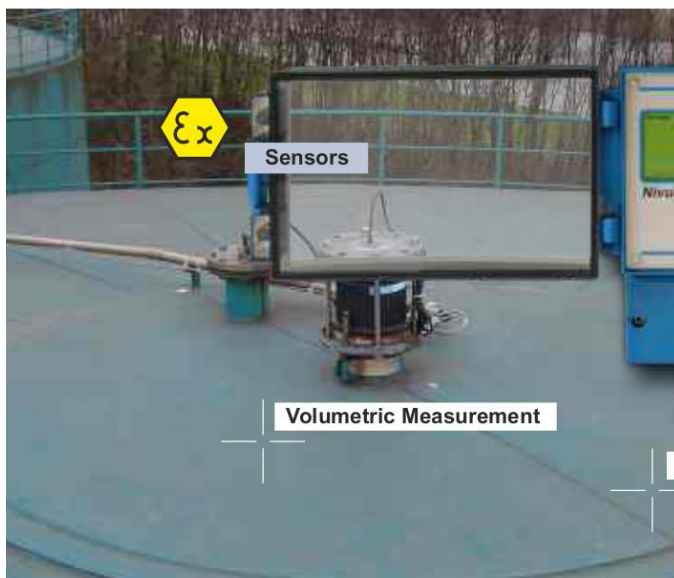


Volume Measurement

Pump Control



Comparative Measurement



Sensors

Volumetric Measurement



Distance Measurement



Limit Level Measurement

Level Measurement

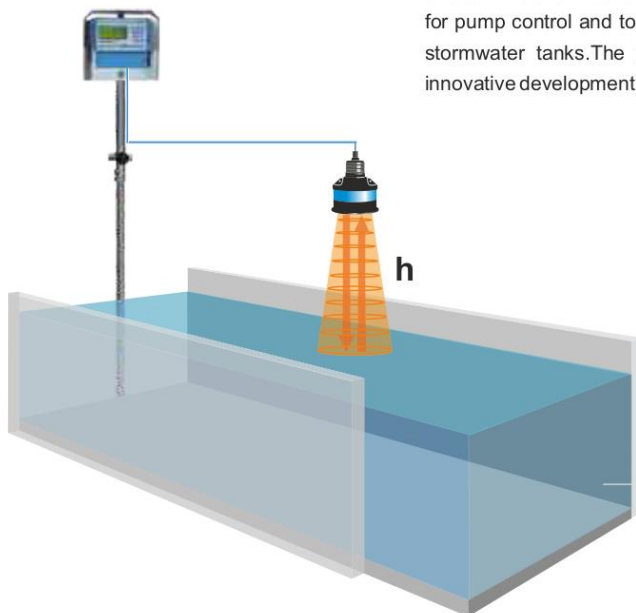
NivuMaster

One for all:
NivuMaster
the multifunctional
universal device



One for all - the NivuMaster handles any challenge

Always, when it comes to measure the fill levels and levels of liquids as well as bulk solids without being in contact with the liquid, the NivuMaster is the ideal universal device of choice. With the NivuMaster, you can not only measure and control the level, but also use it for pump control and to calculate flow rates in open channels and overflow volumes on stormwater tanks. The NivuMaster family combines many years of experience with innovative development in the field of ultrasonic measurement technology.



With the standard NivuMaster, you have the most universal ultrasonic device at your disposal that allows you to perform many application options with a single device. The NivuMaster reliably measures and performs control functions without the need for extra devices. This saves time, money, personnel and stock-keeping costs.

Non-Contact Ultrasonic Level Measurement

The sensor continuously transmits ultrasonic impulses which are reflected from the surface of the liquid. The reflected waves are detected by the sensor again. Level, distance or volume are calculated depending on the sound transit time.



P-series Sensors:





The ultrasonic sensors with integrated temperature compensation for connection to NivuMaster series transmitters provide many possibilities for measurement of liquids and bulk solids.

