

ProConnex® MixOne RG-X Single-use Mixers

Data Sheet

Revolutionizing Single-Use Mixing

The ProConnex® MixOne RG-X mixing system incorporates the proven performance of Metenova's patented Zero Gravity mixing technology, now purpose built for single use mixing applications as "Metenova Inside." This cutting-edge system offers unmatched performance, ease of use, and scalability for bioprocessing operations requiring cost-effective, efficient, and easy-to-deploy solutions.



Key Features and Benefits



Effortless mixing with confidence

- Designed for vortex capability, when required, for rapid powder incorporation and off-bottom suspension
- Versatile: supports a wide range of formulations, from shear-sensitive biologics to high-viscosity solutions
- Rheology optimized: cylindrical vessel geometry and off-center, bottom-mounted magnetic mixer



Outstanding user experience

- Load. Lock. Mix. Simplicity: Modular, easy-to-use drive unit
- Bags using ProConnex RG-V film: engineered for quality, reliability, and performance in every process step
- Intuitive KlariFi™ control software: an established platform common to Repligen's broader system portfolio



Scalability and flexibility

- Reduce capex: universal portable control unit compatible with all vessel sizes from 50L to 3,000L
- Leverages proven stainless-steel Metenova Zero Gravity mixing technology for seamless scale-up to 70,000 L

Recommended Applications

- | | | |
|----------------------|----------------------------------|---|
| • Media preparation | • Resuspension | • Viral inactivation |
| • Buffer preparation | • Cell harvest - CCF/HCCF | • Ultrafiltration/diafiltration (UF/DF) |
| • pH adjustment | • Intermediate pool hold/storage | • Final formulation |

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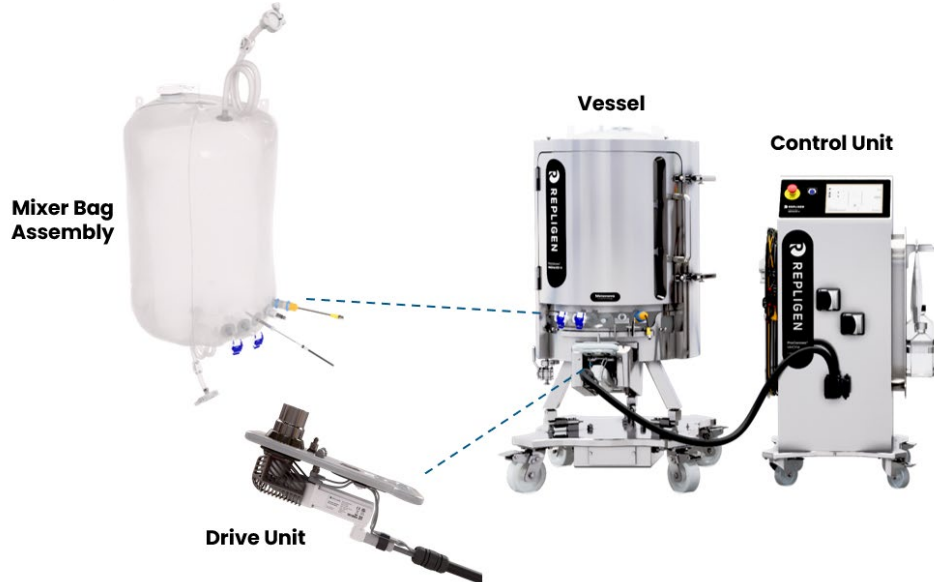
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System Overview

The ProConnex MixOne RG-X Single-use Mixer consists of four primary elements:



Vessels: Mixer vessels are available in three materials of construction: stainless steel, polypropylene, and hybrid (polypropylene with stainless steel base). Vessel designs are scaled geometrically across the range of 50 L to 3000 L. 50 L through 1000 L sizes are portable units with casters. 2000 L and 3000 L sizes are designed to be fixed installations.

Drive units: The drive units are modular, portable elements that are connected to the control units and can easily be docked and undocked from an RG-X mixing vessel for operation. They are offered in three sizes:

- Small (for operating 50 L and 100 L mixers)
- Medium (for operating 200 L to 1000 L mixers)
- Large (for operating 2000 L and 3000 L mixers)

Control unit and software: The control unit is portable, compatible with all RG-X vessel sizes, and contains the instrumentation needed to operate the mixer. There are multiple options for DCS integration: OPC-UA, Ethernet/IP, and remote I/O based connectivity. KlariFi control software is an intuitive, field-proven, end-to-end recipe-driven automation software platform common across Repligen systems for filtration and chromatography.

