

# ST-772 Series

## Luminescent Dissolved Oxygen Sensor

### Product Description

The Pyxis ST-772 Series optical luminescent dissolved oxygen (DO) sensor is based on the principle of 'fluorescence quenching' to determine the dissolved oxygen content in water. It incorporates Pyxis' advanced technology in the field of fluorescence detection and uses dual Blue/Red light detection technology with excitation and reference light sources, offering a wide detection range and very low detection limit. The sensor also integrates temperature and pressure sensors, which can perform temperature and pressure compensation for the measurement of dissolved oxygen based on ambient environmental conditions present in the application of use. The ST-772 offers an easily replaceable, front loading DO membrane cap that has been independently developed by Pyxis Lab, with a typical service life of up to two years. This unique DO membrane cap design incorporates a black microporous PTFE membrane material designed to provide extreme scratch resistance, extended life span and simple replacement. The flat front-end design of the ST-772 makes this platform less prone to contamination or fouling and is very easy to clean. The sensor body is composed of 304 stainless steel or CPVC and is well suited for aggressive industrial application use. The ST-772 (304SS) and ST-772P (CPVC) models should be utilized in a submersed fixed or floating application with the Pyxis submersion assembly options. The ST-772T (304SS) and ST-772T-P (CPVC) models are offered for inline or bypass flow installations. The ST-772 series offers both 4-20mA and RS-485 Modbus outputs and is Bluetooth enabled when used in conjunction with the MA-CR Bluetooth Adapter.



ST-772 DO Sensor



ST-772T DO Sensor

### Product Features

- 0.004-20mg/L measurement range
- No Membrane Replacement or Electrolyte Replacement
- Simple DO Cartridge Replacement every 2 years
- Built-in temperature and pressure sensor with automatic compensation
- Accurate and stable measurement with ultra-low drift requiring no calibration for up to 2-years
- Built-in transmitter without preamplifier or meter head
- Dual Outputs both 4-20mA isolated signal and RS-485 Modbus
- Wireless Calibration, Diagnostics, Data Trend via uPyxis APP when used with MA-CR Bluetooth Adapter
- Slope calibrate with air or air saturated water / Zero calibrate with 5% Sulfite solution or Nitrogen Gas
- Submersible (ST-772 or ST-772P) or Inline Pipe Tee (ST-772T or ST-772T-P) installation versions available

## Typical Applications

- Activated Sludge / Aeration Basin / Nutrient Removal
- Wastewater / Sewage Processing
- Chemical / Process Water Applications
- Domestic / Drinking Water Applications
- Filtration Applications
- Aquaculture
- Agriculture
- Compliant USEPA 40CFR Part 136.3 as an approved method for measurement of dissolved oxygen in wastewater, drinking water and direct discharge.

## Specifications

| Item  | ST-772  | ST-772-P      | ST-772T   | ST-772T-P     |
|---|---|---------------|---|---------------|
| P/N   | 53703   | 53720         | 53719   | 53721         |
| Body Material                                 | 304SS   | CPVC          | 304SS   | CPVC          |
| Installation Method                           | Submerged Installation  |               | ByPass / Inline Installation  |               |
| DO Measuring Range<br>(4-20mA Output Scale)   | 0.004-20mg/L or 0-200% Saturation or 0-500mbarP02   |               |   |               |
| Temp Measuring Range<br>(4-20mA Output Scale) | 32 – 122°F (0 – 50°C)<br>± 0.2% of value  |               |   |               |
| Resolution                                    | 0.01mg/L  |               |   |               |
| Accuracy                                      | ± 0.1mg / L or ± 1%, whichever is greater   |               |   |               |
| Light Source                                  | Blue Light Irradiated Emission<br>Red Light Quenching Excitation                                    |               |   |               |
| Response Time                                 | <60 Seconds   |               |   |               |
| Operational Temperature                       | 0 °C – 45 °C (32 - 113° F)  |               |   |               |
| Operating Voltage                             | 22 – 26V DC, Power 0.6W   |               |   |               |
| Signal Output                                 | 2x 4-20mA analog output / RS-485 digital output   |               |   |               |
| Dimension (L x D)                             | 296 x33.6 mm (11.65x 1.32 inches)   |               |   |               |
| Weight  | 760 g (1.67 lb) cable excluded  |               |   |               |
| Working Pressure                              | 145 psi   |               |   |               |
| Wet Material                                  | 304SS/Polycarb  | CPVC/Titanium | 304SS/Polycarb  | CPVC/Titanium |
| Cables Provided                               | 4.9ft/1.5m Flying Lead Cable – 8Pin<br>30ft/10m Bulkhead Cable – 8Pin                               |               | 4.9ft/1.5m Flying Lead Cable – 8Pin<br>4.9ft/1.5m Bulkhead Cable – 8Pin |               |
| Calibration                                   | Slope calibration Air or Air Saturated Water<br>Zero calibration: 5% Sodium Sulfite or Nitrogen Gas |               |   |               |
| DO Membrane Cap Life                          | 2 years   |               |   |               |
| Protection Grade                              | IP-67/IP-68   |               |   |               |
| Regulation                                    | CE / RoHS   |               |   |               |
| Compliance                                    | USEPA 40CFR Part 136.3  |               |   |               |

