

MASTERflex®

+1.800.MASTERFLEX
masterflex.com

Reimagine
Fluid Handling
Operate, collaborate and
connect with ease



Masterflex® B/T®
MasterSense™ BioPharma Pump

Reimagine an easier way to pump with the **MasterSense B/T BioPharma Process pump**. Intuitive programming and forward-looking features enable you to work smarter and pump easier than ever before. And, with the same great features as all Masterflex peristaltic pumps including high precision, repeatable flow control, and reliable performance, you can have it all in a rugged, IP66-rated stainless steel enclosure—perfect for sanitary and washdown environments.

IP66-rated 316 stainless steel enclosure

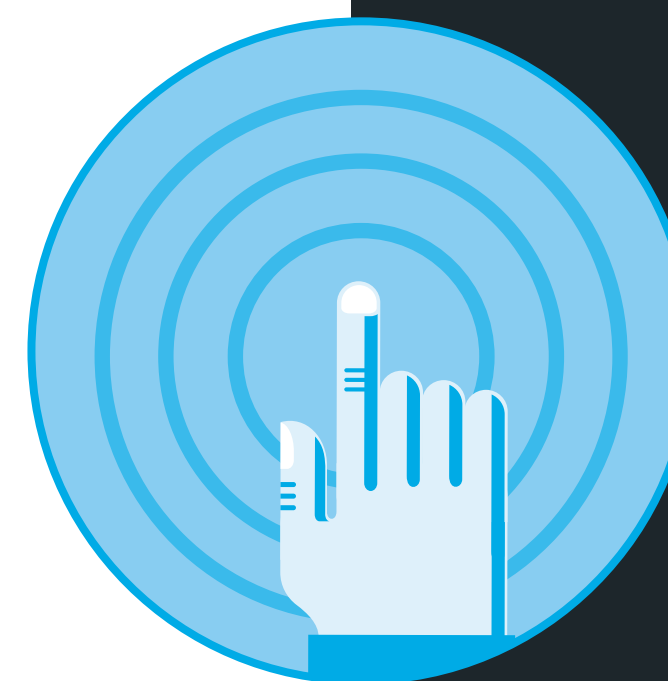
Intuitive touch-screen interface

Easy programming functionality

Over-the-air firmware updates

Multiple connectivity and protocol options





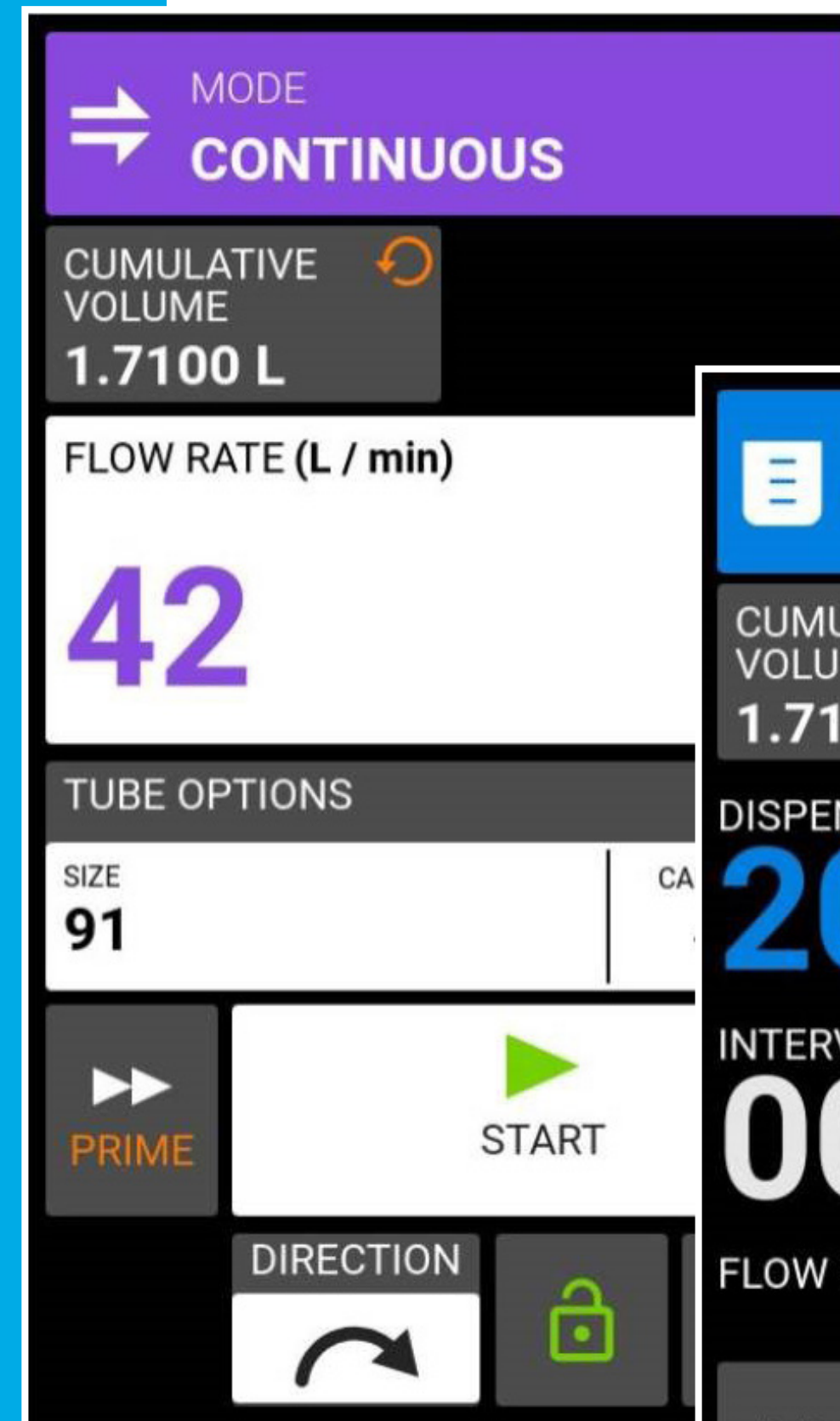
Intuitive Touch-Screen Interface

- **Quick and easy** to set up and program
- 5" capacitive TFT/RGB touch screen with a clear, wide viewing angle
- Adjust parameters with a simple touch—**even with gloves on**