No matter what measurement range or application, the sensors always deliver a strong outstanding performance. A narrow-directional sonic lobe delivers exact measurements, even in narrow containers. False echoes from certain components do not affect the measurements, since they will be avoided automatically. The sensors are available in 1" threaded connection or as DIN flange version and are assembled for easy mounting.

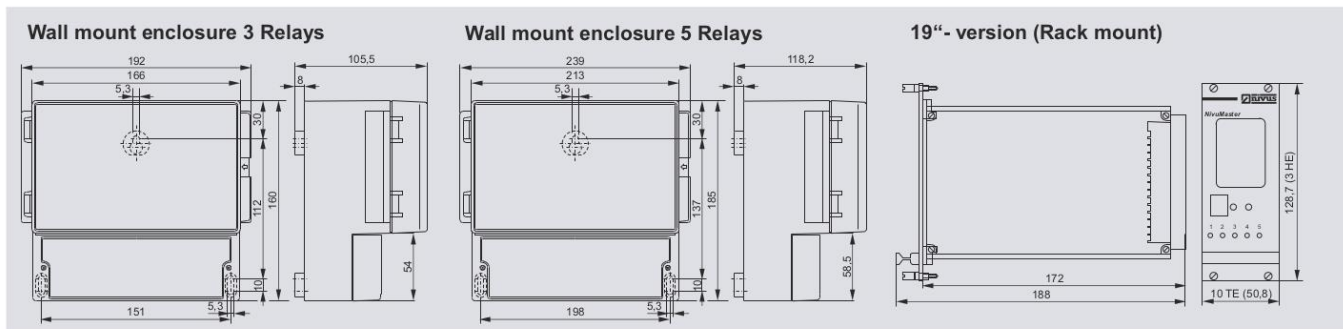
- Flexible installation: maximum cable length 1000 m; various flange versions available
- Very low in maintenance due to non-contacting measurement
- Versatile through measurement ranges from 0.07 m to 40 m
- Protection rating IP 68
- Versions with PVDF enclosure for use in aggressive liquids
- Safe operation through Ex approvals Zone 0, 1 and 2 according to ATEX

Type	P-M3	P-03	P-S6	P-06	P-10	P-15	P-25	P-40
Range	0.07 to 2.4 m	0.125 to 3 m	0.2 to 6 m	0.3 to 6 m	0.3 to 10 m	0.5 to 15 m	0.6 to 25 m	1.2 to 40 m
Resolution	+/- 1 mm		+/- 2 mm					
Ambient pressure	-0.5 to +5.0 bar							
Temperature	-30 °C to 95 °C (Ex -30 °C to 75 °C)			-40 °C to 95 °C (operation in hazardous area -40 °C to 75 °C)				
Beam angle ↴	12°		12°	10°	9°	10°	7°	
Ex approval	II 2GD Ex m II T6 (II 1GD Ex ia IIC T6 also available, only in connection with intrinsically safe transmitter (ia))							
Cable length	5 m, 10 m, 20 m, 30 m, 50 m and 100 m; special lengths on request							
Options	Weatherproof cover & flood protection head incl.		flood protection head (SUB)				not available	
	not available		PVDF enclosure for use in aggressive liquids up to max. 70 °C			not available		
Dimensions in mm								