Mixer bag assemblies: ProConnex Single-use Mixing Bag Assemblies manufactured with ProConnex RG-V Film are available in standard designs and can be customized to meet specific application requirements. Standard designs are pre-configured for powder-liquid mixing or liquid-liquid mixing. Options include integrated single-use sensors or ports for multi-use sensors.

General Specifications

Ingress protection rating: IP54

Environmental conditions: 2°C to 30°C, 20% to 80% relative humidity, non-condensing

Operating temperature: 4°C to 40°C

Standard sensor options:

- Temperature (multi-use)
- Pressure (single-use)
- pH (multi-use or single-use)
- Conductivity (multi-use or single-use)

Compliance: CE, REACH, RoHS, EU Low Voltage Directive, EU Electromagnetic Compatibility (EMC) Directive, UL 508A (control unit only)

Mixer design: Bottom mounted, off-center, magnetically driven mixer

Impeller design: Single-use, pitched blade impeller

Motor: Servo motor

Maximum speeds:

- ≤1000 L vessels: 450 rpm
- 2000 L and 3000 L vessels: 400 rpm



Key Features: Vessels

ProConnex MixOne RG-X Single-use Mixer vessels are available in three types: stainless steel, polypropylene, and hybrid. Consistency in the internal geometry of the vessel types ensures that for a given size, the same bag design can be used. Vessels have been scaled geometrically across the range of 50L to 3000L.

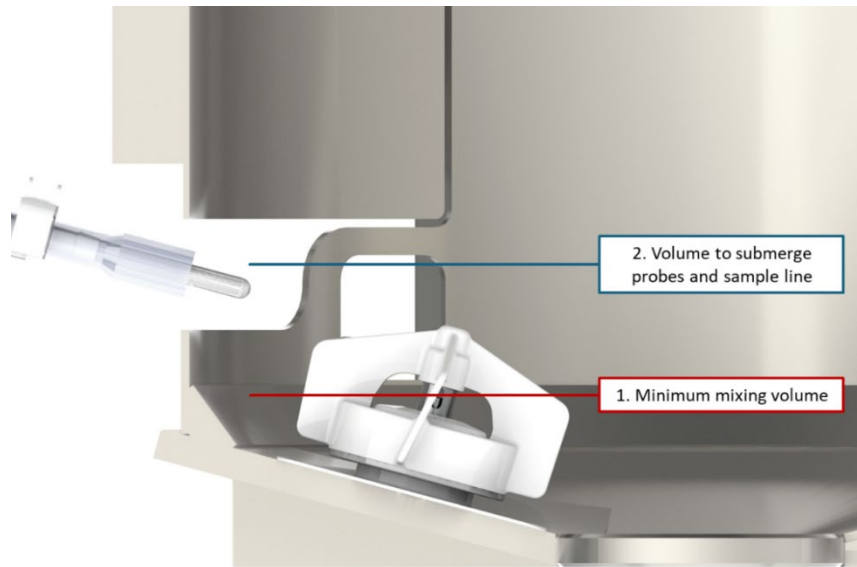
Vessel Features			
	Stainless Steel	Polypropylene	Hybrid
			
Material of Construction	304L stainless steel All welds are continuous, smooth, ground, and polished. All SS surfaces are ≤32 Ra finish.	Polypropylene	Polypropylene (bag holder) 304L stainless steel (base)
Temperature control jacket	50 L – 1000 L vessels: standard 2000 L – 3000 L vessels: optional Dimpled, UM-stamped jacket designed and built to ASME Boiler and Pressure Vessel Code Section VIII Division 1	Excluded	Excluded
Load cells	Included	Excluded	Included
Sizes	50 L* 100 L* 200 L 500 L 1000 L 2000 L* 3000 L*	50 L* 100 L* 200 L 500 L 1000 L	50 L* 100 L* 200 L 500 L 1000 L
Casters	All portable vessels (≤1000 L) include non-marking, 6" swivel casters with lockable brakes. 2000 L and 3000 L vessels are designed with leveling feet to be fixed installations.		

*The 50 L, 100 L, 2000 L, and 3000 L vessel sizes and their associated functions are currently in development. Specifications referenced in this document for these volumes are pending finalization and are subject to change.

