MC series

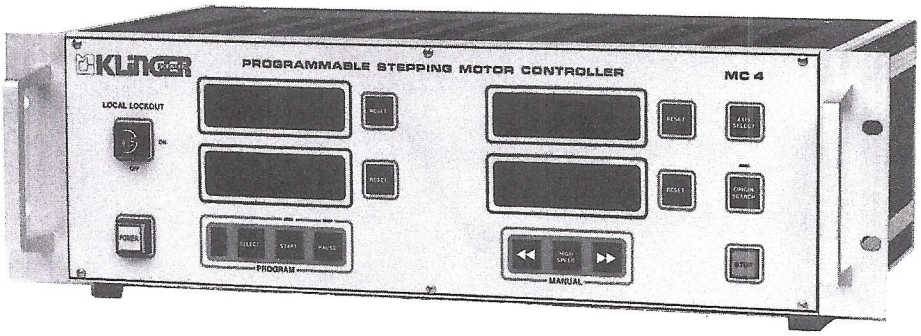
MC4 motor control system

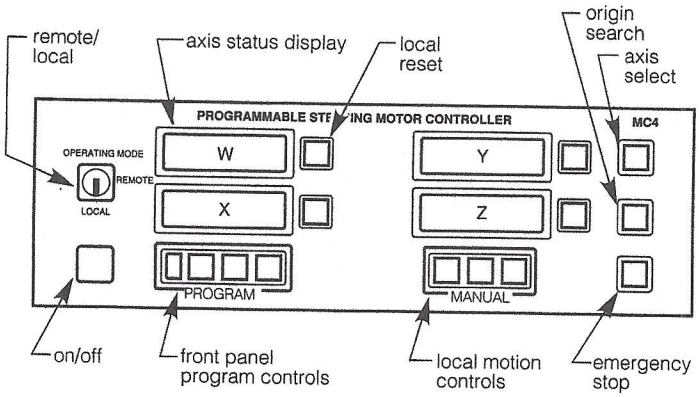
The MC4 series control system is a sophisticated and user-friendly stepping motor or DC motor control system designed to be used in conjunction with the MD4 driver system. The MC4 features onboard intelligence for the command of one to four axes of motion. The system utilizes a high speed pulse generator capable of up to 40,000 pulses per second per axis, thus offering the benefit of both high speed and high resolution micropositioning via mini-step operation of permanent magnet stepping motors.

The MC4 system features both of the industry standard RS-232-C and IEEE-488 interfaces for simple computer control. The MC4 uses a high level instruction set capable of setting acceleration, velocity, position, direction, etc. An onboard 8K non-volatile memory allows the storage of user programs. Up to 99 programs may be stored in memory. The MC4 system is capable of commanding any of the axes independently of each other or in simultaneous or sequential operation. The internal software of the MC4 supports service request generation at the completion of any move as well as status reporting while idle or during execution of commands. The MC4 can operate in both relative or absolute positioning modes.

The MC4 system is housed in standard 19" wide, 5¼" high rack mountable cabinet. It also features a user-friendly front panel array of push button controls and position displays which allow the setting of speed for local operation, commanding origin search ("homing"), single step, jog or slew operation as well as selection and execution of internally stored programs.

Finally, to enhance the user-friendliness of the MC4 system a general purpose I/O connector is provided featuring 8 programmable output bytes as well as open collector outputs and 3 external inputs often used for synchronization of the motors to each other or external peripherals.





MC4 **Cat. No. 044 009**

Characteristics

—Controls either stepper or DC motors
—Programmable acceleration
—Rates to 40,000 pulses/sec. per axis
—Relative or absolute positioning
—IEEE-488 and RS-232-C compatible
—User-friendly design
—8K non-volatile memory
—Flexible command set for automated operation
—Manual control via front panel switches and remote control unit
—Immediate command execution or command storage in a program buffer for later execution
—Simultaneous, sequential, and interdependent command execution
—Status reporting while idle and while executing commands
—Service request generation at the completion of any move and at the occurrence of a travel limit
—Error checking and reporting over the communication channel
—Indication of position via LED display and reporting of position over the communication channel
—Programmable time delay between execution of commands
—Supplied with interconnecting cables to MD unit,

