

L/S® DIGITAL MODULAR DISPENSING DRIVES

FEATURES/BENEFITS

- ▶ Flow rates: 0.006 to 3400 mL/min with L/S tubing
- ▶ Cartridge flow rate: 0.00005 to 1700 mL/min per channel
- ▶ Modular format lets you separate drive and controller for convenient placement; a 1.8-m (6-ft) control cable is included. Extend that distance with optional 2.7-m (9-ft) extension cable
- ▶ Four-line graphical LCD shows four operating modes: continuous run, volume dispense, time dispense, and copy dispense—interface permits precise setting of desired flow rate or volume without over- or undershoot
- ▶ Select one of seven languages for programming and operation
- ▶ Set time interval (delay) between dispense cycles for hands-free dispensing
- ▶ Antidrip function ensures dispensing accuracy
- ▶ Batch count lets you set the number of batches and displays number of batches completed
- ▶ Cumulative volume function (totalizer) tracks total volume dispensed/pumped
- ▶ User selectable English or metric flow/volume units
- ▶ PWM speed control with tachometer feedback for ±0.1% speed control accuracy
- ▶ Reversible, maintenance-free brushless motor
- ▶ Universal voltage, 90 to 260 VAC autoselect, 50/60 Hz
- ▶ Compatible with all L/S pump heads

DRIVE CONTROLS

- ▶ Protected power switch located on back of drive
- ▶ Lighted display indicates power is on
- ▶ Simple programming and operation of the following via sealed membrane keypad:
 - ◆ Tubing size
 - ◆ Flow rate
 - ◆ Flow direction
 - ◆ Flow units (English or metric)
 - ◆ Motor speed (rpm)
 - ◆ Total volume
 - ◆ Dispense (volume/copy/time)
 - ◆ Batch count
 - ◆ On/off time
 - ◆ Antidrip
 - ◆ Control mode (remote/internal)
 - ◆ Prime
 - ◆ Start/stop
 - ◆ Calibration



Digital modular drive 77301-30 shown with Easy-Load® II pump head 77200-62



NEW
Benchtop modular digital drive 77301-20

SETUP

1. Mount pump head(s) and load tubing.
2. Turn drive power on and select language.
3. Select manual (internal) or remote control.
4. Select motor direction.
5. Prime and calibrate pump if required.
6. Set flow rate through keypad.
7. Press START key to begin pumping.

SPEED CONTROL/CIRCUITRY

- ▶ Regulate motor through keypad and menus, 4 to 20 mA, or 0 to 10 V signal
- ▶ Soft start for starts without power surges
- ▶ Speed not affected by variations in power line voltage (VAC) and frequency (Hz)
- ▶ Line filters reduce outside interference
- ▶ Meets UL 61010-1, CSA C22.2, No. 61010-1; for CE mark: EN61010-1 (EU low voltage) and EN61326-1 (EU EMC)

REMOTE CONTROL

Benchtop Modular Drive

- ▶ Remote control via 25-pin (DB25) female connection on back of controller
- ▶ Speed control input: 0 to 20 mA, 4 to 20 mA, and 0 to 10 V (scaleable/invertable)
- ▶ Speed signal output: 0 to 20 mA, 4 to 20 mA, and 0 to 10 V (scaleable/invertable)
- ▶ START/STOP, CW/CCW, PRIME via contact closure
- ▶ Tach output: open collector
- ▶ Motor running indicator
- ▶ Handheld remote, cable, and foot switch options; order separately under "Accessories"

Modular Drive with Washdown, Wall-Mount Controller

- ▶ Remote control via 31-pin weather-resistant circular connection on bottom of controller
- ▶ Speed control input: 0 to 20 mA, 4 to 20 mA, and 0 to 10 V (scaleable/invertable)
- ▶ Speed signal output: 0 to 20 mA, 4 to 20 mA, and 0 to 10 V (scaleable/invertable)
- ▶ START/STOP, CW/CCW, PRIME via contact closure
- ▶ Tach output: open collector
- ▶ Motor running indicator
- ▶ Remote cable and foot switch options; order separately under "Accessories"

CALIBRATION

1. Select TUBING CAL via the Main or Setup menu.
2. Set flow direction, tubing size, and flow rate.
3. Prime the tubing.
4. Highlight START and press ENTER, drive will run based on default volume.
5. Press ENTER and adjust CAL VOLUME to the actual measured volume.
6. Press ENTER to SAVE setting and EXIT.

NOTE: Digital signal processor retains one calibration value for each tubing size, even when power is turned off.



ORDERING INFORMATION

Catalog number	rpm	Power (50/60 Hz)
Benchtop digital modular drive		
HL-77301-40	0.1 to 600	90 to 260 VAC
Digital modular drive with washdown controller		
HL-77301-50	0.1 to 600	90 to 260 VAC

L/S PUMP TUBING FLOW RATE INFORMATION (mL/MIN)

Order Masterflex L/S pump tubing separately on pages 68–73.

