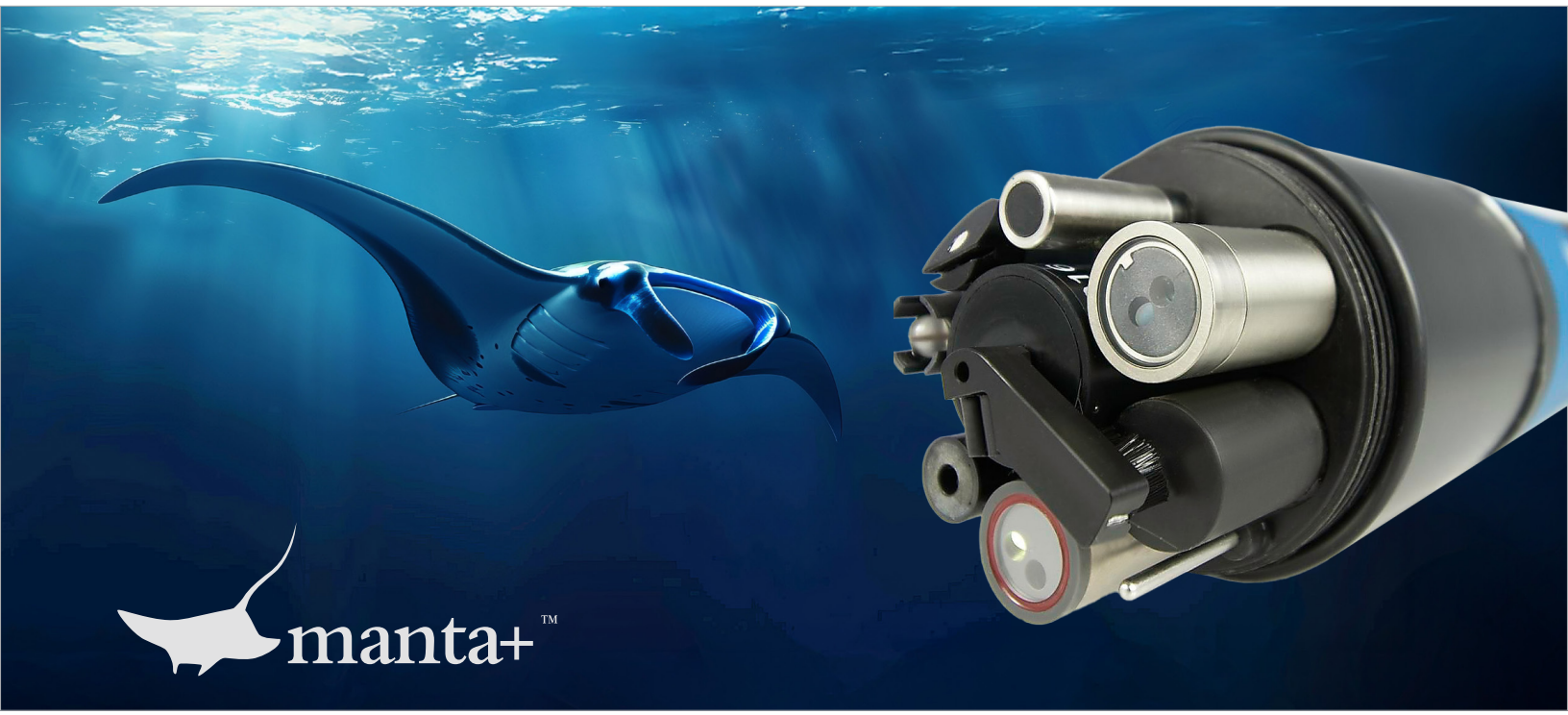
Manta+™ Water Quality Probes

Model 5001 Data Sheet



Manta+ Water Quality Probes
Model 5001

Manta+ Probes are multiparameter sondes designed for monitoring water quality in fresh, brackish, and marine environments.

The Manta+ water quality probe family offers flexible configurations, from standard to custom, with the largest probe accommodating up to 14 sensors.

Each Manta+ unit includes a weighted sensor guard, storage/calibration cup, temperature sensor, internal data logging memory, marine connector, electronic manual, Windows-compatible Manta Control Software, data cables, and a USB cable for PC connection.

Measuring 19–21" (or 26.5–28.5" with the optional external battery pack for autonomous logging), Manta+ Probes can log over 1,000,000 readings at a rate of 1 Hz.