Easy & Accurate

- Operational modes include continuous run, volume dispense, and time dispense
- **Save and recall** up to 50 commonly used protocols, each with a unique name
- Batch control and interval/off time in volume and time modes

Continuous Run



MODE
CONTINUOUS

CUMULATIVE VOLUME 1.7100 L

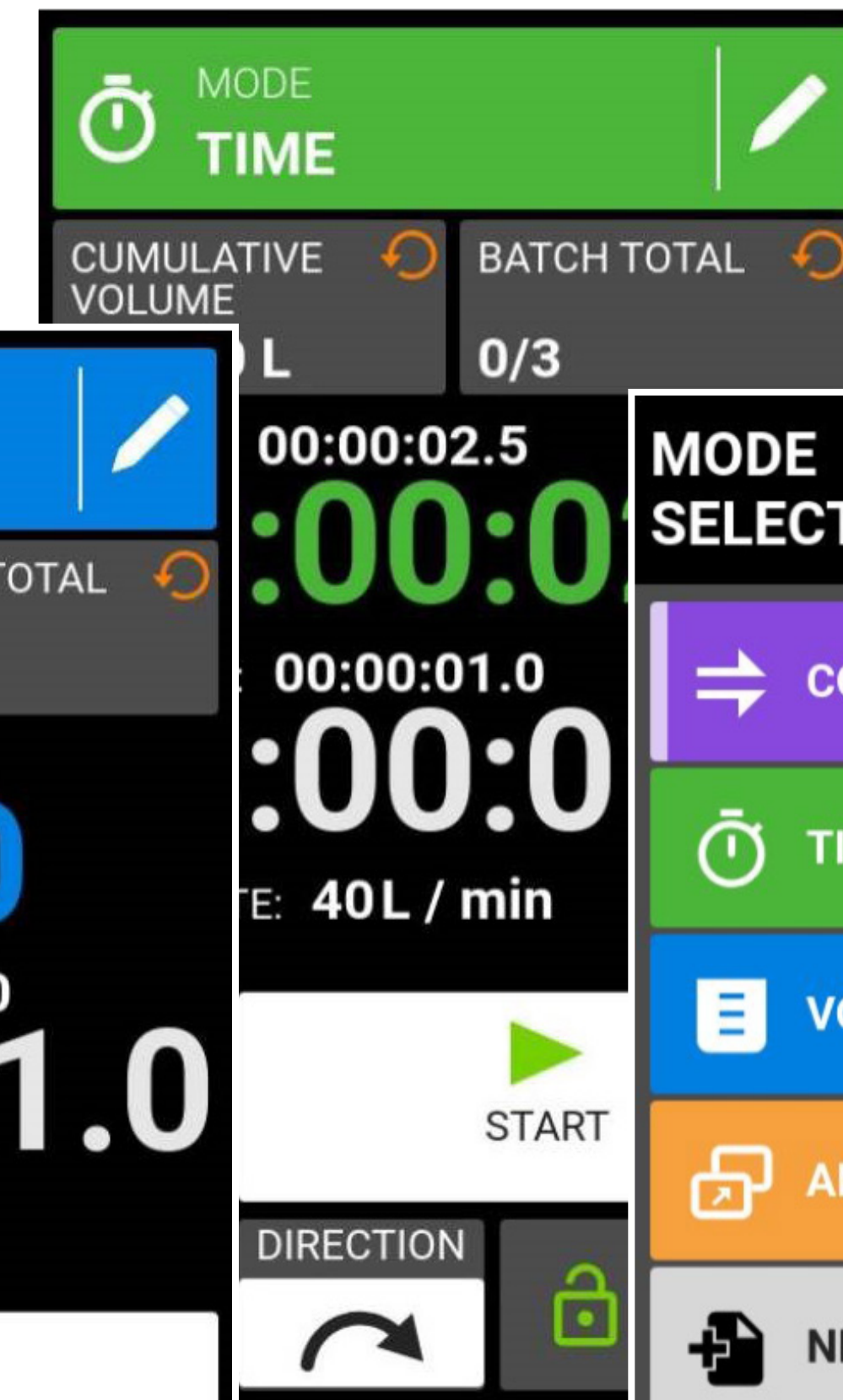
FLOW RATE (L / min)
42

TUBE OPTIONS
SIZE 91

PRIME START

DIRECTION

Time Dispense



MODE
TIME

CUMULATIVE VOLUME L BATCH TOTAL 0/3

00:00:02.5
:00:00

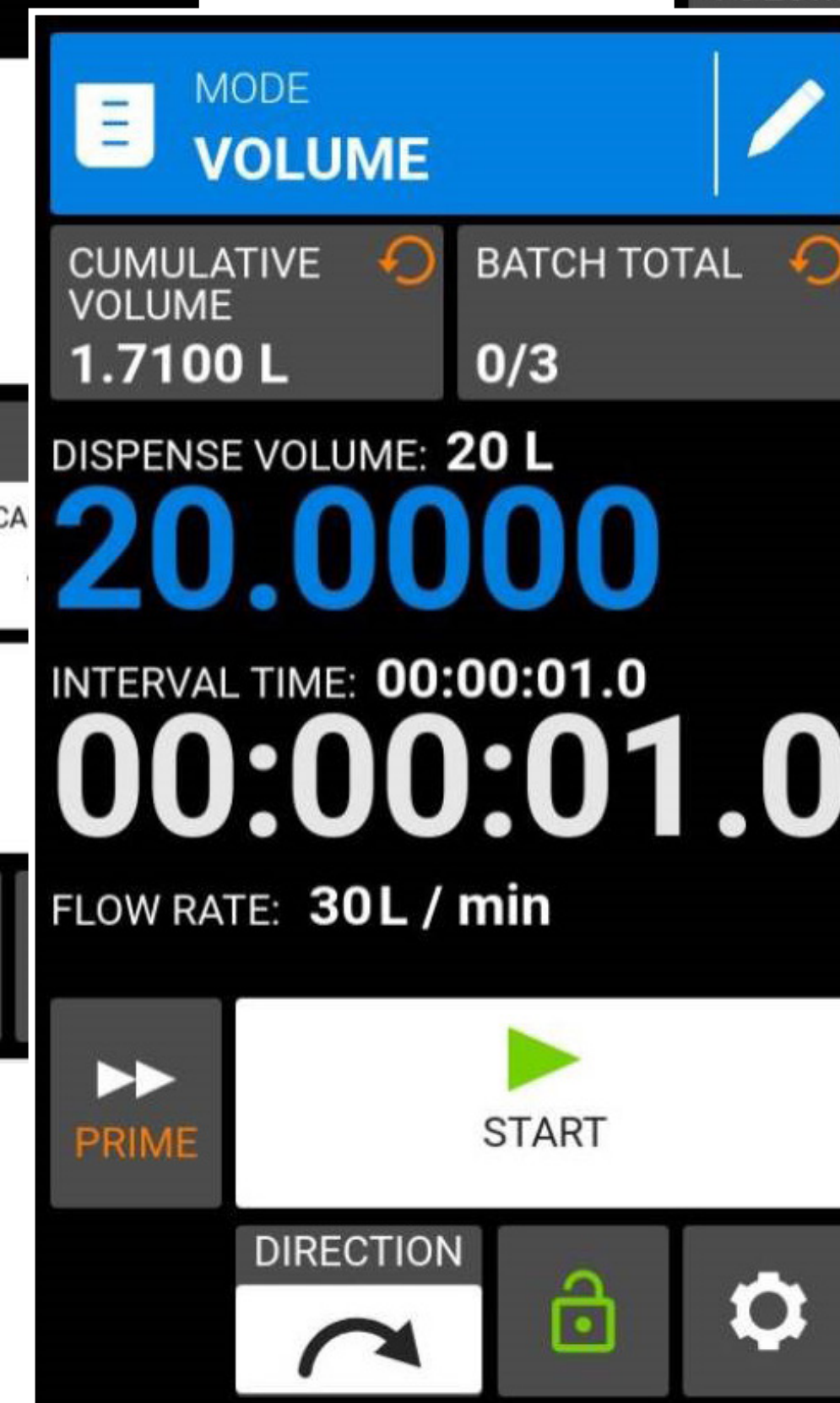
00:00:01.0
:00:00

E: 40 L / min

START

DIRECTION

Volume Dispense



MODE
VOLUME

CUMULATIVE VOLUME 1.7100 L BATCH TOTAL 0/3

DISPENSE VOLUME: 20 L
20.0000

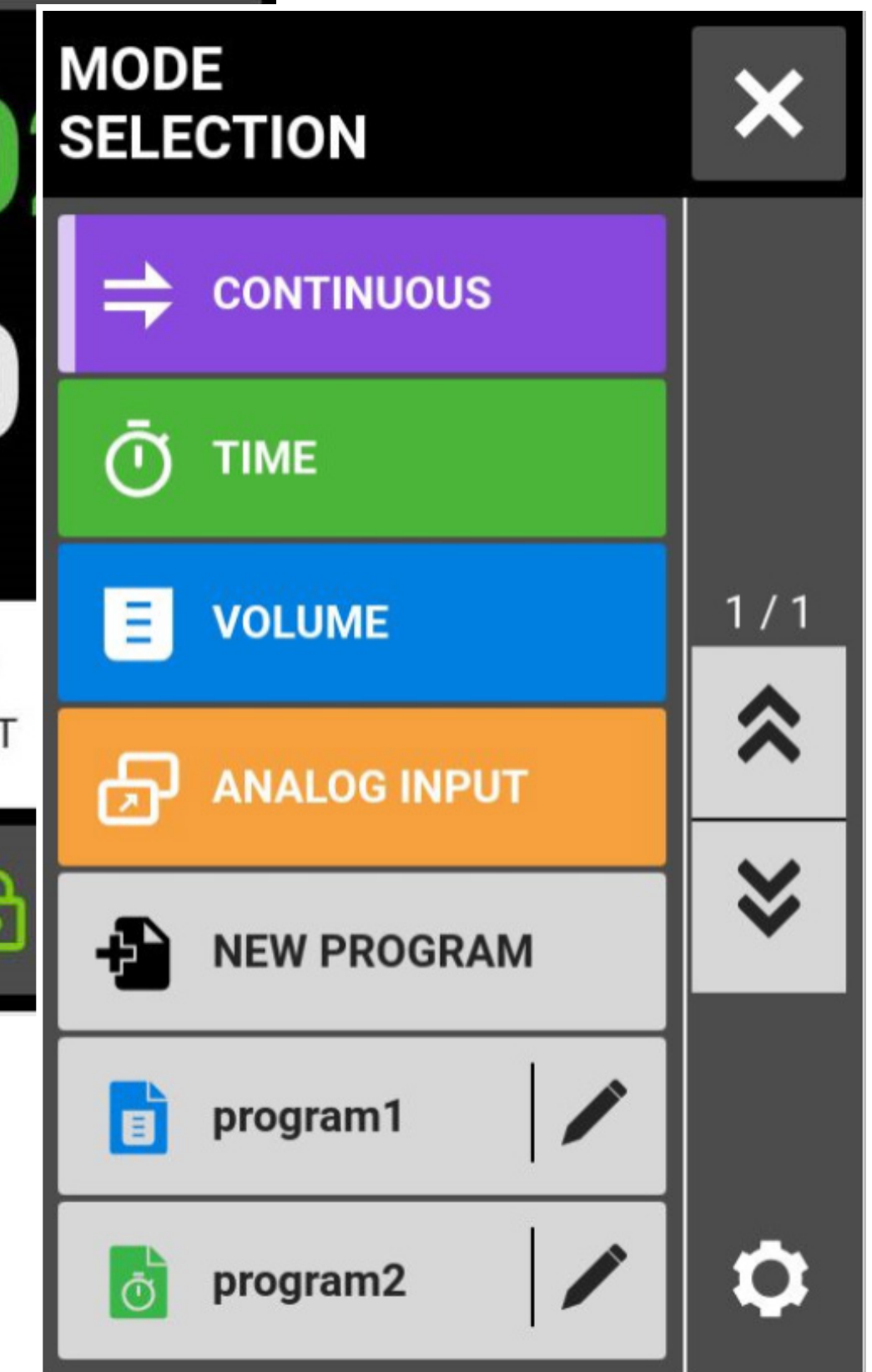
INTERVAL TIME: 00:00:01.0
00:00:01.0

FLOW RATE: 30 L / min

PRIME START

DIRECTION

Saved Programs



MODE SELECTION

CONTINUOUS

TIME

VOLUME

ANALOG INPUT

NEW PROGRAM

program1

program2

Over-The-Air Firmware Update

DEVICE
INFORMATION

MODEL
BT321 / bt-321
77112-10

MAC ADDRESS
04:91:62:F7:64:81

IP ADDRESS
10.80.5.142

SW VERSION
v2.8.0-6-gb77b680

CB/MCB FW VERSION
1.03.000-1 / 0

INSTALL UPDATE

FACTORY RESET

Three-Tier Access

ACCESS LEVELS

| | |
|------------|--|
| USER | |
| SUPER USER | |
| ADMIN | |

Calibration

TUBE
CALIBRATION

CALIBRATION STRENGTH

BEST

EXPECTED CALIBRATION TIME

