# Precision DC & Stepper Motor Controller
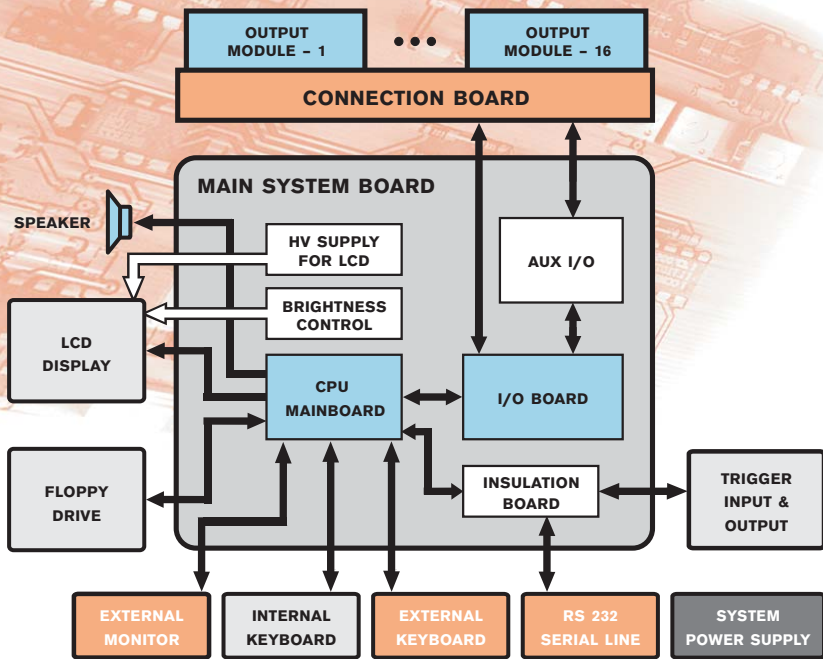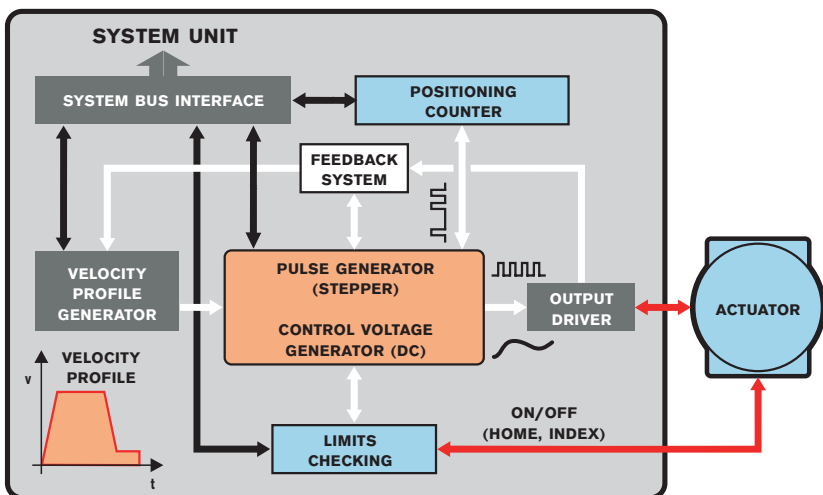## Model **Multidrive 16**



Multidrive 16 – System Unit



Multidrive 16 – Output Module

## Parameters

| | |
|---|---|
| No of output channels | 8, 16 or per the customer's specifications |
| Output modules | DC MOTOR/STEPPER MOTOR |
| Standard indicated resolution | 0.1 microns/0.001 ° |
| Travel range | depending on the motor type |
| Single step | depending on the motor type |
| Limit status check | yes |
| Home & Index signals | yes |
| Output voltage (DC) | 0 to ±12 V |
| Output voltage (STEPPER) | 30 V (PWM) |
| Internal keyboard | 16 keys |
| External keyboard | standard PC keyboard |
| Display | VGA mono/colour |
| External monitor | standard PC (15-way D-sub) |
| Floppy drive | standard 3,5" |
| No of motions per sequence | up to 10 |
| Sequence triggering | manual, external (serial line), trigger signal |
| Trigger input | TTL (BNC, 50 Ω) or opto (FC/PC) |
| Trigger output | TTL (BNC, 50 Ω) or opto (FC/PC, 62.5) |
| Communication | RS-232 (TxD, RxD, GND), D-sub 9 |
| Baud rate | 9600 Bd |
| Communication details | 8 bit, 1 stop bit, no parity |
| Power | 230 VAC, 50/60 Hz, 40 VA |
| Dimensions | 19" × 6U × 280 mm (483 × 264 × 280 mm) |
| Weight | 12 kg |

Multidrive 16 is a universal system for controlling and driving DC or stepper motors as well as rotary or linear actuators. The device has a modular, modern design and is capable of controlling up to 16 motors or actuators.