Key Volume Information

Awareness of the following key volumes is advised:

- 1. **Minimum mixing volume:** minimum volume required to ensure mixer performance
- 2. **Volume to submerge probe belt:** volume at which ports at the probe belt (e.g., pH and conductivity sensors, sample lines, other transfer lines) are submerged for proper function
- 3. **Nominal mixing volume:** recommended maximum mixing volume
- 4. **Maximum fill volume:** volume at which the bag is filled to the vessel rim



Description	50 L	100 L	200 L	500 L	1000 L	2000 L	3000 L
1. Minimum mixing volume	4 L	7 L	12 L	20 L	29 L	43 L	54 L
2. Volume to submerge probe belt	14 L	22 L	34 L	72 L	127 L	218 L	324 L
3. Nominal mixing volume	50 L	100 L	200 L	500 L	1000 L	2000 L	3000 L
4. Maximum fill volume	63 L	116 L	224 L	545 L	1070 L	2133 L	3211 L

Key Features: Drive Units

ProConnex MixOne RG-X Drive Units are portable, modular elements that are connected to the control unit and can be easily docked and undocked from an RG-X mixing vessel. They contain a compact servo motor that is controlled by a servo drive within the control unit and sensors for detection of engagement with the vessel and measurement of rpm. Drive units are available in three sizes to cover the full range of vessel sizes.



Drive Unit Size	Compatible Vessel Sizes
Small*	50 L, 100 L
Medium	200 L, 500 L, 1000 L
Large*	2000 L, 3000 L

*Small and large sizes in development. Associated specifications throughout this document are subject to change.

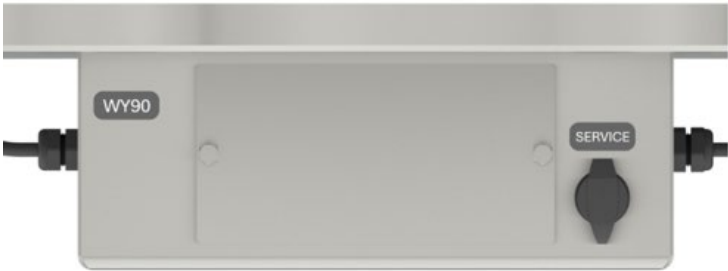
Key Features: Control Units

ProConnex MixOne RG-X Control Units are portable and compatible with all vessel sizes. The RG-X control unit enclosure is constructed of 304L stainless steel and has an IP54 ingress protection rating. Control units are available in two models:

Model	Description	Voltage Range	Compatible Vessel Sizes
MXCTRL1	Standard model for US/Canada	120 – 230 VAC	All vessel sizes (at 208 V) Vessels up to 1000 L (at 120 V)
MXCTRL2	Standard model for EU and rest of world	200 – 230 VAC	All vessel sizes



Standard instrumentation onboard applicable vessels with load cells includes a weight transmitter housed in a summing enclosure underneath the vessel base.

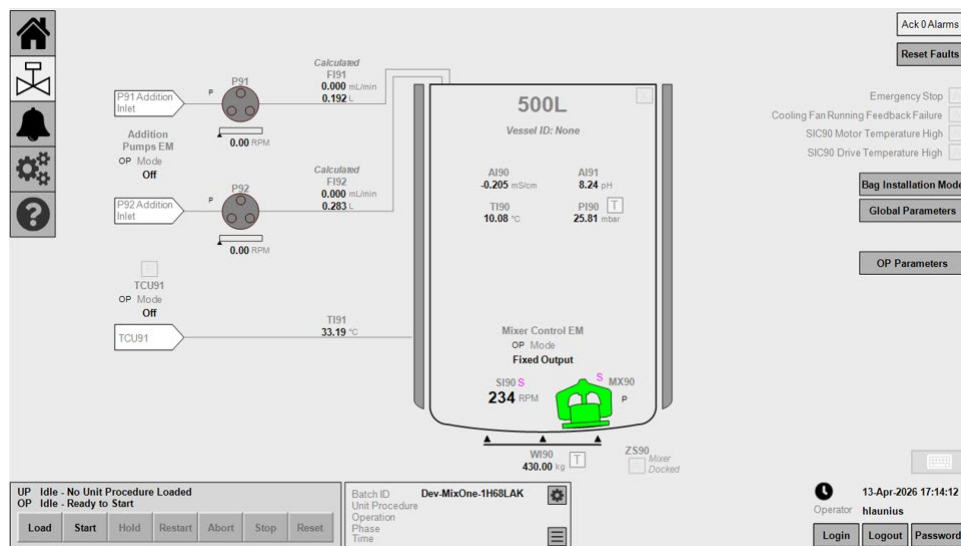


Control units include a servo drive and transmitters for temperature and pressure measurement as standard. They are offered with a variety of optional configurations including conductivity and pH measurement and onboard peristaltic pumps.

