



## PCI/PC Bus Operation

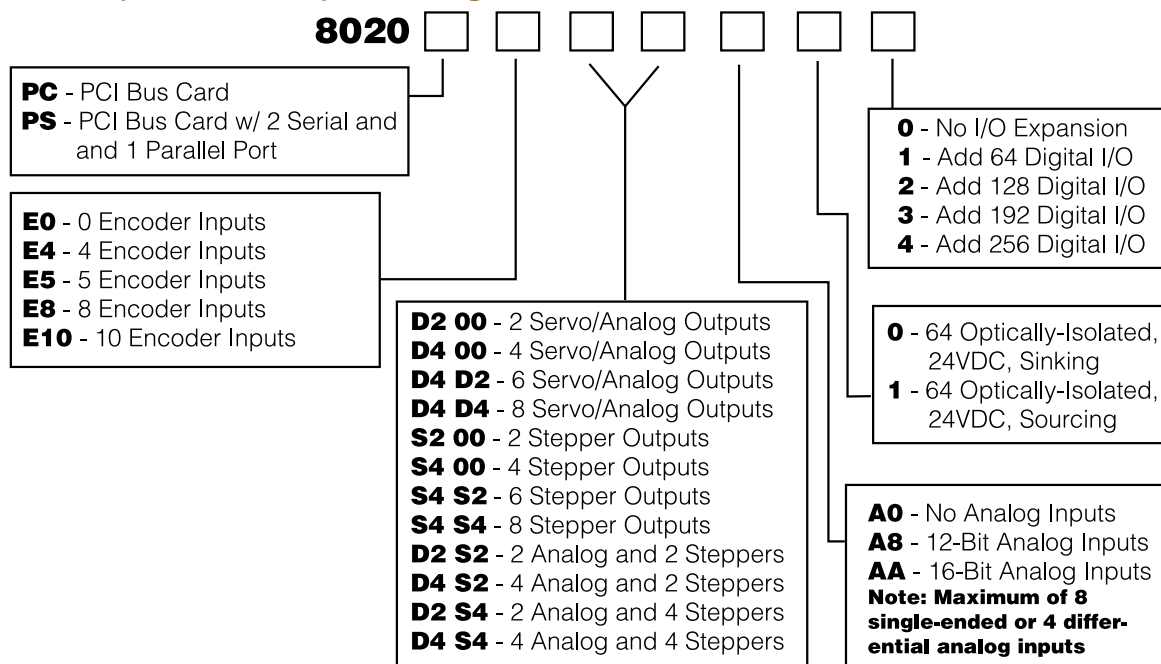
The ACR8020 is Compumotor's premier controller for PCI bus operation. It has the ability to run eight servo loops (16 with expansion board), DAC or Stepper outputs and 10 encoders (20 with expansion board) at 20 MHz counting rate. It can also be equipped with up to 8 analog (12- or 16-bit resolution) inputs. Multi-axis coordinated motion can be performed in multiple groups of axes. Because of the ACR8020's modular design, a combination of both servo and stepper axes can be applied on the same controller. All of Compumotor's Acroloop products utilize the same system software and programming language; this assures users complete flexibility in upgrading their hardware while maintaining their investment in program development.

The ACR8020's processing speed is unmatched in the industry at 120 Mega Floating-point Operations Per Second (MFLOPS)!