The NivuMaster Transmitters: always the right solution

	NivuMaster L-2	NivuMaster 3 Relays	NivuMaster 5 Relays	NivuMaster LD-5:2
Level measurement/ distance measurement	 + + / +	 + +	 + +	 + +
Volumetric measurement/ empty space measurement	+ + / +	+ +	+ +	+ +
Pump control/ slide valve control	-	+	+ +	+
Volume measurement	-	+ +	+ +	+
Comparative measurement	-	-	+	+ +
Measurement on stormwater overflow tanks	-	+ +	+ +	+
Operation				
Display	optional	+	+	+
Keys	optional	+	+	+
Inputs				
Sensors / optional 4-20 mA / digital	1 / - / -	1 / - / -	2 / optional 4-20 mA / -	2 / - / -
Outputs				
Relays / mA-output	2 / 1	3 / 1	5 / 1	5 / 2
RS232 interface	1	1	1	1
Construction				
Wall mount IP65 / DIN rail mounting	IP66/ -	+ / +	+ / +	+ / +
19" version (rack mount)	-	+	+	+
Panel mount	-	+	+	+
Ex approval according to ATEX	Zone 0, 1 and 2	Zone 0, 1 and 2	Zone 0, 1 and 2	Zone 0, 1 and 2
	The NivuMaster L-2 is our cost-effective entry model.	For measurement of distance, level and volumes as well as for pump control and extended control tasks.	For measurement of distance, level and volumes as well as for pump control and extended control tasks.	Particularly designed for comparative measurements. Featuring two mA outputs for difference and filling level.

Dimensions





NivuMaster LF-5:2 **NivuMaster Plus**

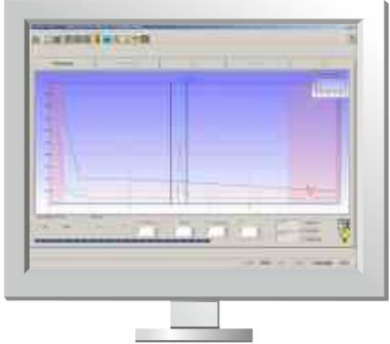


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	5 / 2	6 / 1
	1	1
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	+	-
	+	+
	Zone 0, 1 and 2	Zone 0, 1 and 2
	Particularly designed for stormwater overflow tanks. For measurement and output of level and overflow volume.	Particularly designed for pump management, the NivuMaster Plus features 7 digital inputs.



Use the NivuMaster series units to measure and to control levels, but also for pump control or for measuring flow in open channels and to calculate overflow volumes in stormwater overflow tanks.

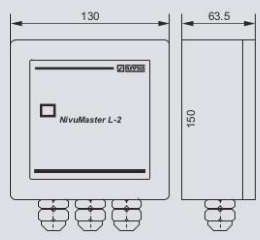
- Universal use for almost all liquids and bulk solids, measurement of level, distance, volume, difference and flow
- High measurement reliability through integrated agitator avoidance
- Easy echo analysis and setting of parameters via PC
- Up to 6 relays and galvanically isolated mA outputs
- Easy operation in dialog mode using back-lit graphic display
- Integrated emergency power switchover



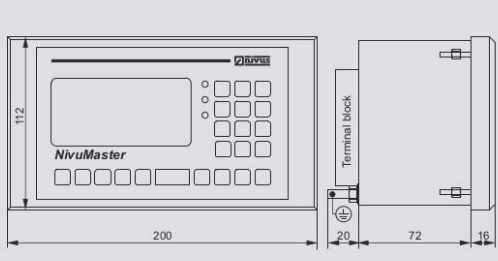
No matter if high accuracy of flow measurements, interference-proof digital echo analysis or difficult measurements – the NivuMaster can handle all tasks. The few parameters required for measuring can be easily entered using the plain text dialog, the backlit display and the keypad. Moreover, a serial interface allows to evaluate the readings using the serial interface as well as the "Ultra PC" software.