Optional accessories

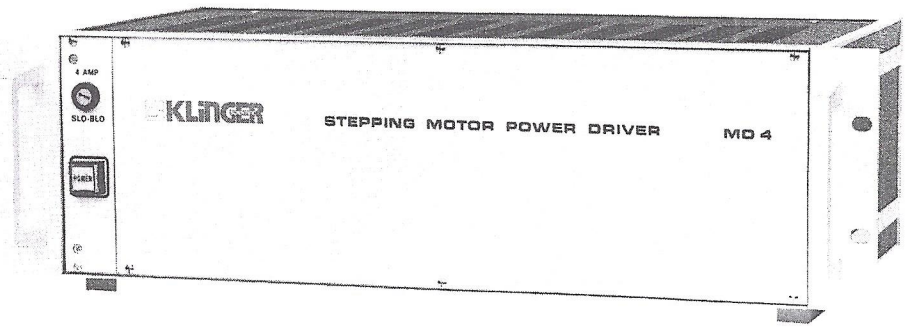
—Handheld remote

This low cost remote control unit provides single step, jog, or slew operation for up to four axes as well as origin search and position display resets.
Cat. No. 070 545

—Synchronization unit

The SU1, SU2 and SU4 synchronization units allow the MC4 controller to synchronize either two or four motors respectively. In the SU1, one motor is the command motor. The second motor is considered the slave. The SU2 is a double version of the SU1 having 2 command motors and 2 slaves. In the SU4, there is one command motor and three slave motors. SU1, **Cat. No. 044 010;** SU2, **Cat. No. 044 011;** SU4, **Cat. No. 044 018.**

MD4 motor driver



The MD4 motor driver is a modular design, 1 to 4 axis motor driver for either stepping motors or DC brush motors. The system is designed to accept slide-in motor cards, power supply cards, sine/cosine cards, DC servo cards and servo amplifier cards dependent upon the requirement. It is housed in a standard 19" wide, 5¼" high rack-mountable cabinet. For stepping motors each axis utilizes a sine/cosine card and motor driver card. For DC servos the sine/cosine is replaced by a servo card and a DC amplifier replaces the stepper motor driver. One power supply card is used for each 2 axes of drivers. As a result, the MD4 can be set up to drive both steppers and DC servos within the same unit while utilizing common software from the MC4 control system. In this drive configuration the system is capable of driving our UE30 (size 11) variable reluctance type or our UE31, UE71, UE72, UE73 or UE91 (nema class 23, 34, 42) permanent magnet type stepping motors with currents up to 4.7 amps per phase.

When operating any of the permanent magnet style stepping motors, the MD4 driver will generate the necessary power switching for mini-step operation (1/10) of the stepping motor. (**Note:** variable reluctance type stepping motors such as the UE30PP are not designed for operation in ministep mode.)

For DC motors, the MD4 system can drive any DC brush motor rated at ±24 volts at 10 amps. (Note: because of the wide range of motors which the MD4 is capable of controlling, it is necessary to specify the particular motors which will be used and the current rating.) A 2 meter long motor connecting cable is supplied with each axis of drive.

Optional : MD2L Driver

This is a two axis linear driver for stepping motors, designed to be used in 1/100 microstep operation (20,000 steps/rev). The linear driver keeps the electromagnetic noise at a minimum level which insures high accuracy for the microstep operation, and very low EMI.
MD4.2L driver accepts pulses up to a rate of 1M pulses/sec and can deliver currents of up to 3 Amps per phase, which makes this driver a perfect match with the Klinger motion control board MotionMaster 2000 and stepping motor module Step1.5M. Housed in a 19" rack, 2 axis for full rack, includes fan and two power supplies. **Cat. No. 044 038.**

Stepper motor versions

Model	Description	Cat. No.
MD4.1	1 axis drive	**044 014**
MD4.2	2 axis drive	**044 015**
MD4.3	3 axis drive	**044 016**
MD4.4	4 axis drive	**044 017**

DC motor versions

Model	Description	Cat. No.
MD4.1	1 axis drive	**044 034**
MD4.2	2 axis drive	**044 035**
MD4.3	3 axis drive	**044 036**
MD4.4	4 axis drive	**044 037**