00:27

TUBE SIZE

91

CALIBRATION VOLUME

13.08L

FLOW RATE

30L / min

DEFAULT CYCLE OPTIONS

CLEAR
CALIBRATION

START

Innovative Features

- **Over-the-air firmware updates**—allows you to take full advantage of future enhancements. Rest assured you will always have the latest technology on your MasterSense drive.
- **Three-tier access to pump functionality**—use this option to protect your process by controlling who can operate the pump and at what level. Offers two-factor security with user name and password required.
- Know when you hit your mark—graphical indicator lets you know when loaded tubing is **optimally calibrated**

Connectivity Options

Get your preferred way to work with **multiple ways to operate the pump**—via touch screen, analog remote, or choose a connectivity option. When you need remote pump control and monitoring, our cloud-based MasterflexLive® technology would be the ideal choice. For a digital protocol to suit your automation needs, we offer both EtherNet/IP™ and Profibus capability.

- Capable of several connectivity and control options—MasterflexLive, EtherNet/IP, Profibus, and analog remote
- **MasterflexLive**—our secure, cloud-enabled platform for remote monitoring and control of critical processes running 24/7 without the need for on-site personnel. Push notifications alert you to changes in operating conditions and error messages. Upgrade to premium for operational data storage in our Microsoft Azure secured cloud platform that complies to both FDA 21 CFR Part 11 and EU Annex 11.

MasterflexLive is proprietary technology—patent pending.





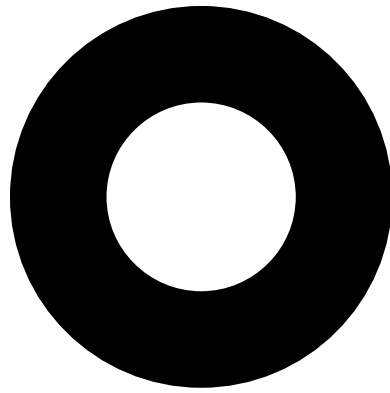
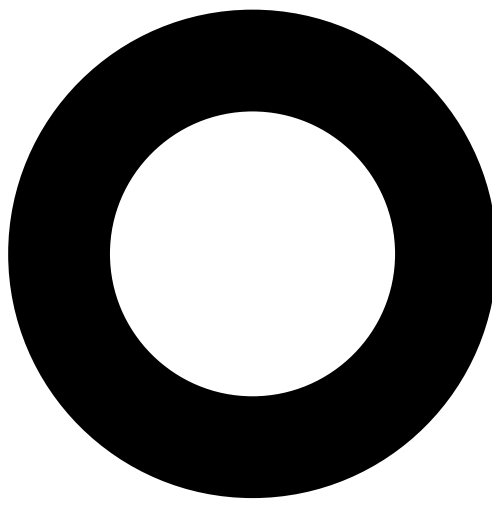
Powerful Performance

- Flow range from 0.65 to 42 LPM (0.17 to 11.1 GPM) for integration into **high-flow bioprocess applications**
- Enable cloud connectivity via Wi-Fi or standard Ethernet (RJ45) jack on rear of drive
- **Open-head sensor** technology stops the drive motor when pump head is opened or connect it to a remote leak detector to indicate ruptured filters, blown gaskets, or leaky tube connections
- Low-shear peristaltic pumping action ensures the integrity and viability of bioprocess fluids and suspensions
- Bidirectional flow and self-priming capabilities allow for **smooth, seamless operation**

Optimal Tubing Life

- Rapid-Load® pump head occlusion mechanism slides occlusion bed out of the way for easy tube loading and **repeatable performance**
- No need for extra fittings (potential sources of contamination)—use a single tube length from source to delivery point
- Tubing sizes ensure fully rated performance under higher pressure applications