Tubing cross sections	L/S Precision pump tubing						L/S High-performance Precision pump tubing			
	L/S 13	L/S 14	L/S 16	L/S 25	L/S 17	L/S 18	L/S 15	L/S 24	L/S 35	L/S 36
Flow range @ 0.1 to 600 rpm	0.006 to 36	0.021 to 130	0.08 to 480	0.17 to 1000	0.28 to 1700	0.38 to 2300	0.18 to 1000 (0.18 to 1100)	0.28 to 1700 (0.30 to 1800)	0.38 to 2300 (0.43 to 2600)	0.48 to 2900 (0.58 to 3400)

Note: Higher flow rates in parentheses can be obtained only with High-Performance pump head.



SPECIFICATIONS for L/S Digital Modular Dispensing Drives

Catalog number	HL-77301-40	HL-77301-50
Performance Specifications		
Flow capacity	0.006 to 3400 mL/min (0 to 54 GPH)	
rpm	0.1 to 600	
Number of heads accepted	2	
Maximum torque	Starting	381 N-cm (540 oz-in)
	Running	127 N-cm (180 oz-in)
Reversible	Yes	
External control – Input	0 to 20 mA, 4 to 20 mA, 0 to 10 V; START/STOP, CW/CCW, PRIME via contact closure	
External control – Output	1 to 20 mA, 4 to 20 mA, 0 to 10 V; TTL pulse, drive running	
Electrical Specifications		
Voltage/Frequency VAC (Hz)	90 to 260 (50/60)	
Current	1.8 A at 115 V; 1.1 A at 230 V	
Fuse rating	3.15 A / 250 V	
Motor type	Continuous duty, brushless DC	
Motor size	75 W (1/10 hp)	
Display	Four-line graphical LCD	
Motor/speed control type	PWM with microprocessor	
Speed regulation	±0.1%	
Soft start/Electronic brake	Yes/Yes	
Physical Specifications		
Housing materials	Drive	Painted steel and aluminum
	Controller	Painted steel and aluminum
IP rating	Drive	IP33
	Controller	IP66 (NEMA 4X)
Agency listings	ETL, cETL, CE	
Operating temperature	0 to 40°C (32 to 104°F)	
Storage temperature	-25 to 65°C (-13 to 149°F)	
Dimensions (L x W x H)	Drive	22.7 x 9.7 x 12 cm (8 7/8" x 3 3/4" x 4 3/4")
	Controller	26.3 x 21.1 x 14.0 cm (10 1/8" x 8 3/8" x 5 1/2")
Shipping weight	7.1 kg (15.6 lb)	14.1 kg (31.1 lb)

ACCESSORIES

For Benchtop Model 77301-40

HL-07523-97 Handheld remote controller; control start/stop, direction, and prime; route tubing through handle for dispensing and filling applications; 1.8-m (6-ft) cable.

HL-07523-92 Foot switch, momentary start/stop; 1.8-m (6-ft) cable.

HL-07523-95 Cable assembly, DB25 male connector and 7.9-m (25-ft) cable with stripped wire ends for remote control.

HL-77301-82 Extension cable, 2.7 m (9 ft), for benchtop modular drive 77301-40; extends distance between motor and controller.

HL-17050-01 NIST-traceable calibration with data for peristaltic pump drive.

For Washdown Model 77301-50

HL-07575-84 Washdown foot switch, momentary start/stop; 1.8-m (6-ft) cable.

HL-77301-82 Extension cable, 2.7 m (9 ft), for washdown modular drive 77301-50; extends distance between motor and controller.

HL-07575-80 Remote control cable; wire to controller/PLC; 8.3-m (25-ft) length.

HL-17050-01 NIST-traceable calibration with data for peristaltic pump drive.

KEYPAD LOCK/UNLOCK FEATURE

- ▶ Lock keypad and protect settings by highlighting the lock icon and pressing ENTER.
- ▶ Select LOCK and press ENTER to exit menu.
- ▶ Repeat above steps to unlock keypad.

SELECTION CRITERIA

1. Motor rpm / flow rate.
2. Number of pump heads accepted.
3. Benchtop or washdown, wall-mount controller.

Order pump heads and tubing separately.

<p>STANDARD 0.06 to 2900 mL/min pages 40–41</p>	<p>HIGH-PERFORMANCE 0.9 to 3400 mL/min pages 48–49</p>	<p>MULTICHANNEL CARTRIDGE 3- or 4-roller; up to 8 channels 0.047 to 1700 mL/min pages 56–57</p>
<p>EASY-LOAD* 3 0.06 to 2900 mL/min pages 42–43</p>	<p>PTFE-TUBING 0.06 to 65 mL/min pages 50–51</p>	<p>6- or 8-roller; up to 12 channels 0.0005 to 350 mL/min pages 58–59</p>
<p>EASY-LOAD* II 0.06 to 2900 mL/min pages 44–45</p>	<p>MULTICHANNEL 4- or 8-channel for microbore tubing 0.0026 to 200 mL/min pages 52–53</p>	<p>PTFE-DIAPHRAGM 10 to 800 mL/min pages 60–61</p>
<p>EASY-LOAD* 0.06 to 2300 mL/min pages 46–47</p>	<p>2-, 4-, or 8-channel for L/S® Precision tubing 0.045 to 2300 mL/min pages 54–55</p>	

Dimensional Drawings cm (in.)

77301-40 Drive

FRONT

SIDE

77301-40 Controller

FRONT

SIDE

77301-50 Drive

FRONT

SIDE

77301-50 Controller

FRONT

BOTTOM