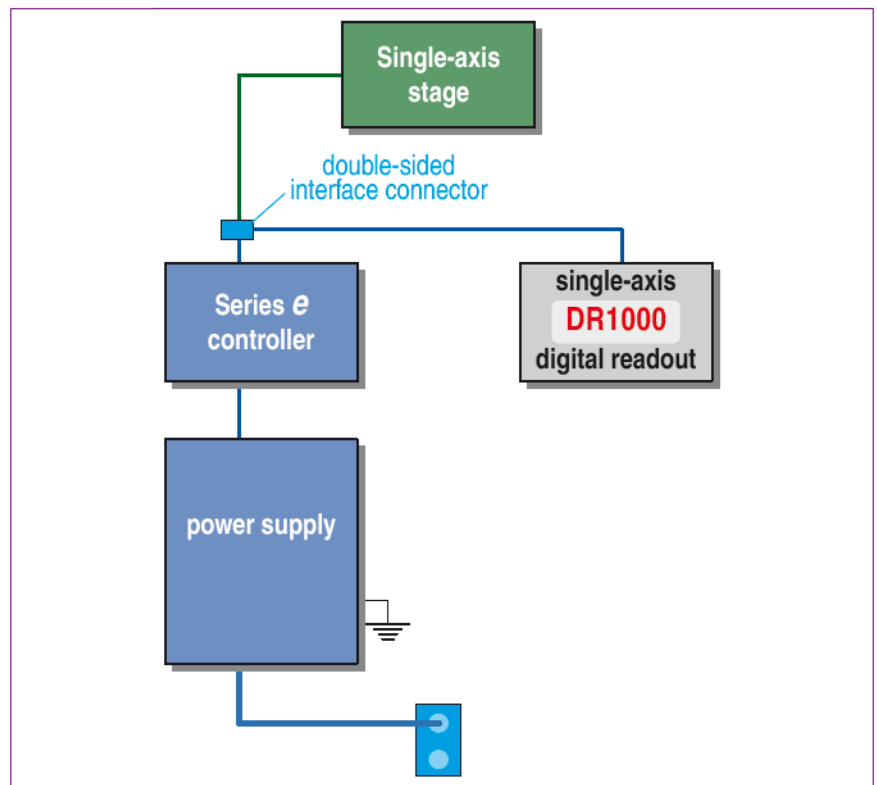## Siskiyou Motion Control Products

Siskiyou translation stages are designed with multiple applications in mind. Siskiyou's motion controllers provide intuitive and accurate control over a full range of actuators, manipulators, and stages. The Siskiyou family of controllers includes single-axis up to 4-axis devices. They utilize a CE certified power supply as a source for clean DC power for the operation of DC servo motors. All cables are shielded, and a central ground is provided to ensure noise-free operation during sensitive electrophysiology experiments. In addition, they are frequently used in controlling microscope, headstage, probe, optics, and fiber optics positioners. Hydraulic controllers for one- or 3-axis control are found in the Life Science section.

All of our controllers come complete with the power supply and power cables needed to operate our motorized equipment. Because each installation is different, grounding cables are not included and must be supplied by the end user.

The MC1000e series of motion controllers uses a closed loop signal between the controller and the motor encoder for smooth, responsive motion. The MC2010 motion controller also uses a closed loop signal between the controller and the motor encoder, but is operated by a user-supplied personal computer. LabVIEW™ is the flexible operating platform used to drive the MC2010. LabVIEW™ is a trade name for National Instruments software, the industry standard in the laboratory automation environment.

Typical Installation Schematic

Single-axis stage

double-sided interface connector

Series *e* controller

single-axis
DR1000
digital readout

power supply

Many of our products utilize symbols or color coding where appropriate. For example, on our motion controllers, a rabbit icon 🐇 is used to show fast, rapid, or high speed settings. This setting is typically used for coarse positioning, where positioning accuracy of 15 μm or greater is adequate.

For slow speed or high resolution settings, a turtle icon 🐢 is used. This setting is typically used for positioning accuracy of 2 μm or less. On manually adjusted stages or manipulators, color coded SoftTouch™ knob caps are used to identify axis adjustment at a glance, especially in low light conditions.

The DR1000 is an example of our Modular by Design™ philosophy. This standalone digital readout is compatible with all of our MC1000e series controllers. The DR1000 is a cost-effective alternative to a PC operated controller — you don't need an active computer to display position. A DR1000 is shown in the typical installation schematic on page 20.

For sensitive electrophysiology experiments it is critical to ground electrical connections. All our controllers come with grounding lugs on the junction box. It is important to read the instruction manual completely before attempting to use any controller or related equipment.

Every effort has been made to protect the equipment and the user from accidental shock. If a saline solution used in electrophysiology experiments is spilled on the control pendant of a   series controller, it is possible that the circuitry would be damaged but highly unlikely that the user would be shocked. As with any accident, unplug the equipment. See Ordering Information for instructions on returning the unit to Siskiyou for repair.