Masterflex PerfectPosition® Pump Tubing Specifications

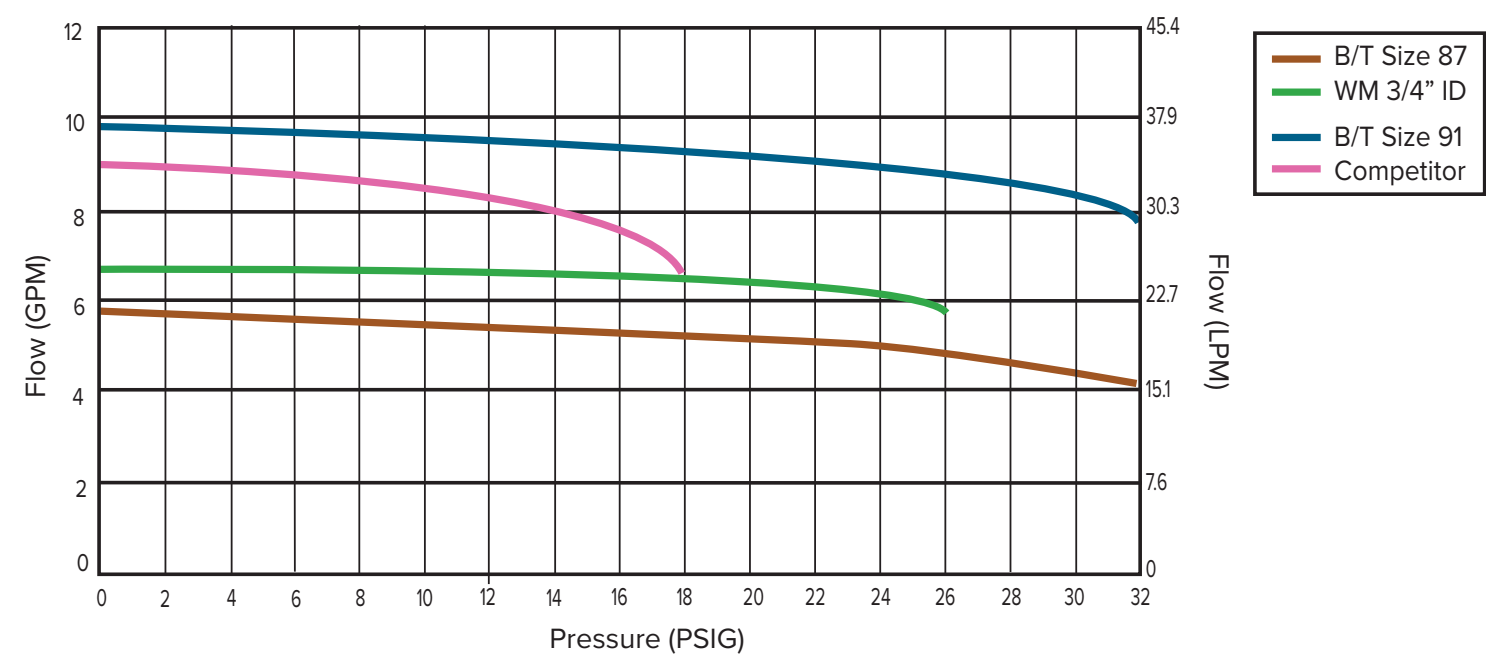
| Tubing cross sections | B/T PerfectPosition pump tubing | |
|--|---|---|
| |  |  |
| | B/T 87 | B/T 91 |
| Pump tubing size | B/T 87 | B/T 91 |
| Inside diameter (nominal) | 12.7 mm (0.5") | 19.0 mm (0.75") |
| Hose barb size | 12.7 mm (½") | 19.0 mm (¾") |
| Flow range (approximate) [†] with 11 to 321 rpm drive | 0.65 to 18.9 LPM (0.17 to 5.0 GPM) | 1.3 to 42 LPM (0.3 to 11.1 GPM) |
| Maximum pressure [‡] | 2.4 bar (35 psi) | 2.06 bar (30 psi) |
| Maximum vacuum [‡] | 660 mm Hg (26" Hg) | |
| Suction lift [‡] | 8.8 m H ₂ O (29 ft H ₂ O) | |

[†]Determined under the following conditions: 0 bar (0 psi) at inlet, 0.03 bar (0.5 psi) at outlet; water temperature at 22°C (72°F). [‡]Actual performance varies depending on tubing formulation—values shown are for firm tubing.