Convenient evaluation of measurement data on PC

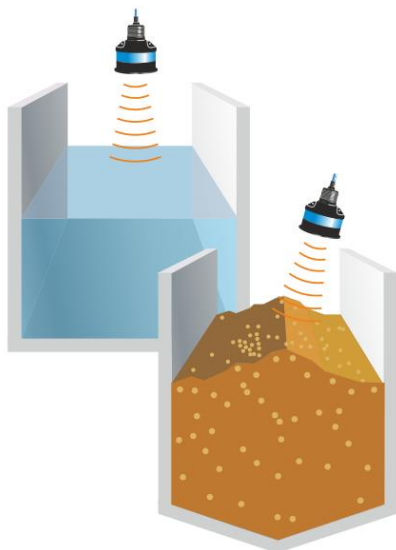
Wall mount enclosure NivuMaster L-2



Panel mount enclosure NivuMaster L-2

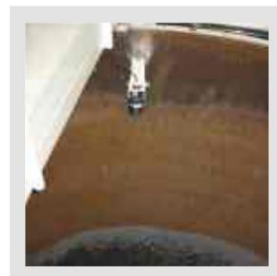


NivuMaster: Versatility is its strength



Level measurements

Non-contacting, maintenance-free level control and measurement in liquids and solids play an important role in the industrial and municipal areas. The high precision and operational safety is of importance in fulfilling these standards. The NivuMaster is an efficient measurement device that meets all these modern requirements for accurate measurements.



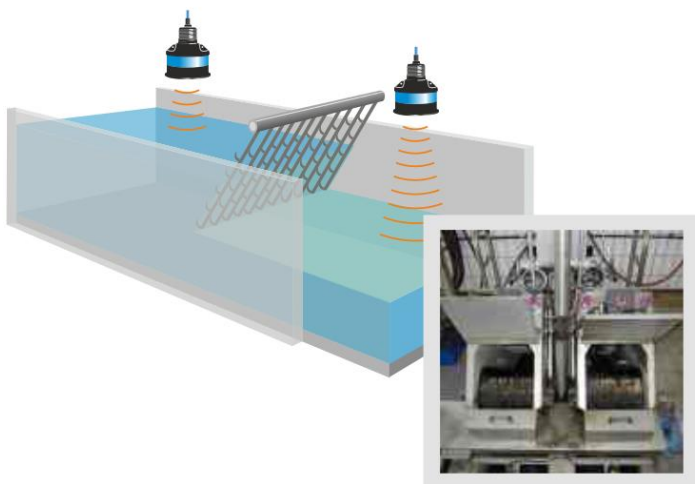
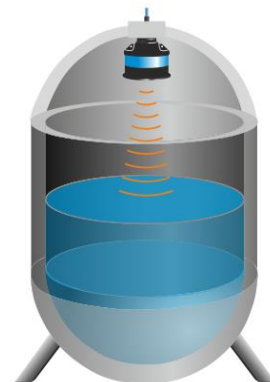
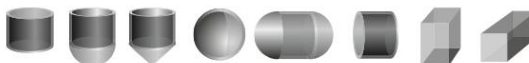
Distance measurements

The NivuMaster measures the distance from the non-contacting sensor to the object. The performance and capability of the NivuMaster is diverse. Its versatility allows for various applications from loop regulation, roll thickness and water level measurements over time, positions, grates and crushers to determination of filter cake thickness, activated sludge blankets and mine tailings.



Volumetric measurements

No matter what container size or shape, the NivuMaster can convert the level measurement into volume with the ability to store standard pre-programmed vessel shapes. Also, a non-standard shape can be freely programmed with custom linearisation capability in the NivuMaster.



Comparative measurements

Differential measurements of water levels at the high and low levels at WWTP gates and screens using 2 ultrasonic sensors can be accomplished with the NivuMaster. All standards of differential measurements are possible with the NivuMaster. The NivuMaster combines all standards required to meet the requirements of modern comparative measurement.





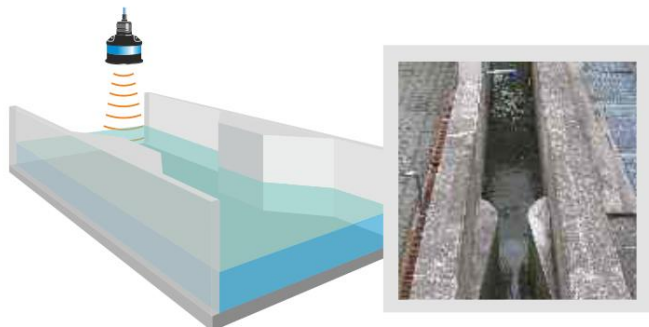
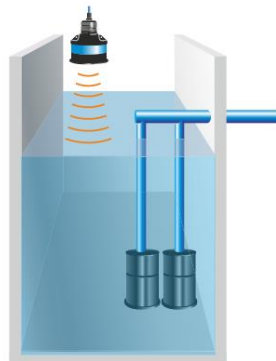
Storm control / basin overflow measurements

