

Multidrive

Product Features & Description

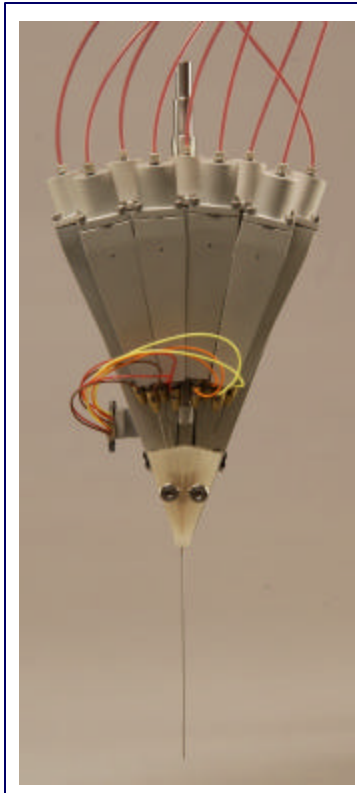
INSTRUMENTATION AND MICROELECTRODES FOR NEUROSCIENCE RESEARCH

The MCM-4 controller module and MCU-5/MCU-4 hydraulic coupling units are used to expand the 50-16-1-01 MCM of the Motorized Drive to position up to 8 electrodes in independent and synchronous combinations. Future expansions will be possible as technology develops.

The MCM-4 controller easily connects to the MCM with the provided communication cable through ports on the rear of the unit. The MCM-4 is used to control the four electrode positioning motors of the MCU-5, or an MCU-4 when more than four channels are used. A dedicated cable from the MCU-5 is connected to the motor port on the MCM to control a main drive channel for positioning all the electrodes and guide tube simultaneously.

The MCU-5 consists of a remote motor unit containing 5 encoder-read stepper motors that drive five hydraulic master cylinders. The master cylinders are connected to the 5 cylinders of the electrode positioning stage by 2.4 m (8') of hydraulic tubing. The MCU-5 is separated from the control module by 3.1m (10') of cabling. (Other lengths of cable and tubing may be specified.) The remote separation of the MCU-5 eliminates artifacts due to mechanical vibration and electrical noise from the motors. Another advantage of this setup is that the electronic cable can be connected through a commutator if the apparatus holding the preparation must be able to move, e.g. rotate.

The MCU-4 is identical to the MCU-5 except for an absence of the main drive channel. The MCU-4 is used to add an additional four drives directly to the MCU-5 setup. The electrode positioning stage of the MCU-4 directly attaches to the face of the MCU-5 electrode positioning stage. An additional MCM-4 controls these drive channels.



Pictured above, is the MCU-5 coupled with the MCU-4 allowing up to 8 electrodes to be positioned independently or in synchronous combinations.

Features

- Functions in conjunction with the MCM controller of the Motorized Microdrive to position up to 8 electrodes in synchronous or independently controlled combinations.
- Position is read from a precision magnetic encoder attached to the motor.
- Variable step length — In step mode, 1, 5, and 10 step lengths are available.
- In continuous mode, rates between 1 and 500 microns/sec. are available.
- Enabling/disabling the channels performed by remote or front panel switches. Front panel only when using the ARC-01 remote.
- Controlled via hand-held Push Button Remote (DRC-01), Knob Function Remote (ARC-01), or PC-controlled through Virtual Remote software (VRC-01), operated via a provided serial port and cable.
- Electrode stage separated from motor stage of the MCU-5 or MCU-4 by 2.5m (8') hydraulic line eliminating artifacts due to motor noise or vibration.
- Compact MCU-5 or MCU-4 Hydraulic Coupling Unit is separated from MCM -4 via 3.1m (10') cable (other lengths can be specified) to allow for noise reduction and commutator applications.
- MCM-4 module will stand alone on a desktop, or can be mounted in an optional frame for instrument rack use.
- Expandable modular design. Ability to expand to more than 8 electrodes as technology develops.