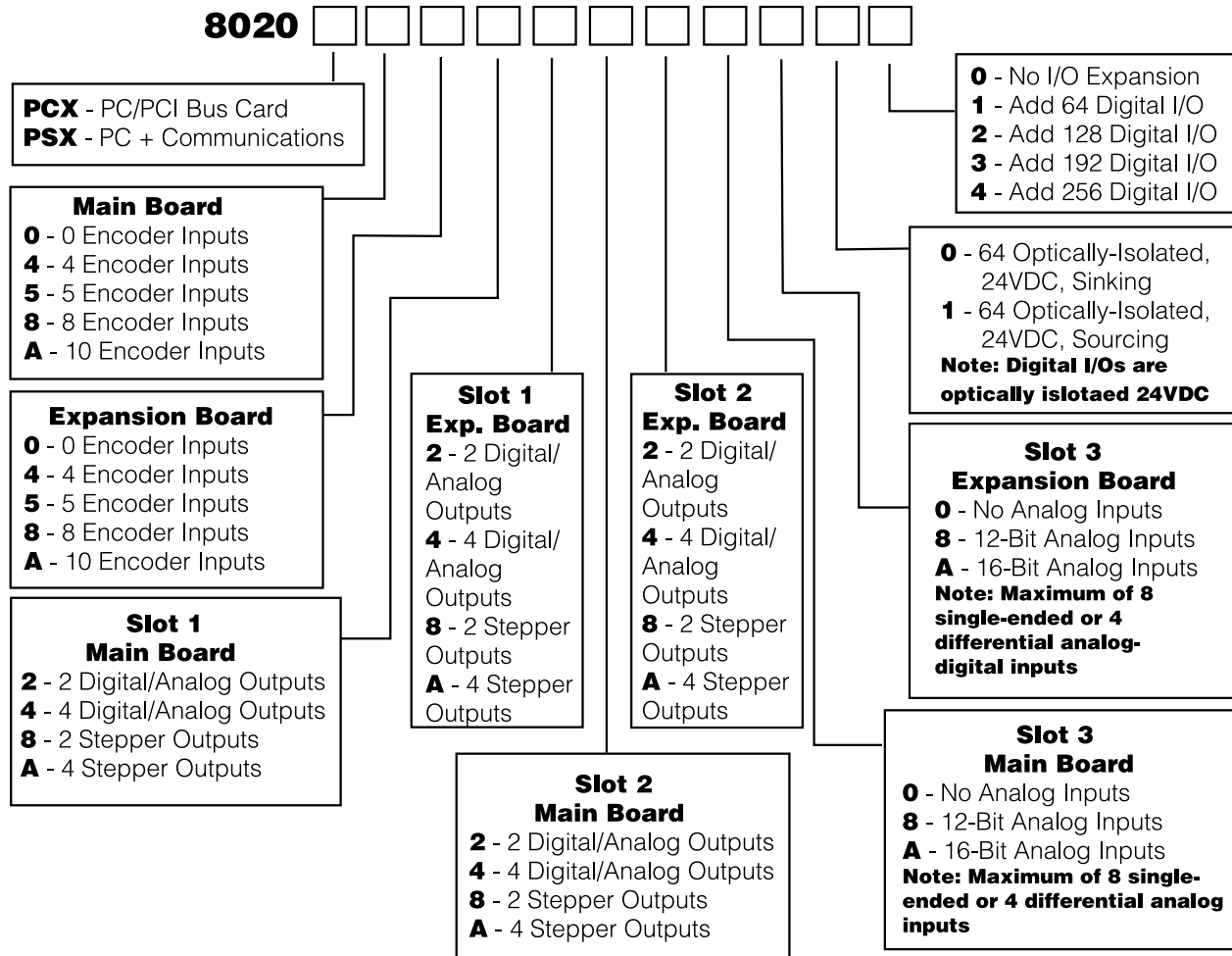
## ACR8020 Exclusives

- 120 MFLOPS, 32-bit floating-point DSP
- 8 axes of servos or steppers (expandable to 16)
- 10 encoder inputs at 20 MHz (expandable to 20)
- User and system memory 512 KB (expandable to 2 MB) each
- Encoder loss and fault protection
- 64 optically isolated 24VDC I/O expandable to 320 I/O
- Dual-port memory standard
- Master PCI DMA interface
- Full-size PCI card
- Optional communications interface (includes 2 serial ports—RS232/RS422/RS485—and 1 parallel port)

## ACR8020 (1- to 8-Axes) Ordering



ACR8020 (9- to 16-Axes) Ordering



**ACR8020 Specifications**

**Hardware**

- Axes/controller
- PC-Bus interface
- Standalone option
- Processor
- Trajectory calculation
- User memory
- System memory
- Firmware
- Flash memory
- Size
- Operating system

