

## 8031 Indexer Interface Card

The combination of the 8031 Indexer Interface Card with the MPA 03/06-SL amplifier creates a stand-alone digital servo controller/amplifier to control a single axis of digital position control. The 8031 Indexer Interface Card executes profiles which are programmed into a single EPROM. Up to 8 profiles can be held in the 8031 Indexer at one time (1 to 4 profiles can be held if using a proximity switch for homing). Profile selection is done via a three-position DIP switch or through digital inputs.

- 12 bit D/A for position command and error output
- 12 bit D/A for acceleration feedforward (quick response for high acceleration moves)
- Programmable position control loop update rate (300  $\mu$ s to 25.5 ms for AVD and velocity profiles)
- Programmable loop and feedforward parameters (Kp, Kd, Kff, Ka)
- Profile selection via DIP switch or optically isolated digital inputs
- Three color LED status indicator

**PROF\_GEN Commands.** The following table shows all of the commands and where they may be used.

Commands which must be used globally (before any programs are defined):

```
PROGRAM_COUNT
RESET_DELAY
INPUT1=HOME
READY_OUTPUT
IF_EXCESS_ERROR
EXCESS_ERR_DELAY
EXCESS_ERR_DIST
EXERR_RETRY
```

Commands which must be used during a program definition:

```
PROGRAM
KP
KD
KFF
KA
AVD_SEGMENT
VELOCITY_PROFILE
HOMING_PROFILE
HOME_ACCEL
NO_HOMING
GOTO
```

Commands which can be used either globally or during a program definition (but not both at the same time):

```
HOME_METHOD
HOME_LOC
HOME_OFFSET
HOME_VELOCITY
RETRIGGER
TEST_HOME
```

## MPA 03/06-SL

### CONTROLLER OPTIONS

## 8031 Indexer card specifications

Parameter	Specification
<b>CPU</b>	
Type	80C31
Speed	16 MHz
Data Bus Width	8 bits
<b>Memory</b>	
System EPROM	64 Kbytes
System RAM	128 bytes (internal)
<b>EPROM</b>	
Size	512 Kbits (27C512)
Speed	120 ns (maximum)
Type	CMOS, 5 volt
<b>Digital Inputs</b>	
Current Sense	Input 1 (Home), Input 2, Input 3 sinking or sourcing
Propagation Delay	200 $\mu$ s maximum
Input Voltage	5 to 30 Vdc = On 0 to 1 Vdc = Off
Input Current	10 mA maximum
Isolation	1500 V minimum
<b>Servo Output</b>	
Type	Analog Voltage
Resolution	12 bits
Range	$\pm$ 10 V single-ended
Load Resistance	2K $\Omega$ minimum
<b>Environment</b>	
Temperature	0 to 45° C ambient 32 to 113° F ambient
Humidity	10 to 90%, noncondensing
<b>Overall Dimensions</b>	
Length	5.1 inches
Width	4.5 inches
Thickness	1.0 inch

*Specifications are subject to change without notice.*

*Contact MTS Automation Division for verification of specifications critical to your needs.*

### 8031 Pulse and Direction Interface Card

The combination of the Pulse and Direction Interface Card with a MPA 03/06-SL amplifier creates a stand-alone digital servo controller/amplifier to control a single axis of digital position control.

The 8031 Pulse and Direction Interface Card is a closed loop position controller. It uses either pulse and direction inputs, or the clockwise/ counter-clockwise inputs for the motion command. These digital signals are then converted to an analog velocity or torque command.

There are two standard EPROM options available with the 8031 Pulse and Direction Interface card to set different scales for input resolution. The standard resolutions are 800, 1000, 2000, 4000, or 512, 1024, 2048, 4096 pulses per motor revolution. Custom resolutions are available.

