



PRODUCT CATALOG



WHEN OUR PLANET IS ON THE LINE, PRECISION MEASUREMENT ENGINEERING COUNTS

INNOVATIVE RESEARCH TECHNOLOGY SUPPORTING WATER QUALITY MONITORING

PME was founded in research institutions more than **40 years** ago and we continue to partner with world's preeminent limnology and oceanography research institutions to solve the world's most challenging problems. We continue to develop new technologies in R&D settings to support public and commercial research organizations.

Our mission is to provide research institutions with affordable instruments and software that accurately and reliably measure, collect and analyze water properties for both fresh and saltwater research.

We believe innovation begins with the real needs of our research partners.

WHAT WE DO

Precision Measurement Engineering, Inc. (PME) is a leading provider of freshwater and oceanographic research devices and aquatic environmental monitoring equipment. PME's sensor loggers, realtime monitoring devices and scientific equipment are trusted among international scientists, academic institutions and government agencies for their ease of use and the quality of data they provide. We provide high resolution measurement of electrical conductivity, temperature, dissolved oxygen, carbon dioxide, pressure, fluorescence and PAR concentration in water.

miniDOT[®] Logger

Measure dissolved oxygen and temperature in water up to 300 meters.

The fully submersible miniDOT® Logger records dissolved oxygen (DO) and temperature measurements in fresh and saltwater environments. Its oxygen-sensing optode utilizes a fluorescence method to determine concentrations of dissolved oxygen in mg/L. Sampling anywhere from once per minute to once per hour, all data is recorded to the logger's internal SD card.

- Fully submersible, compact and durable
- Third-party certified up to 300 meters
- Easy programming and data retrieval
- Field calibration adjustment

Affordable in-house calibration supports long-term continuous deployment, and communication cable prompts software required for data transfer and analysis. The miniDOT[®] Logger is powered by two AA lithium customer replaceable batteries, facilitating easy in-field replacement.

miniDQT°Logger PME.com Made in the USA

ACE

SUPPORTED MEASUREMENTS **Dissolved Oxygen, Temperature**

SPECIFICATIONS: MINIDOT® LOGGER, PART NUMBER 7450				
Sensor Type	Optical			
Calibrated Range	0 to 150% saturation			
Oxygen Accuracy	\pm 5% of the measurement or \pm 0.3 mg/L, whichever is larger			
Oxygen Resolution	0.001 mg/L			
Oxygen Response Time	Approximately 30 seconds			
Temperature Response Time	5 minutes			
Temperature Accuracy	± 0.1 degrees C			
Temperature Range	0 to 35 degrees C			
Temperature Resolution	1 millidegree C			
Sampling Power Capacity	500,000 samples before batteries are replaced			
Memory	Unlimited			
Logging Interval	5 seconds to 24 hours			
Battery	Two AA lithium batteries and backup coin-cell battery			
Software Included	Data visualization and control			
Logger Weight in Air	0.75 lbs			
Dimensions	1.95 inches diameter x 7.375 inches length			
Maximum Depth	300 meters (984 feet)			



WIPER for miniDOT® Logger

The anti-fouling WIPER is a self-contained, completely submersible wiping device compatible with the miniDOT[®] Logger. Its brushing wheel rotates over the sensor surface, reducing the growth of various organisms and preventing biofouling. After each rotation the brush rests away from the sensor to avoid any monitoring interference, allowing for accurate and continuous monitoring.



miniDOT® Clear Logger

Measure dissolved oxygen and temperature with real-time LCD display.

The fully submersible miniDOT[®] Clear Logger records dissolved oxygen (DO) and temperature measurements in fresh and saltwater environments. Its oxygen-sensing optode utilizes a fluorescence method to determine concentrations of dissolved oxygen in mg/L. Sampling anywhere from once per minute to once per hour, the miniDOT[®] Clear Logger's clear plastic housing contains an LCD display of DO and temperature in real-time. Data is recorded to the logger's internal SD card. Affordable in-house calibration supports long-term continuous deployment, and communication cable prompts software required for data transfer and analysis. The miniDOT[®] Clear Logger is powered by two AA lithium customer replaceable batteries, facilitating easy in-field replacement.

