



MFA-SERIES TITRONEX™

Pump-Free Colorimetric Analyzers for Water & Process Applications

DESCRIPTION

The Pyxis Titronex™ MFA Series represents a new generation of pump-free online wet chemistry analyzers designed to simplify colorimetric monitoring while significantly reducing maintenance compared to conventional pump-driven analyzer systems.

Unlike traditional analyzers that rely on multiple peristaltic pumps and tubing assemblies, the Titronex™ MFA platform operates directly from a pressurized process sample while using ultrasonic flow control and sealed disposable reagent cartridges to maintain stable measurement conditions. This simplified architecture reduces mechanical wear, minimizes service requirements, and improves long-term measurement reliability.

The Titronex™ MFA Series is currently available in five analyzer formats, with additional models planned for future release. The MFA-600 provides ultra-low hardness monitoring with detection limits down to 30 ppb calcium (as CaCO_3) using a patent-pending non-staining reagent, enabling early detection of hardness breakthrough in softener effluent, RO feedwater, and boiler feedwater systems. The MFA-100 Series (Free & Total Chlorine) utilizes a patent-pending single-liquid DPD reagent formulation that combines buffer and indicator chemistry into a single stabilized cartridge with up to six-month shelf life, extending reagent life beyond conventional multi-reagent DPD analyzers used in cooling water, drinking water, food and beverage, and industrial process systems. The MFA-310 provides stable orthophosphate monitoring for corrosion control and nutrient removal programs. The MFA-400 measures anionic dispersant polymer (PAA) across a wide range of industrial water treatment applications.

KEY FEATURES

- › Pump-Free Pressurized Sample Architecture
- › Integrated User-Programmable Ultrasonic Flow Control
- › Hybrid Gravity & Tuber Roller Reagent Distribution
- › Disposable Reagent Cartridges
- › Up to 4,000–16,000 Measurements per Cartridge
- › Durable 316L Stainless Steel Wetted Components
- › Constant Flow-To-Drain or Water-Saving Operation
- › Dual 4-20mA, RS-485 Modbus and Relay Outputs
- › NB-IoT / 4G Connectivity for Remote Monitoring
- › Touchscreen Interface for Calibration & Maintenance
- › Compact, Turn-Key Panel Design for Simple Installation
- › Patent-Pending Calcium Reagent (Stain-Free Operation)

APPLICATIONS

- › Cooling Water Chemistry Monitoring & Oxidant Control
- › Drinking, Commercial Food & Process Water Disinfection Monitoring
- › Boiler Feedwater, Softener Discharge & RO Feedwater Ultra-Low Hardness Monitoring
- › Data Center CDU & Advanced Liquid Cooling Chemistry Programs
- › Wastewater Nutrient Removal & Orthophosphate Compliance Monitoring
- › Industrial Process Water & Rinse Water Monitoring
- › Anionic Polymer Feed Verification in Cooling & Process Water Applications
- › Chemical Dosing Optimization and Automation Systems
- › Remote or Unmanned Installations requiring Low-Maintenance Analyzers

MEASUREMENT CAPABILITY + PERFORMANCE

The Titronex™ MFA Series analyzers provide high-resolution colorimetric measurement tailored to each application chemistry. Depending on model, measurement ranges include ultra-low hardness monitoring (down to approximately 0.035 ppm detection limits), free and total chlorine measurement across typical water treatment ranges, and orthophosphate monitoring with stable absorbance-based detection. Integrated ultrasonic flow measurement provides stable sample flow control from approximately 100–500 mL/min while tolerating inlet pressures up to roughly 72 psi. Relay alarm outputs, data logging, USB export capability, and cloud connectivity support advanced operational monitoring and maintenance planning.

MEASUREMENT PROCESS EXPLAINED

The Titronex™ MFA-Series analyzers operate using a controlled, pressurized process-flow architecture designed to deliver stable and repeatable colorimetric measurements with minimal water consumption. Process water enters the analyzer through a 316L stainless sample inlet and passes through an integrated ultrasonic flow controller that continuously regulates flow using a motorized valve to maintain a constant, programmable sample rate. During standby or sample-wait periods, a three-way valve directs water to bypass the reaction chamber and either discharge to drain in constant-flow mode or remain isolated in water-savings mode to prevent unnecessary water loss.

When a measurement cycle begins, the valve automatically redirects the regulated sample into the colorimetric chamber where precise reagent volumes are introduced from the sealed injection-molded cartridge using a gravity-assisted tube-roller dispensing mechanism — eliminating traditional metering pumps. The sample and reagent are mixed within the chamber to form the absorbance-based reaction, after which the reacted solution is discharged through the waste outlet. Following the analysis, the system returns to a controlled wait state where flow is stabilized and the chamber remains protected from fouling until the next scheduled measurement, ensuring repeatable results with reduced maintenance and minimal reagent and water consumption.

