

- Replaceable Extended Life Silicone Protected Luminophore
- Not Effected / Damaged by Sunlight
- Watertight NEMA 6P / IP68 Luminophore Seal
- 6 Status Levels of Luminophore Life
- High Temp Sensor 185°F / 85°C
- Accuracy to ± 0.01 mg/L (ppm) DO
- Output Options Include Wireless Handheld and 120/240VAC Analyzer
- Pre-Calibrated, No Calibration Code or Chip Needed



PDO₂ Direct Connect Smart Sensor Technology

With the PDO₂ optical dissolved oxygen (DO) sensor, the functionality of the traditional transmitter has been replaced by a microprocessor within the sensor. RS-485 (Modbus), 4-20 mA or ECS outputs allow the PDO₂ to connect directly with PLCs or other control systems. Each sensor is provided with software that can be used to directly interface the sensor to any Window™ OS Computer. The PDO2 Sensor can also be connected to the Barben 1401DO four wire analyzer for conventional installations.

The PDO₂ sensor also has an on-board adaptive measurement algorithm to track and maximize the life of the replaceable silicone luminophore. The Barben PDO₂ is extremely stable and ships pre-calibrated from the factory. Typical calibration intervals are between 6 to 12 months. The sensing element is resistant to interference from CO₂, H₂S, SO₂, Ethanol, Methanol, H₂O₂ and sunlight. Watertight seals protect the electronics and the silicone protected luminophore is scratch and damage resistant.

status levels to the life of the luminophore, from excellent to defective, allowing the operator to schedule preventive maintenance and replacement of the luminophore. Multiple PDO₂ sensors can be coupled with a Wireless ARC View Handheld Display to create advanced solutions for installations running digital or analog networks.

Wireless Sensor Adapter

The VP8 cable from the PDO₂ sensor plugs directly into the field mount wireless sensor adapter. The wireless sensor adapter provides configuration-free plug-and-play communication between the PDO₂ sensor and ARC View Handheld Display unit. A status light in the top of the wireless sensor adapter provides positive confirmation of the communication link with an individual PDO₂ sensor.

1401DO Optical Dissolved Oxygen Analyzer

The 1401DO Analyzer provides simple, field mounted NEMA 4X electronics to interface with the PDO₂ sensor. Both 4-20 mA and relay outputs are provided for process control or wash logic. A large backlight display provides easy-to-read local indication during setup and periodic checks.

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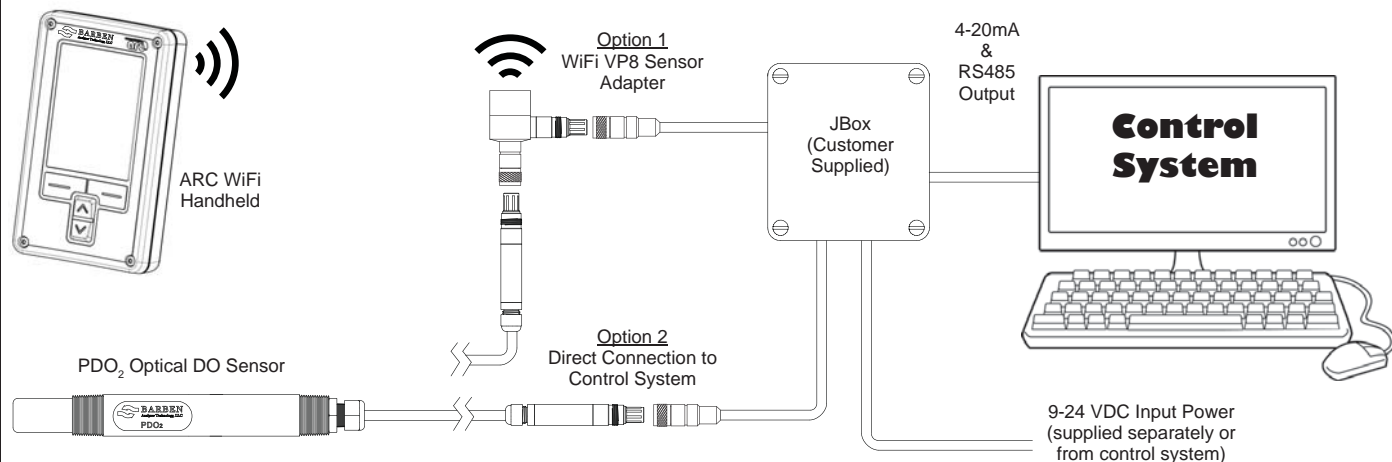
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Dissolved Oxygen

