Hydro-Logic® Smart Monitoring

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Hydro International

Hydro-Logic® Smart Monitoring

Hydro-Logic® Smart Monitoring products and services help you to make better water management decisions.

Whether you need to react to flood events, monitor climate change or forecast network supply and demand, whether you're looking at today or the next ten years, whether you're saving lives or saving money—we can help you to improve the way you plan, act and react.

We've been developing, installing and operating Smart Monitoring technologies for over 40 years, so we make sure you get the right data, at the right time, in the right way.

Our Hydro-Logic® Flexi Logger 105 works with any compatible sensor to provide businesses and public organisations with data required to inform effective event monitoring and early warning, long-term monitoring, analysis and forecasting.

Our Smart Monitoring experts know better than anyone what's required for effective data collection, transmission, storage and analysis, and they'll work with you to ensure that the solution meets your needs from day one.

Or, if you'd prefer to have someone take on your Smart Monitoring challenges for you, our Hydro-Logic® Services team already operates the largest Smart Monitoring network in the UK and will be happy to provide a managed service on your behalf.

Applications

- Hydrometry and flood warning in rivers and channels.
- Drain and trash screen blockage alarms.
- Rainfall monitoring and intensity alarms.
- Water quality monitoring.
- Groundwater logging.
- Consent discharge monitoring and alarms.

Equipment

- Hydro-Logic® Flexi Logger 105
- Range of Sensors

Data visualisation software

- Hydro-Logic® Timeview
- Hydro-Logic® Timeview DBi
- Hydro-Logic® Aquator
- Aquarius™

Consultancy & managed services

- Field hydrometry, including managed flood warning systems
- Consulting hydrometry

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.

Sewer Network and CSO Monitoring

Hydro-Logic® Smart Monitoring can help water companies understand the operation of their sewer networks in various conditions and enable them to model and then mitigate sewer flooding.

Monitoring spill frequency at Combined Sewer Overflows (CSOs) is key to providing water companies with the data they need to be able to reduce the number of spills and improve the quality of the water environment.

Both of these applications are essential to helping water companies meet their Water Industry National Environment Programme (WINEP) objectives.

Case studies

Hydro-Logic® Smart Monitoring system reduces flood risk for Wychavon District Council

Residents of Evesham, near Worcester, had experienced flooding from a culvert on the Bengeworth Brook, a small watercourse that discharges into Battleton Brook and then the nearby River Avon. During storm events a trash screen in the culvert became easily blocked, restricting flow through the culvert and contributing to flooding in the Davies Road area.

Wychavon District Council installed a Smart Monitoring system to provide insight into conditions at the trash screen, with a Hydro-Logic® Flexi Logger 105 to provide water level monitoring and early warning of blockages.

With the Hydro-Logic® Smart Monitoring system in place the Council's Engineering Team is now able to respond to blockages quickly and clear debris before the blockage causes flooding to nearby areas, improving responsiveness and reducing the need for speculative regular inspection visits.

Hydro-Logic® Smart monitoring system improves flood response in Maesteg, Wales

Maesteg in Bridgend, Wales, is situated in a hilly catchment area that is prone to flash flooding - a situation that is exacerbated by fly tipping. Heavy rain washing debris into culverts was causing flooding that blocked roads and damaged homes and businesses. Bridgend County Borough Council needed a way to identify flood risks and monitor culverts in order to warn residents and dispatch flood response teams.

The Hydro-Logic® Services team conducted a site survey, designed and installed a Smart Monitoring system to meet the council's needs. The team used Impress pressure sensors with Hydro-Logic® Flexi Loggers, and connected the network to the Hydro-Logic® Timeview telemetry platform.

The installation was completed in March 2017, and the network is providing support teams with early warning of flood risks and culvert blockages.
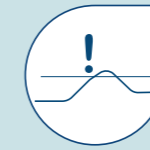
Hydro-Logic® Flexi Logger 105

The Hydro-Logic® Flexi Logger 105 delivers faster ARM-based processing, Wi-Fi connection and large data storage capacity, but is still small enough to fit into a standard pole top installation.
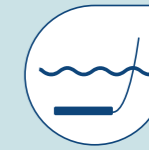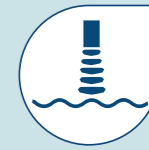
Alarms & monitoring

Water quality

Rainfall & weather

Submerged level sensor

Ultrasonic / radar level

Key Features

- ARM based logger provides faster processing
- 32 channels as standard.
- Uses a 4G modem that supports Long-Term Evolution technology (NB-IoT and CAT M1). 2G fallback included.
- Protected Wi-Fi configuration without ever removing the unit from its installation casing.
- Compatible with Hydro International standard pole top casings so upgrades to existing sites are straightforward.
- 119,700 data storage capacity.
- Switched 12 Volt DC output for powering sensors.
- External power-source capability.
- Configurable sample rate, 10 seconds to 12 hours.
- Industry-standard input capability Analogue, Digital and SDI-12.
- Rugged, environmental protection to IP68.
- Solar or wind external charging system connection option.

