

# MICROMATIC-9



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## Multi-Axis Digital Servo Control

An integrated 1-, 2-, 4-, or 6-axis motion controller and amplifier system with 5 amps continuous and 10 amp peak current capability. MICROMATIC-9 a convenient and compact package, that can be programmed for virtually any type of motion control application, including XY Stages and Tables, Pick and Place applications, CNCs, PLC programming., and more.

- Single enclosure leads to reduced hardware
- Simple installation and reduced panel space
- MICROMATIC 9 is a universal motion controller and amplifier package (brush, brushless and induction) motor drive amplifiers
- Suitable for either one-, two-, four-, or six-axis systems using 3-phase servo motors
- Designed to operate directly off the power mains 115-240 VAC

## Control Description

MICROMATIC-9 is available as a single or dual axis integrated digital servo controller and drive amplifier. This is completely integrated control system featuring USB and Ethernet interfaces to a user supplied, host PC or other system controller. Micromatic-9 is a true stand-alone motion controller. The device includes its own motion control microprocessor and flash storage enabling motion system operation independent of a host computer. This device includes a home routine and all servo parameters. Micromatic-9 delivered in a package intended for panel mount. Control electronics includes the following items; all interconnect cables, servo tune, testing and burn-in.

## Special Features

### Position Synchronized I/O

The Micromatic-9 addresses Position Synchronized I/O for Precision Laser Shuttering and other applications. Using the standard I/O, the Micromatic-9 has high-speed position compare outputs allowing for output control triggered by actual position. The circuit will fire within 100 nsec of reaching the desired position. The position compare output port is enabled by fast CMOS drive technology. Position Compare is programmed deterministically, or non-deterministically in a background process PLC. GUI programmers can read/write from shared RAM for ever changing path and control requirements. No additional hardware is required.

### Analog Input and Programmable PWM Output

The Micromatic-9 offers an Analog I/O option to add two 16-bit  $\pm 10V$  A/D converters as well as one differential 12-bit filtered PWM analog  $\pm 10V$  output. Use the A/D for joystick interface, for analog data sampling or data logging. Use the PWM output for PRF triggered control or alike.

## Software Support

### G-CODE

Program using familiar RS274D or G-Code, commonly used for NC and CNC machine tools. G-Code support can also be expanded to include compound routines or other machine specific codes. For a head start, ask about our available G-Code Interpreter workspace. For turn-key NC software, ask about our Windows-based customizable GUI for PC based CNC control.

### Communications Library

Optional Software Support COM Library interface is available for C++, C#, and VB development environments. Interface provided Ansi C type functions to Matlab or LabVIEW.

## LabVIEW Panel

Also optionally available is our LabVIEW Panel interface including over 250 Virtual Instruments (Vis). Motion that triggers acquisitions and responds to data gathered by SCXI, VXI, and industrial automation networks such as DeviceNet and Field Bus are now possible using LabVIEW's popular and powerful graphical programming environment.

## GUI development for NON programmers

For inexperienced programmers, ask about our intuitive HMI Pro which allows users to quickly build their customized front-end in hours or days instead of weeks and months without the difficulty and learning curve of programming languages or other software methods. No special software knowledge or expertise required.

## Other Features

Motorola DSP 56k digital signal processor

USB2.0 and Ethernet optional TCP/IP ModBus /TCP,100 base T

Linear and circular interpolation & 256 motion program capacity

64 asynchronous PLC program capability

Cubic trajectory calculations, splines, S-curve acceleration, Advanced PID servo motion algorithms

Standard Quadrature encoder feedback or SSI and One quadrature secondary encoder input per Axis

Eight to sixteen digital inputs, 24VDC & six digital outputs, 0.5A @ 24V, sinking or sourcing

Four input flags per axis at 12-24VDC levels

Optional two Hi-Res (16-bit) analog inputs and one 12-bit filtered PWM analog output,  $\pm 10$ VDC

Optional Sinusoidal feedback with 4096x interpolation or absolute resolver

Standard Output Ratings from 5A continuous to 10A peak. Higher current available as option (up to 15/30 on two Axes).

Configurations designed for UL and CE Certification

Integrated bus power supply including shunt regulator and soft start & 7 segment amplifier status display.

## Micromatic-9 Specifications

	1- or 2-Axis		4-Axis		6-Axis	
	5/10A	10/20A	5/10A	8/16A	5/10A	8/16A
<b>Main Input Power</b>						
Nominal Input Voltage (VAC)	230					
Rated Input Voltage (VAC)	97-265					
Rated Continuous Input Current (A ACRMS)	3.3	6.6	13	21	13	21
Frequency (Hz)	50/60					
Phase Requirements	1 $\Phi$ or 3 $\Phi$	3 $\Phi$	1 $\Phi$ or 3 $\Phi$			
Main Bus Capacitance ( $\mu$ f)	3380					
<b>Output Power</b>						
Rated Output Voltage (V)	138					
Rated Cont. Output Current per Axis	5	10	5	8	5	8
Peak Output Current (A) for 2 seconds	10 <sup>2</sup>	20 <sup>2</sup>	10 <sup>2</sup>	16 <sup>2</sup>	10 <sup>2</sup>	16 <sup>2</sup>
Rated Output Power per Axis (Watts)	1195	2390	1247	1995	1247	1995
<b>Bus Protection</b>						
Nominal DC Bus (VDC)	325		340			
Over-voltage Trip Level (VDC)	410		420			
Under-voltage Lockout Level (VDC)	10					
<b>Shunt Regulator Ratings</b>						
Turn-On Voltage (VDC)	392					
Turn-Off Voltage (VDC)	372					
<b>Control Logic Power</b>						
Input Voltage (VDC)	20-27					
Input Current (A)	2		2		3	
<b>Transistor Control</b>						
Recommended PWM Frequency (kHz) @rated current	12					
Minimum Dead Time ( $\mu$ s)	1					
Charge Pump Time (% of PWM period.)	5					

### NOTES:

- 05/10 AMP 3 phase, for single phase input derate peak current 20%
- 8/16 & 10/20 AMP 3 phase, for single phase input derate peak current 30%