



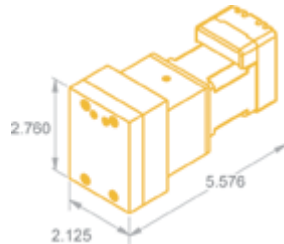
Travcyl™ System Modules

Precision Fluid Delivery requires more than a pump.

Travcyl™ System Modules are complete fluid delivery systems for metering and dispensing. These compact systems precisely move, control, and measure fluid.

Car-May's "traveling cylinder" (Travcyl™) design is an internally-sealed, valveless pump technology which provides absolute control over fluid movement. The hybrid piston-syringe pump design provides exceptional accuracy and durability for demanding applications. Digitally-controlled fluid delivery ensures repeatability and

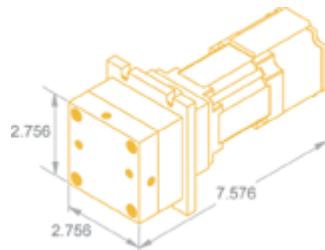
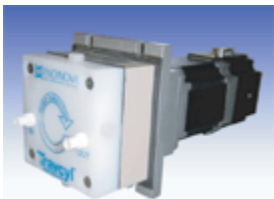
precision which can significantly increase your process control. User calibration is not required, even when flow rates and dispense volumes are changed. Nova System Modules are factory-characterized and individually programmed for optimal metering and dispensing performance.



2-Series

Model 2-1

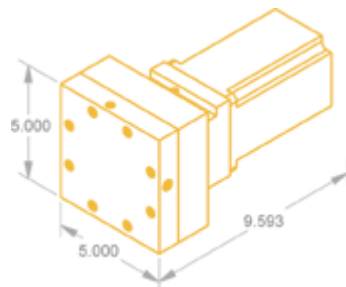
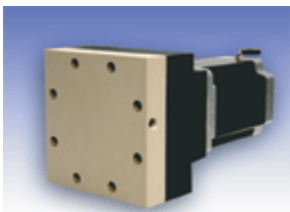
Low-cost metering up to 65 ml/min.



Model 2-4

Dispensing and low-pulsation metering up to 200 ml/min.

Nova 2-4 System includes NovaFlow for near-pulseless metering, and NovaSpense™ for dispensing accuracy up to 0.05% Cv.



16-Series

16-series systems are recommended for applications with higher-viscosity fluids.

Model 16-2

Dispensing and metering up to 640 ml/min.

Model 16-4

Dispensing and low-pulsation metering up to 1500 ml/min.

Nova 16-4 System includes NovaFlow for near-pulseless metering, and NovaSpense™ for dispensing accuracy up to 0.1% Cv.

All dimensions shown in inches



Nova System Communications

To harness precision, you must have control.

That's why our Nova Systems have a flexible communications platform. RS-485 communication capability allows you to easily control the Nova Systems with a ready-made command set. Use a PC, PLC, or any other source that can generate 8-bit ASCII commands to precisely control as many Nova Systems as you need.

LabVIEW™, C++ and Visual Basic compatibility provide the versatility required for simple and effective integration into your process. Connect the Nova System, assign it to an address on your network, and you are ready to go. Up to 250 Modules can be networked together on one RS-485 network using single-byte addressing. Digital I/O and analog capability are standard in Nova Systems and in Basic Systems that use the integrated motor/driver.

Specifications

Nova System Modules	Model 2-4	Model 16-4		
Metering				
Metering Range	200 nl/min - 200 ml/min	1600 nl/min - 1280 nl/min		
Metering Accuracy	< 0.1 %Cv	< 0.1 %Cv		
NovaFlow Metering				
Range	100 nl/min - 20 ml/min	1000 nl/min - 200 ml/min		
Accuracy	< 1 %Cv	< 1 %Cv		
Pulsation (%Cv of total flow at mid range rate)	1-3 %Cv	3-5 %Cv		
NovaSpense™ Dispensing				
NovaSpense™ Dispensing Accuracy	0.1 %Cv	0.1 %Cv		
NovaSpense™ Dispensing Precision	0.05 %Cv	0.05 %Cv		
Motor: Intelligent servo with proprietary firmware for increased dispensing accuracy-and near-pulseless metering.				
Basic System Modules	Model 2-1	Model 2-4	Model 16-2	Model 16-4
Metering**				
Range w/ stepper motor: integrated motor/driver	0.2 - 50 ml/min	.08 - 200 ml/min	3 - 640 ml/min	6 - 1280 ml/min
Range w/ stepper motor: Two-phase 1.8 degree	0.2 - 50 ml/min	6 - 200 ml/min	25 - 640 ml/min	50 - 1280 ml/min
Accuracy	< 2 %Cv	< 2 %Cv	< 2 %Cv	< 2 %Cv
Dispensing				
Accuracy**	1-20 %Cv	1-20 %Cv	1-20 %Cv	1-20 %Cv
Repeatability	< 1 %Cv	< 1 %Cv	< 1 %Cv	< 1 %Cv
General specs for all systems	Model 2-1	Model 2-4	Model 16-2	Model 16-4
Number of Cylinders	1	4	2	4
Displacement volume per cylinder (ml/rev)	0.2	0.2	1.6	1.6
total (ml/rev)	0.2	0.8	3.2	6.4
Max Operating Pressure	125psi (8bar)	125psi (8bar)	125psi (8bar)	125psi (8bar)
Manifold Fittings	1/16" NPT	1/16" NPT	1/8" NPT	1/8" NPT
Custom fittings are available	1/4"-28 UNF	1/4"-28 UNF	1/4" NPT	1/4" NPT
Approx. Dimensions l x w x h (inches)	5.6 x 2.2 x 2.8	7.6 x 2.8 x 2.8	9.6 x 5.0 x 5.0	9.6 x 5.0 x 5.0
Weight (varys depending on motor type)	1.6lb (0.7kg)	3.8lb (1.7kg)	8.6lb (3.9kg)	11.1lb (5.0kg)

Cv: The coefficient of variation, expressed in percent, is used to describe the standard deviation relative to the mean.

Dispensing specs are based on tests with 1.0 ml of RO water at room temperature and 1 atm of pressure.

* please consult Encynova for information specific to your application.

** Specifications are dependent on control system used.

Move it. Control it. Measure it.

Travcyl™ systems are different from basic pumps because they do the work of an entire fluid management system. In addition to pumping fluid, Travcyl™ systems have measurement and flow control capabilities incorporated into the design. No valves or flow meters are needed.



Four Model 2-1 System Modules panel-mounted in a standard 19-inch rack.