**Performance**

- Multi-tasking
- Trajectory update
- Servo update
- Ladder Logic PLC
- Interpolation
- Servo loop
- Position regulation
- Communications

**Communications**

- PC bus
- Optional interface

**Inputs**

- Encoder input
- Analog input - Auxiliary

**Command Signal**

- Analog outputs
- Stepper outputs

**Digital I/O**

**Software Support**

- Standard language
- Program tools
- Development tools
- Operating system
- Additional firmware highlights

**Value**

2-8 axes (Expandable to 16)  
 PCI  
 NA  
 32- /64-bit floating-point DSP @ 120 MFLOPS / 60 MHz  
 64-bit precision  
 512 KB (expandable to 2 MB); 2 MB (standard for 9- to 16-axes cards)  
 512 KB (expandable to 2 MB); 2 MB (standard for 9- to 16-axes cards)  
 Flash-based  
 512 KB (expandable to 2 MB)  
 Full-size PCI  
 Multi-tasking RTOS

16 coordinated systems, motion/PLC programs  
 Every 100-500 usec  
 25 usec/axis  
 100-500 usec scan time  
 Linear, circular, sinusoidal, helical and elliptical, splines, NURBS, 3D arcs  
 PID, velocity feedforward, acceleration feedforward notch, LoPass filtering  
 Hardware, < 1usec  
 Simultaneous PCI, serial and LPT ports

Bus mastering PCI with dual-port memory  
 2 serial ports (RS232 and/or RS422), 1 parallel port (8 bits)

10 (expandable to 20) at 20 MHz post-quadrature  
 Up to 8 (12- or 16-bit)

Up to 16 (16-bit precision)  
 Up to 16 @ 1 MHz  
 64, 24 VDC optically-isolated (expandable to 320)

Visual Basic, Visual C++, C++  
 AcroVIEW Motion/PLC Program  
 ActiveX controls/OCX controls  
 Windows® NT, 98, 2000, XP  
 Triggered floating point electronic GEARING  
 Triggered segmented electronic CAM  
 On-the-fly position and velocity matching  
 Ladder Logic PLC  
 Interruptible moves  
 Either analog or digital feedback for position or velocity loops  
 Dual-encoder feedback  
 Data teach and learn functions  
 Parameter-based with over 15,000 addressable pre-defined hardware registers  
 Sinusoidal commutation  
 NURBS and splines  
 3D arcs  
 Automatic tangential tool operation



## PC-Bus Operation

The ACR8010 is Compumotor's feature-rich controller for ISA PC-bus Operation. The ACR8010 is capable of standalone or PC-bus operation. It has the ability to run up to eight servo loops, with up to 10 encoders at 20 MHz. It can be equipped with eight optional analog inputs through a 12- or 16-bit analog/digital converter (ADC) and introduce these inputs into servo loops. Because of the unit's modular design, it is possible to have several axes of servo with several axes of stepper on the same controller. All of Compumotor's Acroloop products utilize the same system software and programming language; this assures users complete flexibility in upgrading their hardware while maintaining their investment in program development.

