



- **NEW** High Resolution LCD color touch screen
- Unparalleled ease-of-use
- Wide flow rate range from 0.54  $\mu$ l/min to 11.70 ml/min
- Quick setup using the built-in syringe library
- Program simple to complex methods without a PC
- Email methods to your peers, download methods and upgrade your software remotely
- Set the start/stop time for the pump
- Holds up to 4 syringes

**DESIGNED  
EXCLUSIVELY FOR ALL OF  
YOUR MICRODIALYSIS  
APPLICATIONS!**

## NEW CMA 4004 Syringe Pump

The CMA 4004 Syringe Pump is a totally new design that is easy-to-use, can hold four-syringes, and provides a very broad flow rate range suitable for microdialysis. In addition the pump can deliver very precise micro-injections that can be repeated in intervals.

Using the high resolution LCD color touch screen makes it very easy to program and recall methods. The direction of flow can easily be reversed for experiments requiring fluid withdrawal.

The CMA 4004 Syringe Pump has the ability to run in a horizontal or vertical orientation. This allows choosing the proper orientation based on the experiment setup.

The CMA 4004 is equipped with RS-485 for daisy chaining pumps and Digital I/O for remote control as well as USB serial port for computer control.

**cma**  
A Harvard Apparatus Company

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## Technical Information

<b>Accuracy</b>	±0.35%
<b>Reproducibility</b>	±0.05%
<b>Syringes (Min./Max.)</b>	0.5 µl/10 ml
<b>Flow Rate:</b>	
Minimum (0.5 µl syringe)	0.54 pl/min
Maximum (10 ml syringe)	11.70 ml/min
<b>Display</b>	4.3" WQVGA TFT Color Display with Touch Screen
<b>Non-Volatile Memory</b>	Touch Screen
<b>Connectors:</b>	Stores all settings
RS-485	IEEE-1394, 6 position
USB	Type B
I/O & TTL	15 pin D-Sub Connector
Footswitch	Mini phono jack
<b>Linear Force (Max)</b>	16 kg (35 lbs) @ 100% Force Selection
<b>Drive Motor</b>	0.9° Stepper Motor
<b>Motor Drive Control</b>	Microprocessor with 1/16 microstepping
<b>Number of Microsteps per one rev. of Lead Screw</b>	20,480
<b>Step Resolution</b>	0.031 µm/µstep
<b>Step Rate:</b>	
Minimum	27.5 sec/µstep
Maximum	26 µsec/µstep
<b>Pusher Travel Rate:</b>	
Minimum	0.068 µm/min
Maximum	71.55 mm/min
<b>Input Power</b>	12-30 VDC (24 V recommended)
<b>Input Power Connection</b>	2.5 mm ID x 5.5 mm OD male plug
<b>Power Supply</b>	100-240 VAC, 50-60 Hz, 8 Watts Universal Power Supply, Use Only a Harvard Apparatus Approved Power Supply and Line Cord
<b>Dimensions, H x W x D</b>	22.6 x 17.78 x 15 cm (9 x 7 x 6 in)
<b>Weight</b>	2.1 kg (4.6 lbs)
<b>Atmospheric Specifications:</b>	
Operating Temperature	4°C to 40°C (40°F to 104°F)
Storage Temperature	-10°C to 70°C (14°F to 158°F)
Storage Humidity	20% to 80% RH, non condensing

## Ordering Information

	Ref.No.
CMA 4004 Syringe Pump Infusion/Withdrawal Programmable, 4 Syringe	CMA 400400

## Accessories

	Ref.No.
Footswitch with Phono Plug	70-2215
Microsyringe 1 ml, Glass	CMA 8309020
Microsyringe 2.5 ml, Glass	CMA 8309021
Microsyringe 5 ml, Glass	CMA 8309022
Microsyringe 10 ml, Glass	CMA 8309023

