ORBISPHERE 510

Precise, Powerful Process monitoring

HACH ULTRA™

EXCELLENCE IN PROCESS ANALYTICS

ORBISPHERE 510

The ORBISPHERE 510 *offers precise, powerful process monitoring capability. Connected up to 3* ORBISPHERE *high quality Electro Chemical sensors to measure O_2, O_3, or low levels of H_2 and Thermal Conductivity sensors for selective measurement of CO_2, N_2 or H_2, these instruments provide accurate, repeatable trace level gas analysis and an impressive level of data management.*

These instruments are designed for applications in the power generation, electronics, life sciences, beverage, chemical and water treatment industries.

Operation

ORBISPHERE 510 instruments are designed for ease of use. All functions are accessed through the colour touch screen acting as display and keyboard. With help of intuitive software the user can set-up the process parameters and alarms in a few minutes. In standard operation the main measurement window continuously displays real time process readings, graphed sensor trends (user selectable from last 1 minute to last 1 hour), alarm limits, temperature and event occurrence. Sensor life can be extended during CIP and other high temperature procedures through automatic isolation of the EC sensor or continuous purge mode for the TC sensor above a preselectable level. Common interference effects due to CO_2, H_2S, H_2, N_2, humidity, salinity and chlorinity can be eliminated during the configuration process.

Measurement, configuration, calibration and standard service routines are called up using the simple to follow menus on screen. Access levels are password protected supporting regulatory compliance to standards such as ISO and 21 CFR Part 11, ensuring problem free audits and reducing compliance costs. Associated with a sampling device the ORBISPHERE 510 Table version is an ingenious solution for laboratory analysis ensuring traceability of quality control. As an example the Total Package Oxygen (TPO) and the CO_2 concentration in a can of beer or soft drink can be determined in one simple operation using this system.

Benefits

- High level of measurement accuracy and rapid response time means reliable and effective process monitoring
- Easy to use, intuitive software navigation is simple to use for line operators, flexible enough to meet the needs of technical personnel
- The colour touch-screen in a stainless steel enclosure conforming to IP65 defines a robust unit built to handle the industrial environment
- Data storage of up to 10000 measurements, last 1000 operator actions and details of last 50 calibrations

- *Multiple point monitoring with up to three sensor inputs*
- *Easy to use, intuitive software using clear, full colour touch-screen*
- *Internal diagnostics and reminders for maintenance and calibration*
- *Simple transfer of configuration settings between instruments using USB-client or USB-host*
- *Multiple communication options including USB, Profibus, and Ethernet*

Calibration

The ORBISPHERE 510 software defines the step-by-step process for calibration of both measured gas and interferences. Several methods can be used: the unique ORBISPHERE Air Cal or direct value with known gas concentration in dissolved mode or in gas phase. Traceability is ensured through a report that is generated following each calibration. A log file, containing details of the previous 50 calibrations undertaken, further supports traceability.
Barometric pressure calibration for the instrument's internal or optional external sensor may be simply carried outby comparison with a precision certified barometer.

Communication

Digital communication uses industry standard protocols including RS485, USB and Profibus that can drive product change from a centralized automation system.
Traditional analog outputs and 3 alarm relays per channel may all be configured in terms of function, content and behaviour.

ORBISPHERE 510 instruments are fully compatible with all ORBISPHERE electrochemical sensors including Smart sensors. Smart sensors can be calibrated in the laboratory before installing on-line and store their own calibration information, so allowing laboratory precision calibration and minimising process downtime.

- Internal diagnostics simplify trouble-shooting and issue reminders for maintenance and calibration
- Simple transfer of product list and global configuration settings between instruments using USB-client or USB-host
- Adjustable alarms and outputs provide assurance that any out of specification events are appropriately registered
- Software password protection offers 5 levels of control access, minimising the risk of errors in operation or configuration

Validation and diagnostics

To ensure continuous high performance and simplify maintenance ORBISPHERE 510 instruments offer a number of diagnostic features including:

- Notification that calibration is due - ensures QC procedural compliance
- Notification that a sensor service is due - optimal preventative maintenance planning
- Sensor service diagnostics – minimises downtime
- Specific system alarm relay - informing real-time the status of the instrument and sensors