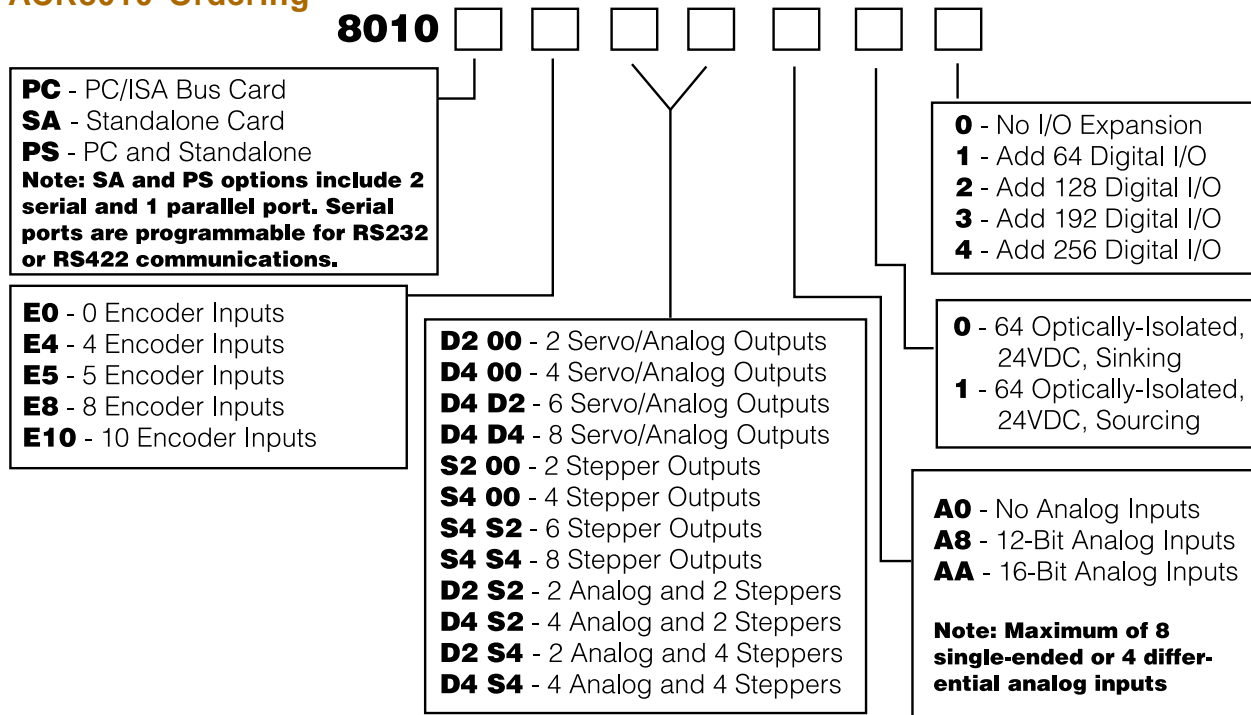
The ACR8010 is Compumotor's answer to affordable high-performance control when flexibility, real-time speed and ease of programming are most needed.

This product is the successor to the very popular ACR8000 and offers plug compatibility with the older product.

### ACR8010 Exclusives

- 8 axes of servo or stepper control
- 60 MFLOPS floating-point DSP
- Up to 10 encoder inputs at 20 MHz
- User and system memory 512 KB standard (each expandable to 2MB)
- Encoder loss and encoder fault protection
- 64 optically isolated 24 VDC inputs and outputs (expandable to 320 optically isolated 24 VDC inputs and outputs)
- Up to 4 communication channels (PC bus, 2 serial RS-232/RS-422, 1 parallel port)
- Dual-port memory option
- Single slot plug-and-play controller

### ACR8010 Ordering



**ACR8010 Specifications**

	Value
<b>Hardware</b>	
Axes/controller	1-8 axes
PC-Bus interface	ISA
Standalone option	Yes
Processor	32- /64-bit floating-point DSP @ 60 MFLOPS / 60 MHz
Trajectory calculation	64-bit precision
User memory	512 KB (expandable to 2 MB)
System memory	512 KB (expandable to 2 MB)
Firmware	2 128 KB x 16 EPROMs
Flash memory	512 KB (expandable to 2 MB)
Size	Full-size ISA board
Operating system	Real-time system independent of PC
<b>Performance</b>	
Multi-tasking	8 coordinated systems, motion/PLC programs
Trajectory update	Every 200-500 usec
Servo update	50 usec/axis
Ladder Logic PLC	200-500 usec scan time
Interpolation	Linear, circular, sinusoidal, helical and elliptical, splines, NURBS, 3D arcs
Servo loop	PID, velocity feedforward, acceleration feedforward notch, LoPass filtering and programmable filtering
	Hardware, < 1usec
Position regulation	Simultaneous ISA, serial and LPT ports
Communications	
PC bus	Dual 512 x 8 hardware FIFOs
Optional interface	2 serial ports (RS232 and/or RS422), 1 parallel port (8 bits)
<b>Inputs</b>	
Encoder input	10 @ 20 MHz post-quadrature
Analog input - Auxiliary	Up to 8 (12- or 16-bit)
<b>Command Signal</b>	
Analog outputs	Up to 8 (16-bit precision)
Stepper outputs	Up to 8 @ 1 MHz
<b>Digital I/O</b>	64, 24 VDC optically-isolated (expandable to 320)
<b>Software Support</b>	
Standard language	Visual Basic, Visual C++, C++
Program tools	AcroVIEW Motion/PLC Program
Development tools	ActiveX controls/OCX controls
Operating system	Windows® NT, 98, 2000, XP
Additional firmware highlights	Triggered floating point electronic GEARING Triggered segmented electronic CAM On-the-fly position and velocity matching Ladder Logic PLC Interruptible moves Either analog or digital feedback for position or velocity loops Dual-encoder feedback Data teach and learn functions Parameter-based with over 15,000 addressable pre-defined hardware registers Sinusoidal commutation NURBS and splines 3D arcs Automatic tangential tool operation

