

Hydro-Logic[®] Smart Monitoring

Applications

Flow, Level, Weather, Quality



Monitoring Applications

Accurate, reliable remote capture of water level, flow, weather and quality data enables engineers, municipal organisations and consultants to carry out critical flood mitigation, water resource planning and long-term environmental research activities.

Monitoring weather

A comprehensive monitoring network may consist of temperature and precipitation, solar radiation, air pressure, wind, soil moisture, river and oceanic variables.

Rainfall is a prime upstream indicator of potential flood risk, and monitoring systems that measure climatic factors such as this can provide insight into imminent flood events. However, rainfall alone does not take into account contributory factors such as ground water, river levels or (in some regions) snow melt.

As such, while meteorological measures might provide an indicator of probability of flooding, they may be insufficient on their own to provide accurate, location-specific flood warning and should therefore be factored into a more comprehensive monitoring network.

The ability to monitor current and trending weather variables is especially important for the management of water resources and rainfall is just a single factor. The effects of wind, sun, changing pressure, humidity, etc. all play a part and these data are important components of a comprehensive management system.

River flow - this is calculated using a distributed rainfall-runoff model using the output from the rainfall model.

Monitoring for droughts - one of the most important uses for rain gauges is to monitor droughts in areas reliant on agriculture, as well as cities that don't get much rain.

Monitoring for floods – this is often used in conjunction with level to create a catchment model.



Monitoring water levels

River level is the depth of water at a monitoring station, measured in metres to a specified datum.

A good indicator of flood risk are the water levels in natural and man-made bodies of water such as rivers and sewers. These water levels represent a tangible, realistic measure of the volume of water that is being conveyed downstream, and can provide accurate signals as to likely flooding.

Monitoring watercourses like these upstream of homes, businesses and infrastructure provides a reliable measure of flood risk, and water level monitoring systems can form the core of an effective flood warning system.



Monitoring flow

Flow is the volume of water passing a monitoring site, measured in cubic metres per second. Flow can be measured directly or derived from continuous measurements of river level and water velocity.

River flow forecasting is very important as a basis for early flood warning

As flow is a function of river level and velocity it is possible to get different values of flow for the same level. This can happen if the characteristics, for example, roughness of the channel, change as the result of a flood or from the growth of vegetation.



Monitoring water quality

Effective water quality monitoring is the key to environmental protection of watercourses and for reliable process control and wastewater treatment. Discharge consents under EPR regulations dictate that water quality monitoring is undertaken to ensure that consented parameters are below the consented concentrations.

Traditionally this has been done using water quality sampling methods, but increasingly automatic water quality measurement sensors linked to real-time telemetry is seen as the most reliable and timely means of ensuring that treatment processes are operating efficiently and that EPR compliance is maintained.



Select the Right Logger for Your Application

We have three types of Hydro-Logic® Flexi logger and they each have attributes that can make them ideal for some applications and not others. Please use the table below to choose the logger that's right for you:

Site Requirement	Hydro-Logic® Flexi Logger Model		
	100	200	300Ex
Environmental Protection	IP68	IP65	IP68
ATEX Compliant			✓
Integral LCD Display Panel		✓	
Input Capability	Analogue, Digital and SDI-12	Analogue, Digital and SDI-12	Analogue, Digital and HART
Solar or Wind External Charging System Connection Option	✓	✓	
Option to Upgrade to 16 Channels	✓	✓	

Hydro-Logic® Flexi Logger Model

100



200



300Ex



Hydro-Logic® Flexi Logger 100

Robust to IP68 standard, the Hydro-Logic® Flexi Logger 100 is ideal for installation into remote or space constricted applications.



Model Specific Features

- Industry-standard input capability Analogue, Digital and SDI-12.
- 3G modem (also 2.5G backward compatible).
- Single sensor connector suitable for field wiring.
- Up to 8 channels, each with four alarm settings (option to upgrade to 16 channels).
- Switched 12 Volt DC output for powering sensors.
- Battery options include an internally fitted Alkaline or Lithium battery pack, both field replaceable, plus a link to an external 12 V lead-acid battery.
- Option for a 12 V lead-acid battery connected to a solar or wind bulk charging system.
- Rapid installation using dedicated tube-mount enclosure.
- Rugged, environmental protection to IP68 (at 1.2 m submersion for 48 hours without significant ingress).