PDO₂ Optical DO Sensor & Electronics

PDO₂ Installation Without Analyzer



PDO₂ Installation With Analyzer

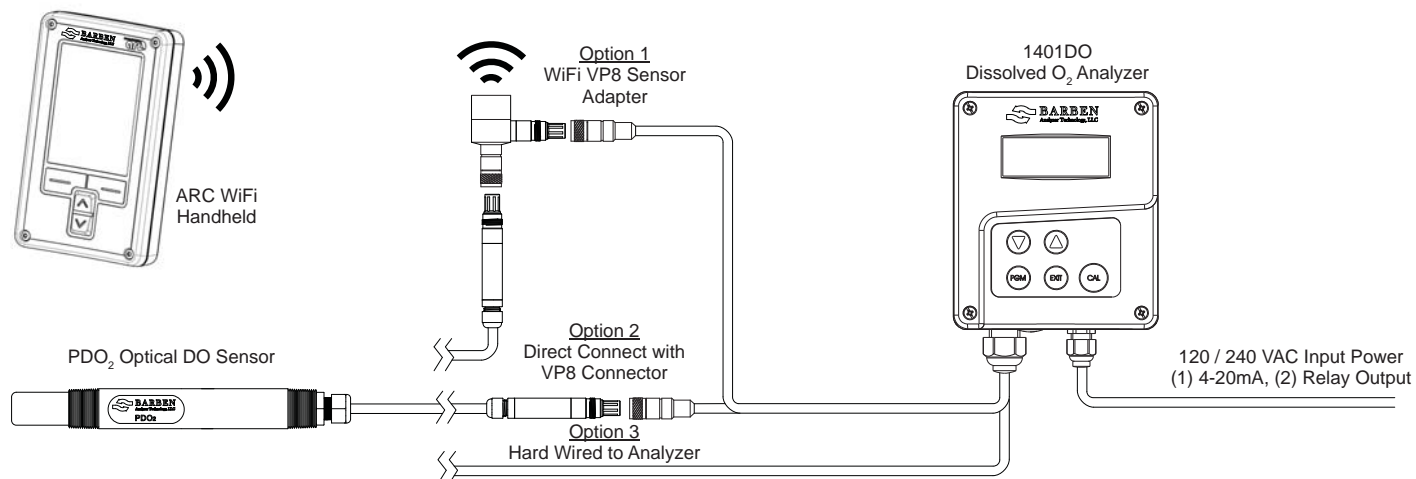


Figure 1

Wireless ARC Handheld Specifications

Operating Temperature:	40°F to 115°F (5°C to 45°C)
Maximum Data Transmission Rate:	256 kbps
Communication Protocol:	RS-485 Modbus RTU
Frequency Range:	2.45 GHz (IEEE 802.15.4)
Maximum Range in Open Area:	~300ft (100m)
Maximum Range in Process Environment:	~65ft (20m)
Dimensions:	(WxHxD) 3-3/8" x 5-1/2" x 1-3/8" (85x140x35mm)
Weight:	12 oz (340 g)
Power Supply:	100 - 240VAC
Power Supply Plug Adapters:	EU, GB, USA and AUS
Battery Life:	(Continuous Operation) 9h
Protection Rating:	(Handheld Only) NEMA 6P (IP 67)
Docking Station Interface:	USB

Wireless Sensor Adapter Specifications

Dimensions:	(WxHxD) 3" x 2-3/4" x 1-1/4" (75x70x30mm)
Weight:	4 oz (110g)
Power Supply:	24 VDC from Sensor Connector Cable
Protection Rating:	NEMA 6P (IP 67)

1401DO Dissolved Oxygen Analyzer Specifications

Power Supply:	90 - 265 VAC, 48-63HZ
Analog Outputs:	(1) each 0/4 - 20 mA or 0 - 10 VDC
Relay Outputs:	(2) each Relays for Control or Rinse
Input:	4-20mA from PDO ₂ Sensor
Measurement Range:	0.01 - 20.00 mg/L (ppm) DO
Display units:	ppm, mg/liter, % saturation
Enclosure Rating:	NEMA 4X / CE / cULus General Purpose
Storage Temperature:	-22 to 158°F (-30 to 70°C)
Operating Temperature:	-5 to 150°F (-15 to 65°C)