Control Unit Features	Option Descriptions	Configuration Details
Controls	Option 1: KlariFi standard software package	10" HMI Display & Touchscreen - Allen-Bradley® CompactLogix® 5069-L350ER PLC - OnLogic® HX401 Industrial PC 21 CFR Part 11 and ALCOA+ compliant software
	Option 2: Remote I/O only	Excludes Option 1 items listed above
Conductivity Measurement	Option 1: Multi-use sensor	Mettler-Toledo® InPro® 7100i/12/225/4435
	Option 2: Single-use sensor	Broadley James® SU400-16-M1 (included in mixer bag)
	Option 3: Excluded	
pH Measurement	Option 1: Multi-use sensor	Mettler-Toledo InPro 3250i/SG/225
	Option 2: Single-use sensor	Mettler-Toledo InSUS 310i (included in mixer bag)
	Option 3: Excluded	
Peristaltic Pumps	Option 1: Two onboard pumps included	Watson-Marlow® 300 Series
	Option 2: Excluded	
Status Light Beacon & Alarm Horn	Option 1: Included	Patlite® NE-M1ANB-M
	Option 2: Excluded	

KlariFi Software Package, Remote I/O, and DCS Integration Options

Standard RG-X Control Units are equipped with Repligen's intuitive, recipe-driven KlariFi automation software, which integrates control, monitoring, and reporting using the standard hardware and software offerings.



Integration of the standard Allen-Bradley CompactLogix PLC (Rockwell) with a customer's distributed control system (DCS, e.g., DeltaV) can be achieved through Ethernet/IP. DCS integration of the standard Wonderware®-based HMI is possible via Ethernet/IP or OPC-UA options.

Alternatively, there is an I/O-only option (excluding PLC, HMI, and KlariFi Software) that can be provided on a custom basis, in which remote I/O modules within the control unit can be integrated with DeltaV or capable, equivalent systems by a customer via Ethernet/IP communication.

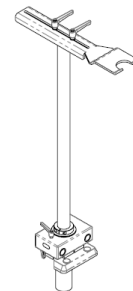
Accessories for Vessels

Several optional accessories are available for ProConnex MixOne RG-X vessels.

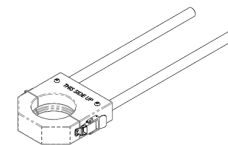
Powder bag holder: Adjustable accessory designed to support a powder bag (up to 25 kg) above the vessel and secure it to the powder addition port.



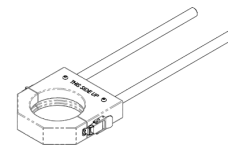
Powder Bag Holder Base (MXACCPBB01): Includes bag holder and base for mounting to vessel. Paired with either MXACCPB301 or MXACCPB401 depending on size of TC connection between mixer bag and powder bag.



Powder Bag Holder TC3 (MXACCPB301): Includes clamping mechanism for 3" TC connection between mixer bag and powder bag.



Powder Bag Holder TC4 (MXACCPB401): Includes clamping mechanism for 4" TC connection between mixer bag and powder bag.



Sensor bracket: Support bracket for pH and conductivity sensors. Adjustable height to ensure that probes can be tilted at an appropriate angle.
Bracket for multi-use sensors (MXACCPBL01)



Bracket for single-use sensors (MXACCPBS01)



Locking plate (MXACCLPS01): Plate for connecting the base of a vessel to the base of a control unit to keep them at a fixed distance from each other or to move them together.



Accessories for Control Units

Drive unit holder (ACC-RBK-01): Support bracket for storing the drive unit on the control unit when not in use.