Multidrive

Description, *cont.* & Specifications

INSTRUMENTATION AND MICROELECTRODES FOR NEUROSCIENCE RESEARCH

The components are operated using one of the three MCM hand-held remote controls. The DRC-01 remote can be used to control the mode, direction, and rate of travel, as well as setting the zero reference point utilizing membrane-type push buttons. The DRC-01 is also capable of enabling and disabling the drives on the remote in the Special Function mode. The ARC-01 Remote uses a spring-loaded knob to position the drive. Rotating the knob from its center position causes the drive to retract or advance. The distance from center determines the rate up to 500 microns/sec. The "Zero" button on the remote sets the reference position. Enabling and disabling the individual drives can be accomplished using switches on the front panel with either remote. Computer operated positioning and selecting can be accomplished via our VRC-01 virtual remote software kit. The VRC-01 performs all the functions of the DRC-01 through a PC (Windows 95, 98, 2000, NT compatible).

FHC offers as an accessory the SAF rack frame (cat # 55-11-0) for conveniently installing the Multidrive components into a standard instrument rack.

Specifications:

MCM-4:

Display: 8 characters, 1cm height, red, 1 micron resolution

Power Requirements: 85-265 VAC

Dimensions: Height: 13cm (5.22") Width: 10cm (4.20") Length: 25cm (9.75")

Weight: 1.48 Kg (3.26 lbs)

Mounting Options: Tabletop, 4 rubber feet prevent sliding. Rack mountable with SAF-08 Frame (Cat. #55-11-0 Available separately)

Mode of Operation: Step or Continuous (Selectable) Continuous only when using ARC-01 Remote

Software: Windows 95, 98, 2000, NT compatible

Cable: Noise shielded 9 pin female DIN (both ends), straight through, 3m (9.8')

MCU-5:

Dimensions: Height: 2.5cm (1") Width: 8cm (3") Length: 15cm (6")

Weight: .57 Kg (1.26 lbs)

Cable Length/Diameter: 3m length (9.8') X .35cm O.D. (0.14")

Connector: 9 pin indexed, color coded Blue with strain relief

MCU-4:

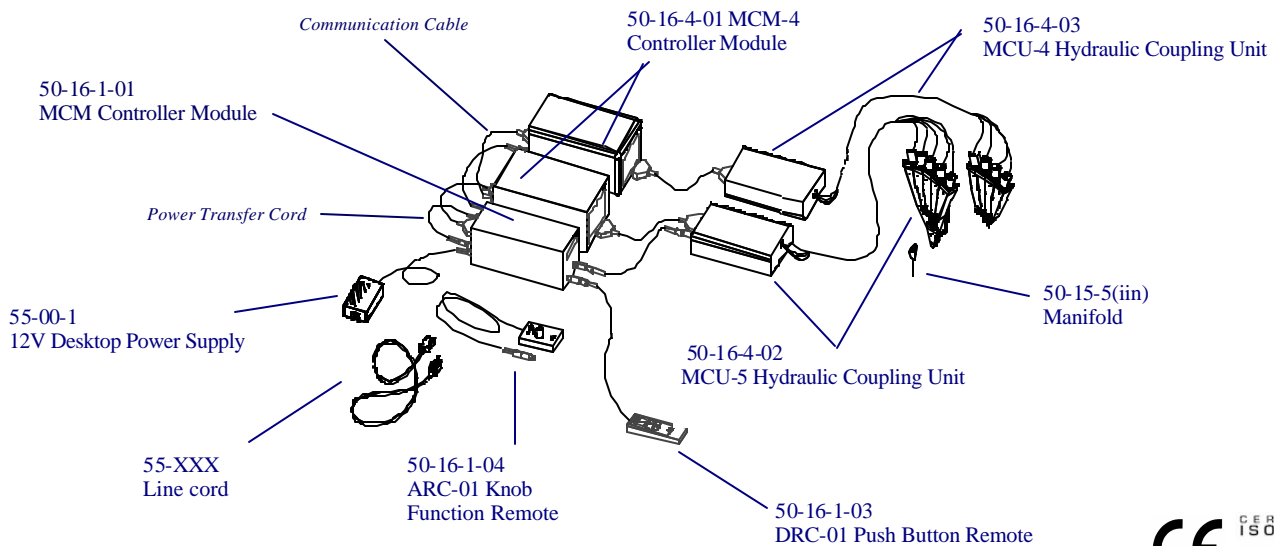
Dimensions: Height: 2.5cm (1") Width: 8cm (3") Length: 15cm (6")