*\*NOTE\* Pyxis is constantly updating product technology as such specifications may be altered at any time.*

### ST-772 / ST-772-P Standard Accessories (For Submersed Installations)

The following accessories are included in the ST-772 and ST-772-P probe for submersed installations

- One **ST-772** (304SS) or **ST-772-P** (CPVC) Dissolved Oxygen Probe with 30ft/10m Bulkhead Cable
- One **DCC-1** Membrane Cap for ST-772 (P/N – 53712)
- One **MA-1.5CR** Cable (1.5 Meter/ 4.9 ft 8Pin Female Adapter/Flying Lead)
- One **MA-CR** Bluetooth Adapter for 8Pin Sensors
- One **MA-NEB** Bluetooth/USB Adapter for use with Desktop uPyxis APP
- The full instrument manual is available for download at [www.pyxis-lab.com/support.html](http://www.pyxis-lab.com/support.html)

### ST-772T / ST-772T-P Standard Accessories (For ByPass Flow Installations)

The following accessories are included in the ST-772T and ST-772T-P probe for bypass flow installations

- One **ST-772T** (304SS) or **ST-772T-P** (CPVC) Dissolved Oxygen Probe with 4.9ft/1.5m Bulkhead Cable
- One **ST-001** Inline Tee Assembly (P/N – ST-001)
- One **DCC-1** Membrane Cap for ST-772 (P/N – 53712)
- One **MA-1.5CR** Cable (1.5 Meter/ 4.9 ft 8Pin Female Adapter/Flying Lead)
- One **MA-CR** Bluetooth Adapter for 8Pin Sensors
- One **MA-NEB** Bluetooth/USB Adapter for use with Desktop uPyxis APP
- The full instrument manual is available for download at [www.pyxis-lab.com/support.html](http://www.pyxis-lab.com/support.html)



Figure 1

ST-772 / ST-772T / ST-772T-P DO Sensors / DCC-1 Membrane Cap / MA-CR Bluetooth Adapter / MA-NEB USB Adapter

### ST-772 Series Optional & Replacement Accessories

| Optional / Replacement Accessories  | P/N   |
|---|-------|
| MA-CR Bluetooth Adapter for 8-Pin Pyxis Sensors   | MA-CR |
| MA-150-1 Floating Submersion Adapter Kit<br><i>For ST-772 (304SS and ST-772-P (CPVC))</i> | 53705 |
| MA-120-B Fixed Submersion Adapter Kit<br><i>For ST-772 (304SS) and ST-772-P (CPVC)</i>    | 50783 |
| ST-001 Inline Tee Assembly (¾" FNPT)<br><i>For ST-772T (304SS) and ST-772T-P (CPVC)</i>   | 50704 |
| DCC-1 Dissolved Oxygen Membrane Cap - Replacement   | 53712 |
| MA-50CR (50' Extension Cable w/8Pin Adapters)   | 50743 |
| MA-100CR (100' Extension Cable w/8Pin Adapters)   | 50744 |

