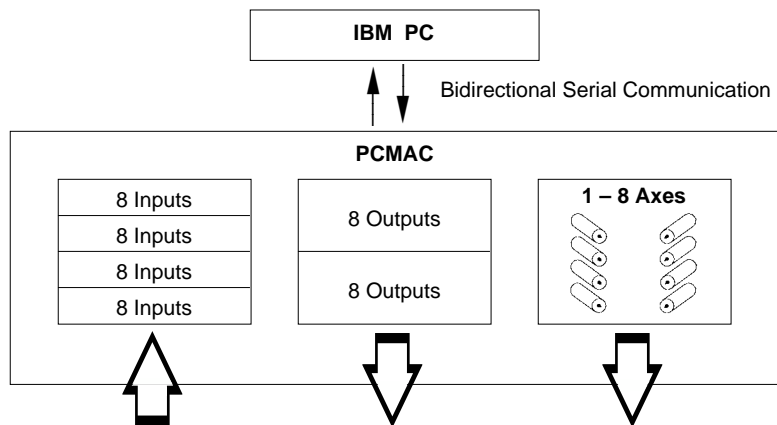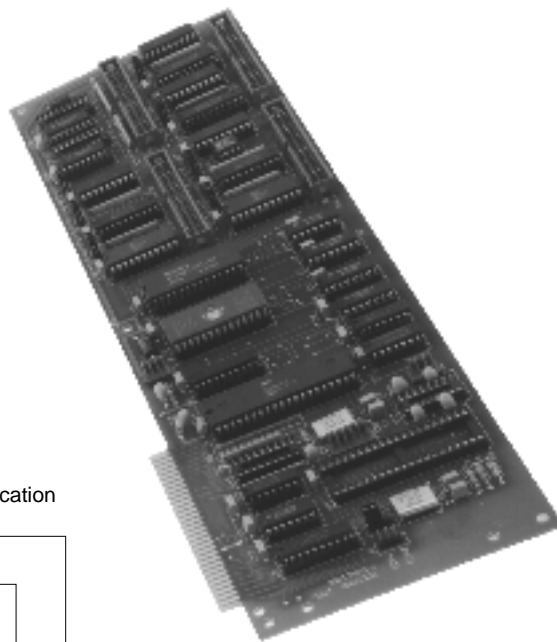# Techno Inc.

# PCMAC100A Stepper Card

## ISA (PC Bus) Components

### THE PCMAC

The PCMAC is a stepper motor control board and logic control system designed to be inserted into one 8 bit, full length slot on an IBM PC or compatible computer.

### INTERNAL OR EXTERNAL OPERATION

The PCMAC board can operate **either** internally, plugged into the PC backplace, **or** it can operate externally, with a separate power supply and an RS232 communication link to the PC.

```
          ┌──────────────────┐
          │      IBM  PC      │
          └──────────────────┘
                  ↑ ↓   Bidirectional Serial Communication

          ┌──────────────────────────────────────────┐
          │                 PCMAC                     │
          │  ┌──────────┐  ┌──────────┐  ┌─────────┐  │
          │  │ 8 Inputs │  │          │  │1 – 8 Axes│ │
          │  │ 8 Inputs │  │ 8 Outputs│  │         │  │
          │  │ 8 Inputs │  │          │  │         │  │
          │  │ 8 Inputs │  │ 8 Outputs│  │         │  │
          │  └──────────┘  └──────────┘  └─────────┘  │
          └──────────────────────────────────────────┘
               ⇑            ⇓            ⇓
```

### PCMAC FEATURES

♦ 8 axes of motor control with pulse/direction signals
♦ 32 inputs and 16 outputs
♦ Remote START/STOP/RESET

♦ Bidirectional serial communication
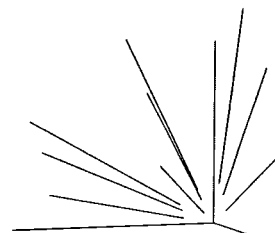♦ 32K of on-board memory, capable of holding as many as 4000 motion commands

### MOTION CAPABILITIES

**Linear Interpolation**
• True step by step interpolation during acceleration, deceleration and all points in between
• Interpolation on any of 1 through 8 axes at pulse rates up to 20K / sec.  Motions up to $\pm$ 8,000,000 steps
• Programmable acceleration and velocity

Linear Interpolation

**Circular Interpolation**
• True step by step circular interpolation during acceleration, deceleration and all points in between
• Maximum error of $\pm$ 1 step from a true circle for any radius up to 2,000,000 steps
• Continuous arcs without stopping at axis boundaries
• Interpolation on any 2 of 8 axes at pulse rates up to 8K / sec.
• Programmable acceleration and velocity

Circular Interpolation

3 ELECTRONICS

# Techno Inc.
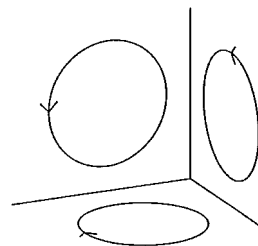
# PCMAC100A Stepper Card

## ISA (PC Bus) Components

### EASY SOFTWARE DEVELOPMENT

The PCMAC includes an easy to use program development system including:
• A full screen text editor
• Integrated compiler that indicates where errors exist
• Integrated communications program to download and test programs
• Sample programs in QuickBASIC to write your own supervisory programs

### INPUTS / OUTPUTS

• 32 inputs in 4 groups of 8 – Each group of 8 inputs can be independently operated at 5V, 12V or any user-selected voltage up to 24V
• 16 outputs in 2 groups of 8 – Each group of 8 outputs can be operated at 5V, 12V or any user-selected voltage up to 40V and can supply up to 500 mA

### SUMMARY OF COMMANDS

| Code | Function |
|---|---|
| LINE | Incremental Motion |
| LINEA | Absolute Motion |
| ARC | Circular Interpolation |
| SEND | Send Data over RS232 |
| DELAY | Wait for Programmed Time |
| BIT | Turn Outputs On/Off |
| IFBIT | Branch on Inputs |
| LOOP | Set Up a Loop Command |
| CALL | Call a Subroutine/Canned Circle |
| HOME | Send Axis to HOME Position |
| COMP | Branch on Value of Memory Location |
| SETCNT | Load a Counter |
| IFCNT | Branch on Value of Counter |
| AT | Turn Output On/Off During Motion |
| ACCEL | Set Acceleration Rate |
| RETURN | Return from Subroutine |
| END | End the Program |

| Item | Catalog Number |
|---|---|
| PCMAC Controller Card | H26T55-PCMAC100A |
| PCMAC Power Box, 300VA | H26T56-PCMACBOX |
| SD12 Driver, 1.5 – 3A | H20K16-SD12A |
| SD13 Driver, 2 – 4A | H20K16-SD13A |
| SD15 Driver, 4 – 6A | H20K16-SD15A |
| SD15M Driver, 3.5 – 5A | H20K16-SD15M |
| Motor Cable, 10 ft | HX1700M6143 |
| Motor Cable, 25 ft | HX1700M2025 |

### A complete motion system consists of:

• ACL software package, included with PCMAC (page 169)
• PCMAC controller card (page 148)
• Stepper Motor Drivers, one per axis (page 154)
• Stepper Motor Cables, one per axis (page 166)
• IBM Compatible PC (286 or higher)

ELECTRONICS