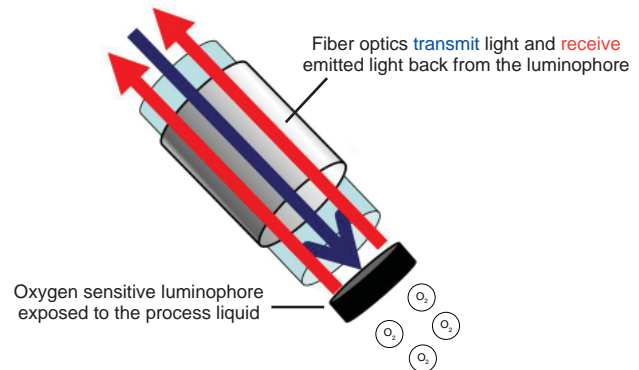
Dissolved Oxygen PDO₂ Optical DO Sensor & Electronics

PDO₂ Sensor Specifications

Measurement Range:	0.00 - 20.00 mg/L (ppm) DO
Accuracy:	± 0.01 mg/L @ 77°F (25°C)
Response Time:	< 30 Seconds T98%
Detection Limit:	0.01 mg/L
Drift:	<0.02 mg/L per week
Output:	4-20mA, RS-485 Modbus RTU or ECS mode
Power Supply:	24 VDC (7 VDC to 30 VDC)
Power Consumption:	Start-up 1 W, Normal Operation 600 mW
Warm Up Period:	15 min
Oxygen Consumption:	NONE
Required Flow:	NONE
Temperature Compensation:	Internal 22k NTC
Operating Temperature:	15°F to 185°F (-10°C to 85°C)
Operating Pressure:	-15 to 100 PSIG (-1 to 6.9 bar)
Wetted Materials:	Polypropylene, Viton, 316L SS, Silicone
Protection Rating:	NEMA 6P (IP 68)
Mounting:	Submersion or Inline (3/4" MNPT)
Weight:	0.44 lb (200g)
Cable Length:	30ft (9.2m)
Luminophore Life:	1 Year under normal use
No Interference From:	CO ₂ , H ₂ S, SO ₂
Resistant To:	Ethanol, Methanol, H ₂ O ₂
Consult Factory:	Cl ₂ Gas, Aromatic Hydrocarbons

Optical Dissolved Oxygen Theory

The luminophore used in the PDO₂ Sensor contains a dye encapsulated in an oxygen permeable matrix. The dye will emit light (luminescent) when excited by an LED light source. The presence of oxygen will "quench" or lessen the intensity of light emitted from the luminophore after reaching its excited state. Low oxygen levels result in higher light emission while high oxygen levels have an opposite effect.



Optical dissolved oxygen sensors represent a significant advancement over traditional electrochemical "Clark Cell" oxygen sensors. The luminophore optical technology is unaffected by fluctuating process pressure that creates measurement error in Clark cells. Accuracy and drift of optical sensors is also better due to less frequent calibration intervals (typically every 6 months). This results in less maintenance time and expense.

The Barben PDO₂ Sensor is specifically designed for use in industrial ppm oxygen measurement applications. The robust luminophore design resists interference from many common process chemicals that shorten lifespan on traditional optical O₂ measurements. The sensor specifications to the left provides chemical compatibility. Consult Barben technical support to determine if your application is suitable.

