.Pyxis

ST-590

Fluorescent Polymer Inline Sensor
For Industrial Cooling Water Applications

ST-590 Fluorescent Polymer Sensor Description

The new ST-590 inline sensor is designed for the direct measurement of "Fluorescent Polymer" with a 410nm excitation and 450nm emission for use in industrial cooling water and process treatment applications. Through significant research and development, Pyxis Lab has developed the ST-590 inline sensor to be used independently or in conjunction with the World-Renowned Pyxis ST-500 inline PTSA sensor. With this unique design the PTSA commonly used in cooling water treatment as a fluorescent tracer will not interfere the ST-590 measurement of the fluorescent polymer.

Like the Pyxis ST-500 PTSA inline sensor, the internal algorithms of ST-590 also measure sample turbidity and color offering real-time compensation enabling accurate polymer measurement in highly contaminated waters (ie. <150NTU and 10ppm Fe). The ST-590 offers a combination of 4-20mA as well as RS-485 Modbus output signals in the Pyxis standard 7Pin wiring format. It is Bluetooth enabled for wireless cleanliness diagnostics and calibration when used with MA-WB or the PowerPACK-2 Bluetooth Adapter and the uPyxis APP for Mobile or Desktop devices. The ST-590 is provided with the standard Pyxis ST-001 inline ¾" NPT Tee assembly, 5-foot bulk-head cable and 1.5ft flying lead cables both with 7Pin quick adapter, enabling rapid wiring to any microprocessor controller, PLC or DCS system.

Figure 1 - ST-590

PTSA & Fluorescent Polymer Combination Monitoring

The ST-590 may be used as a stand-alone monitoring and control sensor for active polymer only or it may be used in conjunction with the Pyxis ST-500 inline PTSA sensor. Providing PTSA *(Total Chemical Dosed)* and Fluorescent Polymer *(Active Polymer Concentration)* measurement enables water treatment experts to "dial-in" the system performance to a level not previously attainable in the marketplace with conventional real-time methods. Through extensive research, Pyxis Lab has mastered this technology and embedded the coding necessary to compensate for color, turbidity and dual fluorophore overlap within the sensors themselves, enabling the user to instantly have "PTSA and Fluorescent Polymer" feed and control using any microprocessor controller, PLC or DCS.

Figure 2 - ST-590SS

PowerPACK-2 Auxiliary Bluetooth Adapter

The Pyxis PowerPACK-2 auxiliary Bluetooth adapter is uniquely designed to provide additional power budget and wireless communication to drive two Pyxis inline sensors. The accessory would ideally be used for those desiring to supplement an existing Pyxis ST-500 (PTSA) sensor with the new Pyxis ST-590 (Fluorescent Polymer). PowerPACK-2 provides dual input and output of both 4-20mA and RS-485 signals, enabling it to be terminated to any receiving microprocessor controller, PLC or DCS.

The PowerPACK-2 auxiliary adapter also offers Bluetooth connectivity to its connected sensors via the **uPyxis APP** for both Mobile and Desktop devices. This unique feature enables users to have immediate and wireless access to their PTSA and Fluorescent Polymer sensors with their smart-phone, smart-pad or laptop for live data trending, sensor cleanliness diagnostics, maintenance cleaning and calibration.

When connected in RS-485 Modbus format, the ST-500, ST-590 and PowerPACK-2 enable the user to obtain additional sensor data and configure internal controller alarming outputs for those desiring cleanliness diagnostics communication of their in-line Pyxis sensors.

PowerPACK-2 can be utilized in 100VAC to 240VAC power formats, with direct "plug into outlet" design. Each input is specifically designed for direct connection to any Pyxis inline sensor and output is designed to connected to the Pyxis standard flying lead cable provided with the sensor, then terminated to the receiving controller. Figure 2. - The sensor input glands (bottom of box) and signal output glands (right side of box) are mapped by the labeled adapters.

Specifications – ST-590 Inline Sensor

Item	ST-590	ST-590SS
P/N	50690	50691
Fluorescent Polymer*	0.0 – 20.0ppm	
Precision	+/- 0.1 ppm (3 Sigma)	
Excitation/Emission	410 / 450 nm	
Power Supply	22 – 26V DC, Power Consumption – 1W	
Outputs	Isolated 4 – 20 mA Analog Output & Isolated RS-485 Digital Output	
Installation	ST-001 Inline Tee (provided) ¾" FNPT Socket & Thread	¾" FNPT Threading
Weight	170 g (0.37 lbs)	1,148 g (2.5lbs)
Operational Pressure	100 psi (6.9 Bar)	290 psi (20 Bar)
Operating Temperature	4 °C – 40 °C (40 – 104 °F)	
Storage Temperature	-7 °C – 60 °C (20 – 140 °F)	
Wet Material	Quartz & UPVC	Quartz & Stainless Steel
Rating	IP67, Fully Dustproof & Waterproof	
Regulation	CE Marked	
Dimension (L x W)	Length 6.8 inch (172.7 mm), body diameter 1.44 Inch (36.6 mm)	
Cable Length	5 feet, terminated w/IP67 adapter + 1.5 feet flying lead w/IP67 adapters	

*The fluorescent polymer concentration scale is based on the polymer containing 0.25 mole %
fluorescent monomer. Typical polymer specifications are attached below but may vary by producer.*