### ST-772T and ST-772T-P Inline/ByPass Flow Installation Option

**Pipeline Installation** The ST-772T (304SS) and ST-772T-P (CPVC) may be installed in a pressurized inline flow application as high as 145 psi (10Bar) using the provided Pyxis ST-001 Inline Tee Assembly. The ST-001 offers ¾" FNPT Thread or Socket Weld Adapters with Unions for easy installation and sensor maintenance. Pyxis recommends installation in a vertical flow format from bottom up to reduce the impact of water bubbles. Install O-ring on the sensor and then install the sensor into the tee and ensure the DCC-1 membrane cap is in the direction of water flow as shown in Figure 2.

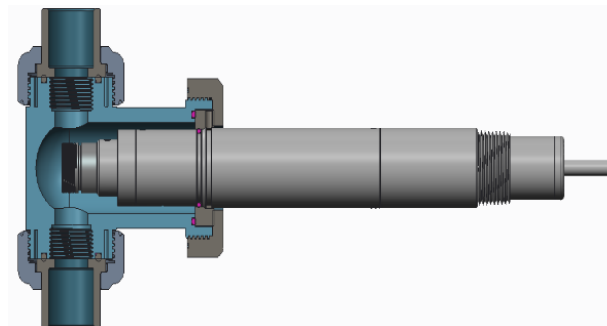
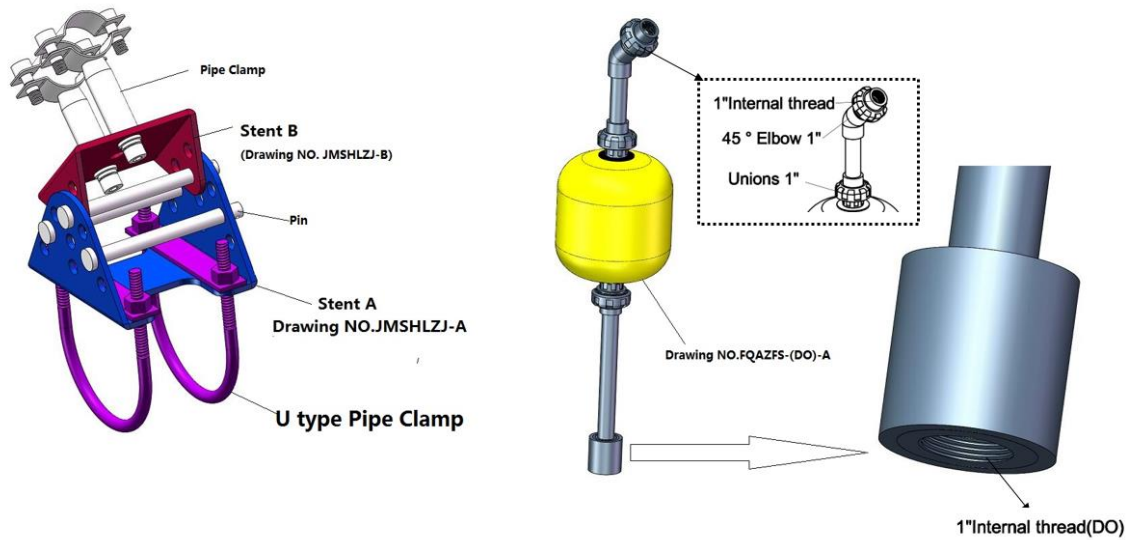


Figure 2 ST-772T / ST-772-P in a pipeline installation using ST-001 inline Tee Assembly

**ST-772 and ST-772-P Submersed Floating Installation**

**MA-150-1 Submersed Floating Installation:** The ST-772 (304SS) and ST-772-P (CPVC) may be installed in a submersed/floating application using the MA-150-1 Submersed Floating Adapter Kit. This kit contains a swiveling conduit mounting bracket and ball float-probe adapter assembly in 1" FNPT. The ST-772 and ST-772-P dissolved oxygen sensors need to be installed as shown in Figure 3. For installation, users only need to purchase the MA-150-1 from Pyxis Lab and may obtain water-tight conduit and cable seal adapter from their supplier of choice. For sensor replacement and maintenance, users only need to pull the MA-150-1 and DO sensor from fixing bracket vertically (upward).

