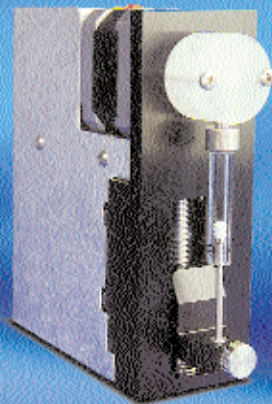


Cavro™ XCalibur

Tecan Systems OEM Syringe Pumps



Superior performance and enhanced reliability

The Cavro XCalibur is Tecan Systems' next generation, high performance, compact syringe pump. The innovative use of linear encoder technology for step loss detection delivers superior precision and accuracy while at the same time minimizing pump-to-pump variation. State-of-the-art electronics and the rugged ball screw syringe offer long-term, trouble-free operation with minimal maintenance requirements.

The XCalibur has the same footprint and is controlled with the same command set as the Cavro XP 3000. It automates pipetting, diluting and dispensing operations with accuracy and precision over a wide range of speeds using a variety of syringe sizes.

Resolution. The Cavro XCalibur is designed for precision liquid handling applications in the 5 μ L to 5 mL range. The syringe drive has a 30 mm travel and a resolution of 3,000 increments in standard mode and 24,000 increments in microstepping mode.

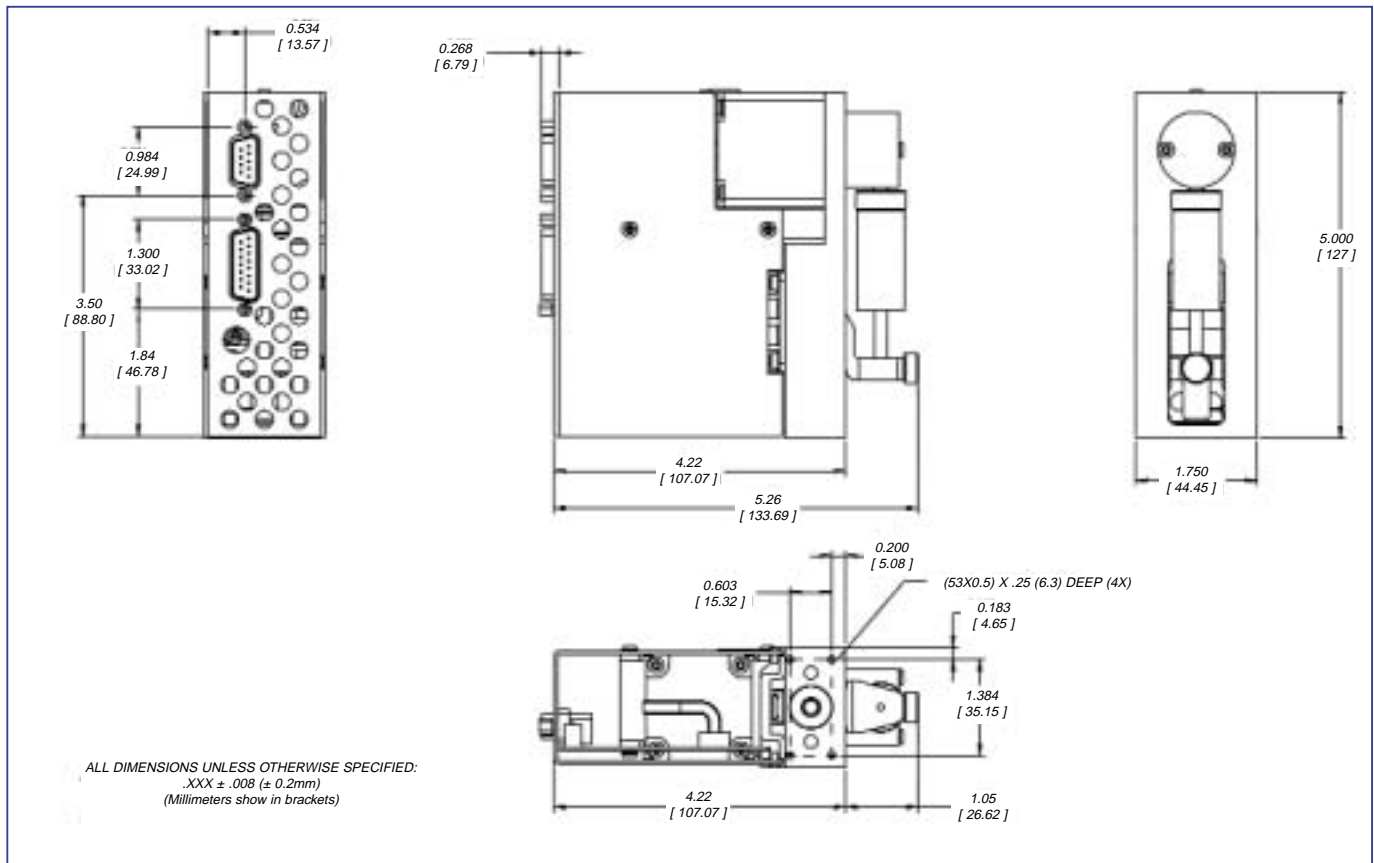
Communications. The Cavro XCalibur communicates singly through RS-232, RS-485 or Controlled Area Network (CAN) interface. Multi-pump communication is through RS-485 or CAN interface. A converter board is available for RS-232 multi-pump communication. Pumps communicate through an OEM or Data Terminal protocol at a 9,600 or 38,400 baud rate or, in the case of CAN, at 100,000 or 125,000 baud rate.

