
Cavro® XCalibur

30mm Stroke OEM Syringe Pump



- 3,000/24,000 increment resolution per stroke
- RS-232, RS-485 and CAN Communication Interfaces
- RoHS compliant
- UL recognized component

The Cavro® XCalibur is Tecan Systems' high performance compact syringe pump. The module was designed for ease of integration and has the same footprint and is controlled with the same command set as the Cavro® XP 3000.

The XCalibur offers multiple valve options to optimize fluidic design. The pump's hardware and firmware allow the user to configure the pump for different valve types, communicate at different baud rates and operate computer-free.

Resolution. The XCalibur automates pipetting, diluting, and dispensing with excellent accuracy and precision over a wide range of speeds using a variety of syringes. Pump resolution is 3,000 increments per stroke in standard mode and 24,000 increments per stroke in microstepping mode.

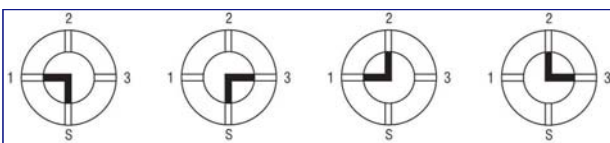
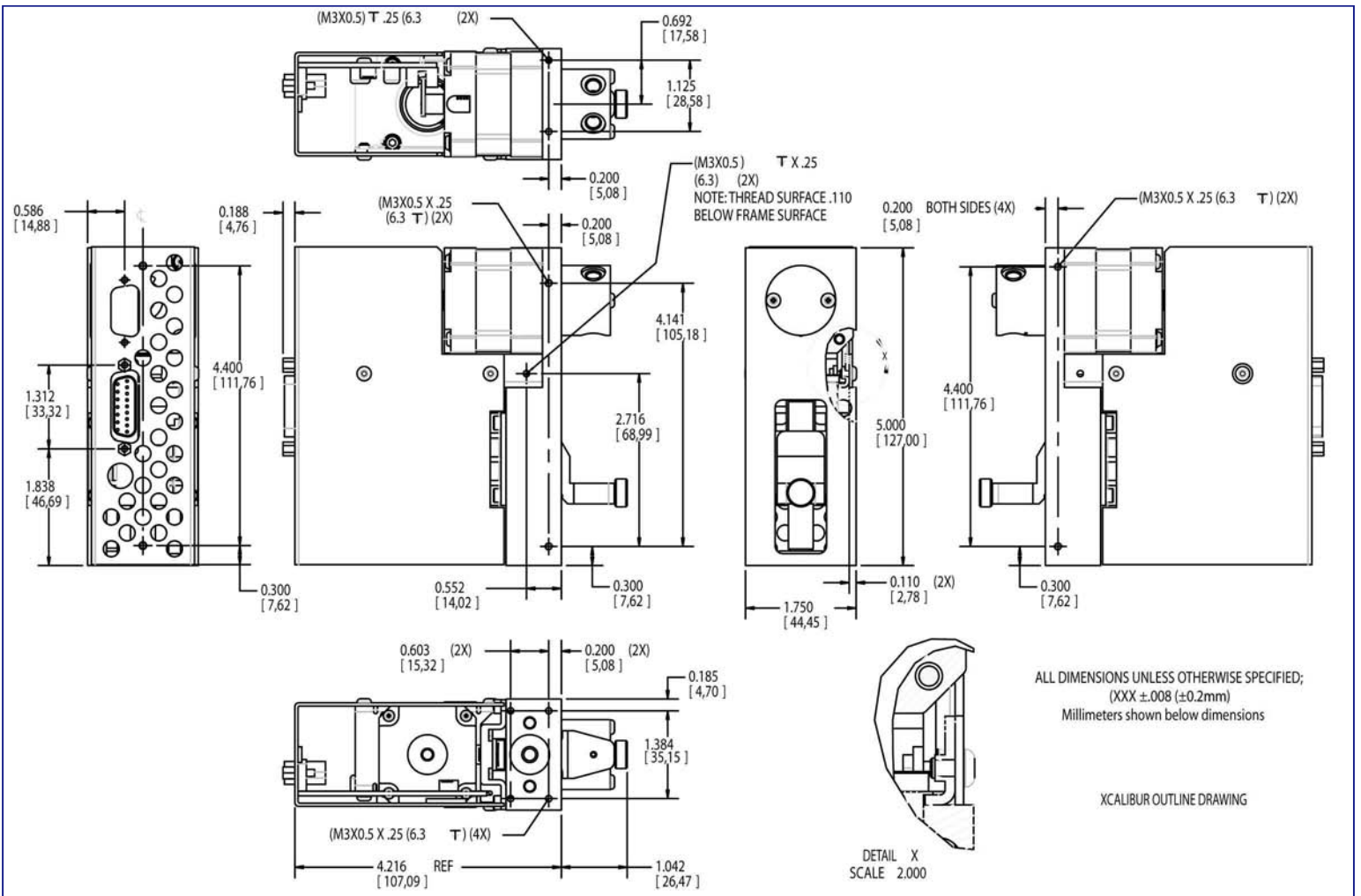
Communications. The XCalibur communicates through RS-232, RS-485 or Controller Area Network (CAN). Pumps are controlled via OEM or Data Terminal protocol at a rate of 9,600 or 38,400 baud, or in the case of CAN up to 1Mbyte.