Siskiyou controllers are compatible with other comparable DC servo devices. Please contact us for compatibility specifications.
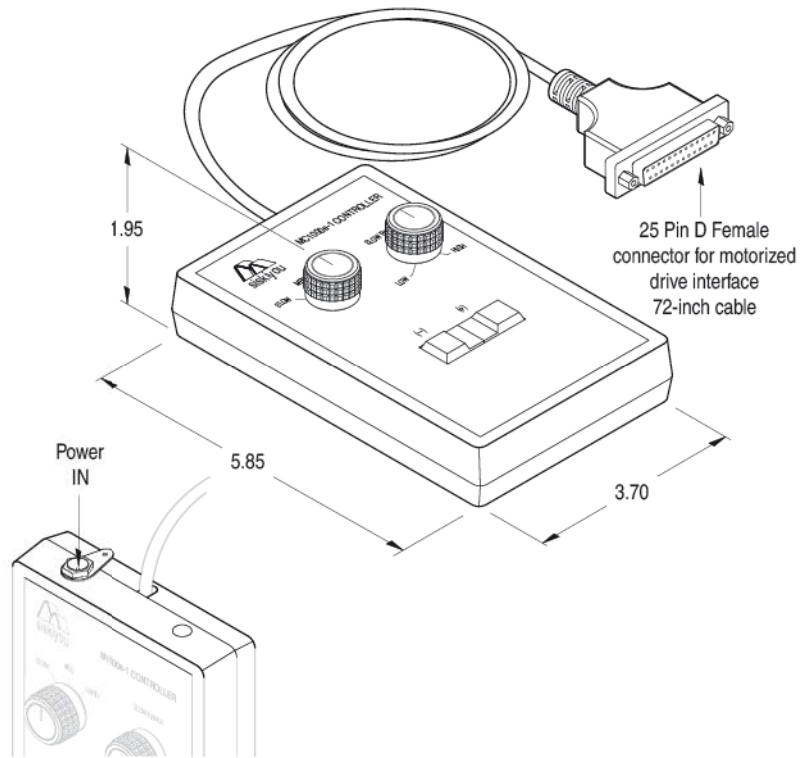
Motion Control

Siskiyou controllers are compatible with other comparable DC servo devices. Please contact us for compatibility specifications.

Motion Control

MC1000e-1

Motion Control

Closed Loop Controllers   CE Certified

1 Axis Push-Button Control / MC1000e-1

MC1000e-1, MC1000e and MC1100e pendant dimensions are identical

1.95

Power IN

5.85

3.70

25 Pin D Female connector for motorized drive interface 72-inch cable

Product Features

■ Economical DC controller
■ Variable, high resolution speed control
■ Preset rapid and medium speed setting
■ User set TARGET point (MC1100e)

Performance Specifications

Minimum controllable motion	0.2 μm
Power requirements	110–230 VAC, 50/60 Hz

Related Products

MX1641 micromanipulators	167
800 and 7000 series translation stages	63
800 and 7000 series actuators	93
100cri stages	64
200cri stages	64
DR1000 digital readout	31

Order Information

1-axis, closed loop controller	MC1000e-1
4-axis, closed loop controller	MC1000e
4-axis, closed loop controller w/ TARGET	MC1100e

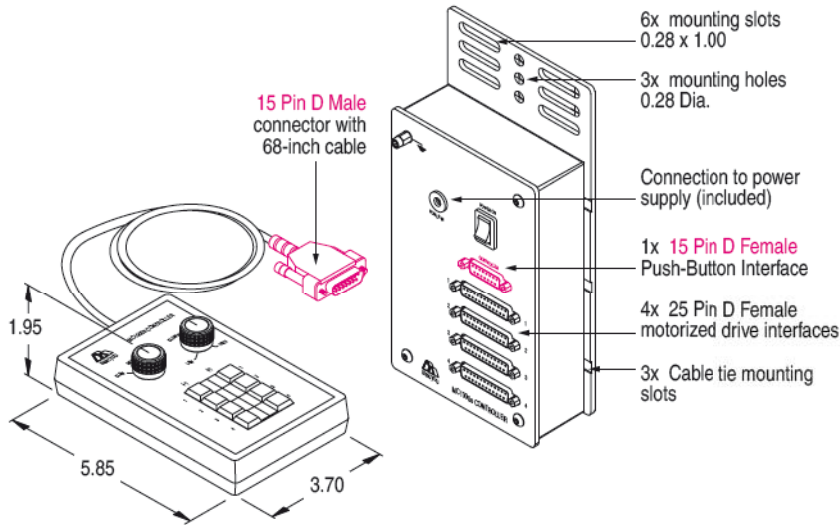### 1 and 4 Axis Push Button Controllers

The MC1000e and MC1100e are simple push-button controllers with submicron positioning capability, and compatible with our 800 and 7000 series actuators, manipulators, and stages. These controllers have two preset speed settings: rapid (1.7 mm/second) and medium (300 μm/second). The third speed selector (slow) has a variable 330° potentiometer that enables settings from high speed (50 μm second) to low speed (2 μm/second). With the speed selector set at the slowest settings, consistent 0.2 μm moves are easily made by the simple bump of an axis button. The controller uses encoder feedback from the motor to drive the device. This encoder coupling enables the use of the DR1000 digital readout for repeated positioning requirements. MC1000e and MC1100e use a CE certified power supply as their source for clean DC power.

The MC1100e has a target/retract feature on one axis. Target/retract allows a user to set a target location at a desired point. When it becomes necessary to back away from the experiment area, the user simply presses the RETRACT button on the controller. The stage/actuator plugged into that axis then automatically retracts to its full negative limit. The user can then return to the previously set position by simply depressing the TARGET button.

All controller cables are shielded and fitted with a central ground lug located on the junction box to ensure noise-free operation during sensitive electrophysiology experiments.

Closed Loop Controllers

CE Certified

4 Axis Push-Button Control / MC1000e

MC1000e and MC1100e component dimensions are identical / Differences are highlighted in ■ ■

15 Pin D Male connector with 68-inch cable

1.95

5.85

3.70

6x mounting slots 0.28 x 1.00

3x mounting holes 0.28 Dia.

Connection to power supply (included)

1x 15 Pin D Female Push-Button Interface

4x 25 Pin D Female motorized drive interfaces

3x Cable tie mounting slots

MC1000e

4 Axis Push-Button Control with Target Functionality / MC1100e

MC1000e and MC1100e component dimensions are identical / Differences are highlighted in ■ ■

25 Pin D Female connector with 72-inch cable

User set Target feature

1.25, typ.   1.00, typ.

.33

.50, typ.

