

**Scotmas Group**

Purify • Protect • Perform



# SCOTMAS BRAVO WA™

Water Disinfection and Management with ClO<sub>2</sub>

**Scotmas Group**  
Pinnaclehill Industrial Estate  
Kelso TD5 8AU Scotland

Phone: +44 (0)1573 226901  
E-mail: [enquiries@scotmas.com](mailto:enquiries@scotmas.com)  
Website: [www.scotmas.com](http://www.scotmas.com)





# WELCOME TO SCOTMAS

## YOUR ClO<sub>2</sub> EXPERTS

The Scotmas range of Chlorine Dioxide generators has been designed to deliver ClO<sub>2</sub> for drinking water and disinfection applications safely and securely, with unparalleled control and monitoring capabilities.

With 30 years' experience in ClO<sub>2</sub> technology and utilising the latest chemical engineering techniques, Scotmas systems are backed by unrivalled application expertise and technical support.

The team at Scotmas encompasses chemists, microbiologists, electrical, mechanical and controls engineers; working together to innovate and provide support to over 4000 ClO<sub>2</sub> installations worldwide.

*Scotmas are the Chlorine Dioxide specialists,  
focused on delivering Chlorine Dioxide systems  
engineered to suit your individual needs.*

# WHY SCOTMAS BRAVO WA?

The Scotmas Bravo WA Chlorine Dioxide generator is designed as a core disinfection system, with the flexibility to be configured for individual applications.



Developed around our unique in-line reactor technology, which prevents any risk of leakage of concentrated Chlorine Dioxide solution, all reactions take place at point of injection into the main water stream as an aqueous solution. Gas is not formed as part of the process and Chlorine Dioxide production is in conformance with EN 12671:2009.

- **Healthcare and Building Services:** Add Bravo WA generators at key locations throughout the estate. Protect at risk locations with Scotmas remote monitoring, including fail safe water supply cut offs. Monitor all usage data on Scotmas Insite. Systems link to existing Building Management Systems.
- **Food Processing:** Precise dosing control combined with downstream monitoring ensures sufficient biocide is added to the water to meet regulatory and customer standards, without impacting the taste or appearance of the finished product. Full audit trails for customer inspections.
- **Industrial Process Water:** Keep water free of Legionella and other pathogens. Full audit trail via the Bravo WA system and strategically positioned remote monitoring.
- **Borehole Water:** Keep borehole water clean or remove contamination with Scotmas Bravo WA. For commercial operators, Bravo WA links to Scotmas Insite for a full audit trail.

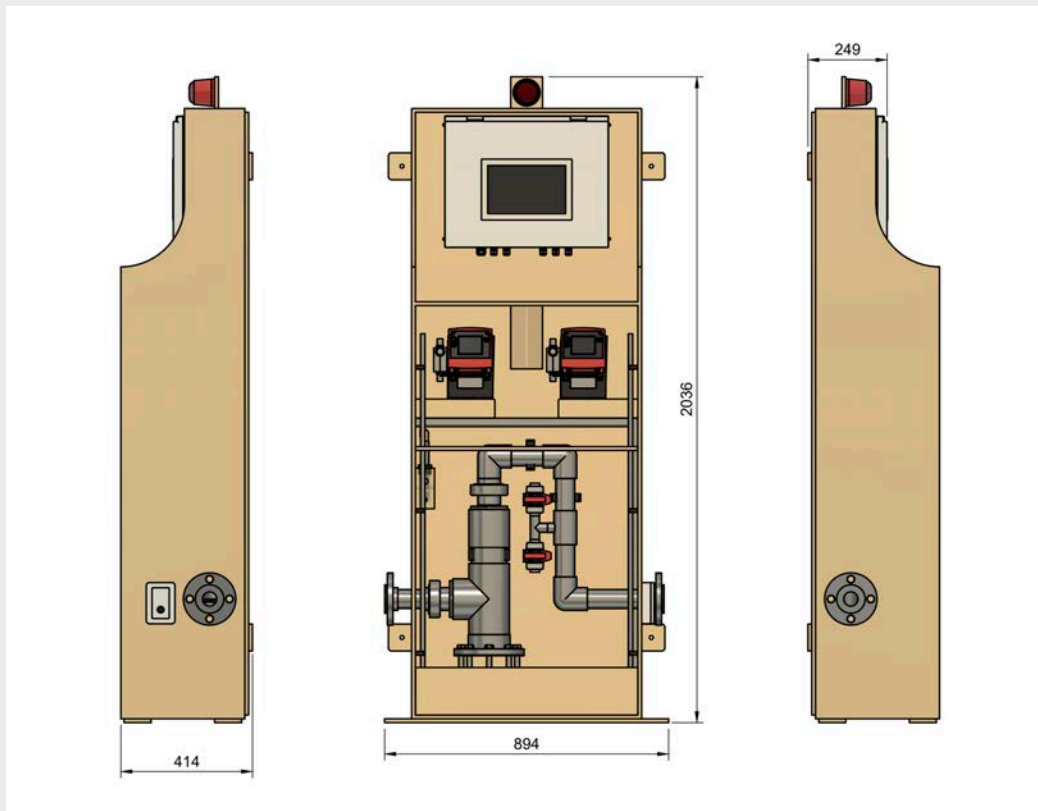
## BRAVO WA SYSTEM

The Bravo WA is controlled by an Industrial Panel PC and offers the ability to dose Chlorine Dioxide directly in proportion to the signals from an industry standard pulsed water meter.