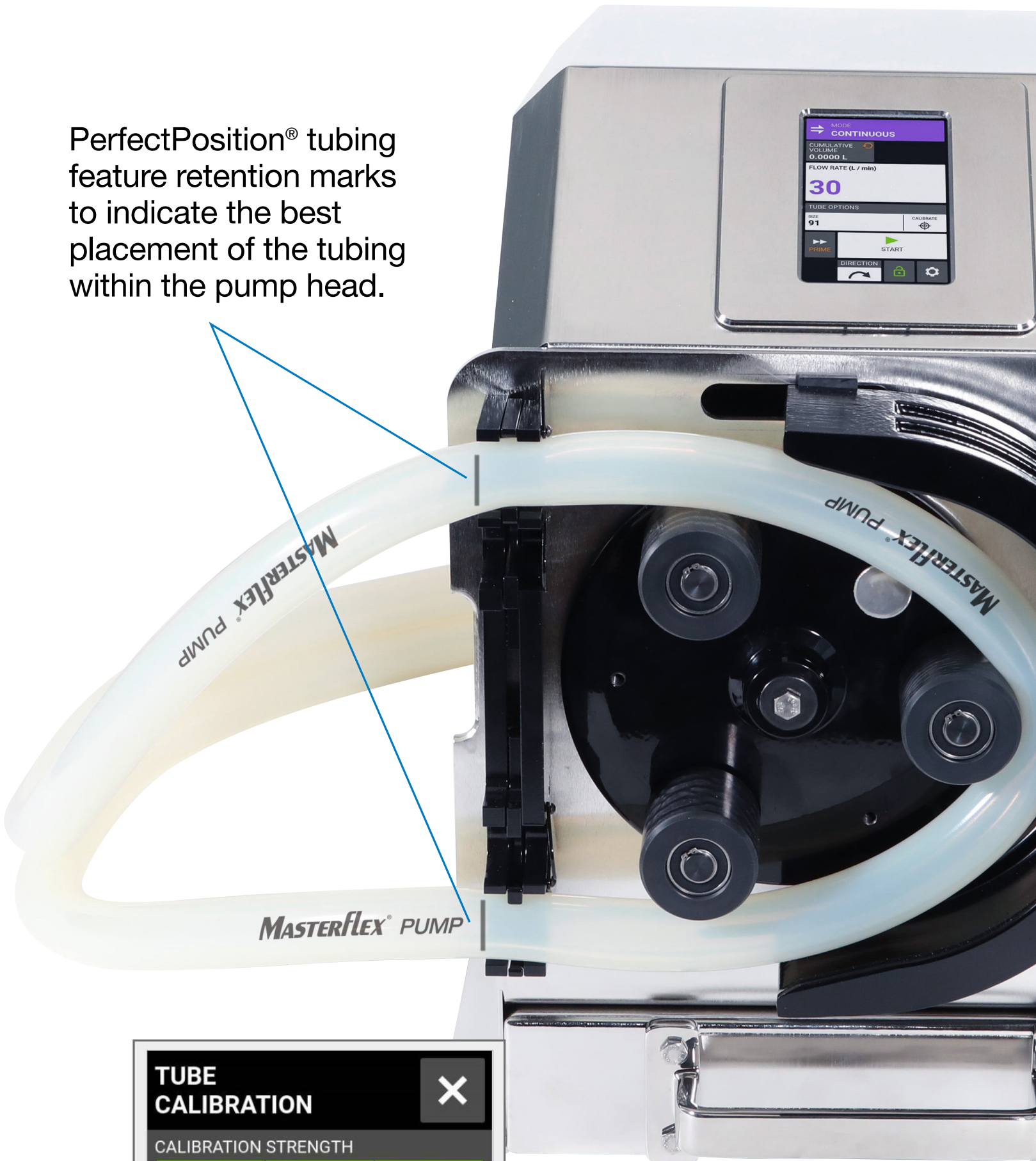
Industry-Leading Performance

Get flow rate consistency across full pressure range

Masterflex® B/T® vs Competitor



PerfectPosition® tubing feature retention marks to indicate the best placement of the tubing within the pump head.



TUBE CALIBRATION

CALIBRATION STRENGTH

BEST

EXPECTED CALIBRATION TIME

00:27

TUBE SIZE

91

CALIBRATION VOLUME

13.08L

FLOW RATE

30 L / min

DEFAULT CYCLE OPTIONS

CLEAR CALIBRATION

START

Easily know when the loaded tubing is optimally calibrated.

Puri-Flex™

- Heat sealable, weldable, and a great alternative to leading TPE's
- Longer pump life and lower spallation when compared to silicone or many other TPE tubings
- USP Class VI, FDA, 3A, REACH, RoHS, ADCF

Platinum-Cured Silicone

- Low protein binding, fungus resistant, phthalate and latex-free
- Accommodates a wide temperature range
- USP Class V, EP, FDA, REACH, RoHS, ADCF

BioPharma Plus Silicone

- Longest tubing life of any silicone pump tubing
- Enhanced pressure capability; low spallation and gas permeability
- USP Class VI, FDA, 3A, REACH, RoHS

PharMed® BPT

- Resistant to ozone and UV radiation
- Noncytotoxic and nonhemolytic; ideal for tissue and cell culture work
- USP Class VI, EP, FDA, REACH, RoHS

PharmaPure®

- Biocompatible; nontoxic and nonhemolytic
- Very low spallation and low extractables
- USP Class VI, EP, FDA, REACH, RoHS

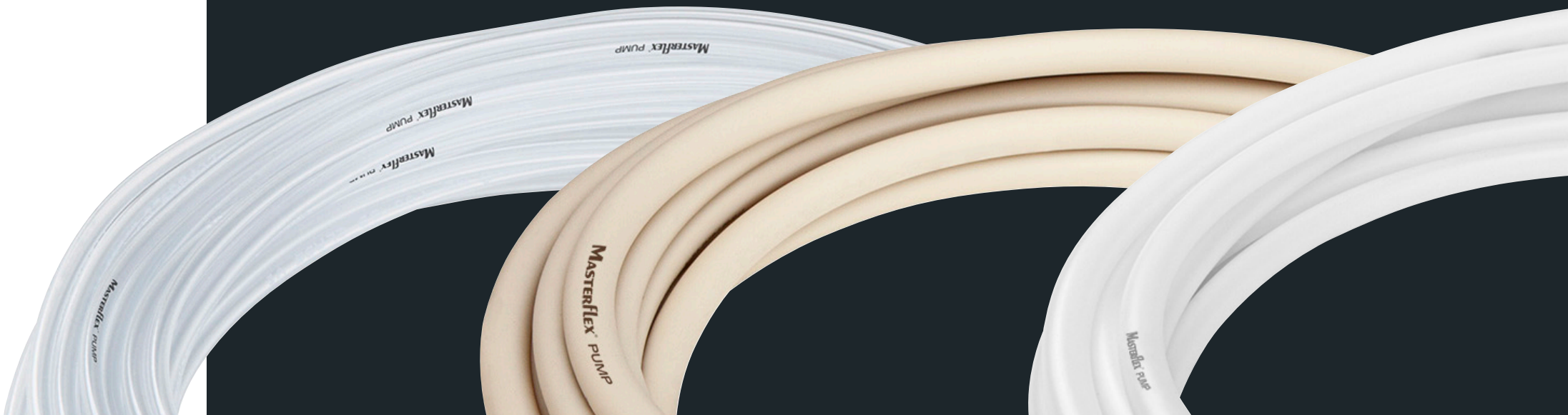
Chem-Durance® Bio

- Excellent chemical resistance and biocompatibility
- Excellent life and durability under pressure work
- USP Class VI, REACH, RoHS, ADCF