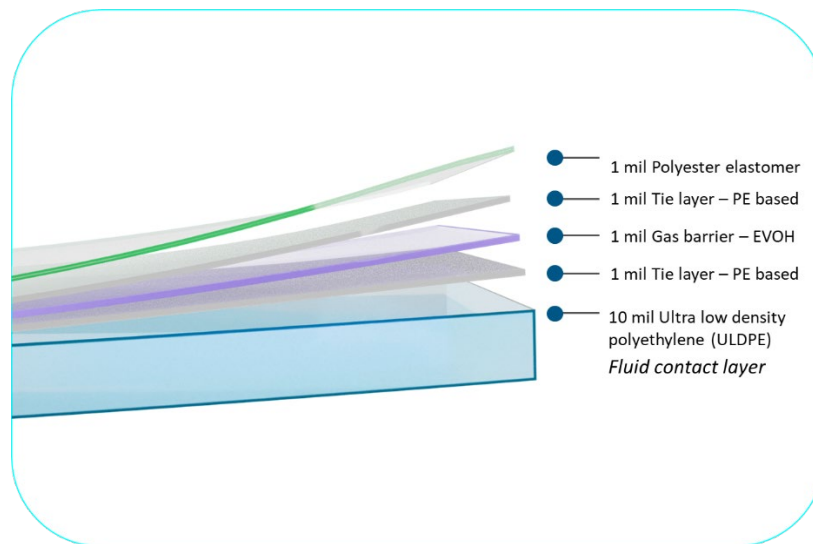


Bag holder and bottle holder: Both holders are for supporting containers for small volume additions.
Bag holder for hanging 2D bags up to 5 L (ACC-RBH-12)
Bottle holder for supporting bottles up to 2 L (ACC-RBH-13)



Key Features: Bags

ProConnex MixOne RG-X mixing bags are manufactured with ProConnex RG-V film, a single-ply, 5-layer, 14 mil thick film developed specifically to meet the stringent quality standards of upstream and downstream single-use bioprocessing applications.

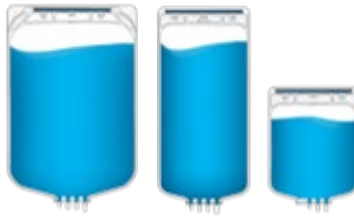


Key Features of RG-V Film:

- Leak and puncture resistant
- Excellent flex durability
- Superb water vapor and gas transmission rates
- Entirely animal-derived component- free structure
- All film layers free of Irgafos 168 antioxidant
- Low coefficient of friction outer layer for enhanced durability and ease of installation
- Standard and custom bags offered with compatible polypropylene bins and totes



For additional details, please reference the [ProConnex® RG-V Film datasheet](#).



ProConnex MixOne RG-X Mixer Bag Assemblies are available in standard designs and can also be customized to meet specific application requirements. Standard designs are pre-configured for:

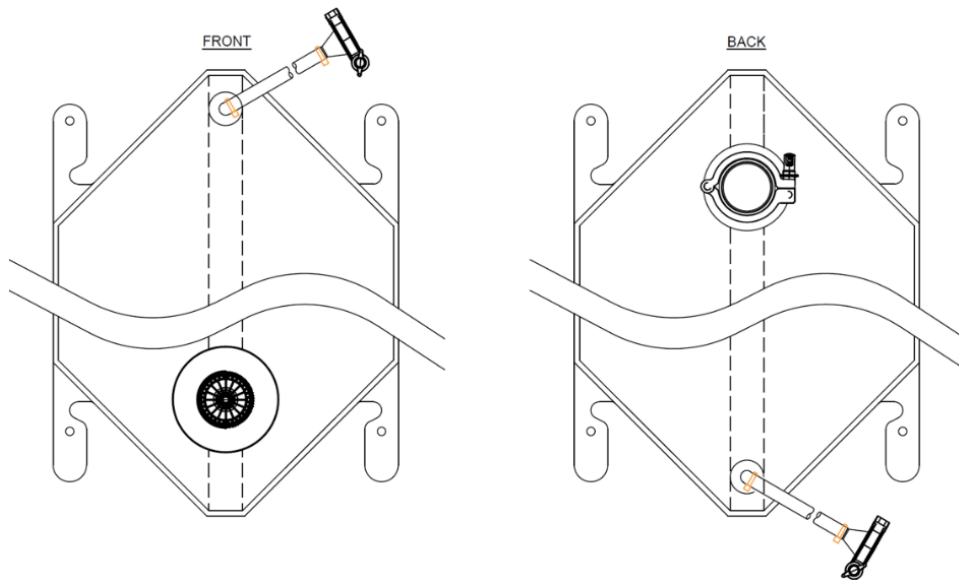
- Powder-liquid mixing or liquid-liquid mixing
- Conductivity/pH sensors: none, multi-use, or single-use

Certificate Claims for Standard Mixer Bags

- Shelf life: 2 years from Date of Manufacturing
- Sterility: Sterility Assurance Level (SAL) 10⁻⁶ per ANSI/AAMI/ISO 11137 Vdmax25
- Biological: USP <88> and/or ISO 10993
- Endotoxin: USP <85>, acceptance limit: ≤0.25 EU/mL
- Particulate: USP <788> Method 2