Harvest configuration software

All our Hydro-Logic® Flexi Loggers are supplied with our Windows Harvest logger control software package which enables users to configure all loggers, sensor and telemetry settings via serial port communications, and inspect collected data and trends. 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/en/smart-monitoring-support

Upgrading from the 100 to the 105

Get nearly four times the readings storage, double the available channels, 4G network connectivity, lower power usage and a faster processor with the Hydro-Logic® Flexi Logger 105.

The Hydro-Logic® Flexi Logger 105 has been designed to enable an easy upgrade to the Hydro-Logic® Flexi Logger 100 in most situations.

The new design will fit easily into our standard pole-top enclosure so upgrades to existing sites are straightforward.

If you would like advice on upgrading your existing Hydro-Logic® Flexi Logger 100, please contact us on: smartmonitoring@hydro-int.com
or call: +44 (0)1275 878371

Support for legacy models

- **Hydro-Logic® Flexi Logger 100**
- **Hydro-Logic® Flexi Logger 200**
- **Hydro-Logic® Flexi Logger 300Ex**

If you are happy with your current logger, whether it's a Hydro-Logic® Flexi Logger 100, 200 or 300Ex, rest assured we will happily continue to support both these models whilst under warranty.

If you have any queries, or would like technical support for either of the 100, 200 or 300Ex Hydro-Logic® Flexi Loggers, please visit our support pages at:

https://www.hydro-int.com/en/smart-monitoring-support or call: +44 (0)1275 878371

Select the sensor to match your application

* All listed sensors are supported and are compatible with our Hydro-Logic® Flexi Logger 105. Pre-configured templates for all supported sensors are located with Harvest configuration software.

Level Sensors

Category	Manufacturer and Model
Contact	Cynergy3 IMSL/S12C/S12S/LMP 307
	In-Situ Level Troll Range
Non-contact	VegaPuls WL61Radar Sensor
	Pulsar dBi HART Transducer Series

Flow Sensors

Category	Manufacturer and Model
Contact	Nivus POA Wedge (or CS2)
Non-contact	Sommer RQ

Weather Sensors

Category	Manufacturer and Model
Tipping Bucket Raingauge	Casella TBR
	EML ARG314
Weather	Gill MetPak PRO

Quality Sensors

Category	Manufacturer and Model
Sediment/Sludge Level	Vega VegaVib 63
Turbidity/TSS	Analite NEP 5000
	In-Situ Aqua Troll Range
Dissolved Oxygen	In-Situ RDO Pro-x
	Ponsel OPTOD
Redox/ORP	In-Situ Aqua Troll Range
	Ponsel PHEHT
pH	In-Situ Aqua Troll Range
	Ponsel PHEHT
Conductivity	In-Situ Aqua Troll Range
	Ponsel C4E
Nitrate	
Chloride	
Salinity	Aqua Troll Range
Ammonium	
Chlorophyll a	AquaRead AP-LITE
	AquaRead AP2000

Category	Manufacturer and Model
Blue Green Algae	
Rhodamine	
Fluoresceine	AquaRead AP-LITE
Refined Oil	
CDOM/FDOM	
PAH	AquaRead AP2000
TOC	
Soil Moisture	TekBox TBSMP02 Soil Moisture Probe
	Adcon SM1 Soil Moisture Probe
Multiparameter WQ	In-Situ Aqua Troll Range
	AquaRead AP2000

Data visualisation, consultancy and managed services

Choose your data visualisation software

Hydro-Logic® Timeview

Hydro-Logic® Timeview provides an online platform for basic data visualisation, inspection and early warning on an annual subscription. The software enables you to:

- 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.
- Easily manage users and device features.

Hydro-Logic® Timeview automatically receives data from remote Hydro-Logic® data loggers, and 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® Timeview also manages 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 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.

Hydro-Logic® Aquator water resources modelling software

Hydro-Logic® 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.

Hydro-Logic® 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.
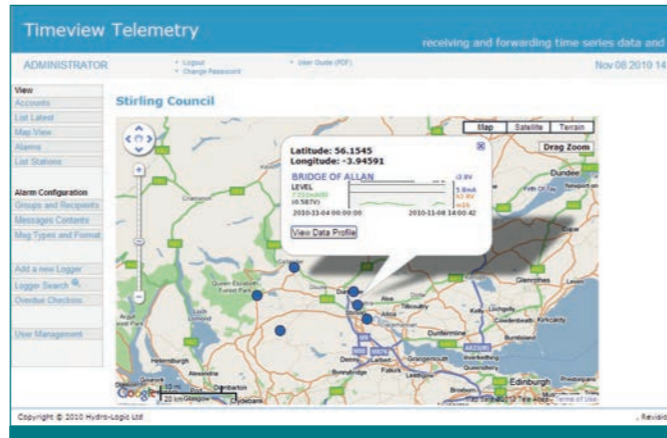
Aquarius Time-Series™ software

Hydro-Logic® Services is the approved distributor in the UK and Ireland for Aquarius software products.

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.

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.

Hydro International ®

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
Unit 2, Rivermead Court
Kenn Business Park
Windmill Road, Kenn
Clevedon
BS21 6FT

Tel: +44 (0)1275 878371
Email: smartmonitoring@hydro-int.com

Consultancy services

Hydro-Logic® Services
Unit 6, Commerce Park
Brunel Way
Theale
RG7 4AB

Tel: +44 (0)118 933 1325
Email: enquiries@hydro-int.com

Make better water management decisions

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