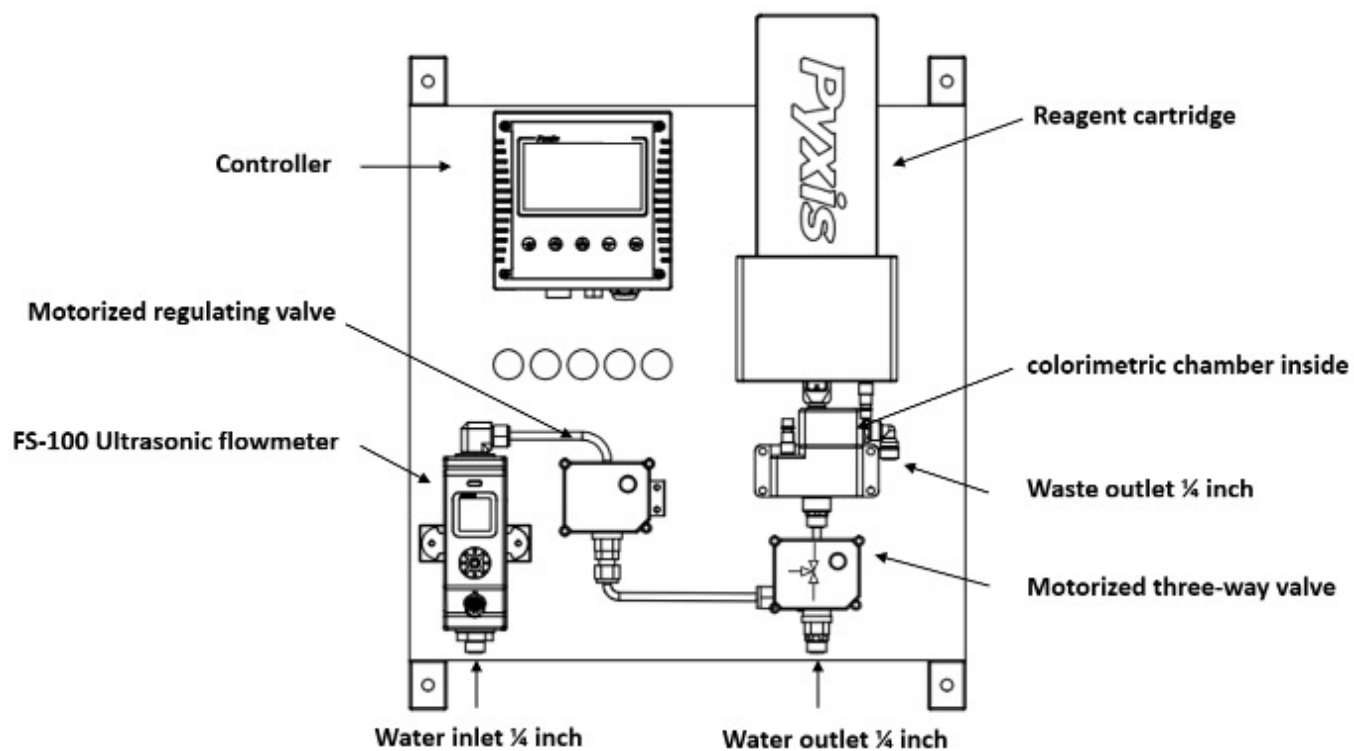
SPECIFICATIONS

Item	MFA-600	MFA-100	MFA-110	MFA-310	MFA-400
Part Number	41748	40196	43485	45224	45477
Target Analyte	Calcium Hardness	Free Chlorine	Total Chlorine	Orthophosphate	Anionic Polymer
Range	0–5ppm Ca as CaCO ₃	0–5ppm as CL ₂		0–25ppm as PO ₄	0–20ppm as PAA
Measurement Method	Chlorophosphonazo III	DPD Colorimetric Method (N, N Diethyl-1,4 Phenylenediamine)		Molybdovanadate (Yellow) Method	Turbidimetric Method
Reagent Required	Hardness-600	FCL-100	TCL-100	Phosphate-310	Polymer-400
Reagent Part Number	37109	36421	35700	31719	30545
Reagent Shelf Life	12 Months	6 Months	6 Months	12 Months	12 Months
Measurement Capacity	up to 4,000 Tests	up to 16,000 Tests	up to 16,000 Tests	up to 8,000 Tests	up to 16,000 Tests