| PerfectPosition pump tubing size | Puri-Flex® | Platinum-cured silicone | BioPharma Plus silicone (platinum-cured) | PharMed® BPT | PharmaPure® | Chem-Durance® Bio |
|-------------------------------------|---------------|----------------------------|--|---------------|---------------|-------------------|
| | 3.0 m (10 ft) | 3.0 m (10 ft) | 3.0 m (10 ft) | 3.0 m (10 ft) | 3.0 m (10 ft) | 3.0 m (10 ft) |
| | Item number | Item number | Item number | Item number | Item number | Item number |
| B/T 87 | MK-96419-87 | MK-96410-87 | MK-96445-87 | MK-06507-87 | MK-06437-87 | MK-06443-87 |
| B/T 91 | MK-96419-91 | MK-96410-91 | MK-96445-91 | MK-06507-91 | MK-06437-91 | MK-06443-91 |

Versatility—Tubing for Every Application

Optimize your demanding peristaltic pump applications when you use our PerfectPosition® pump tubing—specifically designed and manufactured for the Masterflex B/T pump. See all 10+ tubing formulations at [Masterflex.com/tubing](https://www.masterflex.com/tubing).



Technical Specs & Ordering Information



Specifications

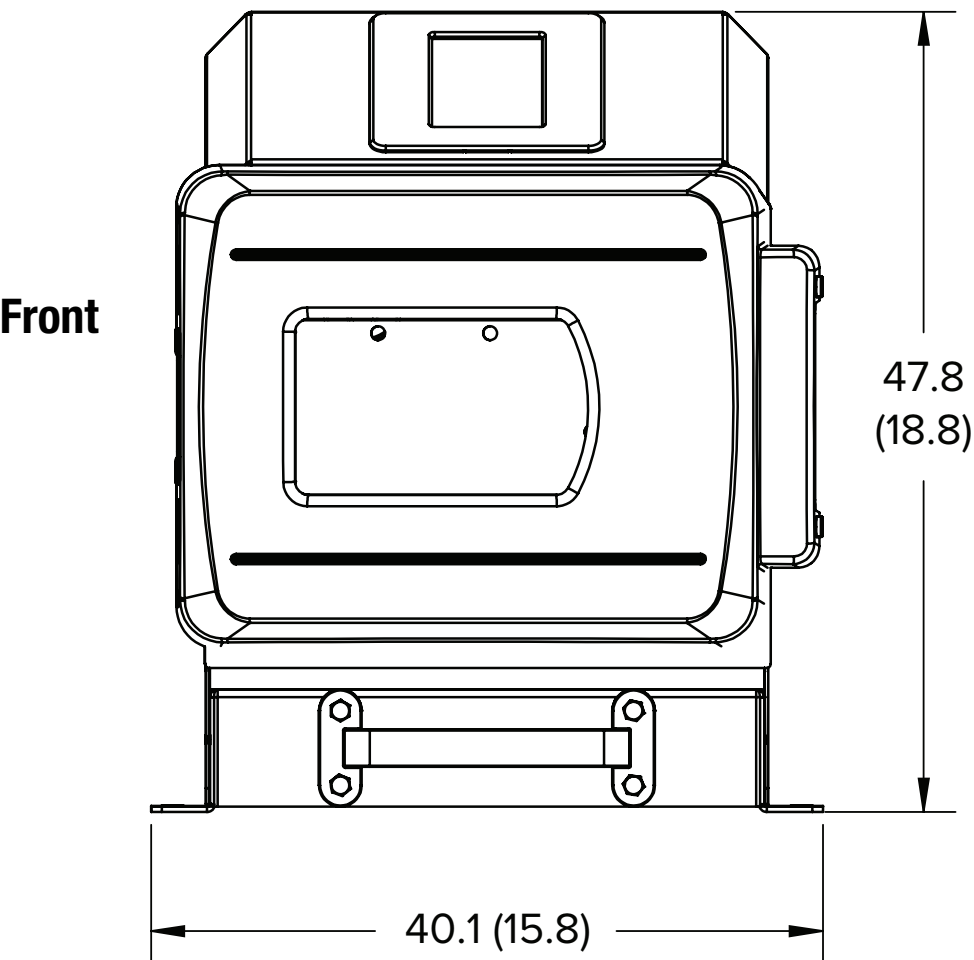
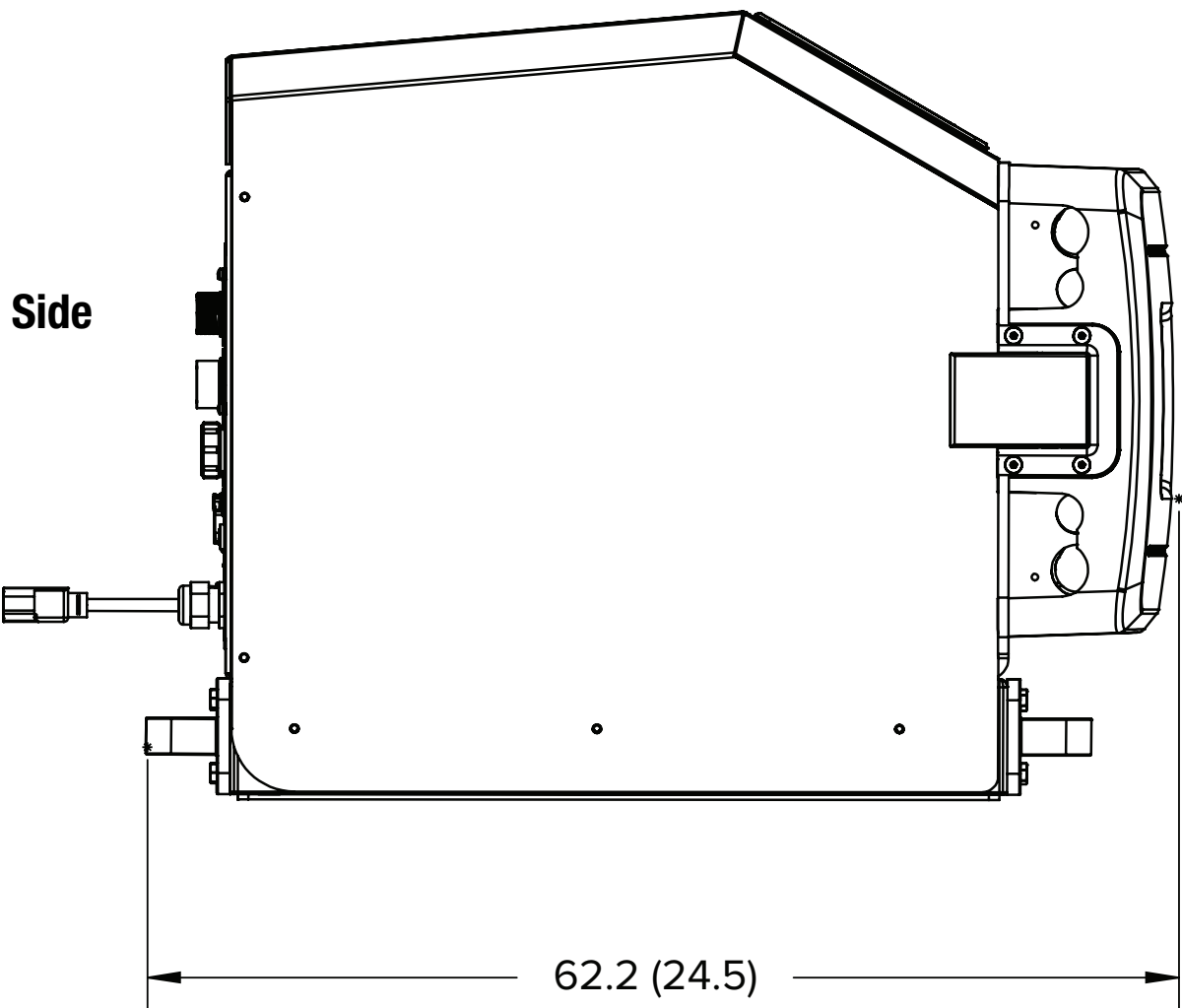
| | |
|---------------------------|---|
| Display | 5" capacitive TFT/RGB touch screen with in-plane switching (wide viewing angle); 800 x 480 pixels |
| External control - input | 0 to 20 mA, 20 to 0 mA, 4 to 20 mA, 20 to 4 mA; 0 to 10 V, 10 to 0 V, 0 to 5 V, 5 to 0 V; Start/stop, Direction (CW/CCW), Prime via contact closure |
| External control - output | 0 to 20 mA, 20 to 0 mA, 4 to 20 mA, 20 to 4 mA; 0 to 10 V, 10 to 0 V, 0 to 5 V, 5 to 0 V; Tach output (open collector), Motor running, Open head, Local/remote, General alarm |
| Motor | Continuous duty, TENV, BLDC; microprocessor-based PWM; reversible; 370 W (0.5 hp) |
| Maximum torque | 1130 N·cm (1600 oz-in) starting; 1017 N·cm (1440 oz-in) running |
| Housing materials | 316 stainless steel housing, stainless steel chassis, stainless steel bezel |