1x 25 Pin D Male Push-Button Interface

8.95

4.50

1.89

MC1100e

Closed Loop Controllers

CE Certified

1–4 Axis Single Dial / MC1000e-R1/4T

MC1000e-R1/4T

Slots typical on each side for 1/4-20 or M6
cap screw mounting.
Fits up to 5.00-inch (125.0mm) or
4.00-inch (100.0mm) table hole pattern.

Includes a 60-inch controller
connection cable

Reverse polarity switch,
4 places

25 pin D sub connector

1–4 Axis Micrometer Dial Control, with Target and Retract Feature

The MC1000e-R1/4T 4-axis dial controller acts as a remote micrometer control with a user selected target feature for 800 and 7000 series actuators, manipulators, and stages. The MC1000e-R1/4T uses encoder feedback from our closed loop devices to create an electronic link between the controller dial and the device being driven. This direct coupling to the encoder ensures smooth and coordinated motion between the controller and the drive. The encoder coupling enables the use of the DR1000 digital readout for repeated positioning requirements.

A four position rotary switch, mounted on top of the controller, is used to select the desired axis to control. A two-position rocker switch is conveniently located on the top of the controller to allow for rapid and slow travel speed. The rapid 🐇 setting is set to maximize speed (1.5 mm/second) when the dial is turned at 240 RPM. The slow 🐢 setting is set to maximize resolution (0.2 µm) but still allow coarse positioning (45 µm/second).

The TARGET/RETRACT allows the user to set a target location at a desired point. When it becomes necessary to back away from the experiment area, the user simply depresses the RETRACT button on the controller. The stage/actuator plugged into that axis (No.1), then automatically retracts to its full negative limit. The user can then return to the previously set position by simply depressing the TARGET button. The MC1000e-R1/4T uses a CE certified power supply as its source for clean DC power. All cables are shielded and a central ground lug is located on the junction box to ensure noise-free operation during sensitive electrophysiology experiments.
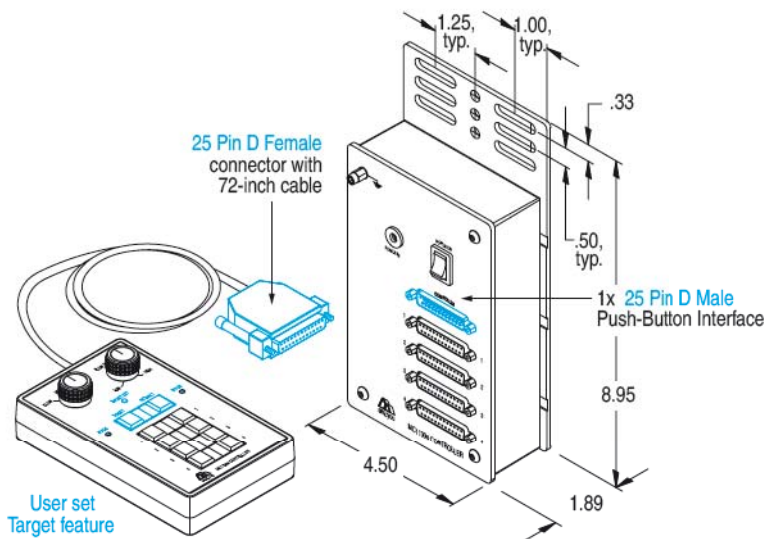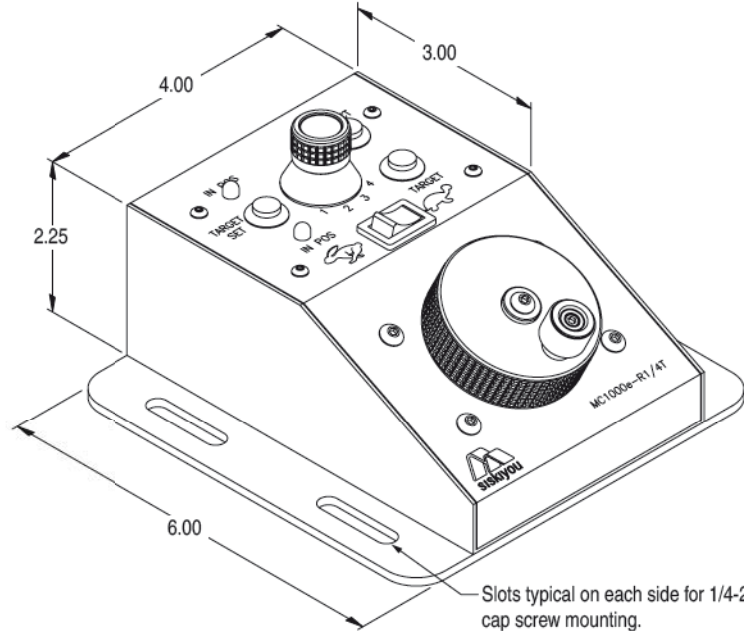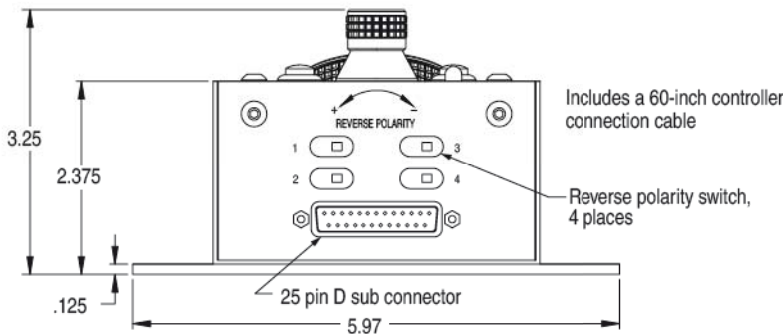
Product Features

- Multi-axis, single dial control
- Remote micrometer control
- High and low speed settings