MA-150-1



The stainless steel pipe needs to be purchased by the user.

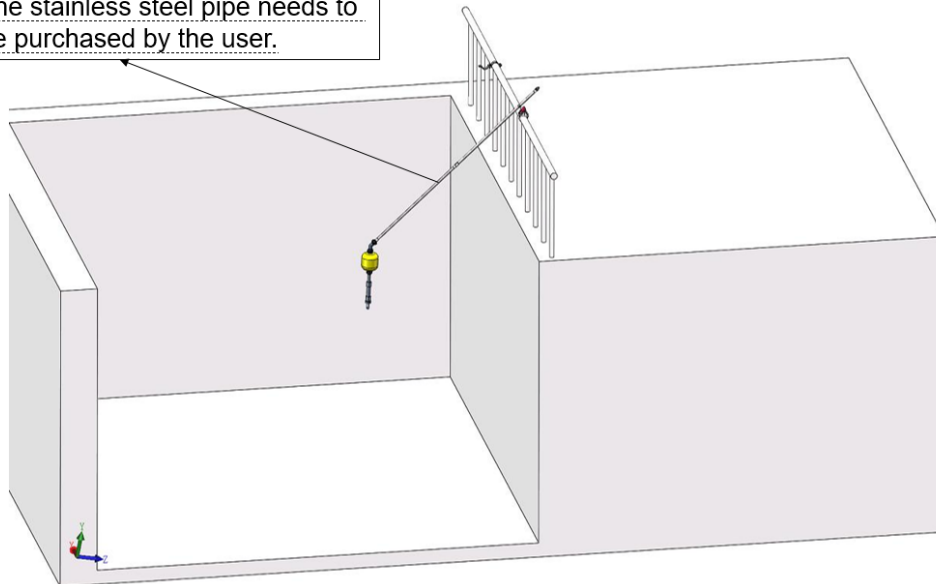


Figure 3 ST-772 / ST-772-P in a submersed floating installation

**ST-772 and ST-772-P Submersed Fixed Installation**

**MA-120-B Submersed Fixed Installation:** The ST-772(304SS) and ST-772-P (CPVC) may be installed in a submersed/fixed application using the MA-120-B Submersion Adapter Mounting Bracket and probe adapter coupler in 1" FNPT. The ST-772 and ST-772-P dissolved oxygen sensors need to be installed as shown in Figure 4. For installation, users only need to purchase the MA-120-B from Pyxis Lab and may obtain water-tight conduit and cable seal adapter from their supplier of choice. For sensor replacement and maintenance, users only need to pull the MA-120-B and DO sensor from fixing bracket vertically (upwards).