Different alarm inputs are provided, allowing for dosing to be started or stopped in response to signals from customer processes, timers or stand-alone batch controllers.

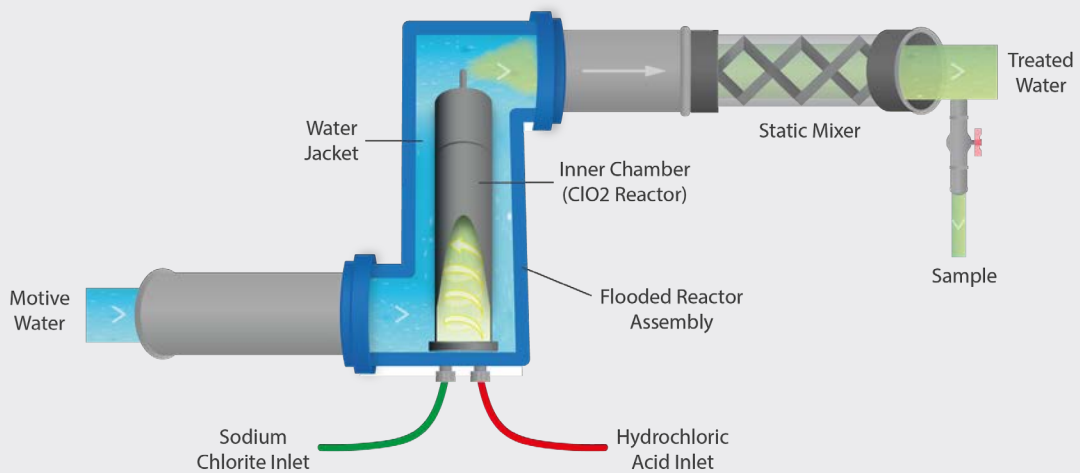
The Bravo WA interfaces directly with Scotmas Sentinel Guard and Sentinel Link remote analysers, which directly monitor residual Chlorine Dioxide and chlorite downstream within the water system.





## Safety at its heart

The unique in line reaction chamber provided at the heart of the Bravo WA was originally designed by Scotmas in 1999. This unique approach ensures that Chlorine Dioxide is generated efficiently and safely within the water pipework itself; there is no storage or pumping of potentially hazardous “free” Chlorine Dioxide solutions.





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## SENTINEL LINK

Designed to work alongside our Bravo and Delta™ water disinfection systems, the Sentinel Link system provides reliable, wireless connectivity for water quality monitoring sensors placed at strategic points throughout the building to give you total visibility of water hygiene parameters up to the point of use.

Capable of monitoring a range of water quality parameters, including flow rate, temperature, pH and residual disinfectant concentration, data is fed back to a central water disinfection system using the highly reliable and resilient LoRA radio protocol where the data can be used to alter parameters such as disinfectant dosing, and is uploaded to our web based InSite platform.



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## SENTINEL GUARD

The Sentinel Guard builds on the capabilities of Sentinel Link by providing local display readout and calibration. Automatic flushing of low frequency outlets can be achieved on the basis of a simple timer or logic driven according to water flow, taking into account low occupancy periods.

Sentinel Guard systems are particularly valuable in high risk laboratory or augmented care environments where it is necessary to shut off the water supply automatically in response to any deviation in agreed water quality parameters.

Sentinel Guard systems can be operated on a standalone basis with direct uplink to our Insite web based monitoring platform, or linked to our Bravo and Delta Chlorine Dioxide generators by Modbus or other hardwired link to provide automatic disinfection control.



# SENTINEL GUARD

## Off and On Site Monitoring

Scotmas offer remote access capabilities as standard across the WA range.

Our InSite web access system provides a secure, easy to use portal to rapidly interrogate datalogs recorded by the WA, Sentinel Link and Sentinel Guard for up to 3 years. The advanced charting and logging system allows daily, weekly, and monthly average residuals to be compared, trended over time and appropriate reports to be exported to PDF or CSV format.

Email and WhatsApp alerts can be generated in response to any alarm condition. The InSite system stores data on off-site secure servers and is ideal for compliance, monitoring and audit purposes.

The included Insite app also allows engineers and estates staff real time access and alerting to the status of your water hygiene system, without the hassle of legacy SMS systems.