Standard Designs for Powder-Liquid Mixing

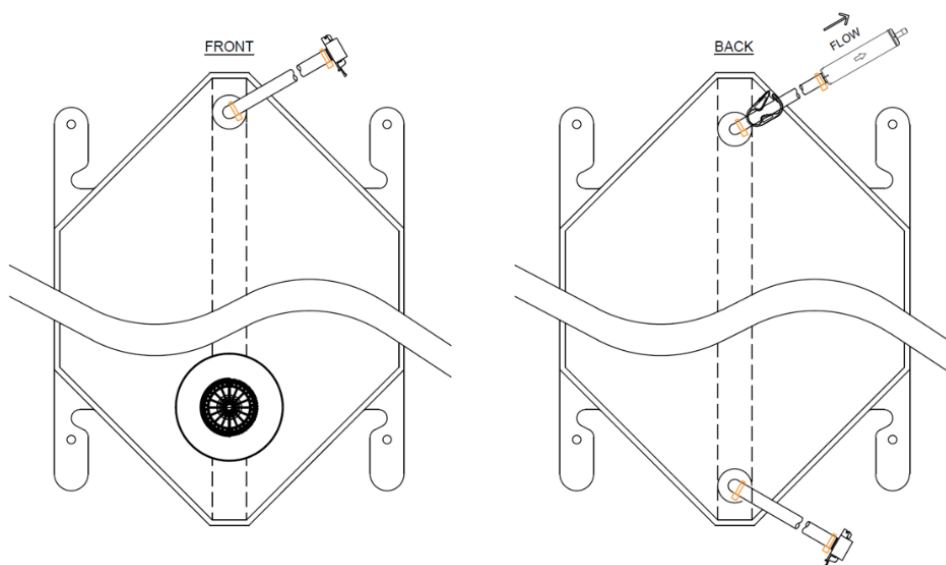
- Top of bag contains 3" TC port for powder/solids addition (Line 4), 1.5" TC line for liquid addition (Line 1)
- Probe belt always includes thermowell and sample line, sensor ports depend on option selected
- Bottom of bag contains mix head and 1.5" TC outlet line (Line 5)



Powder-Liquid Mixing Bag Size	No pH/Conductivity Sensors	Ports (2) for Multi-use Sensors	Single-use pH (1) and Conductivity (1) Sensors
50 L	FPMX100167	FPMX100175	FPMX100183
100 L	FPMX100168	FPMX100176	FPMX100184
200 L	FPMX100134	FPMX100156	FPMX100185
500 L	FPMX100135	FPMX100157	FPMX100186
1000 L	FPMX100136	FPMX100158	FPMX100187
2000 L	FPMX100169	FPMX100177	FPMX100188
3000 L	FPMX100170	FPMX100178	FPMX100189

Standard Designs for Liquid-Liquid Mixing

- Top of bag contains vent line with filter (Line 4), AseptiQuik G line for liquid addition (Line 1)
- Probe belt always includes thermowell and sample line, sensor ports depend on option selected
- Bottom of bag contains mix head and AseptiQuik G outlet line (Line 5)



Liquid-Liquid Mixing Bag Size	No pH/Conductivity Sensors	Ports (2) for Multi-use Sensors	Single-use pH (1) and Conductivity (1) Sensors
50 L	FPMX100171	FPMX100179	FPMX100190
100 L	FPMX100172	FPMX100180	FPMX100191
200 L	FPMX100137	FPMX100152	FPMX100192
500 L	FPMX100138	FPMX100153	FPMX100193
1000 L	FPMX100139	FPMX100154	FPMX100194
2000 L	FPMX100173	FPMX100181	FPMX100195
3000 L	FPMX100174	FPMX100182	FPMX100196

Technical Specifications: Stainless Steel Vessels

Description	50 L	100 L	200 L	500 L	1000 L	2000 L	3000 L
Vessel Geometry	Cylindrical						
Load Cells Included	Yes						
Fixed or Portable	Portable design with casters					Fixed installation	
Integrated Inflation System	No					Yes	
Integrated Mixer Bag Hoist	No					Yes	
Jacket Type/Location	Dimpled and insulated, vessel sides (except door) and bottom jacketed						
Jacket Volume	*	*	10.5 L	17.6 L	27.8 L	43.6 L	61.2 L
Jacket Inlet/Outlet Connections	1 inch TC						
Jacket Max Operating Pressure	150 psi @150°F						
Non-jacketed Option	No					Yes	
Jacketed Vessel Part Number	MX05SV 100001	MX10SV 100001	MX20SV 100001	MX50SV 100001	MX1KSV 100001	MX2KSV 100001	MX3KSV 100001

