GREENSPAN

MULTI PARAMETER WATER QUALITY SENSORS

IRRIGATION AUTOMATION

WATER MEASUREMENT

REMOTE MONITORING

CLOUD BASED DATA

MP SERIES (UP TO 4 PARAMETERS) Ø47mm
MQ SERIES (UP TO 6 PARAMETERS) Ø65mm

MULTI PARAMETER WATER QUALITY SENSORS

DESCRIPTION

The Greenspan MP and MQ Multiparameter Sensors provide a complete self contained measurement and data logging system for a wide range of environmental water monitoring applications. The sensors provide the ability to measure single or multiple water quality parameters (up to 4 parameters on the MP and 6 parameters on the MQ) within the single sensor providing users the choice to select the parameters which best suits their application.

Users have a choice of the following parameters:

- Pressure
- pH
- Oxygen Reduction Potential
- Electrical Conductivity
- Temperature
- Turbidity
- Optical Dissolved Oxygen

The sensor includes an internal data logger to provide long term data collection at remote sites. The sensor can be fitted with an external cable, or with an on-board battery pack for true stand alone operation. Serial output (RS232 or RS485) in Modbus or optional SDI12 allow connection to an external data logger or process controller as well as options for remote telemetry connection.

A durable corrosion resistant body, rugged construction utilising double "O-Ring" ensures suitability for harsh environments. The sensor comes fitted with a fully moulded polyurethane cable as standard. Other cable options are available.

The parameters selected are available in various ranges. The pressure sensors can be supplied as either a gauge (vented) or absolute (non vented) sensor. Gauge sensors utilise the closed vent system (CVS) to provide barometric pressure venting with minimal maintenance. The MQ is ideal for use in hydrographic and environmental water monitoring applications, including tidal and estuary monitoring. The MP sensor uses a slimline housing suitable for groundwater monitoring. Both units are easy to configure and operate using the supplied SensorMate software.

FEATURES

- Low power usage enables long term remote operation
- Internal data logger for collection of data during critical events
- Telemetry options via mobile phone, radio and satellite
- SDI12 cable adaptor unit for connection into data logger or controller.
- Modbus RTU or ASCII
- RS232 or RS485/422

BENEFITS

- Can be installed in active waters (acidic or salty conditions)
- Reliable and robust sensor ensures minimal servicing visits
- Suitable for marine applications and waterways with high sediment loads
- Easy to configure logger – quick retrieval of data using SensorMate software
- Graphical and tabular display – export to spreadsheet format.
- Stand alone operation with on board Battery Pack
- Various cable options for telemetry and integration applications

APPLICATIONS

- Monitoring of streams and rivers, lakes and urban waterways
- Groundwater and Surface water hydrographic data collection
- Water supply storages, Runoff Studies, Flood Warning
- Tidal, estuary and oceanographic monitoring.

DIMENSIONS MP Series

PARAMETER DETAIL

The **Pressure** sensor utilises a robust ceramic capacitance transducer for long term reliable pressure/depth sensing and a highly accurate thermistor for temperature measurement. Multi-point linearity and temperature calibration over the full operating ranges of Pressure and Temperature ensures stable, repeatable and accurate readings in the field.

PRESSURE	Measurement technique	½" Ceramic Capacitance Sensor
	Standard pressure ranges available	Gauge 2.5, 5, 10, 20, 40, 75, 100 m Absolute 20, 40, 75, 100 m
	Max over range	4 times Full Scale range.
	Other ranges available	Yes – Calibration charge may apply – refer sales office
	Overall accuracy (combined linearity, hysteresis and repeatability)	+/– 0.1% Full Scale range
	Long term stability	0.2% full scale per annum
	Resolution	Depth – 0.001 m, Temp – 0.05°C

The **pH** sensor utilises a robust gel filled pH electrode together with the optical isolation and advanced signal conditioning to ensure long term accurate data.

PH	Measurement technique	Gel-filled glass electrode with internal Ag/AgCl reference; Field replaceable electrode
	Sensor range	0–14 pH
	Resolution	0.001 pH
	Accuracy	+/– 0.2 pH

The **ORP** (Oxygen Reduction Potential) sensor is similarly packaged and utilises a platinum electrode. Both sensors feature a field replaceable electrode to further improve long term performance and reduce maintenance costs.