All Manta+ Probes feature anti-corrosive housings and sensors, robust marine bulkhead connectors, and anti-fouling options. LED status indicators on each sonde provide essential diagnostic information.

Add a battery pack to convert a probe to a logging device. A wiper system is available for extended deployments. A standard three-year factory warranty is included.

Manta+ Water Quality Probe Benefits

- **Wide Sensor Selection:** Access to the largest selection of water quality sensor technologies in the industry. Can accommodate up to 14 sensors in one probe.
- **Comprehensive Monitoring:** Measure multiple water quality parameters simultaneously, providing a complete picture of water health.
- **Versatile Use:** Suitable for various applications, from spot checking to continuous monitoring.
- **Real-time Data:** Connect to telemetry stations for immediate access to water quality data in the cloud.
- **Durable:** Features anti-corrosive housings and sensors, robust marine bulkhead connectors, and anti-fouling options.
- **Easy to Use:** One touch and automatic data capture, simple calibrations, collect and manage data with mobile apps, LED status indicators
- **Reliable:** Each probe comes with an industry-leading 3 year warranty

Manta+20

- temperature
- pH
- conductivity
- dissolved oxygen (optical)

Manta+25

- temperature
- pH
- conductivity
- turbidity (or any fluorometer)

Manta+30

- temperature
- pH
- conductivity
- dissolved oxygen (optical)
- turbidity (or any fluorometer)

Standard on Manta+35, +F35, and +40

- temperature
- pH
- conductivity
- dissolved oxygen (optical)
- turbidity
- anti-fouling wiper

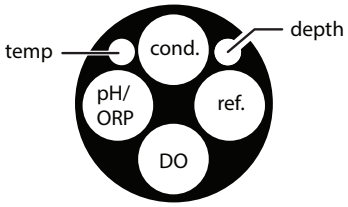
Additional Options (see Sensors chart)

- fluorometers (medium sensors)
- ISEs (small sensors)
- TDG

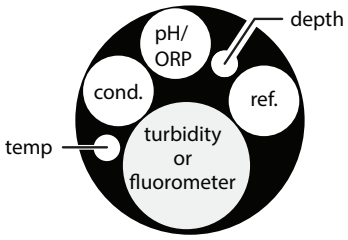
***Depth and ORP (must have pH) optional on any probe**
See the Solinst Eureka Manta+ Standard Sensor Configurations for all possible combinations, based on sensor size.

Manta+ Standard Sensor Configurations

2"
Manta+20



2.5"
Manta+25



Standard models are shown. Please call for a quote for custom configurations.

Any small or medium sensor is optional. Any fluorometer may be substituted for turbidity.

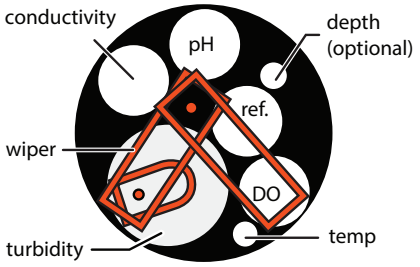
pH, pH reference, conductivity and DO are "small" sensors.

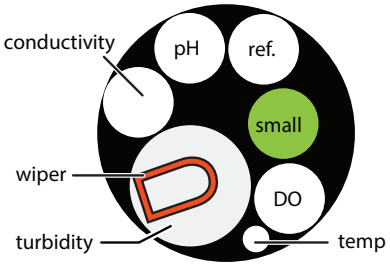
For a probe with turbidity sensor, the turbidity wiper extension brush wipes the fluorometer and DO sensor.

For M+35 and 40 models with no turbidity, a wiper system is available to wipe DO and fluorometer sensors.

Any sensor may be removed and the port plugged.

