

LevelDatic – best balance in safety, efficiency and profitability

We develop, manufacture and commission remote tank level gauging, water ingress detection, and draft measuring and monitoring systems for all kinds and sizes of ships and offshore structures.

Our focus is always on customer needs in combination with safety, reliability and lifetime economics – the LevelDatic systems are tailor-made for every ship for best balance in safety, efficiency and profitability.

All LevelDatic systems must always work reliably providing accurate readings, also in extreme situations.

With experience from more than 2,300 LevelDatic systems delivered and in operation since 1987, we know we meet this challenging objective.

All our products comply with the latest requirements and have been type approved by all major classification societies.

Our company is DNV ISO 9001:2000 certified.

We are a fully owned subsidiary of Rosemount Tank Radar AB, and a member of Emerson Process Management Marine Solutions.

LevelDatic

Reliable tank level, water ingress and draft monitoring



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LevelDatic for all kinds of ships and offshore structures

We develop, manufacture and commission LevelDatic remote online tank level gauging, water ingress detection and draft measuring systems for all kinds and sizes of ships.

LevelDatic can be used for measuring levels and filling rates in all types of tanks such as fuel oil, lubrication oil, sludge oil, bilge, fresh water and ballast water tanks.

It can also be used for water ingress detection and water level measuring in cargo holds, dry ballast tanks and void spaces on bulk carriers. And of course for void space water ingress detection and monitoring on passenger and other vessels, semi-submersibles and other offshore structures as well.

LevelDatic is equally suitable for newbuildings and retrofit installations, replacing failed systems by other makers.

Special applications of LevelDatic are available such as flooding control systems, ballast water exchange systems and dynamic draft measuring systems. Stand alone applications are also available.

Reliable systems for enhanced ship safety

Shipowners concerned with safety, reliability and lifetime economics select LevelDatic.

The electro-pneumatic LevelDatic system provides reliable and accurate continuous on-line information on actual tank levels, possible water ingress and ship's drafts.

Every tank, hold, void space and draft measuring point has its own dedicated sensor in a LevelDatic cabinet located in a safe place, where the risk for cabinet damage is minimal. Our high quality pressure sensors are very accurate and stable, with virtually no drift over their entire lifetime.

All checks can be made locally at the cabinets and in the automation system. Sensor functioning is self-checked continuously by LevelDatic.

With more than 2,300 systems fitted since 1987, the performance records show the proven reliability of LevelDatic. There are almost no need for spares and service.



LevelDatic stands for cost-efficient high quality systems

- Tailor-made ship specific solutions for best cost-efficiency
- Easy installation and commissioning
- Accurate special sensors with proven reliability and long lifetime
- Quick and easy sensor change, no system downtime
- No entry of tanks needed for system checks and maintenance
- Ready protocols for most automation systems
- Turnkey retrofit installations
- World wide service network



LevelDatic 100S cabinet with measuring air pipes on ship

- System and sensor performance is easily checked directly from the cabinet and in the automation system.



Maintenance free systems

We have always focused strongly on enhancing safety when developing LevelDatic remote tank level, water ingress detection and draft measuring systems.

This means that all LevelDatic systems must always be reliable and provide accurate on-line information in normal every day operation as well as in possible distress situations.

All LevelDatic systems are built by very skilled engineers using high quality components only. Every system and all sensor units are factory tested in our plant for functionality and accuracy; - including testing all fatal and system alarm functions.

During commissioning onboard the ship, the system operation and alarms are checked and verified once more.

As a result, there are very few claims even for our first installations of LevelDatic systems, and almost no need of maintenance of the system during the ship's entire lifetime.

This means significant savings in maintenance and spare part costs and system downtime.

LevelDatic retrofit installations

LevelDatic is the ideal solution for up-grading of existing level gauging systems, or replacing failed level gauging systems by other makers.

Many oil, products and chemical tankers, LNG carriers, car carriers, passenger vessels, ferries and navy vessels have been retrofitted with LevelDatic and are working superbly.

The retrofits are always carried out in close cooperation with the shipowner or ship operator, with the objective of reducing the installation costs and possible off-hire. A pre-survey is usually carried out in order to establish the condition of the old system onboard as basis for the retrofit or up-grading.

We have carried out complete retrofits onboard ships, also cruise vessels, while they have been sailing making money for their owners.

The retrofits can be delivered as turnkey installations. We carry out and supervise the installation of air piping and the system cabinets, including commissioning of the LevelDatic system. We can also provide part retrofits and expansions of present systems.



