

Designed for unattended long term moored operations, the Cycle-PO₄ is the first of WET Labs' line of single-analyte chemical sensors. The Cycle line combines precision fluidics with state-of-the-art optics to provide unparalleled precision and accuracy in operational in-situ monitoring of nutrients.

Designed for long-term use, the Cycle-PO₄ features:

- Reagent cartridges
- On-board standard
- Standardization scheduling
- Nanomolar resolution
- Easy-to-use software
- Autonomous or logger-controlled
- Scattering insensitive optical cell
- Over 1000 samples
- Deployments more than three months
- Smart sampling minimizes power consumption
- Calibrated output (user-defined units of μM and $\text{mg/L PO}_4\text{-P}$)



Specifications

Mechanical

Height (w/handle)	56 cm
Width	18 cm
Weight in air	6.8 kg (w/reagents)
Weight in water	0.37 kg
Depth	200 m
Temperature ¹	1–35 °C

Optical

LED wavelength	870 nm
Pathlength	5 cm
Linearity	$\geq 95\% R^2$

Electrical

Input	10–18 VDC
Current draw	2.0 A max; 125 mA avg
Data output	RS-232 or SDI-12
Host connector	MCBH-6-MP
SDI connector	MCBH-8-MP
Sample rate	2 per hour
Data memory	1 GB

Analytical

Detection limit, three standard deviations of 18 MOhm water	$\leq 0.075 \mu\text{M}$
	$\leq 0.0023 \text{ mg/L PO}_4\text{-P}$
Quantification limit, ten standard deviations of 18 MOhm water	$\leq 0.25 \mu\text{M}$
	$\leq 0.0077 \text{ mg/L PO}_4\text{-P}$
Standard deviation of standard solution of 2.6 μM	$\leq 0.05 \mu\text{M}$
	$\leq 0.0015 \text{ mg/L PO}_4\text{-P}$
Range, nominal ²	0–10 μM
	0–0.3 $\text{mg/L PO}_4\text{-P}$

Specifications are subject to change without notice.

¹Both storage and operating temperature for sensor and reagent cartridges.

²Higher range is possible (0–40 μM , 0–1.2 $\text{mg/L PO}_4\text{-P}$), but is outside specifications.

Units:

M = moles per liter.

$\text{mg/L PO}_4\text{-P}$ refer to mg of atoms phosphorus per liter measured in the form of reactive phosphate.

ppm ~ mg/L , ppb ~ $\mu\text{g/L}$.

Cycle PO₄ Sensor

Specifications Sheet

Revision History

Revision	Date	Revision Description	Originator
A	3/9/05	New product specification (DCR 460)	I. Walsh
B	3/16/09	U date (DCR 660)	I. Walsh
C	8/30/10	Update analytical specs (DCR 707)	C. Koch, I. Walsh
D	1/10/11	No changes but rev	
E	4/4/12	SDI-12 comms and specs (DCR 788)	C. Koch
F	12/18/12	Update analytical specs (DCN 816)	C. Koch