

SMC100 Single-Axis Motor Controller/Driver



- Affordable single-axis control
- Advanced Backlash and Hysteresis compensation mode
- RS-232-C or USB communication for easy user interfacing
- Internal RS-485 link allows networking up to 31 controllers
- Convenient multi-axis programming
- Enhanced system safety by reading parameters from Newport ESP compatible stages

The SMC100CC and SMC100PP are single axis motion controllers/drivers for DC servo motors (SMC100CC) and 2-phase stepper motors (SMC100PP) up to 48 VDC at 1.5 A rms. They provide a very compact and low-cost solution for driving most of Newport's stages, including the popular GTS and ILS linear stages, URS rotation stages, and LTA actuators.

Communication with the SMC100 is achieved via the integrated RS-232-C interface, or from a USB port using the external adapter SMC-USB (requires Windows™ operating system). Intuitive, Windows-based software supports all configurations and enables basic motion. Advanced application programming is simplified by an ASCII command interface and a set of two-letter mnemonic commands.

When used with Newport ESP enhanced positioners, the SMC100 will detect the connected product automatically for the most straightforward system configuration. This exclusive Newport feature does not only reduce configuration time, but provides also the best protection of your equipment from any accidental damage.

Up to 31 controllers can be networked through the internal RS-485 communication link. This internal multi-drop full-duplex serial link simplifies communication to several units, without the need for sending "address selection commands". This results in enhanced multi-axes management with improved program readability and faster communication compared to alternative systems based on an RS-232-C chain. The typical execution time for a tell position command, for instance, is only in the range of 10 to 20 ms. The SMC100 also features advanced "multi-axes" commands, such as "Stop all" or "Start a motion of all axes" and performs at a 57,600 baud rate communication speed. Furthermore, for an efficient process control, the SMC100 features dedicated digital outputs for "In Motion" and "Not referenced".



The SMC-RC is an affordable remote control for the SMC100 controller. It features a 16-character LCD for position display and 4 push buttons for +/- jog motion, configuration, homing, motor on and motor off.

Specifications

Description	Single-axis motion controller/driver for DC servo motors (SMC100CC) or stepper motors (SMC100PP)
Controller Capability	SMC100CC: DC servo motors in open or closed loop operation SMC100PP: 2-phase stepper motors, bi-polar mode, open-loop operation
Motor Output Power	SMC100CC: 48 VDC @ 1.5 A rms, 3 A peak SMC100PP: 48 VDC @ 1.1 A peak per phase 100 kHz PWM switching frequency
Control Loop	SMC100CC: Floating point digital PID loop with velocity and friction feedforward, 2kHz servo rate SMC100PP: Open-loop control with 10 kHz analog sine-cos commutation, max. 2000x micro-stepping ratio
Motion	Point-to-point motion with s-gamma motion profiler allowing acceleration and jerk time control; Backlash and Hysteresis compensation mode
Computer Interface	RS-232-C with 57,600 baud rate USB compatible with external adapter SMC-USB (requires Windows™ operating system) RS-485 internal link for chaining up to 31 controllers from the same COM port
Programming	40+ intuitive, 2 letter ASCII commands Command set includes software limits, user units, synchronized motion start, stop all
I/O	4 TTL out (open collector) 4 TTL in (2.21 kΩ pull up to 5 V) 1 analog input, ±10 V, 8-Bit
Dedicated Inputs	RS-422 differential encoder input for A, B, and I, max. 2 MHz rate (SMC100CC only) Forward and reverse limit, home switch and index pulse
Dedicated Outputs	1 open-collector output for "InMotion" 1 open collector output for "NotReferenced"
Display	Two color LED
Internal Safety Feature	Watchdog timer
Software	Windows Utility program LabView™ drivers
Dimensions (W x D x H) (mm)	161 x 140 x 33