LevelDatic is virtually maintenance free because

- All sensors and components used are of high quality with proven long lifetime
- Extensive system checking and testing during manufacturing and commissioning
- All sensors are located in cabinets in safe area and easily accessible
- Quick and easy sensor checking and change, with no shutting down, no rebooting and no system downtime
- No sensors, moving parts or cables in tanks subjected to dirt, wear and tear, corrosion or mechanical damage
- No entry of tanks needed for system checks and maintenance
- Turnkey retrofit installations



Retrofit with LevelDatic LD 80S with installation by shipowner

- Close co-operation with ship owner for best ship specific solution
- Pre-survey for checking the condition of the old system and the possibilities to integrate parts of old system with the new LevelDatic



LevelDatic WIM for bulkers

LevelDatic WIM is the next generation water ingress detection and monitoring system for bulk carriers complying with all requirements of IMO Solas Chapter XII/12.

It is an intelligent system based on scientific principles allowing the system to detect any water in cargo holds, empty ballast tanks and voids, and monitor the change in water levels.

Tests and measurements we have carried out for various bulk cargoes under classification society supervision show that LevelDatic WIM detects reliably and accurately the presence of water in different bulk cargoes tested, and can continuously monitor the change in water levels in these cargoes.

The special LevelDatic WIM alarm panel has all required alarms and shows in addition the actual water level.

The officers can see what is really happening in a leak condition. LevelDatic WIM is not blind like humidity sensor based systems, which only give pre-alarms and main alarms, and no information on what is happening.

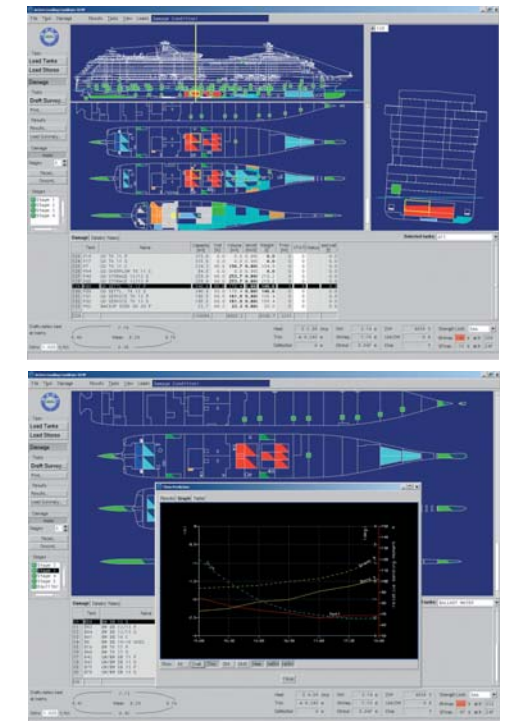
Several special applications

We have developed several LevelDatic applications to meet the needs of shipowners and officers.

These applications presently include, among others:

Decision Support for Flooding Control - has been developed in cooperation with Onboard Napa Oy. It is based on real online flooding information, an accurate online floating position, and a powerful calculation tool based on a real 3D geometric product model. The DFC identifies the location and quantity of floodwater, and performs continuous trend analysis based on the measured flooding rates and corresponding measured real floating position. Integrating the LevelDatic 100S with Onboard-NAPA provides an unbeatable solution giving the officers best possible decision support in case of flooding.

LevelDatic DYN is a special application of the LevelDatic draft measuring system, which measures the changes in vessel floating position during navigation. This information may also be used in various other applications such as ballast water management, vessel scheduling, fuel economy management, hull stress monitoring etc.



LevelDatic WIM for bulkers

- Tailor-made ship specific solutions for best cost-efficiency
- Easy installation and commissioning of system on newbuildings and sailing ships
- Display for water level monitoring
- Testing and purging possibilities
- Shows actual water levels and level changes



Recent newbuildings include:

- 4 LNG carriers by Daewoo for Qatar Gas II
- 6 product tankers by HHI Mipo for Vroon, The Netherlands
- 4 container vessels by Hanjin for German owners
- 5 car carriers by Daewoo for Wallenius Marine, Sweden
- 2 cruise vessels by Aker Finnyards for RCI
- 5 ropax vessels by Fincantieri for Finnlines, Finland

Recent retrofits include:

- 2 chemical tankers for Ernst Jacob, Germany
- 1 ro-ro for Engship, Finland
- 1 container ship for Komrowski, Germany

Satisfied customers – our prime objective

As a customer oriented company we provide the best tailor-made and cost efficient solutions. Our objective is always to satisfy customer's needs and expectations.

