TECAN.

Cavro® XMP 6000 Multi-Channel Pump

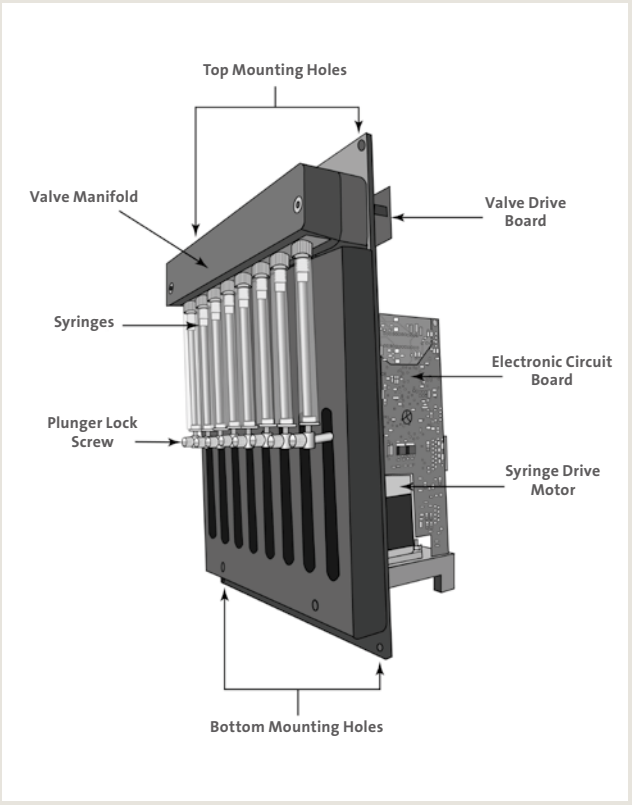
The economical solution for parallel liquid handling

In today's fast-paced environment, time-to-market is a major consideration for any instrument designer. However, the efforts required to comply with regulatory standards often have an impact on development and production timelines. The need for extensive component testing and validation data can hold up release of new products, potentially harming your position in the marketplace.

One way to simplify regulatory approval of your instruments is to use OEM components that have already been extensively tested and approved. Tecan Cavro brand components are all constructed to meet ISO13485 and ISO9001 requirements, as well as national and regional compliance, such as Europe's 2006 RoHS Directive or the US FDA's QS regulations.

The Cavro XMP 6000 Pump is Tecan Systems' multi-channel OEM syringe pump for liquid handling applications in the 10 µl to 5 ml range. The unit is available in 2, 4, 6, and 8 channel configurations, and is ideal for multi-probe liquid handling tasks such as sample transfer, dilutions, mixing, reagent addition and plate reformatting.

The design of the pumps offers a compact solution for parallel liquid handling applications, minimizing logistical restrictions in your instrument design. By choosing Cavro XMP 6000 Pumps, your instruments will benefit from the long life and low maintenance requirements of our robust and reliable pumps, helping to maintain your reputation and, ultimately, leading to greater customer satisfaction.



The Cavro XMP 6000 Pump is available with 100 µl, 250 µl, 500 µl, 1.0 ml, 2.5 ml and 5.0 ml syringe volumes and features individual valve control per channel.

The pump is offered with either a standard inlet/outlet valve configuration, or a bypass valve option to allow rapid flushing, charging and priming of the system with external liquid handling units. This offers significant time gains in set-up and maintenance operations without excessive syringe pump operation or loss of liquid handling precision.

Technical features

Syringe drive

The Cavro XMP 6000 Pump uses a Teflon® coated lead-screw, with backlash compensation nut, driven by a stepper motor. The travel length of the plunger is 60 mm and the drive incorporates a quadrature encoder for step loss detection.

Design and maintenance

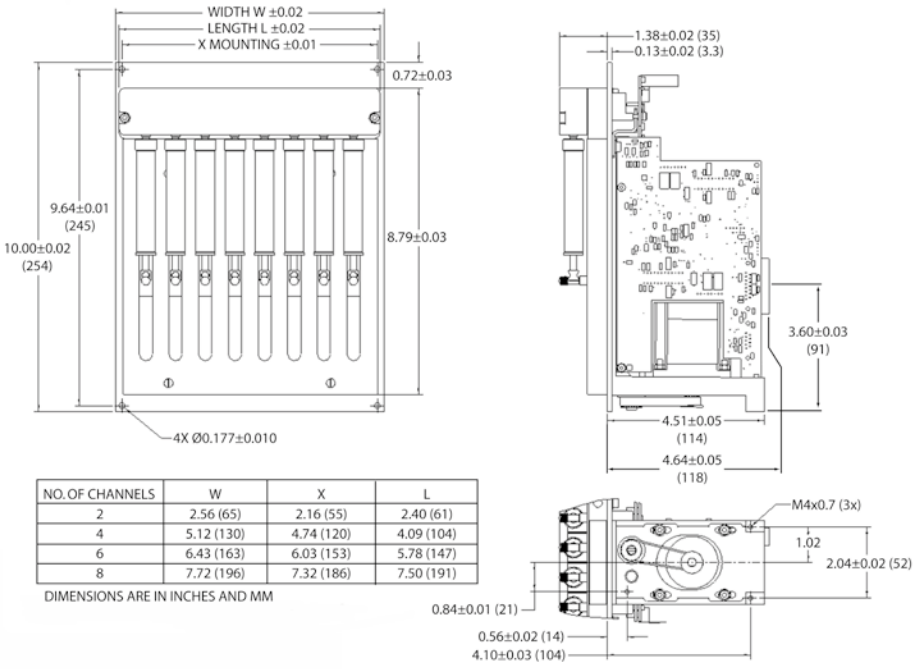
The Cavro XMP 6000 Pump leadscrew does not require lubrication. Valve and plunger move counters have been added to the firmware to help plan preventive maintenance replacement of valves and syringes.