Performance Specifications

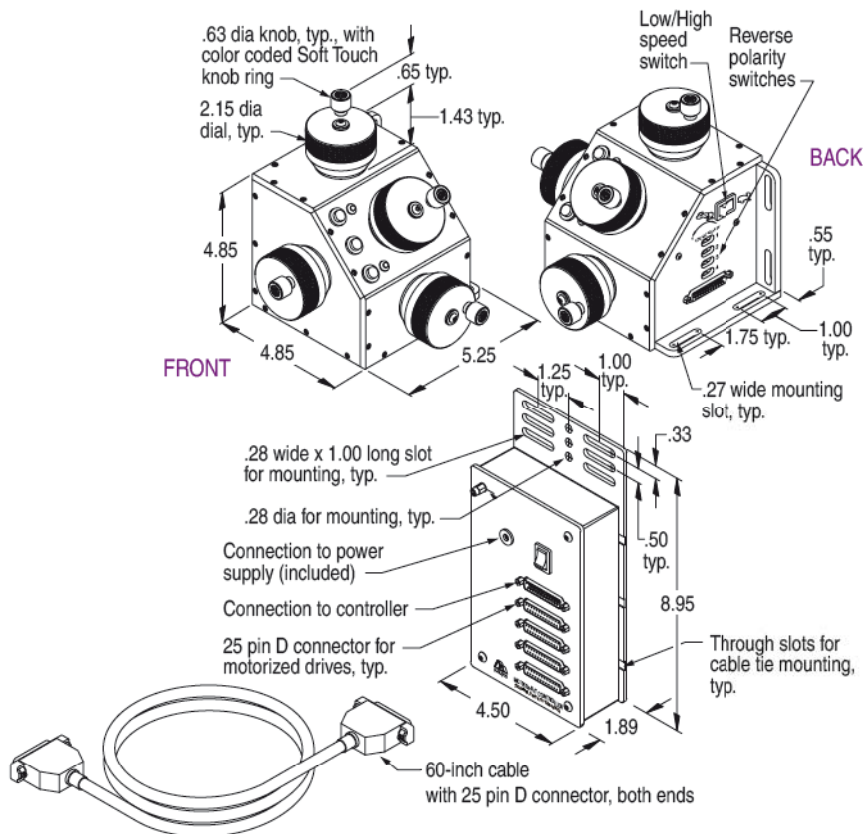|	
Minimum controllable motion	0.2 µm
Maximum speed	1.5 mm/sec
Power requirements	110–230 VAC, 50/60 Hz

Related Products

motorized micromanipulators	beginning 166
800 and 7000 series actuators	93
800 and 7000 series translation stages	63
100cri stages	64
200cri stages	64
DR1000 digital readout	31

Order Information

1–4-axis dial controller	MC1000e-R1/4T
junction box for MC1000e-R/T	JB-MC1000e-R/T

Closed Loop Controllers

4 Axis Dial / MC1000e-R/T

.63 dia knob, typ., with color coded Soft Touch knob ring

2.15 dia dial, typ.

.65 typ.

1.43 typ.

Low/High speed switch

Reverse polarity switches

BACK

4.85

FRONT

4.85

5.25

.55 typ.

1.00 typ.

1.75 typ.

.27 wide mounting slot, typ.

1.25 typ.

1.00 typ.

.28 wide x 1.00 long slot for mounting, typ.

.33

.28 dia for mounting, typ.

Connection to power supply (included)

Connection to controller

25 pin D connector for motorized drives, typ.

.50 typ.

8.95

Through slots for cable tie mounting, typ.

4.50

1.89

60-inch cable with 25 pin D connector, both ends

MC1000e-R/T

4 Axis Micrometer Dial Control, with Target and Retract Feature

The MC1000e-R/T 4-axis dial controller acts as a remote micrometer control with a user selected target feature for 800 and 7000 series actuators, manipulators, and stages. The MC1000e-R/T uses encoder feedback from our closed loop devices to create an electronic link between the controller dial and the device being driven. This direct coupling to the encoder ensures smooth and coordinated motion between the controller and the drive. The encoder coupling enables the use of the DR1000 digital readout for repeated positioning requirements.

A two-position rocker switch is conveniently located on the side of the controller to allow for rapid and slow travel speed. The rapid ⚡ setting is set to maximize speed (1.5 mm/second) when the dial is turned at 240 RPM. The slow ⚡ setting is set to maximize resolution (0.2 µm) but still allow coarse positioning (45 µm/second).

The TARGET/RETRACT allows the user to set a target location at a desired point. When it becomes necessary to back away from the experiment area, the user simply depresses the RETRACT button on the controller. The stage/actuator plugged into that axis (No.1), then automatically retracts to its full negative limit. The user can then return to the previously set position by simply depressing the TARGET button. The MC1000e-R/T uses a CE certified power supply as its source for clean DC power. All cables are shielded and a central ground lug is located on the junction box to ensure noise-free operation during sensitive electrophysiology experiments.

Product Features

- 4-axis intuitive dial control
- Remote micrometer control
- High and low speed settings

Performance Specifications

Minimum controllable motion	0.2 µm
Maximum speed	1.5 mm/sec
Power requirements	110–230 VAC, 50/60 Hz

Related Products

MX7500 micromanipulator	170
MX7600 micromanipulator	169
831 stage	63
800 series actuators	93
100cri stage	64
200cri stage	64
DR1000 digital readout	31

Order Information

4-axis dial controller	MC1000e-R/T

Motion Control

Closed Loop Controllers

CE Certified

3 Axis Joystick Control / MC1000e-J

MC1000e-J

Product Features

- 3-axis, proportional speed control
- Ideal for XYZ motorized manipulator control
- High and low speed settings