*For more information, please contact a sales specialist

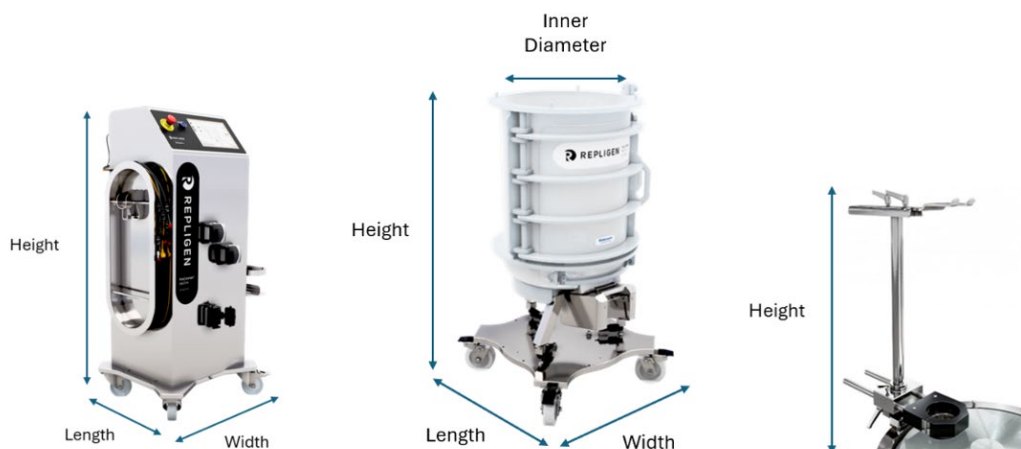
Technical Specifications: Polypropylene Vessels

Description	50 L	100 L	200 L	500 L	1000 L
Vessel Geometry	Cylindrical				
Load Cells Included	No				
Fixed or Portable	Portable design with casters				
Integrated Inflation System	No				
Integrated Mixer Bag Hoist	No				
Vessel Part Number	MX05PV 100001	MX10PV 100001	MX20PV 100001	MX50PV 100001	MX1KPV 100001

Technical Specifications: Hybrid Vessels

Description	50 L	100 L	200 L	500 L	1000 L
Vessel Geometry	Cylindrical				
Load Cells Included	Yes				
Fixed or Portable	Portable design with casters				
Integrated Inflation System	No				
Integrated Mixer Bag Hoist	No				
Vessel Part Number	MX05HV 100001	MX10HV 100001	MX20HV 100001	MX50HV 100001	MX1KHV 100001

Technical Specifications: Dimensions and Weights for Vessels and Control Unit



Description	Length (inches)	Width (inches)	Height (inches)	Inner Diameter (inches)	Weight (lbs)
Control Unit	21.8	23.2	52.8	N/A	286
50 L Stainless Steel Vessel	26.8	26.3	46.7	14.5	*
100 L Stainless Steel Vessel	30.2	28.8	51.0	18	*
200 L Stainless Steel Vessel	32.3	32.3	55.6	23	706
200 L Polypropylene Vessel	30.5	28.6	57.9	23	181
200 L Hybrid Vessel	29.5	29.5	58	23	486
500 L Stainless Steel Vessel	38.3	38.3	66.1	31.5	1141
500 L Polypropylene Vessel	46.3	46	68.3	31.4	294
500 L Hybrid Vessel	37	38	67.7	31.4	694
1000 L Stainless Steel Vessel	44.3	44.3	76.1	40	1684
1000 L Polypropylene Vessel	59	59	75.8	39.8	400
1000 L Hybrid Vessel	45	45	75.8	39.8	1098
2000 L Stainless Steel Vessel	58.5	55	92.3	50	2600
3000 L Stainless Steel Vessel	64.8	61.3	103.3	57	3472
Powder Bag Holder	N/A	N/A	39.9	N/A	39