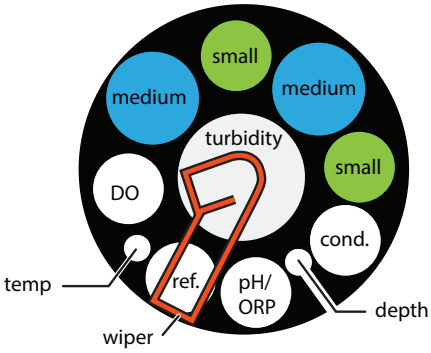
3"
Manta+30A

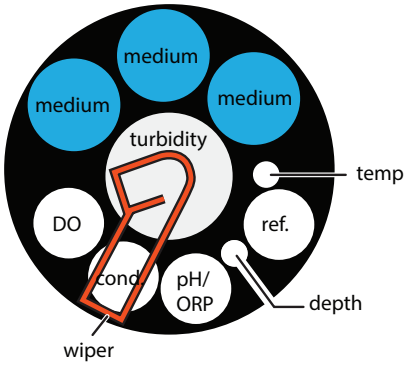




3"
Manta+30B

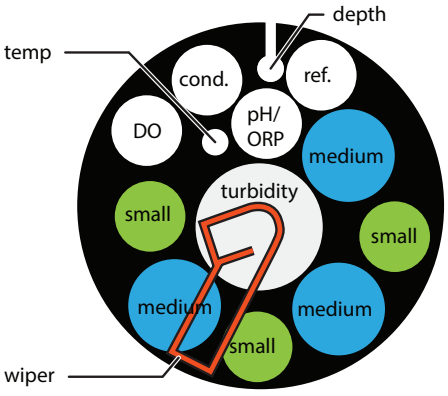
3.5"
Manta+35A





3.5"
Manta+35B

4"
Manta+40



Small	Medium
nitrate	chlorophyll a
ammonium	blue green algae
chloride	CDOM/FDOM
sodium	tryptophan
calcium	optical brighteners
bromide	rhodamine
TDG	fluorescein
	PTSA
	crude oil
	refined oil

- A small sensor may be substituted for any medium sensor.
- TDG sensor cannot be wiped.
- +F35 only: optional depth occupies one medium port.

Manta+ Multiprobe Sensor Configuration

In addition to the latest technology for measuring standard parameters such as temperature, pH, conductivity, dissolved oxygen, turbidity, and depth, Solinst Eureka provides speciality sensors including PAR (Photosynthetically Active Radiation), Total Dissolved Gas, as well as a long list of fluorometers.

Manta+ optical dissolved oxygen sensors feature a long-lasting (5+ years) replaceable cap, and Manta+ pH sensors use a refillable reference solution. This design minimizes consumable costs and ensures low long-term ownership expenses.

The Manta+20 comes standard with temperature, pH, conductivity, and dissolved oxygen sensors, with optional sensors for ORP and depth.

The Manta+25 comes standard with temperature, pH, conductivity, a wipered turbidity sensor, and optional ORP and depth sensors.

The Manta+30 is available in two configurations, the M+30A and M+30B. Both models have wipered turbidity, temperature, pH, conductivity, dissolved oxygen, and optional ORP, depth sensors and DO wiper. The M+30B accommodates the addition of an ISE sensor (small sensor).

The Manta+35 is available in two configurations, the M+35A and M+35B. Both come standard with turbidity, temperature, pH, conductivity, and dissolved oxygen sensors, with the option to add ORP and depth sensors. In addition to these standard sensors, the M+35A model will accommodate two fluorometers (medium sensors) plus two ISE sensors (small sensors); the M+35B will accommodate three fluorometers (medium sensors).

The Manta+F35 includes the same standard sensors as the +35, with the option to add up to three fluorometers. The +F35 features an anti-fouling copper-infused "nose cone" covering the sensor bodies. A central wiper system keeps the exposed sensor surfaces clean during continuous deployments. These features mean better data and less overall cleaning is required. PAR, CO_2, TDG, and ISE sensors are unavailable on the +F35.

The Manta+40 comes standard with turbidity, temperature, pH, conductivity, and dissolved oxygen sensors, with the option to add ORP and depth sensors. In addition to these standard sensors, the M+40 will accommodate three fluorometers (medium sensors) plus three ISE sensors (small sensors).

Manta+ Water Quality Probe Specifications

		Manta+20	Manta+25	Manta+30	Manta+35	Manta+F35	Manta+40
Diameter		1.95"	2.45"	2.95"	3.5"	3.5"	4.0"
Length with guard	no battery pack	19"	19"	19"	21"	21"	21"
	with IBP (internal battery pack)	27.75"	27.75"	N/A	22.5"	22.5"	22.5"
	with EBP (external Li-ion battery pack)	26.5"	26.5"	26.5"	28.5"	28.5"	28.5"
Weight with guard	no battery pack	2.7 lbs	3.95 lbs	5.7 lbs	7.75 lbs	7.75 lbs	10.65 lbs
	with IBP	3.45 lbs	6.55 lbs	N/A	8.75 lbs	8.75 lbs	11.65 lbs
	with EBP	4.95 lbs	6.2 lbs	7.95 lbs	10 lbs	10 lbs	12.9 lbs
IBP configuration		3 "D"	3 "D"	N/A	6 "C"	6 "C"	6 "C"
Weight of disposal lead acid batteries not included in total probe weight with IBP compartment.							
Operating temperature		-5 to 50°C					
Depth rating		200 m (15 m maximum for ISE and TDG sensors)					
Communication		RS-232, SDI-12, MODBUS, USB or Bluetooth					
Sample rate		1 Hz					
Data memory		>1,000,000 logged readings					