Originally, the device was developed to control precision actuators at optical positioning systems used mainly by the academic and R&D sector. However, due to its versatility and the range of motors it can control, the device is also suitable for demanding industrial applications.

The device consists of the system unit and individual output modules.

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## System Unit

The core of the system unit is the **Main system board**, which houses the following functional blocks: CPU MainBoard based on an industrial PC, Input/output board providing for communication between the CPU MainBoard and other circuits, particularly output modules, LCD control and power circuits, and circuits that galvanically separate trigger signals from the external communication signals.

The CPU unit directly controls an LCD display, an external monitor (standard PC), 3.5" floppy drive, external and internal keyboard and a speaker.

The system unit also includes a connection board with 16 free slots for output modules.

The device is power supplied from a switch mode power unit.

The device can be operated either as a stand-alone system, in which case it is controlled through an internal 16-key keyboard or an external standard PC keyboard, or remotely over a serial RS-232 line. Pre-programmed sequences of motor motions can be also triggered by external TTL or optical impulses.

The housing of the system unit is made of a high-quality metallic case of the standard 19" dimension. It can be either fast mounted in 19" racks or operated in free table top position.

## Output Modules

Output modules generate power and control signals for a specific type of motor (actuator). They are designed and optimised to ensure accurate homing of the motor in a defined position or to ensure an accurate linear movement by a defined length allowing at the same time to set up the velocity profile. As a standard, DC MOTOR and STEPPER MOTOR output modules are supplied.

Velocity profile generator generates temporally dependent control signals corresponding to the required velocity of the motor. The velocity profile is defined by 5 parameters (acceleration, deceleration, max and min velocity, stopping distance). The signals from the velocity profile generator are used to generate control voltage (for DC motors) or clock pulses (for the stepper motor) that consequently control the output driver. The output driver has an in-built PWM output current stabilisation. The position of the motor is monitored by the pulse counter with the pulses coming either from the encoder (if the actuator includes an encoder) or from the pulse generator (in the case of stepper motors without an encoder).

The system is regulated by a feedback system.

Output modules also contain circuits for checking of the stop position status or for processing home position identification signals (in the case of some actuators).

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## Compatible Motors and Actuators
The following list shows some compatible motors or actuators. For the latest information, please contact our company or visit our web site.

Newport Corporation:
CMA-12PP, CMA-25PP, CMA-12CCCL, CMA-25CCCL,
M-TM25PP1, M-UTM50PP1, M-UTM100PP1, M-UTM150PP1,
M-UTM25PP.1, M-UTM50PP.1, M-UTM100PP.1, M-UTM150PP.1,
M-UTM25PE1, M-UTM50PE1, M-UTM100PE1, M-UTM150PE1,
M-UTM25PE.1, M-UTM50PE.1, M-UTM100PE.1, M-UTM150PE.1,
M-URM80PP, M-URM80PE, M-URM100PP, M-URM100PE

Thorlabs Inc.:
Z606, Z612, Z612B, Z625B

Spectra-Physics Inc.:
Oriel Encoder Mikes 18255, 18237, 18254, 18256 etc.

## Device Operation and SW
Operating of the device is very intuitive and simple. The device can be easily configured. By selecting a motor from the database, which is a standard part of the basic software package, optimum operational parameters can be set up. For more convenience, individual channels of the device can be given symbolic names.

All settings, configuration, etc. are automatically saved in the device. The data can be also saved to (or loaded from) a 3.5" floppy disc or they can be transferred to an external computer over a serial line.

The device also includes basic SW for controlling the serial communication with the device.

The system and application SW is under continuous development. The latest information can be obtained on our web site.

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