- Real-time dissolved oxygen display
- Fully submersible, compact and durable
- Easy programming and data retrieval
- Field calibration adjustment

SUPPORTED MEASUREMENTS Dissolved Oxygen, Temperature

SPECIFICATIONS: MINIDOT® CLEAR LOGGER, PART NUMBER 7405				
Sensor Type	Optical			
Calibration Range	0 to 150% saturation			
Oxygen Accuracy	± 5% of measurement or ± 3% mg/L whichever is larger			
Oxygen Resolution	0.001 mg/L			
Oxygen Response Time	Approximately 30 seconds			
Temperature Response Time	5 minutes			
Temperature Accuracy	± 0.1 degrees C			
Temperature Range	0 to 35 degrees C			
Temperature Resolution	1 millidegree C			
Sampling Power Capacity	500,000 samples before batteries are replaced			
Memory	Unlimited			
Logging Interval	5 seconds to 24 hours			
Battery	Two AA lithium batteries and backup coin-cell battery			
Software Included	Data visualization and control			
Logger Weight in Air	0.75 lbs			
Dimensions	1.95 inches diameter x 7.375 inches length			
Maximum Depth	100 meters (328 feet)			



WIPER for miniDOT® Clear Logger

The anti-fouling WIPER is a self-contained, completely submersible wiping device compatible with the miniDOT[®] Clear Logger. Its brushing wheel rotates over the sensor surface, reducing the growth of various organisms and preventing biofouling. After each rotation the brush rests away from the sensor to avoid any monitoring interference, allowing for accurate and continuous monitoring.



miniPAR Logger

Reliably measure PAR, water temperature and logger orientation.

The miniPAR Logger is a fully submersible logger designed to measure diffused sunlight through water, or PAR (Photosynthetically Active Radiation) in fresh and saltwater environments. In addition to a temperature sensor, each miniPAR is equipped with a tilt sensor that confirms the logger is correctly positioned for accurate data collection. All data is recorded to the logger's internal SD card.

- Fully submersible up to 100 meters
- Durable, corrosion-resistant metal housing
- Cosine corrected PAR sensor

The miniPAR Logger's design supports data accuracy over long-term, continuous deployment. It is powered by two standard AA lithium batteries to facilitate easy in-field replacement.

SUPPORTED MEASUREMENTS PAR (LI-COR), Temperature

SPECIFICATIONS: MINIPAR LOGGER, PART NUMBER 7530				
Sensor Type	PAR (LI-COR), Temperature			
Sensor	LI-192 (LI-COR)			
Measurement Range	0-3000 μmol s-1 m-2			
Accuracy	± 5% in air traceable to NIST			
Sensitivity	Typically 4 μA per 1,000 μmol s-1 m-2 in water			
Response Time	10 µs			
Stability/Drift	< ± 2%			
Operating Temperature Range	0 to 35 degrees C			
Sampling Power Capacity	>50,000 samples over 12 months @ 10 minute sample interval			
Memory	Unlimited			
Logging Interval	5 seconds to 24 hours			
Battery	Two lithium AA batteries and backup coin-cell battery			
Software Included	Data visualization and control			
Weight	1.1 lbs			
Dimensions	1.95 inches diameter x 8.5 inches length			
Maximum Depth	100 meters (328 feet)			
Temperature Accuracy	0.2 degrees C			
Temperature Range	0 to 35 degrees C			



WIPER for **miniPAR Logger**

The anti-fouling WIPER is a self-contained, completely submersible wiping device compatible with the miniPAR Logger. Its brushing wheel rotates over the sensor surface, reducing the growth of various organisms and preventing biofouling. After each rotation the brush rests away from the sensor to avoid any monitoring interference, allowing for accurate and continuous monitoring.



C-FLUOR Logger

PME C-FLUOR Logger designed for Turner Designs' C-FLUOR sensors.

The Interchangeable and Fixed C-FLUOR Logger connects seamlessly with Turner Designs' C-FLUOR sensors, offering users maximum flexibility in measurement capabilities. Programmable sample intervals collect and record data internally. Data is easily transferred for analysis via standard USB cable connection.

SUPPORTED MEASUREMENTS

Chlorophyll, Rhodamine, Fluorescein, Phycocyanin Optics (Blue-Green Algae freshwater), CDOM/FDOM, Refined Fuels, Crude Oil, Turbidity, Phycoerythrin, Tryptophan, Optical Brighteners, Red Excitation Chlorophyll **THE FIXED C-FLUOR LOGGER** connects to one Turner Designs' C-FLUOR sensor. The sensor is permanently installed on the Fixed C-FLUOR Logger and cannot be removed by the user.