Specifications – PowerPACK-2 Auxiliary Bluetooth Adapter

Item	PowerPACK-2
P/N	MA-BLE-2
Power Input	100-240VAC w/1.0 AMP Fuse *(USA Plug Adapter)*
Power Output	24VDC, 20W
Signal Input	2x 4-20mA & RS-485
Signal Output	2x 4-20mA & RS-485
Enclosure Material	ABS
Enclosure Rating	IP-65
Storage Temperature	32 - 122 °F (0 - 50° C)
Operational Temperature	32 - 122 °F (0 - 50° C)
Dimension	4.89inch(L) x 4.89inch(W) x 3.15inch(H)
Weight	654 g (1.4 lbs.)
Certificates	CE, RoHS
Cable Adapter	Pyxis Lab Inc. 7-Pin Standard In & Out
Sensor Compatibility	All Pyxis Lab Inc. – 7 Pin Sensors Direct & 5 / 8Pin Sensors with Converter

ST-590 Cleaning & Calibration

Pyxis Lab recommends cleaning and calibrating the ST-590 *(Fluorescent Polymer)* and ST-500 *(PTSA)* inline sensors at a minimum frequency of once per month. For very clean water applications this period may be increased. For heavily contaminated applications, diagnosis, cleaning and calibration may be considered more frequently. Both sensors contain internal hardware and algorithms that enable compensation of color and turbidity as well as sensor cleanliness diagnostics. When powered by and connected to the PowerPACK-2 Auxiliary Bluetooth Adapter, the ST-590 and ST-500 sensors can both be wirelessly accessed via Bluetooth from any mobile or desktop device using the **uPyxis APP**. The APP features a live graphical display of each sensors value output, as well as a sensor cleanliness check and calibration function. The cleanliness check can be conducted rapidly to determine if a cleaning is required prior to sensor calibration. Once the sensor is properly cleaned it can be re-diagnosed to confirm the cleaning was effective and then calibrated with its appropriate Pyxis Calibration Standard *(ie. PTSA-100, TAG-10 or PTAG-1010)*. Contact service@pyxis-lab.com for support.
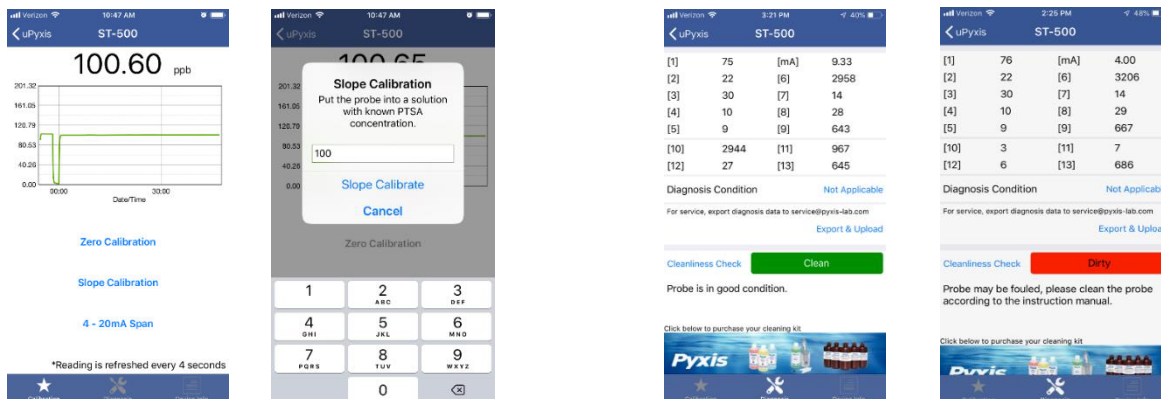
Instructional videos on this and other Pyxis devices can be found at

https://www.youtube.com/channel/UC8RqYgnwL-Vzu2TRzraqrUw

Calibration and diagnostics made easy with the **uPyxis** APP

Order Information   P/N

ST-590 Fluorescent Polymer Inline Sensor *(0-20ppm/4-20mA & RS-485)*   50690

ST-500 PTSA Inline Sensor *(0-200ppb/4-20mA & RS-485)*   50661

Power*PACK-2 (Dual Chanel Auxiliary Power Supply w/Bluetooth For Pyxis Series Sensors)*   MA-BLE-2

Optional Accessories Information   P/N

SP-350P Handheld Fluorometer *(Fluorescent Polymer 0-20ppm)*   50228

SP-380P Handheld Dual Fluorometer *(PTSA 0-300ppb + Fluorescent Polymer 0-20ppm)*   50402

MA-WB Bluetooth/WiFi Adapter *(Single Sensor Installation – Pyxis Bluetooth Adapter)*   MA-WB

MA-NEB Bluetooth/USB Adapter *(Enables Bluetooth for Desktop and uPyxis APP)*   MA-NEB

Pyxis ST/LT Series Sensor Cleaning Kit *(Includes Sensor Cleaner 500mL + Accessories)*   SER-02

Pyxis PTAG-1010 *(Fluorescent Polymer 10ppm/ PTSA 100ppb Calibration Std. 500mL)*   21055

Pyxis TAG-10 *(Fluorescent Polymer Calibration Standard – 10ppm/500mL)*   21054

Pyxis TAG-20 *(Fluorescent Polymer Calibration Standard – 20ppm/500mL)*   21053

Pyxis PTSA-100 *(PTSA Calibration Standard – 100ppb/500mL*   21001

MA-C10 *(10' Extension Cable for ST/LT Series Sensors)*   50738

MA-C50 *(50' Extension Cable for ST/LT Series Sensors)*   50705