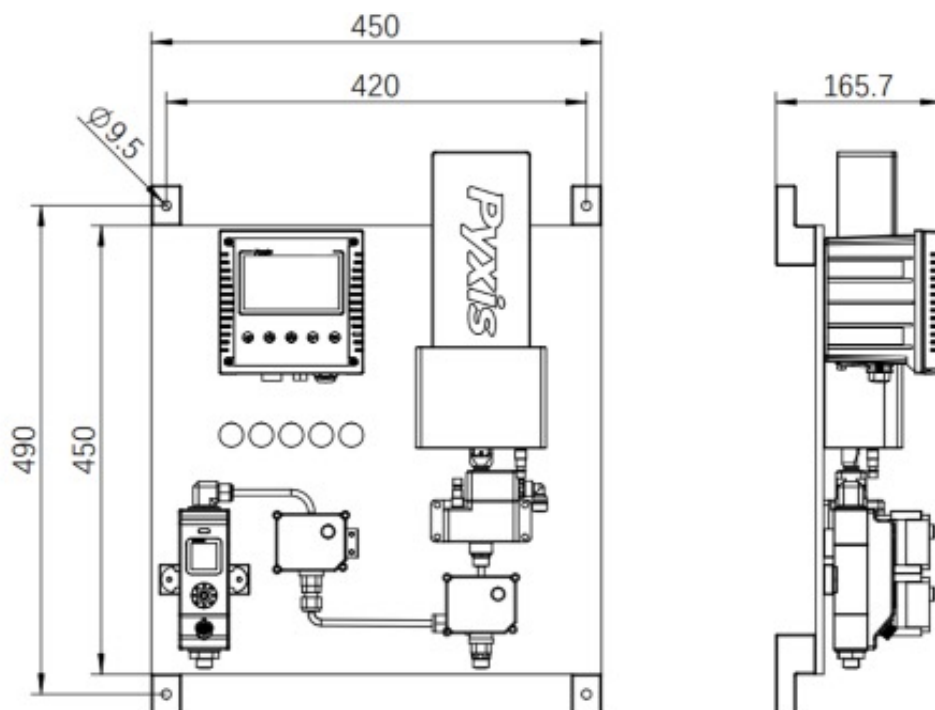
Item	MFA-Series General Equipment Specifications
Measurement Interval	Selectable: 1min, 2min, 5min, 10min, up to 360min - Configurable via the Controller Menu
Sample Inlet Pressure	7.25–72.5psi (0.05–0.5MPa)
Sample Inlet Flow Range	100–500mL/min
Sample Inlet/Outlet	¼ inch Tube Fitting
Sample Waste Outlet	¼ inch Tube Fitting
FS-100 Ultrasonic Flow Meters and Control Valves	
Range of Measurement	0–3,000mL/min
Resolution / Accuracy	1mL/min / 10mL or ±1% of the value, whichever is greater
Operation Mode	Operates in Flow Control (C) Mode, Recommended Control Flow Rate Range is 100–500mL/min
UC-60 Display	
Display	4.3inch LCD Color Touchscreen & Button Interface
Analog Outputs	(2) 4–20mA Current Outputs
Digital Outputs	(1) Isolated RS-485, Modbus RTU
Relay Output	(2) SPST Relays (Dry Contact) / Contact Rating: 5A 250VAC/30VDC
Power Supply	100–240VAC, 50/60Hz
USB Interface	For Data Downloading and Firmware Upgrade
Humidity	5–95% No Condensation
Protection	IP-65
4G CloudLink™	Included and Activated upon request with enrollment - Contact Pyxis Lab, Inc. for Details
PANEL	
Operating Temperature	32–122 °F (0–50 °C)
Storage Temperature	-4–158 °F (-20–70 °C)
Dimensions	144mm H x 144mm W x 120mm D