*For more information, please contact a sales specialist

Technical Specifications: Mixing System

Description	50 L	100 L	200 L	500 L	1000 L	2000 L	3000 L
Drive Unit Size & Part Number	Small MXACCDUA01		Medium MXACCDUA02			Large MXACCDUA03	
Drive Unit Weight (lbs)	*		21			27	
Motor Manufacturer	Festo						
Motor Model	EMMT-AS series		EMMT-AS series			EMMT-AS series	
Motor Power	200 W		440 W			910 W	
Gear Ratio	5:1		5:1			8:1	
Servo Drive Manufacturer	Festo						
Servo Drive Model	CMMT-AS series						
Single-Use Impeller	Yes						
Top or Bottom Mount	Bottom						
Impeller Type	Pitch Blade Turbine (PBT) – 4 impeller blades						
Impeller Rotation	Clockwise (downward flow)						
Impeller Span/Diameter	110 mm	110 mm	132 mm	132 mm	152 mm	186 mm	186 mm
Power Number	6.1	6.1	5.8	5.8	6.3	6.8	6.8
Minimum Impeller Speed (rpm)	10	10	10	10	10	10	10
Maximum Impeller Speed (rpm)	450	450	450	450	450	400	400

*For more information, please contact a sales specialist

Technical Specifications: Control Units

Description	KlariFi Standard Software Package	Remote I/O Configuration
General Description	Portable, vessel-agnostic control unit with required mixer instrumentation	
Control Panel IP Rating	IP54	
Control Enclosure Material of Construction	304L SS	
PLC Model	Allen-Bradley CompactLogix	N/A
Data Historian Included	Yes	N/A
Data Historian Software	Aveva Wonderware Historian	N/A
21 CFR Part 11 Compliant	Yes	N/A
HMI/OIT Model	Systec MODI 110 IoT Monitor	N/A
Monochrome or Color OIT	Color	N/A
Touch Screen or Keypad	Touchscreen	N/A
Network Communications	Ethernet/IP	
Network Connectivity	External monitoring and control ready. Dedicated network connections for the HMI.	

Technical Specifications: Utilities

Description	MXCTRL1 (U.S./Canada)	MXCTRL2 (EU/Rest of World)
Electrical Supply	120 – 230 VAC, single-phase, 50/60 Hz, 15 A	200 – 230 VAC, single-phase, 50/60 Hz, 15 A
Full Load Current	9.9 A at 120 VAC, 8.1 A at 208 VAC	7.9 A at 230 VAC
Power Cable/Plug Configuration	A factory-installed flexible power cable with insulated flying leads intended for field installation of the supply connector by qualified personnel	A complete power cord assembly incorporating a CEE type pin-and-sleeve IEC 60309 compliant plug

Technical Specifications: Load Cells and Weight Transmitter

Description	50 L	100 L	200 L	500 L	1000 L	2000 L	3000 L
Load Cell Manufacturer	Mettler Toledo						
Load Cell Model	*	*	MTB200	MTB500	SLB515 (550)	SWB505 (2200)	SWB505 (2200)
Load Cell Quantity	3						
Total Load Cell Capacity (kg)	*	*	600	1500	1650	6600	6600
Load Cell Ingress Protection Rating	*	*	IP68				
Weight Transmitter	Laumas TLB4						
Accuracy (% of Nominal Volume)	0.5%						

*For more information, please contact a sales specialist

Technical Specifications: Additional Instrumentation

Sensor Description	Sensor Type	Sensor Make/Model	Transmitter Make/Model	Measurement Range
Temperature	Multi-use	Burns 21140 RTD	JUMO dTRANS T05 T	0 – 50°C
Pressure	Single-use	Pendotech PREPS series	Pendotech PTR 7.5	Up to 7.5 psi
pH	Single-use	Mettler-Toledo in SUS310i	JUMO ecoTRANS pH 03	3 – 10
pH	Multi-use	Mettler-Toledo InPro 3250i/SG/225	Mettler Toledo M100/2H DR	0 – 14
Conductivity	Single-use	Broadley-James SU400-16-M1	JUMO AQUIS 500 CR	0.1 – 100 mS/cm
Conductivity	Multi-use	Mettler Toledo InPro 7100i/12/225/4435	Mettler Toledo M100/2H DR	0.02 – 400 mS/cm

Technical Specifications: Peristaltic Pumps

Description	
Manufacturer	Watson-Marlow
Model	300 DriveSure® En
Type	Stepper motor with 314D2 pump head
Compatible Tubing Sizes	Bore size: 1.6 mm, 3.2 mm, 4.8 mm, 6.4 mm Wall thickness: 2.4 mm
Flow Rate	Manufacturer: maximum 1191 mL/min

For more information on ProConnex Fluid Management Solutions, visit www.repligen.com.

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