| Pump head materials | Powder-coat carbon steel and cast aluminum, stainless steel, polycarbonate, Nylatron® rollers |
| Enclosure rating | IP66 |
| Agency listings | UL, cUL, CE, DLS |
| Dimensions (L x W x H) | 62.2 x 40.1 x 47.8 cm (24½" x 15⅓" x 18⅜") |
| Shipping weight | 54.5 kg (120 lb) |
| Power | 90 to 260 VAC, 50/60 Hz |

Ordering Information

| Flow range, LPM (GPM) | | Drive rpm | Speed control (resolution) | Open-head sensor | Pump head | Connectivity | Item number |
|--------------------------|-------------------------|-----------|----------------------------|------------------|------------------------------|---|--------------------|
| B/T 87 | B/T 91 | | | | | | |
| 0.65 to 18.9 (0.17 to 5) | 1.3 to 42 (0.3 to 11.1) | 11 to 321 | ±0.1% | Yes | B/T Rapid-Load® (integrated) | EtherNet/IP, Profibus, and MasterflexLive | MK-77112-10 |

MK-07575-80 Cable assembly for remote control; 7.6 m (25 ft) cable with stripped wire ends

Dimensional Drawings cm (in.)



Masterflex, an Antylia Scientific company, is a leading, global fluidics manufacturer of proprietary products—with certifications to help you stay compliant—for your complete fluidic path. Along with our wide range of products, from pumps and tubing to flowmeters and single-use components, we are your consultant and partner to help you optimize your full fluidics workflow from research to process. And, when one of our standard offerings won't fit your application, we can help you succeed with a custom-engineered OEM pump solution to meet your exact needs and budget.

Masterflex products are known for their accuracy, durability, and ease-of-use. They can be seen in facilities around the world particularly in the pharmaceutical, biopharmaceutical, food & beverage, and chemicals industries. Masterflex products can also be used in any bioprocess and R&D industries where fluidics is required.



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