Hydro-Logic® Flexi Logger 200

The Hydro-Logic® Flexi Logger 200 has an integral display panel and is ideal for installation into control panel cabinets of permanent installations.



Model Specific Features

- Industry-standard input capability Analogue, Digital and SDI-12.
- 2.5G modem.
- Dual input plug with up to 8 input channels, each with four alarm settings.
- Option to upgrade to 16 channels.
- Switched 12 Volt DC output for powering sensors.
- Powered by six alkaline D cells with the option to link to an external 12 V lead-acid battery.
- Option for a 12 V lead-acid battery connected to a solar or wind bulk charging system.
- On-board relay output for local event-warning systems.
- User configurable via a plug-in sensor card.
- Environmental protection to IP65.

Hydro-Logic® Flexi Logger 300Ex

ATEX certified, the Hydro-Logic® Flexi Logger 300Ex is ideal for installation in chambers or tanks where a potentially explosive atmosphere may be present.

Model Specific Features

- ATEX and IECEx compliant (to Zone 0).
- 3 sensor connectors suitable for field wiring.
- Remote monitoring of up to 3 HART or float switch sensors and one 4-20mA input.
- 18V sensor power supply.
- User-replaceable battery 96Ah battery.
- Rugged, environmental protection to IP68 (at 1.2 m submersion for 48 hours without significant ingress).



Software Options

Harvest software

All our Hydro-Logic® Flexi Loggers are supplied with our Windows Harvest logger control software package. This enables users to configure all loggers, sensor and telemetry settings via serial port communications. The package also enables collected data and trends to be inspected. It is also used to export and manage data retrieved from these devices.

Harvest software is available in two versions:

- Harvest for Windows based PCs.
- Pocket Harvest for Windows Mobile based devices including the rugged Juniper Archer 2.

You can download Harvest Windows software free of charge from our support website:

www.hydro-int.com/smart-monitoring-support.

Telemetry

Hydro-Logic telemetry systems provide an online platform for basic data visualisation, inspection and early warning on an annual subscription.

Automatically receiving data from remote Hydro-Logic® data loggers, Hydro-Logic® telemetry systems provide an interface to enable you to inspect data outputs, helping you to identify potential system blockages and alerting you to changes in environmental conditions that could indicate an imminent flood event.

Hydro-Logic® telemetry systems also manage any automated alerts that have been configured, distributing them via e-mail or SMS to designated recipients to provide early warning of flood events or other environmental risks.

Hydro-Logic® Timeview

Hydro-Logic® Timeview provides automatic wireless receipt of data from remote sensors, triggering automated flood event alarms, providing short-term data storage and enabling data visualisation and initial analysis.

- Capture latest data and trends.
- Reduce site visits to save cost of data collection.
- Use near real-time alarms to alert emergency staff ie. to clear blockages.
- Get warnings of events or licence compliance failure.

Hydro-Logic® Timeview DBi

Hydro-Logic® Timeview DBi is a streamlined online database for long-term data warehousing of hydrometric, climate and environmental data, equipping you with analysis tools to help you derive meaningful, actionable insights from that data.

Select the Sensor to Match Your Logger and Application

* All listed sensors are supported, but those marked as recommended are the most compatible with our loggers and the Harvest configuration software.