We listen to our customers and appreciate receiving feedback relating to our products and services.

We continuously develop new products and services, and improve existing ones based on customer feedback combined with new technology and our extensive experience from more than 1,300 systems onboard various types of ships.

Our staff of skilled and innovative engineers has long and profound experience in developing and installing ship automation and control systems. They have been working with shipyards and shipowners for years, and understand well how to develop technically viable and cost efficient solutions for ships.

We contribute to safety of ships and their crew by developing, manufacturing and installing equipment and systems that are reliable and work as expected, also in difficult situations.

Always close to you – worldwide sales, service and support

As a part of Emerson Process Management Marine Solutions we are committed to provide customers with the best possible products, service and support there is.

We give our customers the highest attention and priority – before, during and after system installation.

Our worldwide presence means that we are always close to you for immediate attention.

Our offices are staffed with expert consultants, naval architects, marine engineers, surveyors and highly-skilled service technicians providing you with the best possible service and support.

We also supply pressure transmitters, gas detectors and other Emerson Rosemount products as part of our deliveries.

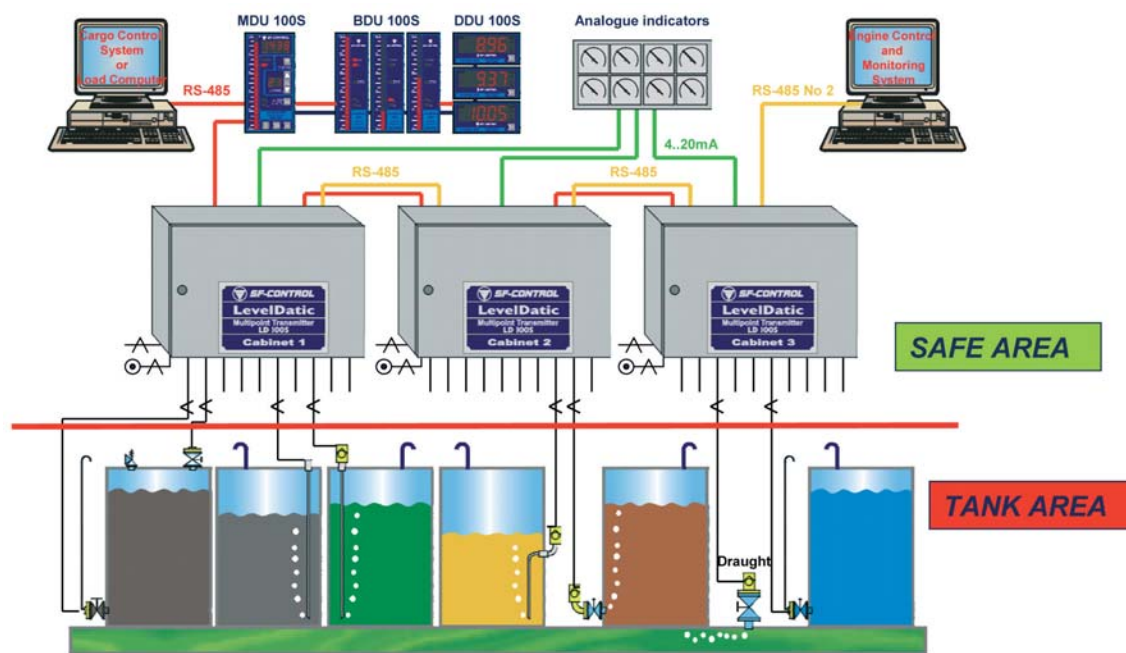
Please contact us or any of our representatives for more information on our products and services.

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LevelDatic commissioning and maintenance checks from cabinet

- System parameter settings
- Sensor performance and changing defect sensors
- Air pressure and air flow controller
- Measuring pipe tightness
- Purging of measuring pipe
- Fatal and system alarms
- Densities
- Communication



LevelDatic 80S and 100S technical specifications

Both LevelDatic 80S and 100S Multipoint transmitters are high quality, reliable and accurate level gauging and draft measuring systems.

In both systems, all sensors are located in the LevelDatic cabinets in safe area and easily accessible.

All LevelDatic systems meet with the latest requirements, including those for electro-magnetic compatibility. Type approval certificates have been granted by all major classification societies.



The LevelDatic system

The fully digital LevelDatic 100S calculates the levels and drafts, whereas the analog LevelDatic 80S sends 4-20 mA pressure signals to the automation system, where the calculations for levels and drafts are done.