Ordering Information

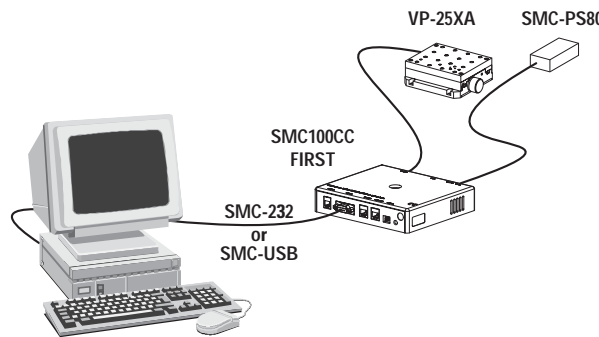
Model	Description
SMC100CC	SMC100 controller for DC servo motors. Includes 0.2m long power and RS-485 cable
SMC100PP	SMC100 controller for 2-phase stepper motors. Includes 0.2m long power and RS-485 cable
SMC-RC	Remote control for SMC100
SMC-PS80	80 W power supply – AC input: 100-240 VAC, 47-63 Hz, 1.9 A max.
SMC-232	RS-232-C cable, 3 m length, DB9F to DB9F
SMC-USB	USB interface, Includes one USB to COM port adapter and one RS-232-C cable; requires Windows™ operating interface system
SMC-CB1 ¹⁾	1 m RS-485 cable
SMC-CB3 ¹⁾	3 m RS-485 cable

1) Only required when RS-485 cable included with SMC100 is too short.

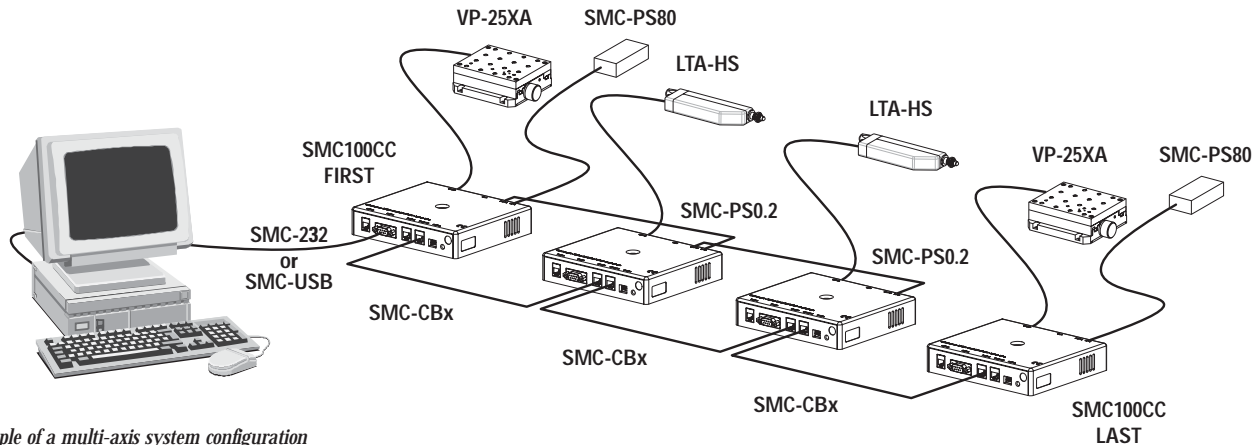
Refer to the Stage and Controller Compatibility Table (see page 842) for a complete list of stages. Listed also is the maximum power consumption for each stage when used at maximum speed, with full load and with maximum acceleration. The SMC100 allows daisy-chaining power from one SMC100 to another one using the power cable included with the controller. But, the total power consumption of all stages connected to the same power supply should not exceed 80 W.

Example: The maximum power consumption of an IMS-V is 55 W. The maximum power consumption of a VP-25XA is 10 W. So, it is possible to connect one IMS-V and up to two VP-25XA to the same power supply. But, it is not possible to connect two IMS-V stages to the same power supply.

Note: Certain stepper motor driven stages, when used with an SMC100PP, can attain speeds of only up to 40% of the rated maximum speed.



Example of a single-axis system configuration



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