THE INTERCHANGEABLE C-FLUOR LOGGER connects to one Turner Designs' C-FLUOR sensor at a time. Sensors

are removable and can be interchanged by the user.

User selected sensors are pre-calibrated and arrive pre-programmed into the C-FLUOR Logger. PME software also facilitates user installation of additional sensors post-delivery.

SPECIFICATIONS: INTERCHANGEABLE PART NUMBER 7800 / FIXED PART NUMBER 7803

Sensor Type	Chlorophyll, Rhodamine, Fluorescein, Phycocyanin (freshwater), CDOM/FDOM, Refined Fuels, Turbidity
Operating Temperature Range	0 to 35 degrees C
Calibration Range	Sensor specific
Temperature Accuracy	0.2 degrees C
Temperature Resolution	1 millidegree C
Sampling Power Capacity	200,000 samples and a total of 130 days @ 1 minute sample rate or more than a year with 10+ minute sample rate
Memory	Unlimited
Logging Interval	5 seconds to 24 hours
Battery	Two C cell batteries. User replaceable
Software Included	Data visualization and control
Weight	1.6 lbs
Dimensions	1.75 inches diameter x 20.75 inches length
Maximum Depth	100 meters (328 feet)

SENSOR OPTIONS

INTERCHANGEABLE	Chlorophyll	Rhodamine	Red Excitation Chlorophyll	Fluorescein	Phycocyanin	Phycoerythrin	CDOM/FDOM	Crude Oil	Optical Brighteners	Turbidity
Measurement Range	0 - 500 µg/L	0 - 200 ppb	0 - 500 µg/L	0 - 150 ppb	0 - 4,500 ppb	0 - 4,500 ppb	0 - 500 ppb	0 - 300 ppb	0 - 300 ppb	0 - 200 NTU
Resolution	0.3 µg/L	0.03 ppb	0.3 µg/L	0.02 ppb	0.8 ppb	0.8 ppb	0.2 ppb	0.2 ppb	0.08 ppb	0.1 NTU
		Red Excitation								
FIXED	Chlorophyll	Chlorophyll	Phycocyanin	Crude Oil	Turbidity					
Measurement Range	0 - 500 µg/L	0 - 500 µg/L	0 - 4,500 ppb	0 - 300 ppb	0 - 200 NTU					
Resolution	0.3 µg/L	0.3 µg/L	0.8 ppb	0.2 ppb	0.1 NTU					



WIPER for **C-FLUOR Logger**

The anti-fouling WIPER is a self-contained, completely submersible wiping device compatible with the C-FLUOR Logger. Its brushing wheel rotates over the sensor surface, reducing the growth of various organisms and preventing biofouling. After each rotation the brush rests away from the sensor to avoid any monitoring interference, allowing for accurate and continuous monitoring.



CYCLOPS-7 Logger

PME Cyclops-7 Logger designed for Turner Designs' Cyclops sensors.

The Interchangeable and Fixed Cyclops-7 Logger is compatible with Turner Designs' Cyclops-7 sensors, offering users maximum flexibility in measurement capabilities. User-determined sample intervals collect and record water quality data internally. Data is transferable via a standard USB cable, and upon connection the logger will automatically adjust for sensor gain based on measurement conditions.

SUPPORTED MEASUREMENTS

Chlorophyll, Rhodamine, Fluorescein, Phycocyanin Optics (Blue-Green Algae freshwater), CDOM/FDOM, Refined Fuels, Crude Oil, Turbidity, Phycoerythrin, **Red Excitation Chlorophyll**

THE FIXED CYCLOPS-7 LOGGER connects to one Turner Designs' Cyclops-7 sensor. The sensor is permanently installed on the Fixed Cyclops-7 Logger and cannot be removed by the user.

THE INTERCHANGEABLE CYCLOPS-7 LOGGER

connects to one Turner Designs' Cyclops-7 sensor at a time. Sensors are removable and can be interchanged by the user.