Performance specifications*

Measurement		Resolution, accuracy and response time are determined by sensor
Sensor options	Up to 3	ORBISPHERE sensors (with a maximum of 2 TC sensors) ORBISPHERE Electro chemical sensor for O_2, H_2 low level, O_3 measurements ORBISPHERE Thermal conductivity sensor for CO_2, H_2, N_2 measurements
Units	■ Gas concentration	Configurable for gas or liquid phase with multiple unit options
	■ Pressure	External and barometric pressure with multiple unit options
	■ Temperature	Sample temperature with unit options (K, °C, °F)
Operating conditions		−5° C to 50° C - 23° F to 122° F / 0 to 95 % non-condensing relative humidity, for 1 channel −5° C to 45°C - 23° F to 113° F / 0 to 95 % non-condensing relative humidity, for 2 channels −5° C to 40° C - 23° F to 104° F / 0 to 95 % non-condensing relative humidity, for 3 channels
Thermal cut-off		Configurable thermal cut-off for sensor protection.
Sample frequency		Continuous or single sample measurement
Interference correction	■ EC sensor	Chlorinity / Salinity / CO_2 insensitivity / H_2S insensitivity / H_2 for O_2
	■ TC sensor	Humidity / He for H_2
Compensation options		O_2/H_2 compensation for nuclear applications O_2/N_2 compensation for electronics applications
Communications		RS485, USB client, USB Host, Ethernet, Profibus DP (optional)
Analog output		Three 4-20 mA or 0-20 mA (software configurable) per channel. R max 600 Ω or Three 0-5 V (hardware option)
Relays		Three measurement alarm relays (2A-30VAC or 0.5A-50VDC) per channel One instrument system alarm relay (2A-30VAC or 0.5A-50VDC)
Password protection		Five levels of authorised access to configuration and data management
Calibration data		Holds calibration records for last 50 calibrations
Data storage		Rolling or store once mode for up to 10'000 measurements and 1'000 last operator actions
Display		Full colour STN 320 x 240 pixels with CFL backlight
Keypad		Touch-screen panel
Languages		6 major European languages are available as standard and Chinese (C), Japanese (J) or Korean (K) versions can be ordered specifically
CE Certifications		CE Electromagnetic compatibility standards: EN 61326-1 : A1 & A2 (Ed. 2001), A3 (Ed. 2003) CE Safety standard: EN 61010-1 (Ed. 2001) ETL, conforming to UL 61010-1 and CSA 22.2 No. 61010-1

ORBISPHERE 510 instruments are available in 3 versions

Wall and pipe version	Mounting is facilitated by use of simple brackets that allow adjustment of the instrument for optimum screen viewing angle
Power requirements	■ Universal 100-240 VAC @50/60 Hz, 25 VA; or 10-36 VDC, 25 W
Enclosure	■ Stainless steel, IP65
Dimensions	■ Height: 236.5 mm - 9.31 in / Depth: 160 mm - 6.29 in / Width: 250 mm - 9.84 in
Weight	■ 3.8 kg

Panel mount version	Quick and easy mounting from the front of the panel using concealed screws
Power requirements	■ Universal 100-240 VAC @50/60 Hz, 25 VA; or 10-36 VDC, 25 W
Enclosure	■ Aluminium, IP65
Dimensions	■ Height: fascia: 156 mm - 6.14 in / enclosure: 123 mm - 4.84 in Depth: 250 mm - 9.84 in Width: fascia: 220 mm - 8.66 in / enclosure: 214 mm - 8.42 in
Weight	■ 2.9 kg

Portable version	All the functionality of the mains version with battery option for cart or portable use
Power requirements	■ 5V supplied through external 85-264 VAC @ 50/60 Hz, with optional 4 hour duration battery pack
Enclosure	■ Aluminium, IP65
Dimensions	■ Height: 225 mm - 8.85 in / Depth: 250 mm - 9.84 in / Width: 219 mm - 8.62 in
Weight	■ 3.8 kg

*Certain elements of the performance specification are only available as options to the standard unit. Please discuss your specific needs with a HACH ULTRA representative.

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