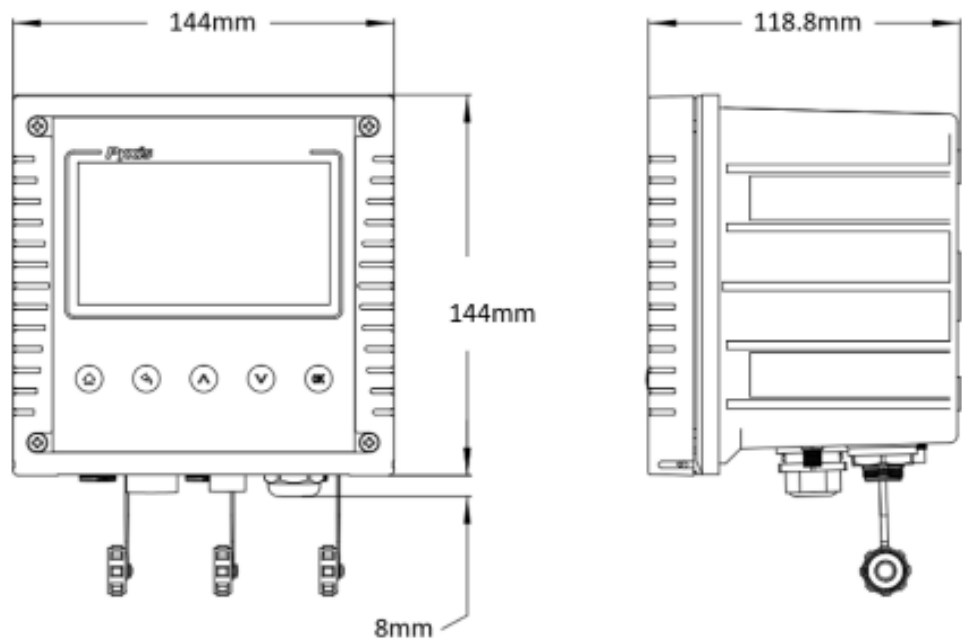
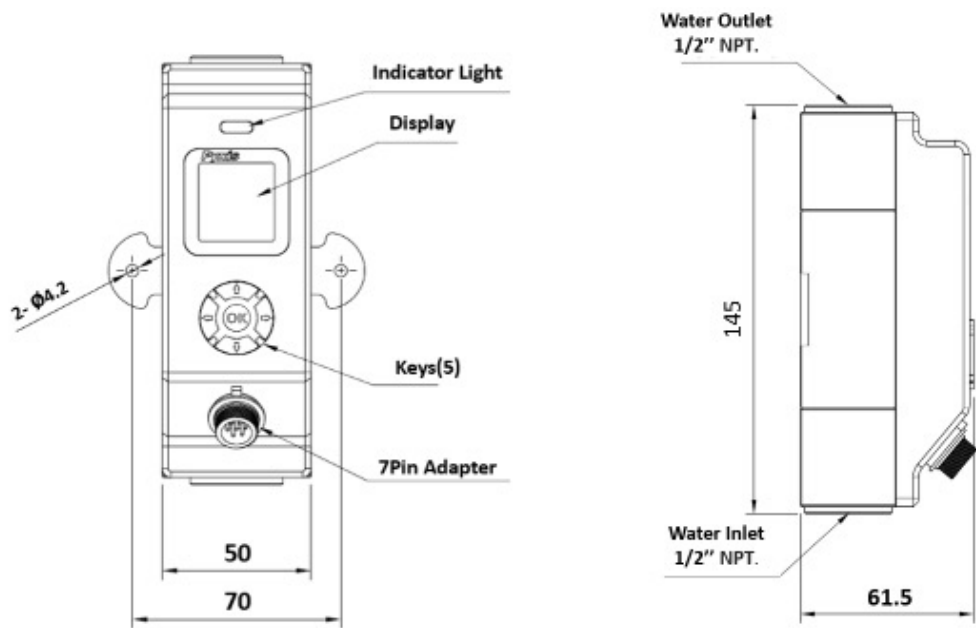
TITRONEX™ MFA-SERIES ANALYZER OVERVIEW



DIMENSIONS



DIMENSIONS



ORDER INFORMATION

Accessory Name	Part Number
Hardness-600 Calcium Hardness Reagent Cartridge for MFA-600 (400mL)	37109
FCL-100 Free Chlorine Reagent Cartridge for MFA-100 (400mL)	36421
TCL-110 Total Chlorine Reagent Cartridge for MFA-110 (400mL)	35700
Phosphate-310 Phosphate Reagent Cartridge for MFA-310 (400mL)	31719
Polymer-400 Polymer Reagent Cartridge for MFA-400 (400mL)	30545
MA-1.5CR Replacement Flying Lead Cable Male/Flying Lead 8PIN Adapter (1.5m)	50746
Motorized Flow Regulation Valve (Replacement)	27427
Motorized Three Way Valve (Replacement)	21572
FS-100 Ultrasonic Flow Sensor (Replacement)	54200
UC-60 Display/Controller (Replacement)	79262
Replacement Reaction Chamber Kit-00 (MFA-600)	20829
Replacement Reaction Chamber Kit-01 (MFA-100/MFA-110)	25494
Replacement Reaction Chamber Kit-02 (MFA-310/MFA-400)	27614
Pump Roller Assembly (Replacement)	25662
Cleaning Brush Kit (1x each Lambswool & Stiff Brush)	23577
Weatherproof Outdoor Cabinet	21198
SP-800 Multiparameter Colorimeter includes Calcium Hardness Method	50610
Pyxis Lab, Inc. Probe Cleaning Solution (500mL)	SER-01