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new

Install sensor,
connect - done

i-Series

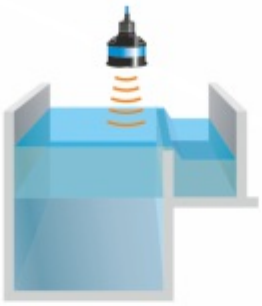
„i“ Intelligent
Level Sensors
With Integrated
Transmitter

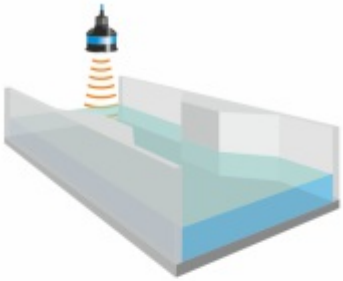
NIVUS i-Sensors

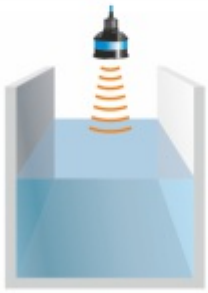
the latest development in ultrasonic level measurement systems

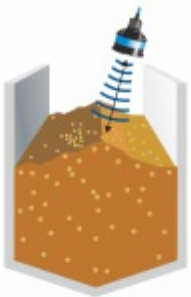
The i-Series sensors can be used to measure distance, level, empty space or volumes of liquids and bulk solids. They are used wherever highly accurate level measurements are required.
NIVUS i-Sensors are designed for use under poor ambient conditions. Pollution and wear are prevented thanks to non-contacting measurement technology. Housed in one common and fully encapsulated enclosure, sensor and transmitter can be installed easily at low space requirements. Pre-programmed measurement range steps make comprehensive programming works unnecessary.

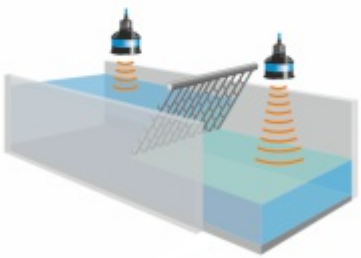
The NIVUS i-Sensors can be connected directly to any PLC, NIVUS GPRS data loggers and other systems processing readings as soon as an active mA-input or HART® communication protocol is available.











Compact, indestructible, reliable and highly accurate!

NIVUS i-Sensors supply levels or measured values as proportional analog 4 - 20 mA signal and as digital signal using the HART® protocol (version 7), which uses the frequencies 1200 Hz and 2200 Hz to modulate readings to the power signal.
Accurate measurement values are the result of sophisticated signal processing in conjuntion with refined temperature compensation. Typical tank shapes from a library can be used for volume calculation.
Constructions and flow measurements with special shapes can be computed additionally by using a linearisation curve featuring 16 breakpoints.

DATEM echo signal processing

NIVUS i-Sensors featuring HART® communication utilise the worldwide leading DATEM (Digital Adaptive Tracking of Echo Movement) echo evaluation software. The self-learning algorithms dynamically follows the useful echo and continuously masks out fixed as well as moving false echoes. Grease rims building up, agitators with irregular build-up of deposit, ladders or running stirrers are detected and avoided automatically. This allows to use the units without any prior knowledge and comprehensive programming measures.

Benefits of the i-Sensors

- Sensor as independent and comfortable level measurement
- For liquids and bulk solids
- Direct connection to PLC possible
- Pre-programmed measurement steps of 3, 6, 10 and 15 m
- Low energy consumption, quick startup time in sleep mode
- Insensitive to humidity, aggressive environments and heavy temperature fluctuations
- Protection IP68, flood-proof with appropriate adapter (optional)
- Saves time and space, no need to install a transmitter
- 2-wire technology, cable length up to 1000 m
- DATEM digital echo processing with automatic agitator avoidance
- Ex approval according to ATEX for zone 1, optional zone 0
- Easy wiring, in Ex areas directly to terminal unit, no Zener barrier required

Typical Applications

Level measurements and control functions for:

Wastewater	Stormwater overflow tanks and storage sewers, clarifiers, pump stations, screening plants, flow measurements, tank volume measurements, container monitoring, irrigation facilities
Drinking water	Tank level measurements, water treatment, seawater desalination plants, level measurements
Flood protection	Stormwater retention tanks, level measurements with remote data transmission, surface water bodies
Power generation	Cooling water circuits, hydropower plants
Industry	Any kinds of tanks and basins

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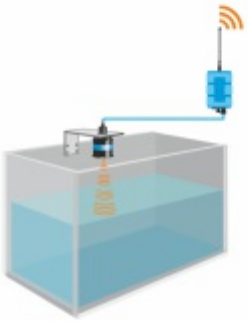
Direct connection to NIVUS GPRS data loggers

A special energy-efficient sensor concept is used for the sensors. Very short startup and measuring cycles result in a very long lifetime of independent and battery-powered data loggers.

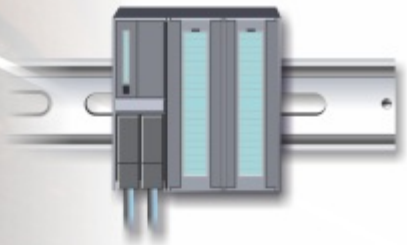
- Low power consumption 4 - 20 mA / 10 - 28 V DC
- Very quick startup time of 4 seconds
- Minimum measuring cycle down to 1 second

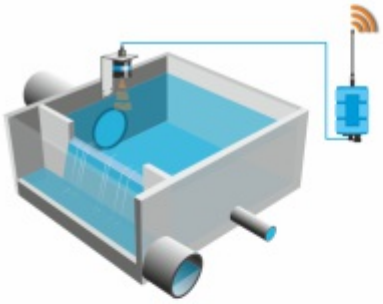


Diagnostics and parameter setting via HART® modem

Commnucation with the i-Sensor is possible by using an independent handheld programmer or a laptop running the free "PC-Suite" software. All parameters needed to adjust measurement values and to optimise the measurement can be modified this way.