Performance Specifications

Minimum controllable motion	1 μm
Power requirements	110–230 VAC, 50/60 Hz

Related Products

Order Information

3-axis joystick controller	MC1000e-J
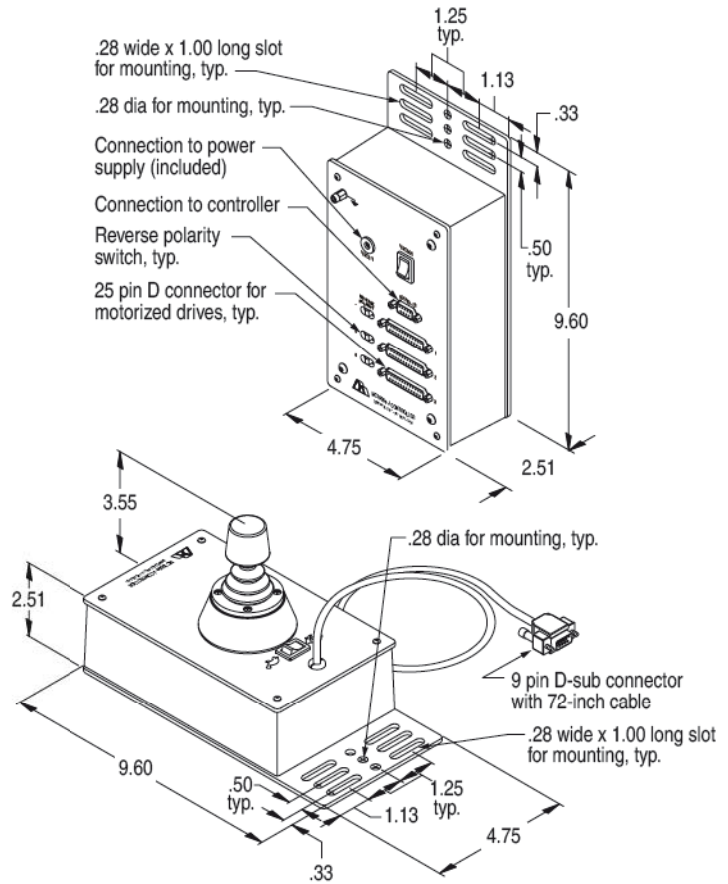
3 Axis Joystick Control

The MC1000e-J joystick controller is designed for micron-scale positioning of our 800 and 7000 series actuators, manipulators, and stages.

The joystick control is proportional from slow to high through the travel range of the joystick motion. A two-position rocker switch is conveniently located on the top of the controller. The rapid 🐇 setting is set to maximize speed (1.7 mm/second) when the joystick is moved to its farthest position from center. The slow 🐢 setting is set to maximize resolution (0.2 μm, 30 μm/second).

Polarity switches on the junction box allow the joystick motion to be set to match the direction of travel of the stage being driven. This feature ensures intuitive interaction between the joystick operator and the operation. The controller uses encoder feedback from the motor to drive the device. This encoder coupling enables the use of the DR1000 digital readout for repeated positioning requirements.

The MC1000e-J uses a CE certified power supply as its source for clean DC power. All cables are shielded and a central ground lug is located on the junction box to ensure noise-free operation during sensitive electrophysiology experiments.

Closed Loop Controllers

CE Certified

4 Axis USB 2.0 Computer Interface Control / MC2010

Cabinet dimensions:
5.20 H x 17.56 W x 10.00 D

19.00

18.30 from mounting
hole to mounting hole,
4 places

2.25

MC2010 CONTROLLER

MC2010

MC2010 CONTROLLER

back

Motor drive
connection, typ

USB connection
to computer

Inlet power socket
IEC 320 C14
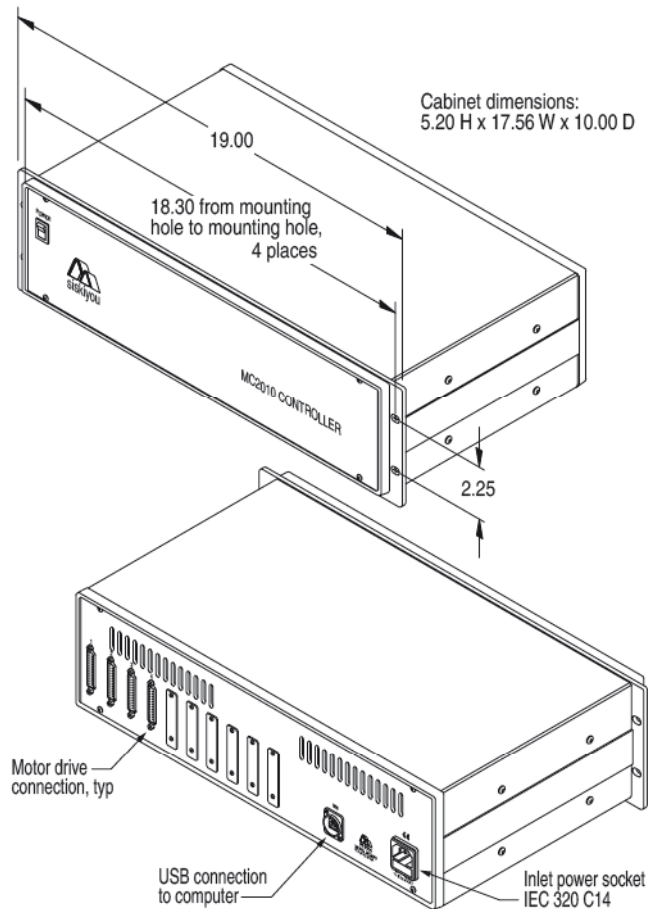
Computer Interface Control

The MC2010 is a LabVIEW™ driven interface for our 800 and 7000 series actuators, manipulators, and stages. It is designed to be connected to the customer-supplied computer *via* the USB com port. The standard configuration is a 4 axis system and is capable of up to 10 axes of control.