- Customizable, user-calibrated sensors
- Gain auto-ranging sensing and recording

SPECIFICATIONS: INTERCHANGEABLE PART NUMBER 7400 / FIXED PART NUMBER 7401

Sensor Type	Chlorophyll, Rhodamine, Fluorescein, Phycocyanin (freshwater), CDOM/FDOM, Refined Fuels, Tryptophan, Turbidity		
Operating Temperature Range	0 to 35 degrees C		
Calibration Range	Sensor specific		
Temperature Accuracy	0.2 degrees C		
Temperature Resolution	1 millidegree C		
Sampling Power Capacity	28,000 samples before batteries need to be replaced		
Memory	Unlimited		
Logging Interval	5 seconds to 24 hours		
Battery	Two C cell batteries. User replaceable		
Software Included	Data visualization and control		
Weight	1.6 lbs		
Dimensions	1.75 inches diameter x 18.3 inches length		
Maximum Depth	100 meters (328 feet)		

SENSOR OPTIONS

Resolution

INTERCHANGEABLE	Chlorophyll	Rhodamine	Fluorescein	Phycocyanin	CDOM/FDOM	Refined Fuels	Tryptophan	Turbidity
Measurement Range	0 - 500 µg/L	0 - 1,000 ppb	0 - 150 ppb	0 - 4,500 ppb	0 - 3000 ppb	0 - 1,500 ppb	0 - 5,000 ppb	0 - 1,500 NTU
Resolution	0.3 µg/L	0.01 ppb	0.01 ppb	2 ppb	0.5 ppb	0.2 ppb	3 ppb	0.05 NTU
FIXED	Chlorophyll	CDOM/FDOM	Turbidity					
Measurement Range	0 - 500 µg/L	0 - 3000 ppb	0 - 1,500 NT	Ū				

0.05 NTU



WIPER for CYCLOPS-7 Logger

The anti-fouling WIPER is a self-contained, completely submersible wiping device compatible with the Cyclops-7 Logger. Its brushing wheel rotates over the sensor surface, reducing the growth of various organisms and preventing biofouling. After each rotation the brush rests away from the sensor to avoid any monitoring interference, allowing for accurate and continuous monitoring.



T-Chain

Customizable thermistor string with optional sensor integration.

The T-Chain is a waterproof electrical cable containing a range of integrated water quality sensors for vertical profiling. Every T-Chain is constructed on a semi-custom basis, with users specifying the length, interval, type and quantity of pre-constructed sensors included. The central electrical cable is manufactured specifically for PME, featuring a Kevlar reinforced core and waterproof polyurethane sheathing.

The RS 232/485 T-Chain requires connection to a customer-supplied power source, and it emits calibrated

measurements in accordance with RS232 and RS485 protocol. PME recommends the Campbell System Data Logger for the host logger system.

- · Central cable is reinforced by Kevlar core
- Reliable and responsive sensors ensure data accuracy
- Moderate power requirements ranging between 9V to 20V

SUPPORTED MEASUREMENTS Dissolved Oxygen, Pressure, PAR, CHL, Turbidity, CDOM/FDOM, Temperature

SPECIFICATIONS: T-CHAIN, PART NUMBER 6534, RS232/485				
Sensor Type	Dissolved Oxygen, Pressure, PAR, CHL, Turbidity, CDOM/FDOM, Temperature			
Operating Temperature Range	-4 to 36 degrees C			
Temperature Calibration Range	0 to 36 degrees C or an optional cold water range of -4 to 31 degrees C			
Temperature Accuracy	±0.010 degrees C			
Temperature Resolution	1 millidegree C			
Temperature Response Time	Less than 5 seconds			
Temperature Stability/Drift	±0.030°C per year			
Measurement Interval	5 seconds to 24 hours (or keypress)			
Input Voltage	9V - 20V			
Maximum Depth	165 meters (541 feet)			

OPTIONAL SENSOR SPECIFICATIONS

Sensor Model	PME Oxygen Sensor	Keller Series 10L	LI-192 (LI-COR)	Turner Designs Cyclops-	7 Sensors	
Sensor Type	Dissolved Oxygen	Pressure	PAR	CHL (Chlorophyll)	Turbidity	CDOM/FDOM
Measurement Range	0 to 150% saturation	0 - 5 bar (4512)	0-3000 µmol s-1 m-2	0 - 500 µg/L	0 - 1,500 NTU	0-3000 ppb
		0 - 10 bar (4717)				
		0 - 20 bar (4730)				
Resolution	0.01 mg/L	0.1 bar	N/A	0.3 µg/L	0.05 NTU	0.5 pbb
Accuracy	±5% of the measurement or	± 0.50 %FS max.	Maximum deviation of 1%	N/A	N/A	N/A
Accuracy	±0.3mg/L, whichever is larger		up to 10,000 µmol s-1 m-2			
Ctability/Drift	Typically less than -3% per year	less than ± 1.5	less than ± 2% per year	N/A	N/A	N/A
Stability/ DIIIt		mbar per year				