No matter if basin fill level, overflow volume or trend – the NivuMaster can do it all. Specially designed for storm control applications, the NivuMaster is available with two analogue outputs. One sensor measures height and volume. Each output is available for the two measurements. With the trend monitoring capability, the stormbasin/ overflow chamber can be efficiently controlled and performance optimized.

Pump control

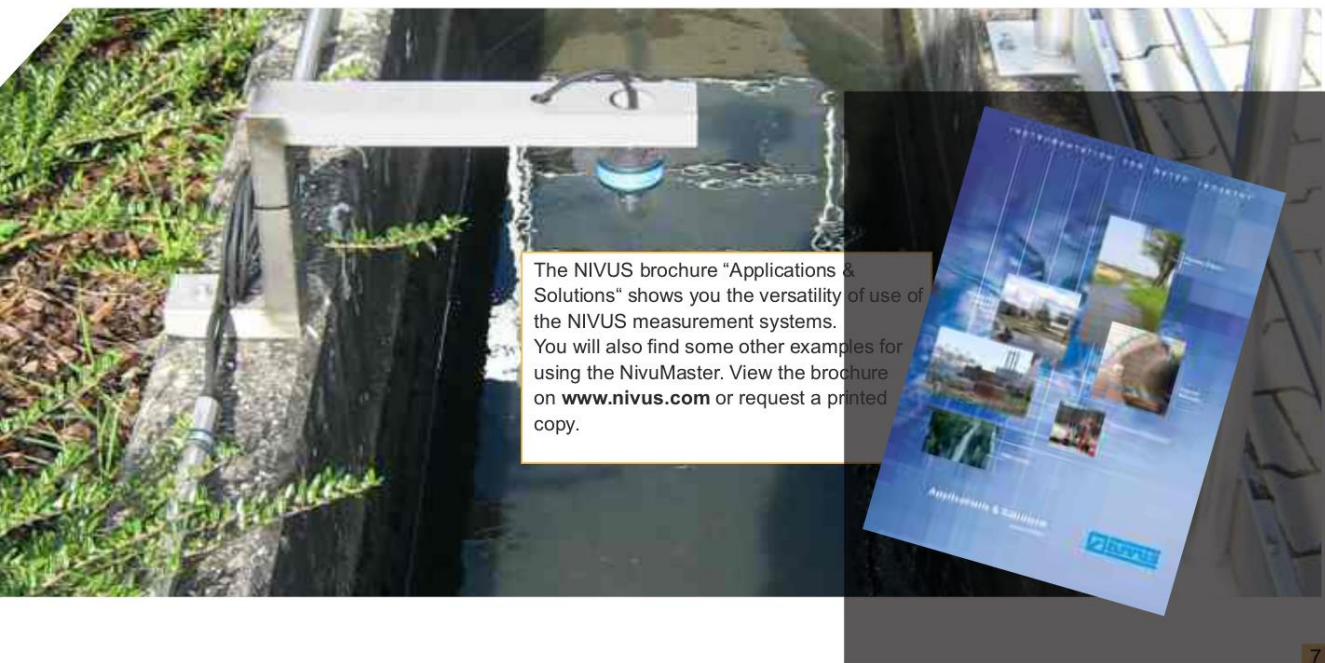
Comprehensive pump control of up to 6 pumps with special features as standard is possible with the NivuMaster pump manager. Two groups of pumps can be chosen. What previously was possible only by using additional devices can now be easily handled by the NivuMaster. Due to a runtime-based control it is possible to equally share the operation times of pumps as well as to optimize maintenance intervals. Even “grease rims” are no problem for the NivuMaster.