When operating in a multi-drop arrangement, up to 15 pumps can be addressed through a single communication BUS. The XCalibur also provides two auxiliary inputs and three outputs for TTL level signals.

Syringe Drive. The XCalibur has a ball screw syringe drive controlled by a stepper motor. The drive incorporates a linear encoder for step loss detection. Available syringe sizes range from 50 μ L to 5 mL.

Speed Selection. Plunger speeds vary from 1.2 seconds to 20 minutes per stroke. Ramp-up and ramp-down rates are programmable. The firmware allows the user to enhance fluid break-off by changing the start velocity, top speed, slope and cutoff speeds.

Design and Maintenance. The XCalibur's machined aluminum frame has a smooth black finish and bottom mounting holes. The ball screw drive is maintenance free and can be lowered manually for easy syringe replacement.



Cavro XCalibur OEM Syringe Pump Specifications

Plunger Drive

Principle Ball screw drive with linear encoder

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 3-port

Turn time <250 ms between adjacent ports

Drive Stepper motor with optical encoder for positioning feedback

Materials Plug: Teflon
Body: Kel-F

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

Firmware

Programmable Ramps
Cutoff Velocity
Plunger Speeds
Delays and Loops
Change Speeds on the Fly
Terminate Moves
Diagnostics
Absolute or Relative Positions

Dimensions

Height 127 mm (5.0 in.)

Width 45.7 mm (1.8 in.)

Depth 114.3 mm (4.5 in.)

Power Requirements

Supply Voltage 24 VDC \pm 10%

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 \leq 0.05% CV within run at full stroke (for 250 µL syringe and above) using deionized water
 \leq 0.1% CV within run at full stroke (with 50 and 100 µL syringes) using deionized water

Accuracy <1.0% deviation from expected at full stroke

Interface

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

Baud rate 9,600 or 38,400 (100 K or 125 K for CAN)

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

Environmental

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

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

Safety and Regulatory Compliance

Tecan Systems operates a manufacturing facility with an ISO 9001 and QSR compliant quality system certified by Underwriter's Laboratories, Inc.

Ordering Information

Cavro XCalibur	RS-232/CAN	RS-485/CAN
3-Port, 1/4-28	732730	732734
3-Port, M6	733031	733029