On site monitoring can be tailored to your individual requirements. All our systems can be configured with comprehensive data logging and off-site analysis via LAN, GPRS, 802.11b, SCADA or MODBUSw technologies. The modular structure of Scotmas dosing systems means that any number of remote monitoring points may be set up, allowing generator performance to be monitored and controlled not just at the dose point, but also in the downstream process.



# WHY CHLORINE DIOXIDE

Chlorine Dioxide has been proven to offer a reduced whole-life cost when compared with competing biocidal technologies, such as electrochlorination, ozone, and hypochlorite treatments, due to its powerful mode of action, low dose rates, and superior environmental performance.

## Destroys biofilm completely at source

Biofilm removal is the most important part of an effective water treatment system. Without it, it is simply not possible to have a safe, pathogen free environment.

## Lower biocidal contamination

Some biocides require very high concentrations to produce the required disinfection impact. Where Hydrogen Peroxide has been promoted as a biocide for water treatment, dose rates can be up to 30 times the equivalent Chlorine Dioxide dose rate to achieve the same disinfection impact.

## Effective against complex organisms

Chlorine Dioxide has been found to be effective against complex organisms such as cysts and protozoa including Cryptosporidium, Giardia and amoeba.

## Disinfection by-products

High concentrations of certain biocides can cause environmentally persistent, potentially carcinogenic by products to form, including Trihalomethanes, Chlorinated Organics and Bromate. Chlorine Dioxide does not react to form complex organic by products. In addition, the superior reaction efficiency of the Bravo WA minimises residual Chlorite and Chlorate levels.

## Oxidation strength vs. oxidation capacity

When compared with other oxidising biocides, Chlorine Dioxide has a significantly lower oxidation strength, yet is strong enough to attack the disulphide bonds found in the membranes of bacteria and other biological material. This process of “selective oxidation” allows the Chlorine Dioxide biocide to be targeted where it is needed most, disinfecting areas quickly and at low dose rates.

## BRAVO WA MODELS

<b>WA 6g/h</b>	<ul style="list-style-type: none"> <li>- &lt;2" diameter water pipe, &lt;6,000 l/hr water treated @ 1 mg/l ClO<sub>2</sub></li> <li>- Generates 0.3 - 6g ClO<sub>2</sub>/hr</li> <li>- Part number: SE3100</li> </ul>
<b>WA 15g/h</b>	<ul style="list-style-type: none"> <li>- &lt;2" diameter water pipe, &lt;15,000 l/hr water treated @ 1 mg/l ClO<sub>2</sub></li> <li>- Generates 0.75 - 15g ClO<sub>2</sub>/hr</li> <li>- Part number: SE3101</li> </ul>
<b>WA 50g/h</b>	<ul style="list-style-type: none"> <li>- &lt;2" diameter water pipe</li> <li>- Generates 2.5 - 50g ClO<sub>2</sub>/hr</li> <li>- Part number: SE3102</li> </ul>
<b>WA 80g/h</b>	<ul style="list-style-type: none"> <li>- &lt;4" diameter water pipe</li> <li>- Generates 4 - 80g ClO<sub>2</sub>/hr</li> <li>- Part number: SE3103</li> </ul>
<b>WA 210g/h</b>	<ul style="list-style-type: none"> <li>- &lt;4" diameter water pipe</li> <li>- Generates 10.5 - 210 g ClO<sub>2</sub>/hr</li> <li>- Part number: SE3104</li> </ul>

### Enclosure Options



Standard Unit



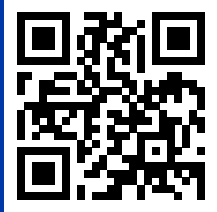
Steel Enclosure



GRP Unit

Use for	Treatment of process water and borehole supplies. Safety critical food and drink processing. Recirculating Industrial process water systems.
Precursors	6.7% Low Alkalinity - 7.5% Standard Sodium Chlorite EN938 <10% Hydrochloric Acid EN939 To produce Chlorine Dioxide to EN 12671:2009
Sensor	0-2 mg/l Chlorine dioxide probe c/w single Perspex single flow cell with flow cell switch, as standard.
Precursor Dosing Pumps	2 x Grundfos DDA Dosing Pumps, Smart Digital
Gas Detector	Scotmas Chlorine Dioxide vapour detector as standard safety feature c/w beacon and sounder.
Standard Alarms	As standard 2 alarm outputs. Leak detection, chemical level alarms, audio/visual gas detection, precursor chemical pump faults.
User Control	System Healthy/Fault System Warnings/Errors Gas Alarm - Audio/Visual – Beacon and Sounder 2 Levels of user security
Screen	LCD display screen c/w SD Card. Remote viewer via InSite / 2 levels of user security.
Data Logging	On-board data logging via SD card, Offsite logging via GPRS/3G Communication and local download.
Layout	System is composed of one enclosure.

\*A full technical data sheet is available on request.



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