By programming pump switching points as area, the development of deposits on vessel walls is reduced strongly. All the pump cycles can be programmed individually, no matter what type of pump exchanges exist.



Quantity measurement

The NivuMaster measures flow in channels and overflow structures with highest precision. The most common standard channels and weir forms are integrated into the device and can be easily programmed. Furthermore, a linearisation curve can be set up easily. The graphic display shows the flow readings in the desired units.



The NIVUS brochure "Applications & Solutions" shows you the versatility of use of the NIVUS measurement systems. You will also find some other examples for using the NivuMaster. View the brochure on www.nivus.com or request a printed copy.

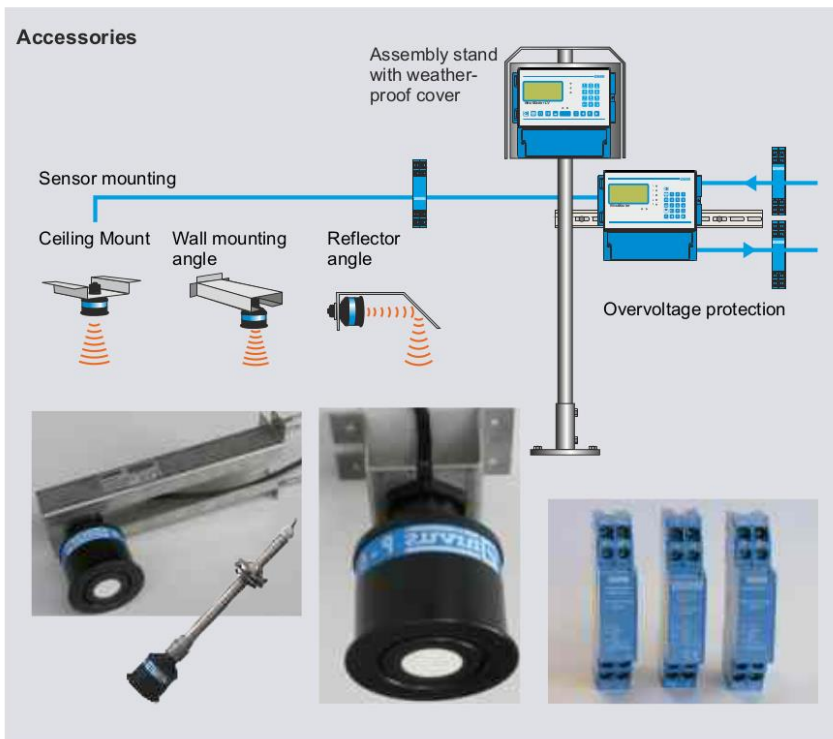


Universal Mounting Set

Our Vario Mounting Set for quick and easy installation is perfectly matched for the NivuMaster.