ORP	Measurement technique	Platinum electrode with internal Ag/AgCl reference; Field replaceable electrode
	Sensor range	–1000 mV– +1000 mV
	Resolution	1 mV
	Accuracy	+/–2%full scale

Electrical Conductivity sensors utilise a reliable and robust toroidal sensor for conductivity measurement and thermistor for temperature measurement. Multi-point linearity and temperature calibration over the full operating range ensures stable, repeatable and accurate readings in the field. (Note: pH cannot be used in combination with EC sensor in the MP)

EC	Measurement technique	Toroidal Conductivity
	Standard EC ranges available	0–5000 µS/cm, 0–10000 µS/cm, 0–20000 µS/cm, 0–60000 µS/cm, 0–70000 µS/cm
	Other ranges are available	Yes – calibration charge may apply – refer to sales office
	Overall accuracy (combined linearity, hysteresis and repeatability)	+/–1%full scale range
	Resolution	EC– 1 µS

Turbidity sensors feature an integral wiper and digital filtering technology to provide long term reliable operation at remote sites where bio-fouling or sedimentation can occur.

TURBIDITY	Measurement technique	90° Infra-red (ISO7027)		
	Standard ranges available (factory set)	100 NTU	400 NTU	1000 NTU
	Resolution	0.1 NTU	0.2 NTU	0.3NTU
	Linearity	+/–1 %	+/–1 %	+/–3 %
	Temperature coefficient	+/–0.2%/°C	+/–0.2%/°C	+/–0.2%/°C
	Calibration standard	APSAEPA polymer solutions 0, 100 NTU,		400 NTU, 1000 NTU

The **Optical Dissolved Oxygen** sensors utilise fluorescence DO sensor technology. The sensor's fast response allows users to capture rapid changes in DO.

OPTICAL DO	Measurement technique	Oxygen fluorescence detection method
	Sensor range	0–200% saturation (0–20 ppm)
	Resolution	0.1%
	Accuracy	Oxygen 1% of reading or 0.02 ppm whichever is greater
	Response time	90% of DO change within 60 seconds

SENSOR SPECIFICATIONS

Temperature measurement technique	Integrated precision thermistor
Operating ranges	0–50°C
Overall temperature accuracy (combined linearity, hysteresis and repeatability)	0.2°C
Sensor Outputs	Internal Data Logger – serial data via SensorMate software Optional adaptor provides SDI12 serial output (3wire)
Storage temperature	–5°C – +60°C
Cable type	Polyurethane sheathed cable, OD 8 mm, with 3 mm vent tube, moulded entry, HS7 connector for serial connection.
Standard cable lengths	10, 20, 30, 50, 100, 150 m (32, 65, 100, 165, 325, 490 ft)
Non-standard cable lengths	Yes (Extracable moulding time may be required)
Power supply	8 to 30 VDC (at sensor), or on-board battery pack (option)
Power ESD protection	2000 volts
Current consumption	Sleep <0.2 mA, logging 20 mA, communicating 30 mA(consumption rates vary depending on parameters selected)
Sensor warm-up time	Up to 5 seconds
On-board battery pack (option)	Housing screws to sensor size (OD × L) 47 mm × 250 mm
Battery capacity	9×LithiumAA(3.6Volt) – Total capacity 5.2 Ah @10.8 V
Typical field life (battery pack)	Over 12months' remote operation @15-minute datalogging.
Internal datalogger	Non-volatile, battery backed RAM with real time clock
Memory size	4 Mb capacity, with user-selectable wrap function
Measuring units	User definable (Metric and Imperial US units)
Data storage	250,000 readings. (Typically 5-minute data for >12 months)
Logging frequency	User selectable from 1 second up to once per day
Dimensions (L×OD)	*MP – 355 mm× 47 mm(14″ ×1.78″), MP– 355 mm× 65 mm (14″× 2.5″) – Optional End Mount Batt Pack – 300 mm × 47 mm
Weight	MP – 550 g plus cable weight (665 g per 10 m length) MP – 650 g (plus cable weight (665 g per 10 m length)
Wetted materials	Acetal, ceramic, 316 passivated stainless steel, polyurethane, viton

* Variable depending on parameters chosen. Drawings show example dimensions.

OPTIONAL EXTRAS AND ACCESSORIES

- On Board Battery Pack (includes Housing and Battery Pack)
- SDI12 Adapter (connects to end of sensor cable for serial output to logger)
- Closed Vent System – if gauge pressure sensor selected
- Communications Cables (serial to USB connector on laptop)

CUSTOMER SUPPORT

Greenspan also offer a range of customer support functions:

- Technical and sales support
- Factory calibration and re-certification
- Product servicing and repair

SDI-12 Adaptor

Closed Vent System

GREENSPAN

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