The supplied LabVIEW™ executable has the ability to drive the stage/actuator with an external device. A traditional USB type PC game controller may be used to coarsely position the device, as well as define coordinate points to record and playback. The software's versatile parameter screens allows the user to custom fit AXIS HOME, ABSOLUTE POSITION, ZERO SET, VELOCITY, and INCREMENTAL AXIS JOG buttons. Interface commands are given in microns and are capable of 0.1 µm resolution when used with our motorized systems. The MC2010's industry standard 19-inch rack mounted cabinet comes with power supply and USB interface cords. The software is supplied on a CD.

Product Features

- LabVIEW™ Operating Software
- 4-axis, closed loop control
- USB I/O interface
- 19-inch Rack Mount Formfactor

Performance Specifications

Minimum controllable motion	0.1 µm
Maximum speed	1.7 mm/sec
Power requirements	110–230 VAC 50/60 Hz

Related Products

MX7500 micromanipulator	170
MX7600 micromanipulator	169
831 stage	63
800 series actuators	93
100cri stage	64
200cri stage	64

Order Information

4-axis, computer interface controller	MC2010

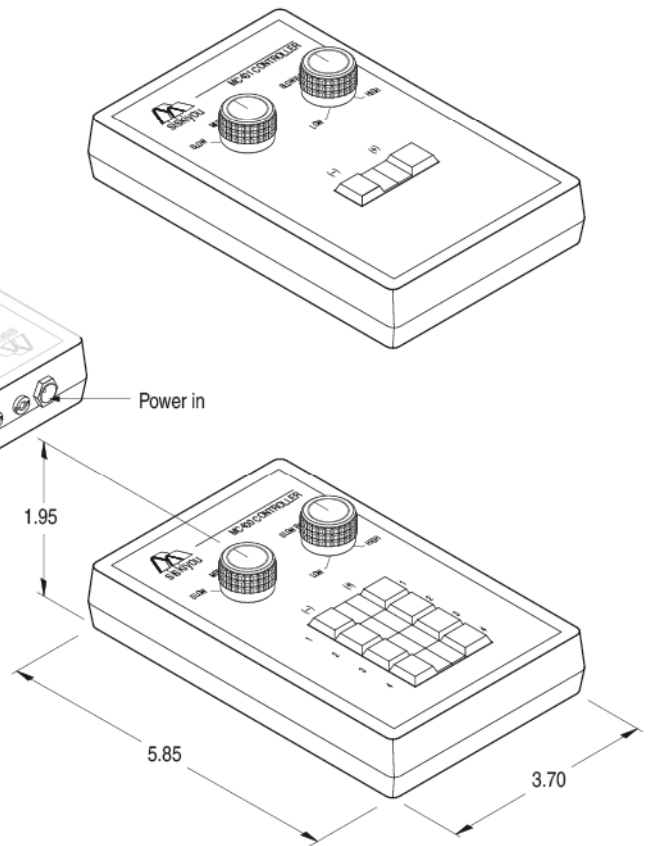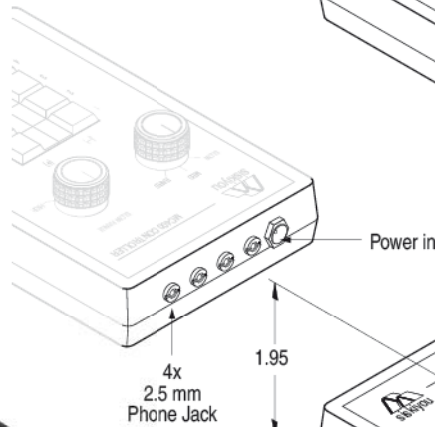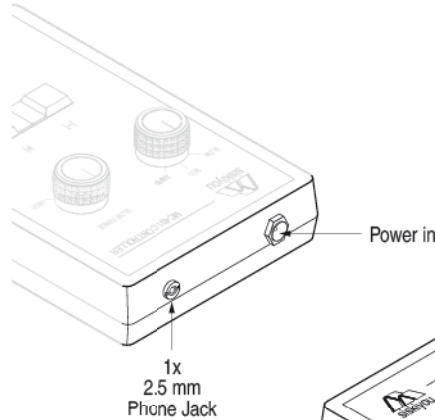Motion Control

Open Loop Controllers

1 and 4 Axis Push-Button Control / MC401, MC400

MC401

MC400
shown with 420 series actuator,
not included

Product Features

■ Economical DC controller
■ Variable, high resolution speed control
■ Preset rapid and medium speed settings

Performance Specifications

with 400 series actuators under 8 pounds load
Maximum speed:

Rapid	800 µm/sec
Medium	100 µm/sec
Slow Range / High	35 µm/sec
Slow Range / Low	5 µm/sec
Power requirements	110 VAC, 50/60 Hz