MiniWIPER Made in the USA

miniWIPER

WIPER for Loggers Added to T-Chain

The anti-fouling WIPER is a self-contained, completely submersible wiping device compatible with loggers integrated into the T-Chain. Its brushing wheel rotates over the sensor surface, reducing the growth of various organisms and preventing biofouling. After each rotation the brush rests away from the sensor to avoid any monitoring interference, allowing for accurate and continuous monitoring.



PRODUCT ACCESSORIES

PRODUCT ENHANCEMENTS TO PROLONG PEAK PERFORMANCE

WIPER

Anti-Fouling Wiper for PME Loggers.

The anti-fouling WIPER is a self-contained, completely submersible wiping device compatible with the miniDOT® Logger, miniDOT Clear® Logger, miniPAR Logger, C-FLUOR Loggers, Cyclops-7 Loggers and various T-Chain sensors. Its brushing wheel rotates over the sensor surface, reducing the growth of various organisms and preventing biofouling. After each rotation the brush rests away from the sensor to avoid any monitoring interference, allowing for accurate and continuous monitoring.

SPECIFICATIONS:	
Operating Temperature Range	0 to 35 degrees C
Sampling Power Capacity	8000 wipes before batteries need to be replaced
	(varies based on environmental factors)
Memory	UNLIMITED
Logging Interval	5 Seconds to 24 Hours
Battery	Two AA Lithium, Backup Coin-Cell
Software	Included. Data Visualization and Interval Control
Weight	.80 LBS
Dimensions	1.95 Inches Diameter X 7.375 Inches Length
Maximum Depth	25 Meters

PLUG & PLAY SOFTWARE

miniWIPEP

Internal software allows user to program wiping interval, check battery voltage, number of wipes performed and wiped calibrations. Wiping intervals can be customized from once every hour to once every 24 hours.



WIPER FOR MINIDOT: PART NUMBER: 5950

The WIPER is intended to provide gentle brush action across the sensor, and can wipe at intervals from once, every hour or once, every 24 hours. A copper plate is available to be placed on the miniDOT logger to increase wiper effectiveness. Internal software allows the user to set the wiping interval and check the battery voltage.

- Full wipe of sensor
- · Long-lasting in field
- 25 Meter depth rating
- USB communication cable
- Portable and easy to use



WIPER FOR **MINIDOT CLEAR:** PART NUMBER 5950

The WIPER is intended to provide gentle brush action across the sensor, and can wipe at intervals from once, every hour or once, every 24 hours. A copper plate is available to be placed on the miniDOT logger to increase wiper effectiveness. Internal software allows the user to set the wiping interval and check the battery voltage.

- Full wipe of sensor
- Long-lasting in field
- 25 Meter depth rating
- USB communication cable
- Portable and easy to use

WIPER

Anti-Fouling Wiper for PME Loggers.



WIPER FOR MINIPAR: PART NUMBER 7550

The WIPER is intended to provide gentle brush action across the sensor, and can wipe at intervals from once, every hour or once, every 24 hours. Internal software allows the user to set the wiping interval and check the battery voltage.

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• Full wipe of sensor

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- · Long-lasting in field
- 25 Meter depth rating
- · Portable and easy to use



WIPER FOR CYCLOPS-7 AND C-FLUOR PART NUMBER 5850

The WIPER is intended to provide gentle brush action across the Cyclops-7 sensor, by Turner Designs, and can wipe at intervals from once, every hour or once, every 24 hours. Internal software allows the user to set the wiping interval and check the battery voltage.

- Full wipe of sensor
- · Long-lasting in field
- 25 Meter depth rating
- Portable and easy to use





WIPER Bracket

Each PME WIPER requires a bracket to attach to the individual logger.