Comprehensive Applications of Manta+ Water Quality Sondes

Solinst Eureka's water probes are used to collect water quality data in any kind of water—lakes, rivers, groundwater, stormwater, estuaries, streams, ponds, near-shore oceanographic, process waters, waste waters, and for laboratory research. They can be used for discrete sampling and profiling, unattended datalogging and remote monitoring with telemetry. Applications include:

Environmental Monitoring:

- Baseline water quality assessments and long-term monitoring of aquatic ecosystems
- Monitoring wetland health and restoration projects
- Assessing the effects of runoff from agricultural

Drinking Water Monitoring:

- Source water protection and monitoring
- Treatment plant optimization and process control
- Distribution system monitoring
- Detecting and responding to contamination events

Stormwater Monitoring:

- Monitoring the effects of storm events on local waterways
- Monitoring the effectiveness of stormwater controls and treatment systems

Hydrology and Hydrogeology:

- Groundwater monitoring for aquifer characterization
- Surface water and groundwater interaction studies
- Monitoring saltwater intrusion in coastal aquifers

Dredging and Construction:

- Monitoring turbidity during dredging operations
- Assessing the impact of construction projects
- Monitoring runoff from construction sites

Mining:

- Monitoring runoff and discharge
- Monitoring the effects of mining on ground and surface water
- Monitoring the effects of acid mine drainage

Wastewater Management:

- Monitoring effluent quality for compliance
- Optimizing wastewater treatment processes
- Tracking the impact of wastewater discharges

Oceanography and Marine Research:

- Monitoring coastal water quality and ocean acidification
- Studying the health of coral reefs, marine ecosystems and biodiversity
- Tracking the movement of masses and currents

Aquaculture:

- Maintaining optimal water quality for fish and shellfish farming
- Preventing disease outbreaks and optimizing growth

Industrial Applications:

- Process water monitoring and control
- Cooling water monitoring and treatment
- Monitoring environmental impact of industrial activities and effluents

Research and Education:

- Conducting scientific research on water quality and aquatic ecosystems
- Providing hands-on learning experiences for students in environmental science

Flexible Communication

All sondes can be used for discrete sampling and profiling or self-powered datalogging, and data station connectivity. Real-time data is available through cloud-based software when connected to a telemetry station.

Users can operate the Manta+ Probes with various display options via a direct or *Bluetooth*® connection. Intuitive control software, compatible with Windows, iOS, and Android™, is included at no additional cost with every probe. Our sondes communicate via RS-232, SDI-12, or MODBUS, allowing flexibility in connecting to various dataloggers and PLCs.

Download on the App Store

GET IT ON Google play

Accessories for Added Convenience

Many accessories are available for the Manta+ line of multiparameter probes, including underwater cables from 3 to 200 meters in length, USB adapters and data cables for office use, flow-cells, copper-gauze anti-fouling sensor guards, cable reels for extra-long cables, SDI-12 adaptor cables, carry cases, pipe kits to protect probes used for continuous deployments, attachable rechargeable battery packs for powering probes used for continuous deployment, and a full line of calibration standards including secondary calibration standards for fluorometers.

Manta Control Software

Use the Manta+ data cable with RS-232 to USB adapter, to connect your water probe via USB, for operation with the Manta Control Software for Windows PC's and laptops.

This software for the Manta+ family of probes features simple to use, intuitive menus for data capture, sensor calibrations and configuration, file management, and more.

It also includes a feature for use by software developers and end users for communication with external data loggers. This feature is also used by the Solinst Eureka Support Team to guide the user through troubleshooting routines.

Wireless Bluetooth Communication

The mantaMobile™ is a rechargeable, high-capacity lithium battery with a Bluetooth transceiver in a water-resistant case. The mantaMobile communicates via Bluetooth to Android or Apple® devices, including tablets and smartphones.

MantaLink™ is the software app used to access functions and data from your Manta+ probe. Installing MantaLink on your display device takes just a few minutes. Connecting the Manta+ probe to your device only takes seconds.

Use MantaLink's simple menu structure to perform essential functions like data capture, calibration, and sensor parameter selection. The email feature allows quick transfer of field data to your home computer. Advanced features like geofencing make your sampling job even easier. The apps black background and large white text ensure that information is easily readable in sunlight.