- 12 bit D/A for analog command
- 800  $\mu$ s position control loop update rate
- Switch selectable loop and feedforward parameters ( $K_p$ ,  $K_v$ ,  $K_{ff}$ )
- Switch selectable input resolution
- Maximum input pulse rate of 500 KHz (1  $\mu$ s width minimum)
- Current sinking or sourcing pulse and direction inputs (or CW or CCW inputs)
- Switch selectable mode of operation (velocity or torque)
- Three color LED status indicator
- Open collector fault output
- Isolated inputs

### MPA 03/06-SL

### CONTROLLER OPTIONS

### 8031 Pulse and Direction Interface Card Specifications

Parameter	Specification
<b>CPU</b>	
Type	80C32
Speed	16 MHz
Data Bus Width	8 bits
<b>Memory</b>	
System EPROM	64 Kbytes
System RAM	128 bytes (internal)
<b>EPROM</b>	
Size	512 Kbits (27C512)
Speed	120 ns (maximum)
Type	CMOS, 5 volt
<b>Digital Inputs</b>	
Voltage Sense	Pulse and Direction (CW/CCW) active high or active low
Current Sense	sinking or sourcing
Maximum Pulse Rate	500 KHz
Minimum Pulse Width	1 $\mu$ s
Propagation Delay	200 $\mu$ s maximum
Input Voltage	5 to 30 Vdc = On 1 Vdc = Off
Input Current	10 mA maximum
Isolation	1500 V minimum
<b>Digital Output</b>	
Voltage Sense	Fault active high or active low
Current Sense	sinking or sourcing
Propagation Delay	25 $\mu$ s maximum
Leakage Current	100 nA maximum
Output Current	15 mA maximum
Isolation	1500 V minimum
<b>Servo Output</b>	
Type	Analog Voltage
Resolution	12 bits
Range	$\pm$ 10 V single-ended
Load Resistance	2K $\Omega$ minimum
<b>Environment</b>	
Temperature	0 to 45° C ambient 32 to 113° F ambient
Humidity	10 to 90%, noncondensing
<b>Overall Dimensions</b>	
Length	5.1 inches
Width	4.5 inches
Thickness	1.0 inch

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### 8031 Clamp Interface Card

The combination of the Clamp Interface Card with a MPA 03/06-SL amplifier creates a stand-alone “clamping” servo controller/ amplifier.

The 8031 Clamp Interface Card is a closed loop position controller. It is used in applications where the amplifier is run in open-loop velocity control (such as a conveyer or pump application where the velocity command is usually a potentiometer or other DC source). When the 8031 Clamp Interface Card is enabled, it will clamp (or lock) the current position of the motor to prevent the motor from drifting from its current position. Upon the release of the clamp input, the amplifier is switched back to open loop velocity control.

- 12 bit D/A for analog command
- 800  $\mu$ s position control loop update rate
- Switch selectable loop gain parameter (Kp)
- Current sinking or sourcing Clamp inputs
- Three color LED status indicator

### MPA 03/06-SL

### CONTROLLER OPTIONS

### 8031 Clamp Interface Card Specifications

Parameter	Specification
<b>CPU</b>	
Type	80C32
Speed	16 MHz
Data Bus Width	8 bits
<b>Memory</b>	
System EPROM	64 Kbytes
System RAM	128 bytes (internal)
<b>EPROM</b>	
Size	512 Kbits (27C512)
Speed	120 ns (maximum)
Type	CMOS, 5 volt
Input Current	10 mA maximum
Isolation	1500 V minimum
<b>Digital Inputs</b>	
Current Sense	Input 1 (Home), Input 2, Input 3 sinking or sourcing
Propagation Delay	200 $\mu$ s maximum
Input Voltage	5 to 30 Vdc = On 0 to 1 Vdc = Off
Input Current	10 mA maximum
Isolation	1500 V minimum
<b>Servo Output</b>	
Type	Analog Voltage
Resolution	12 bits
Range	$\pm$ 10 V single-ended
Load Resistance	2K $\Omega$ minimum
<b>Environment</b>	
Temperature	0 to 45°C ambient 32 to 113°F ambient
Humidity	10 to 90%, noncondensing
<b>Overall Dimensions</b>	
Length	5.1 inches
Width	4.5 inches
Thickness	1.0 inch

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