Speed selection

Pump speed ranges from 1.2 seconds to 160 minutes per stroke. The firmware allows the user to optimize liquid handling performance by changing the start speed, top speed, and cut off speeds, with ramp up and ramp down rates also programmable.

Interface and control

The pump's firmware automatically detects the communication interface (RS232, RS485, or CAN) and communication protocol (OEM or data terminal). Multi-module communication is possible through either RS485 or CAN interfaces, addressing up to 15 modules through a single communication bus. The pump also provides two digital inputs and three outputs for TTL level signals that can be used for synchronization with external devices.



NO. OF CHANNELS	W	X	L
2	2.56 (65)	2.16 (55)	2.40 (61)
4	5.12 (130)	4.74 (120)	4.09 (104)
6	6.43 (163)	6.03 (153)	5.78 (147)
8	7.72 (196)	7.32 (186)	7.50 (191)

DIMENSIONS ARE IN INCHES AND MM

The Cavro XMP Pump family of products are UL recognized components and bear the UL designation label.

Product ordering information

Description	Valve Type	Material Number
XMP 6000 8-channel ¼-28 Bypass	3-way Bypass	20737363
XMP 6000 8-channel M6 Bypass	3-way Bypass	20737365
XMP 6000 8-channel ¼-28	3-way	20737367
XMP 6000 8-channel M6	3-way	20737369

Description	Valve Type	Material Number
XMP 6000 6-channel ¼-28	3-way	20737371
XMP 6000 6-channel M6	3-way	20737373
XMP 6000 4-channel ¼-28	3-way	20737422
XMP 6000 4-channel M6	3-way	20737424
XMP 6000 2-channel ¼-28	3-way	20737375
XMP 6000 2-channel M6	3-way	20737377

Specifications

Plunger drive	Principle	Stepper motor driven lead screw with quadrature encoder for step loss detection and home flag
	Travel	60 mm
	Plunger speed	5 – 6000 pulses per second
Resolution	6,000 steps in standard mode and 48,000 steps in fine-positioning and microstep mode	
Syringes	Sizes	100 µl, 250 µl, 500 µl, 1.0 ml, 2.5 ml and 5.0 ml
	Barrel material	Borosilicate glass
	Plunger material	Stainless steel
	Seal material	Virgin Teflon® (PTFE)
	Precision	≤ 0.05 % CV at full stroke (250 µl syringe and above) ≤ 0.1 % CV at full stroke (50 µl and 100 µl syringes)
	Accuracy	< 1 % at full stroke
Valve drive	Switch time	≤ 250 ms
	Drive	Independently operated solenoid valves
Valves	Diaphragm material	Kalrez®
	Body material	PEEK™
	Fittings	¼ – 28" or M6 tubing fittings
	Valve options	3-way, 3-way with bypass option
Power requirements	Voltage	24 V DC ± 10 %
	Current	2.0 A (peak) for standard configurations 2.5 A (peak) for bypass configurations
Interface	Type	RS-232, RS-485 or CAN
	Baud rate	9600 or 38400 (RS-232 and RS-485) 100K, 125K, 250K, 500K and 1M (CAN)
	Format	Data bits: 8 Parity: No Stop bit: 1 Half duplex
Communications	Addressing	Up to 15 individual addresses available
	Communications	Data terminal and OEM protocol (with error recognition)
Firmware	Programmable ramps Programmable plunger speeds Programmable backlash compensation Change speed on the fly	Terminate moves Diagnostics Absolute or relative positions Programmable non-volatile memory
Inputs	Two TTL level inputs with 4.7k pull-ups	
Outputs	Three outputs, CMOS (HC) level	
Environmental	Operating temperature (mechanism)	59°F (15 °C) to 104 °F (40 °C)
	Operating humidity (mechanism)	20 – 80 % RH at 104 °F (40 °C)
	Storage temperature	-4 °F (20 °C) to 149 °F (65 °C)
Safety and regulatory compliance	The Cavro XMP 6000 Pump uses only UL recognized electronic components and bears the UL recognized component mark: Tecan Systems' UL customer file number is E164638. Tecan Systems operates a manufacturing facility with an ISO 13485 and QSR compliant quality system.	

Specifications are subject to change without notice.

Austria +43 62 46 89 33 **Belgium** +32 15 42 13 19 **China** +86 10 5869 5936 **Denmark** +45 70 23 44 50 **France** +33 4 72 76 04 80 **Germany** +49 79 51 94 170
Italy +39 02 92 44 790 **Japan** +81 44 556 73 11 **Netherlands** +31 18 34 48 174 **Portugal** +351 21 000 82 16 **Singapore** +65 644 41 886 **Spain** +34 93 490 01 74
Sweden +46 31 75 44 000 **Switzerland** +41 44 922 89 22 **UK** +44 118 9300 300 **USA** +1 919 361 5200 **Other countries** +41 44 922 8125

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