Related Products

400 series actuators   90
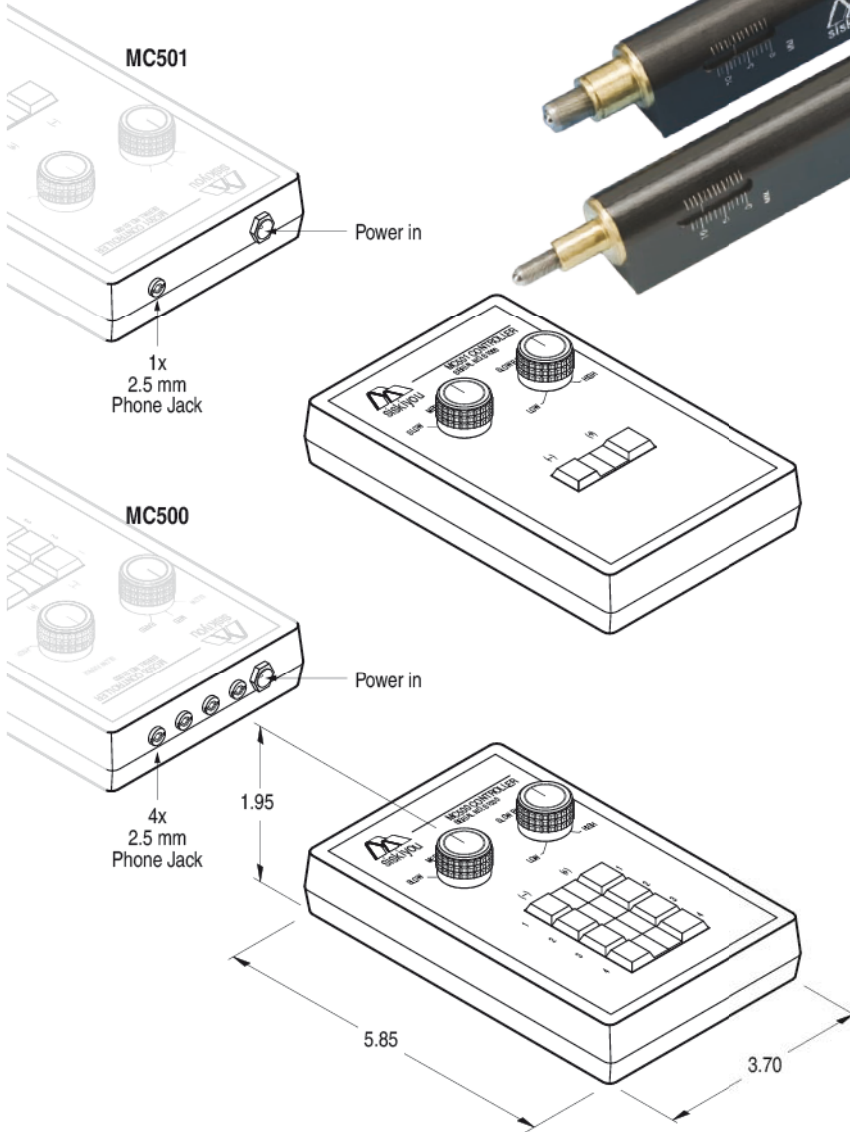
Order Information

1-axis, open loop controller	MC401
4-axis, open loop controller	MC400

1 and 4 Axis Push Button Control

The MC401 and MC400 open loop DC controllers are designed to drive our 400 series actuators. These controllers allow the user to operate from one to four of our 400 series actuators of any travel length. Both single and four-axis controllers have two preset speed settings: rapid (0.8 mm/second) and medium (100 µm/second). A third speed selection (slow) has a variable 330° potentiometer that enables settings from high speed (35 µm/second) to low speed (5 µm/second). With the speed selector set at the slowest settings, consistent 1.0 µm moves are easily made by the simple bump of an axis button. The MC400 and 401 controllers use wall mounted DC power supplies as their source. These noise-free DC controllers, along with our 400 series drives, can be used in proximity to electrophysiology experiments.

Open Loop Controllers

1 and 4 Axis Microdrive Push-Button Control / MC501, MC500

MC501

Power in

1x
2.5 mm
Phone Jack

MC500

Power in

1.95

4x
2.5 mm
Phone Jack

5.85

3.70

*MC501
shown with 500 series actuators, not included*

MC500

Product Features

- Economical DC controller
- Variable, high resolution speed control
- Preset rapid and medium speed settings
- Variable, "slow" speed range

Performance Specifications

Maximum speed	
Rapid	300 µm/second
Medium	100 µm/second
Slow Range / High	30 µm/second
Slow Range / Low	10 µm/second
Power requirements	110 VAC, 50/60 Hz

Related Products

500 series actuators	91
500MM series actuators	91

Order Information

1-axis, open loop microdrive controller	MC501
4-axis, open loop microdrive controller	MC500

1 and 4 Axis Microdrive Push Button Control

MC500 and MC501 open-loop DC controllers are specifically designed to drive series 500 and 500MM actuators. The 4-axis MC500 controller allows a user to operate as many as four series 500 actuators of any travel length. It has two preset speed settings: rapid (0.8 mm/ second) and medium (100 µm/second). The third speed selector (slow) has a variable 330° potentiometer that enables settings from high speed (35 µm/ second) to low speed (5 µm/second). With the speed selector set at the slowest settings, consistent 1.0 µm moves are easily made by the simple bump of an axis button. The MC500 controller uses a wall mounted DC power supply as its source. This noise-free DC controller, along with our 500 series drives, can be used in proximity to electrophysiology experiments.

Motion Control

Switching and Junction Boxes / SB and JB Series

SB-MC1000e Series

back

Connection to
Junction Box,
4 places,
available with
9, 15 or 25
pin connectors

Connection
to controller

Dial for switching to
different junction boxes

Application

JB-MC1100e

SB-MC1100e

MC1100e

Product Features

- Control 2 to 4 micromanipulators with 1 controller
- Cost-effective and easy to assemble
- No position loss during switching
- Available in 9, 15 or 25 pin connector interface

Related Products

Order Information

Switch Boxes

for MC1000e	SB-MC1000e
for MC1100e	SB-MC1100e
for MC1000e-R/T	SB-MC1100e
for MC1000e-R1/4T	SB-MC1100e
for MC1000e-J	SB-MC1000e-J