All LevelDatic sensors are located in cabinets in a safe place outside the tank area. There are no sensors, electrical cables or moving parts in the tanks that can be damaged, or require tank entry for replacement, service, cleaning or calibration.

Every tank, hold or void space measured has at least own dedicated LevelDatic sensor, and a constant air flow speed controller with indicator. There is always continuous air flow in all measuring lines. There is purge possibility with full supply air pressure for every measuring line.

The pneumatic unit has built-in non-return and shut-off valves, which prevent any back-flow from the measuring lines if the air supply drops or is shut down, or if the measuring line is accidentally broken.

LevelDatic uses dry clean instrument air for measuring the hydrostatic pressure in tanks, holds and voids. The actual levels and drafts are calculated using the measured hydro-static pressure, and affecting parameters such as atmospheric pressure, liquid densities, pipe resistance etc.

In case dry and clean air cannot be supplied, then an air dryer with filter should be installed in order to restrict moisture and possibly oil from entering the LevelDatic system.

LevelDatic 80S	LevelDatic 100S
Measuring capacity per cabinet 1...10 electro-pneumatic measuring points	Measuring capacity per cabinet 1...10 electro-pneumatic measuring points 1...5 electro-pneumatic measuring points AND 5 analogue 4...20 mA inputs
For every measuring point <ul style="list-style-type: none"> - capacitive custom-made gauge pressure sensor with over capacity of 8 bar - constant air flow speed controller and indicator, continuous air flow in measuring lines - purge and test possibility - built-in non-return valve and shut off valve 	For every measuring point <ul style="list-style-type: none"> - capacitive single crystal silicon absolute pressure sensor with over capacity of 8 bar - constant air flow speed controller and indicator, continuous air flow in measuring lines - purge and test possibility - built-in non-return valve and shut off valve
For every cabinet <ul style="list-style-type: none"> - shut off valve for air supply - pressure reducing valve with manometer and low pressure alarm switch - atmospheric connection for pressure sensor reference 	For every cabinet <ul style="list-style-type: none"> - shut off valve for air supply - pressure reducing valve with manometer and low pressure alarm switch - atmospheric connection for pressure sensor reference - PLC for measurement and communication processing
Standard interface <ul style="list-style-type: none"> - 2-wire 4...20 mA signal from every measuring point 	Standard interface <ul style="list-style-type: none"> - one RS-485 serial line, SF-Control protocol - optional interface / outputs: - second RS-485 serial line, SF-Control protocol - up to 10 analogue 4...20 mA outputs for selected measuring points
System capacity <ul style="list-style-type: none"> - unlimited 	System capacity <ul style="list-style-type: none"> - up to 32 LevelDatic 100S cabinets (max. 320 meas.points) to same RS-485 serial line
Measuring range 0...40 m	Measuring range 0...35 m
Accuracy $\pm 0.2\%$ of sensor F.S. incl. non-linearity, repeatability and hysteresis error	Accuracy $\pm 0.1\%$ of system F.S. incl. non-linearity, repeatability, hysteresis and temperature error.
Power supply 230 / 115 VAC; 50 – 60 Hz, or 24 VDC	Power supply 230 / 115 VAC; 50 – 60 Hz, or 24 VDC
Air supply - about 7 bar dry and clean air	Air supply - about 7 bar dry and clean air
Air consumption / measuring point empty tank 0.5 lit / min free air; 0.07 lit / min (7 bar) 10 m 0.85 lit / min free air; 0.12 lit / min (7 bar) 20 m 1.2 lit / min free air; 0.17 lit / min (7 bar) 30 m 1.4 lit / min free air; 0.20 lit / min (7 bar)	Air consumption / measuring point empty tank 0.5 lit / min free air; 0.07 lit / min (7 bar) 10 m 0.85 lit / min free air; 0.12 lit / min (7 bar) 20 m 1.2 lit / min free air; 0.17 lit / min (7 bar) 30 m 1.4 lit / min free air; 0.20 lit / min (7 bar)
Housing <ul style="list-style-type: none"> - epoxy powder painted steel - standard colour RAL 7032 (grey), other colour optional - IP 56, splash proof 	Housing <ul style="list-style-type: none"> - epoxy powder painted steel - standard colour RAL 7032 (grey), other colour optional - IP 56, splash proof
Operating temperature 0...+ 55°C	Operating temperature 0...+ 55°C
Storage temperature -50... + 60°C	Storage temperature -50... + 60°C
Humidity - no condensation	Humidity - no condensation