MA-120-B

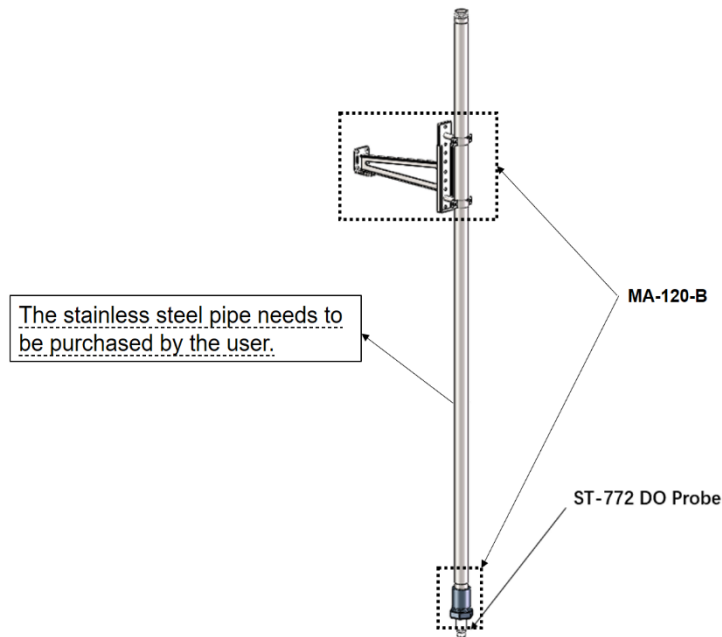
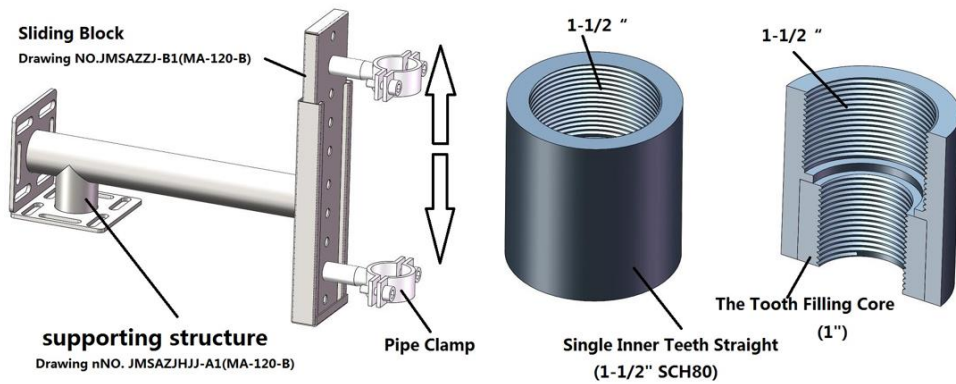


Figure 4 ST-772 / ST-772-P in a submersed fixed installation

### ST-772 Series Wireless Calibration via uPyxis APP

The uPyxis APP manages all Pyxis portable meter and inline sensors on mobile and desktop devices, including Apple iPhones and Samsung Android smartphones. When connected to the Pyxis ST-772 Series Dissolved Oxygen sensor, the uPyxis APP enables users to diagnose, clean and calibrate the sensor at both zero and slope points, preventing the need to calibrate the sensor through the receiving controller or PLC. **\*Note\*** The uPyxis Mobile APP is evolving rapidly and users can find the latest version at no cost on Apple iStore or Google Play. The uPyxis Desktop APP may be downloaded at <https://pyxis-lab.com/support-2/>



### Order Information

### P/N

|  |       |
|--|-------|
| ST-772 Submersed DO Sensor – 304SS (0.004-20.0 ppm 4-20mA & RS-485)  | 53703 |
| ST-772-P Submersed DO Sensor - CPVC (0.004-20.0 ppm 4-20mA & RS-485) | 53720 |
| ST-772T Inline DO Sensor – 304SS (0.004-20.0 ppm 4-20mA & RS-485)    | 53719 |
| ST-772T-P Inline DO Sensor - CPVC (0.004-20.0 ppm 4-20mA & RS-485)   | 53721 |

### Optional Accessories Information

|  |              |
|--|--------------|
| MA-CR Bluetooth Adapter (8Pin Adapter Enables Wireless Calibration w/uPyxis APP) | MACR         |
| MA-150-1 (Floating Submersion Adapter Kit)                                       | 53705        |
| MA-120-B (Fixed Submersion Adapter Kit)  | 50783        |
| DCC-1 Dissolved Oxygen Membrane Cap Replacement                                  | 53712        |
| ST-001 (Inline Tee Assembly 3/4" NPT for ST Series Probes)                       | 50704        |
| UC-50 (Micro Display + Data Logger)  | 43007        |
| UC-100S (Touch Screen Display + Data Logging Terminal Standard Unit)             | 43047        |
| UC-100 Back Panel (UC-100 Premounted on Back Panel)                              | UC-100 Panel |
| MA-50CR (50 foot Extension Cable w 8Pin Quick Adapters)                          | 50743        |
| MA-100CR (100 foot Extension Cable w 8Pin Quick Adapters)                        | 50744        |