Wiper Maintenance Kit

Maintenance Kit used with PME WIPERS.

Kit Contains:

- 1 Wrench **1** Timing Belt
- **Pulley Brush Washers**
- **O-rings (2-130)** Synthetic Oil

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Replaceable Brush for WIPER

Replaceable Brushes for miniDOT® and miniDOT® Clear WIPER.

Instead of purchasing a replacement wiper wheel, purchase a replacement brush. PME customers can buy replaceable brushes for their existing miniDOT® or miniDOT® Clear WIPER and easily install themselves. Additionally, we offer a separate 10-pack of brush heads for purchase.

To maintain peak performance, PME recommends inspecting the brush after each deployment.

Anti-Fouling Kit



Replaceable Brushes for miniDOT® and miniDOT® Clear WIPER.

Fouling is an issue all researchers collecting data need to be concerned about. Anti-fouling kits are available for the miniDOT® Loggers and miniDOT® Clear Loggers. PME offers a copper plate that fits directly on top of the sensor endcap and a copper mesh that creates a wire cage over the sensor to help combat the growth or organisms and build up of particles.

Kit Contains:

- **Copper Plate**
- **Copper Mesh Disc**
- **Nylon Ring**





- **Phillips Pan Head Screws**



Communication Cable

Standard USB communication cable required to download data from PME data loggers. Cable is six-foot USB 2.0 A-male to micro B cable.

Maintenance Kits

Maintenance Kit used with all PME data loggers.

Kit Contains:

5 0-rings (2-130)

2 Synthetic Oil

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Maintenance Plan

For miniDOT[®] and miniDOT[®] Clear Loggers.

Maintenance packages offer PME customers a proactive approach to scheduling and saving on calibrations. Maintenance, Repairs and Operations (MRO) checks are required for the longevity of the miniDOT® Logger and miniDOT® Clear Logger lifespans. The first MRO checks and recalibration will be completed at the end of first year of ownership. The second MRO check and recalibration will be completed at the end of the second year of use. These checks are designed to give customers the best product experience and peace of mind to ensure accurate data collection.



Field Calibration Adjustment

Available for PME miniDOT[®] and miniDOT[®] Clear Loggers.



FIELD-FRIENDLY CALIBRATION ADJUSTMENT

Precision just got easier with the Field Calibration Adjustment for miniDOT® and miniDOT® Clear Loggers. Our team understands the rigorous and often remote locations where our loggers are utilized. Retrieving loggers, data and verifying optical sensor accuracy is essential to successful data collection. We have developed a simple three-step process that allows researchers to easily measure, analyze and update the optical sensor accuracy in the field.



customers and researchers.

*Please note that factory recalibration is the only way to ensure a miniDOT® and miniDOT® Clear Logger sensor meets PME's stated calibration accuracy.

*Not all loggers are candidates for field calibration adjustment. Please refer to PME guidelines when selecting loggers for field calibration adjustment.

Benefits of Field Calibration Adjustment

- Extends field usability of data logger
- Improves optical sensor accuracy in the field
- Minimizes occurrence of sending data loggers back for factory recalibration, reducing cost and lost time in the field
- Multiple miniDOT® Loggers can undergo the same field calibration adjustment at once, minimizing the time for the adjustment



INNOVATIVE RESEARCH TECHNOLOGY SUPPORTING WATER QUALITY MONITORING

PME was founded in research institutions **40 years** ago and the world's preeminent limnology and oceanography research institutions to solve the world's most challenging problems, developing new technologies in R&D settings to support public and commercial research organizations.

Our mission is to provide research institutions with affordable instruments and software that accurately and reliably measure, collect and analyze water properties for both fresh and saltwater research.

We believe innovation begins with the real needs of our research partners.

WHAT WE DO:

Precision Measurement Engineering, Inc. (PME) is a leading provider of freshwater and oceanographic research devices and aquatic environmental monitoring equipment. PME's sensor loggers, real-time monitoring devices and laboratory equipment are trusted among international scientists, academic institutions and government agencies for their ease of use and the quality of data they provide. We provide high resolution measurement of electrical conductivity, temperature, dissolved oxygen, carbon dioxide, pressure, fluorescence and PAR concentration in water.



pme.com (760) 727-0300 info@pme.com

1483 Poinsettia Ave. Suite 101 Vista, California, USA 92081