Level Sensors

Logger Model	Category	Manufacturer and Model	Recommended by Hydro International*
100	Contact	Impress IMSL/S12C/S12S/LMP 307	✓
		Level Troll Range	
100	Non-contact	VegaPuls WL61Radar Sensor	✓
		Pulsar IMP+	
200	Contact	Impress IMSL/S12C/S12S/LMP 307	✓
		Level Troll Range	
200	Non-contact	VegaPuls WL61Radar Sensor	✓
		Pulsar IMP+	
300Ex	Contact	Impress LMK 307	✓
300Ex	Non-contact	Pulsar dBI HART 3/6/10/15	✓



Flow Sensors

Logger Model	Category	Manufacturer and Model	Recommended by Hydro International*
100 / 200	Contact	tRDI ChannelMaster	✓
		Nivus POA Wedge (or CS2)	✓
300Ex	Non-contact	Pulsar Microflow-i	✓



Weather Sensors

Logger Model	Category	Manufacturer and Model	Recommended by Hydro International*
100 / 200	Tipping Bucket Raingauge	Casella TBR	✓
		EML Arg100	
	Weather	Gill MetPak PRO	✓



Logger Model	Category	Manufacturer and Model	Recommended by Hydro International*	Logger Model	Category	Manufacturer and Model	Recommended by Hydro International*
100/200	Sediment/ Sludge Level	Vega VegaVib 63	✓	100/200	Blue Green Algae	AquaRead AP-LITE	✓
	Turbidity/TSS	Analite 390	✓		Rhodamine		
		Aqua Troll Range			Fluoresceine		
	Dissolved Oxygen	In-Situ RDO Pro-x	✓		Refined Oil		
		Ponsel OPTOD	✓		CDOM/FDOM		
	Redox/ORP	Aqua Troll Range	✓		PAH	AquaRead AP2000	✓
		Ponsel PHEHT	✓		TOC		
	pH	Aqua Troll Range	✓		Soil Moisture	TekBox TBSMP02 Soil Moisture Probe	✓
		Ponsel PHEHT	✓			Adcon SM1 Soil Moisture Probe	
	Conductivity	Aqua Troll Range	✓		Multiparameter WQ	Aqua Troll Range	✓
		Ponsel C4E	✓			AquaRead AP2000	
	Nitrate	Aqua Troll Range	✓				
	Chloride						
	Salinity						
	Ammonium						
	Chlorophyll a	AquaRead AP-LITE	✓				
		AquaRead AP2000					

Consultancy projects and managed services

Many organisations don't have the time, resources or expertise to design, install or operate a Smart Monitoring system, and many face similar difficulties in collating, manipulating and interpreting hydrometric data.

Our Hydro-Logic® Services team is hugely experienced in all aspects of Smart Monitoring, and is able to provide expert system design, installation and operation services, or to deliver stand-alone hydrometry consultancy projects such as MCERTS inspections.

Our Hydro-Logic® Services consultants can help you to address your most complex, critical and urgent Smart Monitoring challenges.

Services

Field Hydrometry

Smart Monitoring network design, management and operation.

Consulting Hydrometry

Specialist hydrometry guidance, advisory support and training.

Software

Aquarius Time-Series™ software

Hydro-Logic® Services are the only people who offer and support AQUARIUS in the United Kingdom and Ireland.

AQUARIUS is the leading software for water time series data management. The world's most advanced environmental monitoring agencies trust AQUARIUS to achieve higher data integrity, defensibility, and timeliness. Its simple design delivers the latest hydrological science and techniques in an intuitive interface.

AQUARIUS allows water resource managers to correct and quality control time series data, build better rating curves, and derive and publish hydrological data in real-time to meet stakeholder expectations.

Aquator™ water resources modelling software

Aquator™ software enables engineers and analysts to create and run complex models of water resources systems, providing insight into system performance under current and future supply, demand and environmental conditions in order to make better planning, development and resourcing decisions.

Aquator™ is the only water resources/supply software in the world with the right to use Microsoft Visual Basic® for Applications (VBA) to customise its models - making it uniquely capable of helping water providers to overcome their most important challenges.



To learn more about how our Hydro-Logic® Smart Monitoring products and services can help you make better water management decisions visit hydro-int.com/smartmonitoring or search **hydro-logic smart monitoring** online.

Contact us to talk to an expert:

Products

Hydro-Logic® Smart Monitoring
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Make better water management decisions