Multi-pump communication is possible through RS-485 or CAN interface. When operating in a multi-pump arrangement, up to 15 Cavro modules can be addressed through a single communication bus. The XCalibur also provides two digital inputs and three outputs for TTL level signals that can be used for synchronization with external devices.

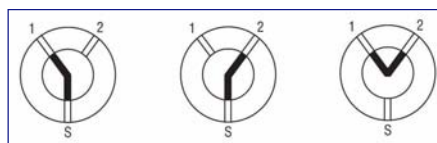
Syringe Drive. The XCalibur uses a stepper motor driven ball-screw. The travel length of the plunger is 30 mm and the drive incorporates a linear encoder with temperature compensation circuit.

Speed Selection. Pump speed ranges from 1.2 seconds to 20 minutes per stroke. The firmware allows the user to enhance liquid handling performance by changing the start speed, top speed, and cutoff speeds. Ramp-up and ramp-down rates are also programmable.

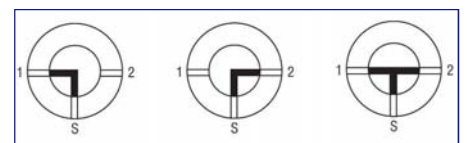
Design and Maintenance. The XCalibur's machined aluminum frame has a smooth black finish and numerous mounting holes for mounting flexibility. The ball-screw drive does not require lubrication and can be manually lowered for easy syringe replacement. Valve and plunger move counters have been added to the firmware to help plan preventive maintenance replacement of valves and syringes.



4-Port Valve



3-Port Valve



T-Valve

Cavro XCalibur OEM Syringe Pump Specifications

Plunger Drive

Principle Ball screw drive with linear encoder step loss detection

Travel 30 mm

Syringes

50 µL, 100 µL, 250 µL, 500 µL, 1.0 mL, 2.5 mL, 5.0 mL

Valve/Valve Drive

Valve Options 120° 3-port, 90° 4-port, T-valve, Y block
90° 3-port distribution

Turn time ≤250 ms between adjacent ports

Drive Stepper motor with optical encoder for positioning feedback

Wetted Materials Plastic - Plug: Teflon®
Body: PCTFE

Standard Fittings 1/4-28 or M6 for tubing ports, 1/4-28 syringe fitting

Firmware

Programmable ramps, cutoff velocity, backlash compensation, plunger speeds, delays and loops, change speeds on the fly, terminate moves, diagnostics, absolute and relative positions.

Dimensions

Height 127 mm (5.0 in.)

Width 44.5 mm (1.8 in.)

Depth 111.8 mm (4.4 in.)

Power Requirements

Supply Voltage 24 VDC ± 2%

Current Peak: 1.5 Amps

Resolution

3,000 increments in standard mode and 24,000 increments in microstep mode

Speed

1.2 seconds - 20 minutes / full stroke depending upon syringe size and tubing

Precision

<0.05% C.V. within run at full stroke (at 25°C, with 1 mL syringe using deionized water)

≤0.5% C.V. within run at 10% stroke (at 25°C, with 1 mL syringe using deionized water)

Accuracy

<1.0% deviation from expected value at full stroke (at 25°C with 1 mL syringe using deionized water).

Interface

Type RS-232, RS-485, or CAN BUS

Baud rate RS-232/485: 9,600 or 38,400 CAN: 100Kb, 125Kb, 250Kb, 500Kb, and 1Mb

Format Data Bits: 8 Parity: None Stop Bit: 1 Half Duplex

Addressing Up to 15 pumps can be addressed individually

Communications Data Terminal and OEM protocol (Serial); "Cavro CAN" (CAN)

Environmental

Operating Temperature 15° - 40°C (59° - 104°F)

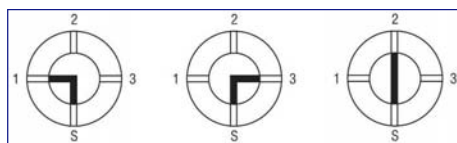
Humidity (Non-Condensing) 20-80% RH at 40°C (104°F)

Safety and Regulatory Compliance

The XCalibur is a UL recognized component. Tecan Systems UL customer file is E164638
Tecan Systems' Quality System is ISO 13485 Certified. The XCalibur meets the requirements set by European Union's Directive 2002/95/EC on the Restriction of Hazardous Substances.



Specifications are subject to change without notice.



3-Port Distribution Valve

Ordering Information

	Cavro XCalibur	
Plastic Valves	RS-232/485	RS-485/CAN
120° 3-Port, 1/4-28	20738291	20738293
120° 3-Port, M6	20738295	20738297
90° 4-Port, 1/4-28	20738299	20738301
90° 4-Port, M6	20738303	20738305
T Valve, 1/4-28	20738307	20738309
T Valve, M6	20738311	20738313
Y Block, 1/4-28	20738315	20738317
Y Block, M6	20738319	20738321
90° 3-Port Distribution, 1/4-28	20738323	20738325
90° 3-Port Distribution, M6	20738327	20738329

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