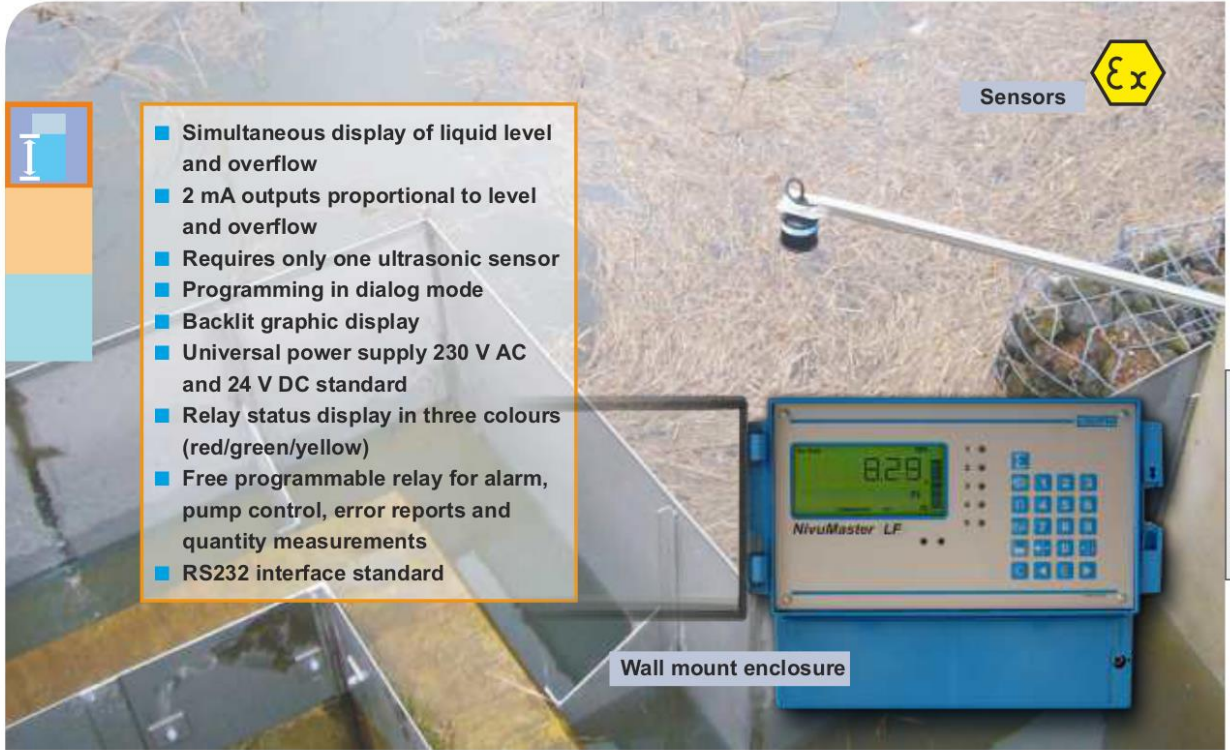
If you should have particular mounting issues we are at your disposal at any time. We will put together an appropriate sensor mounting set for your application out of our vario mounting components.

- Easy installation of sensors and transmitters
- Robust construction made of stainless steel



Specifications subject to change. 12.03.2012

NIVUMASTER LF-5:2



- Simultaneous display of liquid level and overflow
- 2 mA outputs proportional to level and overflow
- Requires only one ultrasonic sensor
- Programming in dialog mode
- Backlit graphic display
- Universal power supply 230 V AC and 24 V DC standard
- Relay status display in three colours (red/green/yellow)
- Free programmable relay for alarm, pump control, error reports and quantity measurements
- RS232 interface standard

Sensors

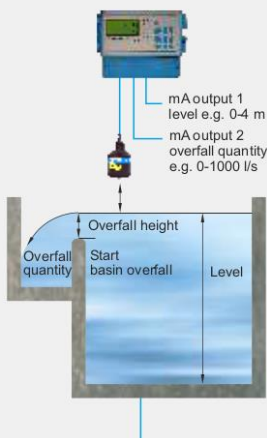


Wall mount enclosure

NivuMaster LF-5:2



Also available as 19"-plug in unit or panel mount



NivuMaster LF-5:2

The NivuMaster type LF-5:2 'RUB Master' has been specifically developed for storm water retention tanks and monitoring of sewers with storage capacity and overflow.

The NivuMaster LF-5:2 has 2mA outputs which can be used for output of liquid level and overflow quantity to recipient. The advantage of the NivuMaster LF-5:2 is that it requires only one ultrasonic sensor to measure liquid level and overflow quantities.

The multi-functional display of the NivuMaster LF-5:2 simultaneously indicates liquid level and overflow quantities. The backlit display ensures optimum reading conditions even in poorly lit environs such as in a switch box. LEDs in different colours indicate the relay status and hence allow to visibly distinguish between the alarm, control and error report functions.

The NivuMaster LF-5:2 can be supplied with AC and / or DC simultaneously. In case of a mains failure the unit automatically switches over to 24 V DC emergency power. This provides the maximum level of operational safety.