Junction Boxes

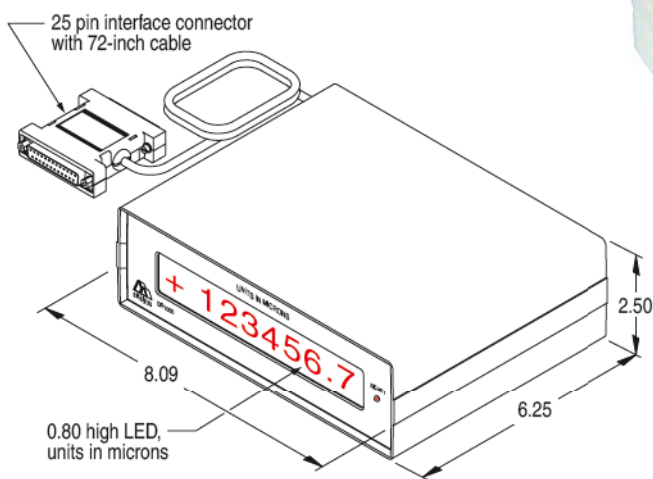|	
for MC1000e	JB-MC1000e
for MC1000e-R/T	JB-MC1000e-R/T
for MC1000e-R1/4T	JB-MC1000e-R/T
for MC1100e	JB-MC1100e
for MC1000e-J	JB-MC1000e-J
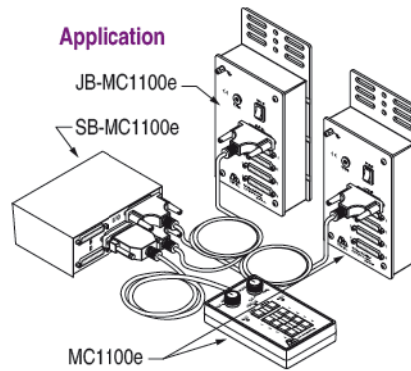
Switching and Junction Boxes

Our switching box allows control of one to four 4-axis micromanipulators by one controller (MC2010 excluded). The basis of the design is simple and requires only an extra controller junction box for each added micromanipulator or motor drive group (up to four per group). Junction boxes must be purchased separately, however this is more cost-effective than individual handheld control units. When used with the MC1100e controller, the user can save a "target" location for each manipulator independent of the operation of the others even after switching between micromanipulators. The DR1000 is also compatible with this switching box and will allow the user to reposition without the use of an expensive computer based controller. The switch box comes with enough cables to attach four junction boxes, and all connections are shielded.

Motion Control

Accessories and Hardware

Digital Readout / DR1000

25 pin interface connector with 72-inch cable

2.50

8.09

6.25

0.80 high LED, units in microns

+ 123456.7

DR1000

Product Features

- Economical position readout solution
- Large, easy to read, digital display
- Compatible with all *e* series controllers

Performance Specifications

Minimum travel increment	0.1 μm
Maximum travel display	500,000 μm
Accuracy	99

Related Products

MC1000e-1 motion controller	22
MC1000e-R1/4T motion controller	24
MC1000e-J motion controller	26
MC1000e motion controller	22
MC1100e motion controller	22
MC1000e-R/T motion controller	25

Order Information

single-axis digital readout	DR1000

The DR1000 Digital Readout provides an accurate, highly visible display for axis position. The digital readout may be installed on any of our *e* series controllers and is connected in series via a double-sided connector between the controller junction box and the device D connector. Each digital readout reads a single axis position. Additional units may be used to monitor multiple axes. The DR1000 reads from 50 mm down to 0.1 μm and has a face mounted ZERO SET button.

The DR1000 receives clean DC power through the junction box of the MC1000e series controller. All cables are shielded to ensure noise-free operation during sensitive electrophysiology experiments. The slim and light weight case may be mounted separately or stacked on top of each other in multiple axis applications

Reverse Polarity Adapter / RPA

RPA interface connector plugs into any controller 25-pin motor drive socket, except axis one on the MC1100e

Controller sold separately

Motor drive 25-pin connector

2.10

.65

2.20
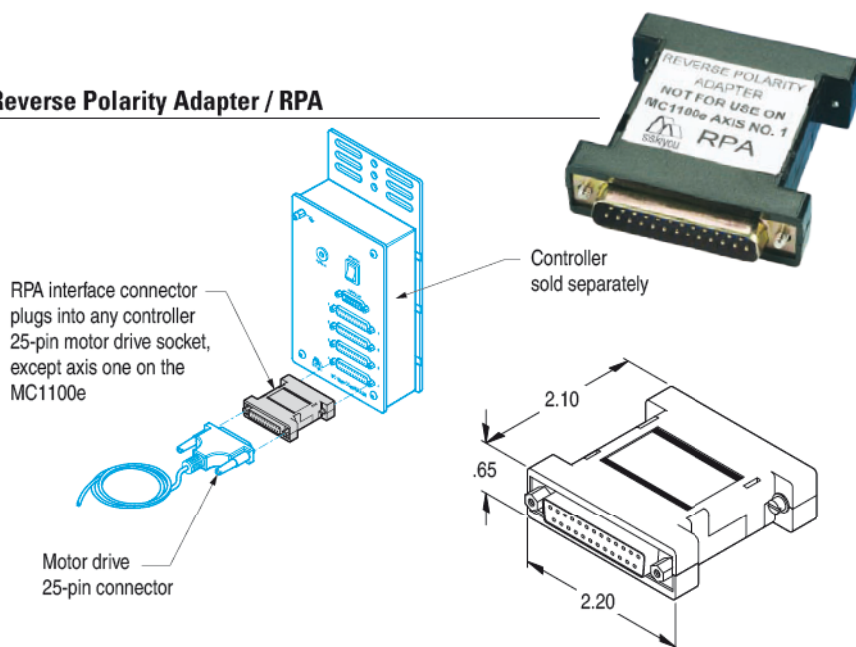
Product Features

- Economical solution to reversing polarity
- Intuitive controller adapter
- Maintains gender orientation

Performance Specifications

Pinout pattern	standard 25-pin "D" connector Male to Female
Power requirements	12 volt DC maximum

Related Products

MC1000e-1 motion controller	22
MC1000e motion controller	22
MC1100e motion controller	22

Order Information

reverse polarity adapter	RPA

The RPA is an interface plug that reverses the motion direction of stages and actuators. Used to reverse axis direction relative to controller. Use on MC1000e-1, MC1000e, and MC1100e (except axis number 1).

Motion Control