Weight: .57 Kg (1.26 lbs)

Cable Length/Diameter: 3m length (9.8') X .35cm O.D. (0.14")

Connector: 9 pin indexed, color coded Blue with strain relief

8 Channel System



Multidrive

Ordering Information

INSTRUMENTATION AND MICROELECTRODES FOR NEUROSCIENCE RESEARCH

Ordering Information:

For 4 electrode systems

- 1 ea. 50-16-1-01 MCM Controller Module
- 1 ea. 50-16-4-01 MCM-4 Controller Module
- 1 ea. 50-16-4-02 MCU-5 Coupling Unit
- 1 ea. Remote Control option from the following:

- 50-16-1-03 DRC-01 Push Button Remote
- 50-16-1-04 ARC-01 Knob Function Remote
- 50-16-1-05 VRC-01 Virtual Remote Software Kit

- 1 ea. 55-00-1 12V Desktop Power Supply
- 1 ea. 55-XXX Line cord, specify country codes from chart
- 1 ea. 50-15-4(iin) Manifold

For 8 electrode systems

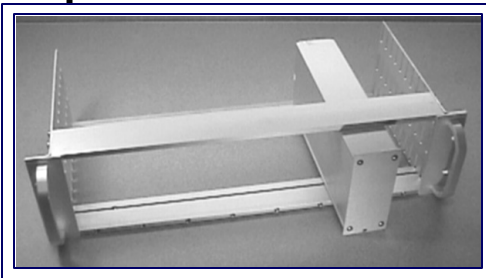
- 1 ea. 50-16-1-01 MCM Controller Module
- 2 ea. 50-16-4-01 MCM-4 Controller Module
- 1 ea. 50-16-4-02 MCU-5 Coupling Unit
- 1 ea. 50-16-4-03 MCU-4 Coupling Unit
- 1 ea. Remote Control option from the following:

- 50-16-1-03 DRC-01 Push Button Remote
- 50-16-1-04 ARC-01 Knob Function Remote
- 50-16-1-05 VRC-01 Virtual Remote Software Kit

- 1 ea. 55-00-1 12V Desktop Power Supply
- 1 ea. 55-XXX Line cord, specify country codes from chart
- 1 ea. 50-15-5(iin) Manifold

Available Accessories:

- 55-11-0 SAF Rack Frame (pictured below)



*SAF-08 Rack Frame
For Stand-Alone
modules (shown with a
neuroCraft type 2
module)*

Illustrative Procedure

1. Set up the unit in a convenient manner, positioning all MCM-4's where displays can be easily seen.
2. Apply power to the MCM and all MCM-4's.
3. Install manifold per section 2.1.2 of manual A110
4. Enable the MCM-4 per section 2.3 of this manual.
5. Align the individual electrodes within the manifold and set to zero.
6. Attach the electrode stage of the MCU-5 to a stereotaxic or manipulator system.
7. Coarsely position the guide tube using the stereotaxic or manipulator system to a reference point. (Commonly just above the dura.) Zero the displays at this reference point.
8. If the target is within 15 mm, the individual channels can be positioned from this point. It is common practice to use the main drive channel to simultaneously position all electrodes to within 7-8mm, then use the individual drive channels to fine tune the target signal.
9. To position with the main drive channel, enable the MCM and set the zero reference per section 2.3 of this manual.
10. Position the main drive channel to within 7-8mm of target.
11. Enable the MCM-4.
12. Position the individual drive channels. It's common practice to use the continuous mode while searching for units, then using the step mode to fine-tune the signal.
13. At the end of the experiment, retract all drive channels back to their rear limit for storage. Remove from the stereotaxic or manipulator system.

Line cord country codes, (required for both 4 electrode and 8 electrode systems)

55-AUS	Australia	55-JA	Japan
55-CH	China	55-SAF	South Africa
55-DAN	Denmark	55-SWI	Switzerland
55-EURO	Europe	55-UK	United Kingdom
55-ISR	Israel	55-USA	North America
55-ITA	Italy		