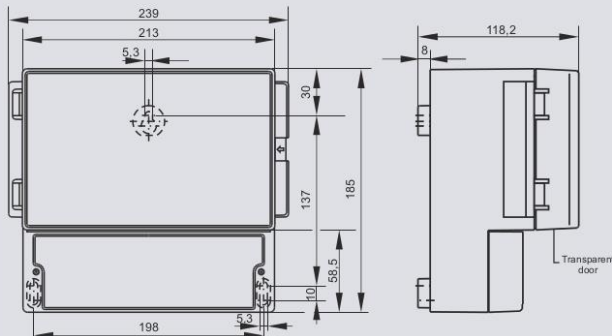
The entire system is maintenance-free and the sensors operate reliably even if flooded. The DATEM analysis software enables reliable ultrasonic measurement like never possible before.

The software constantly analyses adjacent areas and compensates slowly occurring disturbances.

Specifications

Dimensions

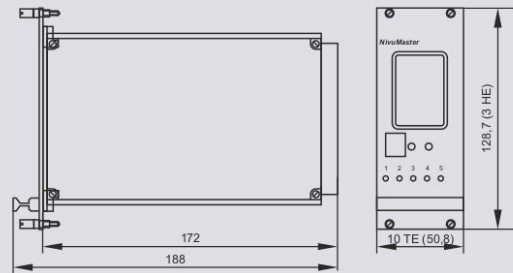
Wall mount enclosure



Please observe to have sufficient space left (min. 30 mm) on the left-hand side of the NivuMaster to open the transparent door. Enclosure also suitable for DIN-rail mounting.

There are six knock-out cable entry glands on the NivuMaster underside (1 x M16.5 x M20).

19" Plug-in unit



Dimensions in mm

Transmitter

Device type	NivuMaster LF-5:2
Article no.	NMA/5201xxxxxx
Mode	Liquid level and overflow quantity calculation
Power supply	115 / 230 V AC +5 %; -10 %; 50 / 60 Hz 18 - 36 V DC
Power consumption	max. 10 VA
Measurement range	0.07 m to 15 m (depending on sensor type)
Measurement uncertainty	0.25 % of measurement range or 6 mm (whichever is higher)
Resolution	depending on sensor type 0.1 % of measurement range or 1 to 2 mm (whichever is higher)
Display	LC-Display wall mount 100 mm x 40 mm (w x h)
Programming	via keyboard, PC (RS232) or handheld programming device
Software	DATEM™
Totalisator	internal on the display and output via relay
Outputs	<ul style="list-style-type: none"> • 2 x 0/4 - 20 mA • load 500 Ohm • galvanically isolated • 5 potential-free switch relays • contact rating 5 A, 250 V AC • RS232 interface via RJ12 plug
Inputs	1 ultrasonic sensor
Relay functions	<ul style="list-style-type: none"> • 5 switchpoints (alarm) or levels, free selectable • pump control functions for up to 5 pumps with automatic pump switchover • duty assist, duty backup, alternation • start delay • rate of change alarm • temperature alarm • error message • real time alarm

Control	Failsafe-Min./Max./Hold; separate error relay
Temperature stability	transmitter -20 °C up to +60 °C
Enclosure	wall mount: 239 x 185 x 118 mm (w x h x d) protection: IP65 weight: approx. 1 kg material: Polycarbonate 19" plug-in unit or panel mount
Accessories	
Sensors	P-M3, P-06, P-S6 and P-10, P-15
Cable to sensor	type LIYCY 3 x 0.75 mm ² (shielded), max. length 500 m
Temperature compensation	sensor-integrated, optional with separate temperature sensor
Approval	Ex m II T6 for zone 1 (optional)
Handheld programmer for NivuMaster in 19"-version	
32-pole spring rail with terminal clamps for installation of NivuMaster 19" into panel mount	
Interface cable for NM serial as well as NivuCompact	