- Echo diagnostics, manual or automatic false echo avoidance
- Measurement range adjustment
- Volume calculation of pre-programmed tank shapes
- Linearisation of measurement values using 16 breakpoints

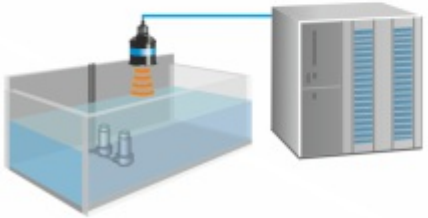




Easy connection to control systems

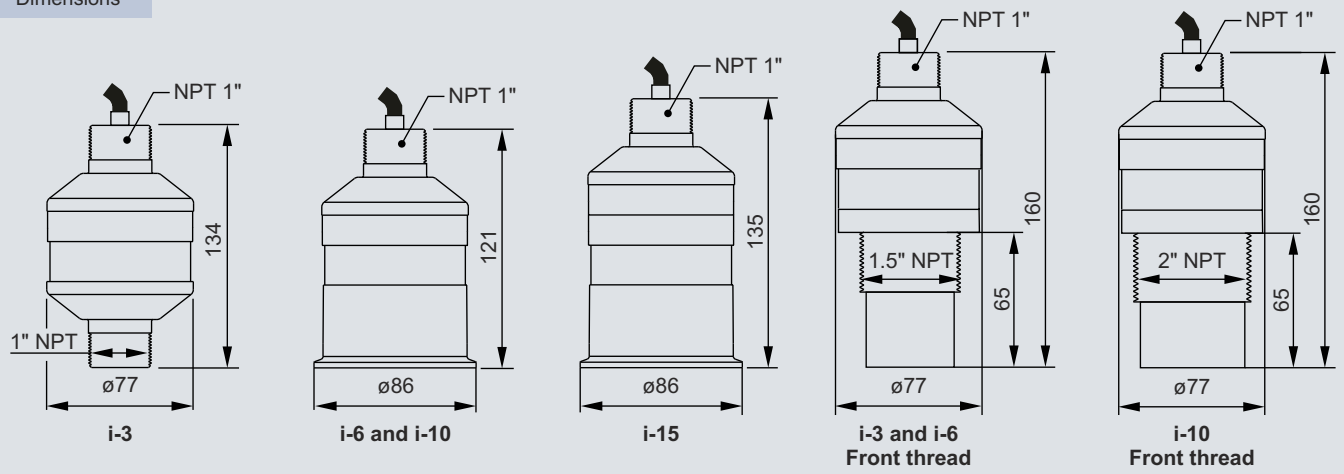
The i-Series sensors can be easily integrated into existing control systems. Thanks to standardised measurement values it is possible to connect the system to a PLC without programming efforts.

- Direct communication via 4 - 20mA or HART® protocol
- Cable routing between sensor and PLC without interruptions (even if sensors are installed in Ex areas)
- Saves installation costs and space



Specifications

Dimensions



Dimensions in **mm** or **inch**

Specifications subject to change. 24.04.2013

i-Series Sensors

General	
Power supply	10 - 28 V DC
Outputs	HART® – loop powered (2-wire) 4 - 20 mA (3.8 - 22 mA)
Functions	Level, distance, empty space, volume and linearisation using 16 breakpoints
Operating temperature	-40 to 80 °C
Configuration	PC software for parameter setting, echo evaluation, linearisation and agitator avoidance
Sensor body material	Valox 357 PBT, optional: PVDF
Protection	IP68
Ex approval	II 2 GD Ex m IIC T4 or II 1 GD Ex ia IIC T4
Startup time	4 sec. typical
Sensor Type	**i-3**
Measurement range	0.125 m - 3 m
Sensor	125 KHz, beam angle <10°
Meas. uncertainty	2 mm
Resolution	0.5 mm
Installation	1” NPT
Sensor Type	**i-6**
Measurement range	0.3 m - 6 m
Sensor	75 KHz, beam angle <10°
Meas. uncertainty	4 mm
Resolution	1 mm
Installation	1” NPT

Sensor Type	i-10
Measurement range	0.3 m - 10 m
Sensor	50 KHz, beam angle <10°
Meas. uncertainty	2 mm at distances of up to 6 m, 6 mm at distances of more than 6 m
Resolution	1 mm
Installation	1” NPT
Sensor Type	**i-15**
Measurement range	0.5 m - 15 m
Sensor	41 KHz, beam angle <10°
Meas. uncertainty	6 mm at distances of up to 10 m, 10 mm at distances of more than 10 m
Resolution	1.5 mm
Installation	1” NPT
Options	
Sensor face coating	PTFE, soft foam
Installation	i-3 and i-6 using 1.5" front thread i-10 using 2" front thread
Flood protection head	for all types without front thread
Flange version	for all types

The NIVUS Vario Mounting Sets provide appropriate accessories for quick and easy sensor installation.

You can find more information in the instruction manuals or under **www.nivus.com**

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