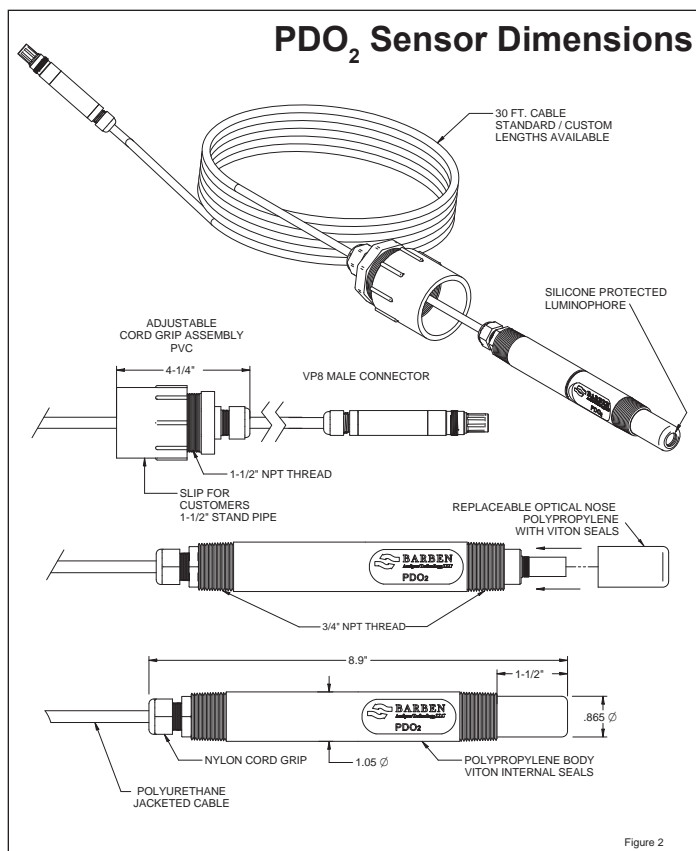


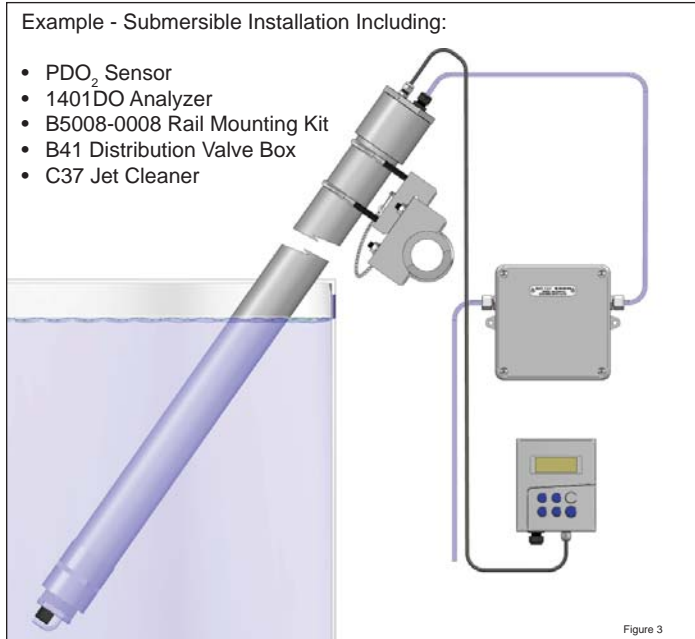
Figure 2

Dissolved Oxygen

PDO₂ Optical DO Sensor & Electronics

Example - Submersible Installation Including:

- PDO₂ Sensor
- 1401DO Analyzer
- B5008-0008 Rail Mounting Kit
- B41 Distribution Valve Box
- C37 Jet Cleaner



Ordering Information

- PDO2-1: 1401DO Analyzer & Sensor, 30ft (9.2m) Cable, VP8 Connector, 1-1/2" PVC Cord Grip Assembly
- PDO2-2: 1401 DO Analyzer & Sensor, 30ft (9.2m) Cable, hard wired, 1-1/2" PVC Cord Grip Assembly
- 1401DO: Analyzer for Hard Wired Installations
- 1401DO-VP: Analyzer for VP8 Installations (With Female Cable)
- B5103-2000: Sensor Only, 30ft (9.2M) Cable, VP8 Connector, 1-1/2" PVC Cord Grip Assembly
- B5103-2001: Sensor Only, 30ft (9.2M) Cable, Hard Wired, 1-1/2" PVC Cord Grip Assembly

Accessories

- B5103-1004: Replacement Luminophore Kit
- B5008K-1009: Pipe Mount Kit for 1401DO (1" to 1-1/2" Mounting)
- B5008K-1010: Hood Kit for 1401DO (Requires Pipe Mount Kit)
- B5008K-1011: Panel Mount Kit for 1401DO
- B5008K-1012: 35mm DIN Rail Mount Kit for 1401DO

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