Manta+ Sensor Specifications

Common Parameters

Sensor	Parameter	Range	Resolution	Accuracy	Comments
temperature	temperature	-5 to 50°C	0.01	±0.1	Calibration not required
pH/ORP	pH	0 to 14 units	0.01	±0.1 within 10 C of calibration; or 0.2	Refillable reference electrode; corrected for temperature; typical sensor life >6 years; optional ORP sensor is combined with pH sensor
	ORP	-999 to 999 mV	0.1	±20 mV	
turbidity	turbidity	0 to 1000 FNU	0.01	±0.3 FNU or ±2% of reading w.i.g.	Filtered for non-turbidity spikes; includes wiper to clean the optics; FNU and NTU are interchangeable
		1000 to 4000 FNU		±4% of reading	
dissolved oxygen (optical sensor)	concentration	0 to 20 mg/l	0.01	±0.1	Compensated for temperature and salinity; EPA approved "lifetime" luminescence method; typical sensor cap life > 6 years
		20 to 30 mg/l	0.01	±0.15	
		30 to 50 mg/l	0.01	±5% of reading	
	% saturation	0 to 500% saturation	0.1	Corresponds with the accuracy of the concentration reading	
conductivity	specific conductance, µS/cm	0 to 5000 µS/cm	0.1	±0.5% of reading or ±1 w.i.g.	Corrected for temperature; four easy-to-clean graphite electrodes; optional sensor provides ±0.5% of reading accuracy to 100 mS/cm.
	specific conductance, mS/cm	0 to 100 mS/cm	0.001	±1% of reading ±0.001	
		100 to 275 mS/cm	0.001	±2% of reading	
	salinity	0 to 70 PSU	0.01	±2% of reading	
	total dissolved solids (TDS)	0 to 65 g/l	0.1	±5% of reading	Calculated from conductivity and temperature, PSU is equivalent to ppt
pressure	depth	0 to 25 m	0.01	±0.05	Compensated for temperature and salinity
		0 to 200 m		±0.4	
	vented depth	0 to 10 m	0.001	±0.003	Compensated for temperature, salinity, and barometric pressure
	barometric pressure	400 to 900 mm Hg	0.1	±1.5	Included with depth sensor
total dissolved gas	total dissolved gas (TDG)	400 to 1,400 mm Hg	0.1	±1	Compensated for temperature; maximum depth 15 m

For best accuracy, always calibrate near the anticipated field readings, and near the temperature of the anticipated field readings.

Fluorometers (Medium Sensors)

fluorometers	chlorophyll a - blue	0 to 100 µg/l	0.01	linearity of 0.99 R^2	Highest-quality fluorometric sensors, custom optics available upon request
	chlorophyll a - red	0 to 500 µg/l			
	rhodamine dye	0 to 200 ppb			
	Phycocyanin (freshwater BGA)	0 to 4500 ppb			
	Phycoerythrin (marine BGA)	0 to 700 ppb			
	CDOM/FDOM	0 to 500 ppb			
	optical brightener	0 to 300 ppb			
	tryptophan	0 to 5000 ppb			
	fluorescein dye	0 to 150 ppb			
	PTSA	0 to 650 ppb			
	refined oil	0 to 20 ppm			
	crude oil	0 to 300 ppb			

Ion-Selective Electrodes (Small Sensors)

ion-selective electrodes (ISEs)	ammonium	0 to 100 mg/l as nitrogen	0.1	±10% of reading or 2mg/L w.i.g.	Corrected for ionic strength (via conductivity readings); the accuracy specification relies on non-trivial maintenance practice and frequent calibration near the temperature of measurement; sensors require periodic tip replacement, max depth 15 m
	nitrate	0 to 100 mg/l as nitrogen			
	chloride	0.5 to 18,000 mg/l			
	sodium	0.05 to 20,000 mg/l			
	calcium	0 to 40,000 mg/l			
	bromide	0 to 80,000 mg/l			

Other Parameters

photometric PAR	photometric PAR	10,000 µmol/cm2	0.1	±5% of reading	LiCor spherical sensor
CO_2	carbon dioxide	0 to 10,000 ppm	0.1	±3% of full scale	ranges available: 0-50 ppm, 0-2000 ppm, 0-5000 ppm, 0-10,000 ppm; max depth 50m

CAUTION: Never look directly at a fluorometer sensor. The UV rays emitted by the sensor can cause eye damage.

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