**ACR2000 Specifications**

	Value
<b>Hardware</b>	
Axes/controller	1-4 axes
PC-Bus interface	ISA
Standalone option	Yes
Processor	32- /64-bit floating-point DSP @ 50 MFLOPS / 50 MHz
Trajectory calculation	64-bit precision
User memory	512 KB
System memory	512 KB
Firmware	2 128 K x 16 EPROMs
Flash memory	512 KB
Size	Half-size ISA board
Operating system	Real-time system independent of PC
<b>Performance</b>	
Multi-tasking	8 coordinated systems, motion/PLC programs
Trajectory update	Every 200-500 usec
Servo update	50 usec/axis
Ladder Logic PLC	200-500 usec scan time
Interpolation	Linear, circular, sinusoidal, helical and elliptical, splines, NURBS, 3D arcs
Servo loop	PID, velocity feedforward, acceleration feedforward notch, LoPass filtering and programmable filtering
Position regulation	Hardware, < 1 usec
Communications	Simultaneous ISA, serial and LPT ports
<b>Communications</b>	
PC bus	Dual 512 x 8 hardware FIFOs
Standalone	2 serial ports (RS232 and/or RS422), 1 parallel port (8 bits)
Protocols	Binary (PC), string and ASCII
<b>Inputs</b>	
Encoder input	4 (32-bit registers), up to 8 MHz post quadrature
Analog input - Auxiliary	Up to 8 (12-bit)
<b>Command Signal</b>	
Analog outputs	Up to 4 (16-bit precision)
Stepper outputs	Up to 4 @ 1 MHz
<b>Digital I/O</b>	
<b>Software Support</b>	
Standard language	Visual Basic, Visual C++, C++
Program tools	AcroVIEW Motion/PLC Program
Development tools	ActiveX controls/OCX controls
Operating system	Windows® NT, 98, 2000, XP
Additional firmware highlights	Triggered floating point electronic GEARING Triggered segmented electronic CAM On-the-fly position and velocity matching Ladder Logic PLC Interruptible moves Either analog or digital feedback for position or velocity loops Dual-encoder feedback Data teach and learn functions Parameter-based with over 15,000 addressable pre-defined hardware registers Sinusoidal commutation NURBS and splines 3D arcs Automatic tangential tool operation



**PC-Based, OEM-Priced**

The ACR1500 is Compumotor's OEM 4-axes PC bus-based controller. The ACR1500 is a PC bus-based card only and offers no serial or LPT ports as an option. It has the ability to run up to four servo loops with up to four encoders at 8 MHz (post-quadrature). The ACR1500 can also be equipped with eight analog inputs through a 12- or 16-bit analog-to-digital converter and introduce these inputs into the servo loop. Because of the modular output design of the ACR family, it is possible to have two axes of servo with two axes of steppers on the same controller or all axes of one type. Unlike other members of the Compumotor Acroloop controller line, the ACR1500 utilizes a 16-bit bus, which reduces cost dramatically. With this feature, the ACR1500 provides a high level of control at roughly half the cost! All of Compumotor's Acroloop products utilize the same system software and programming language; this assures users complete flexibility in upgrading their hardware while maintaining their investment in program development.

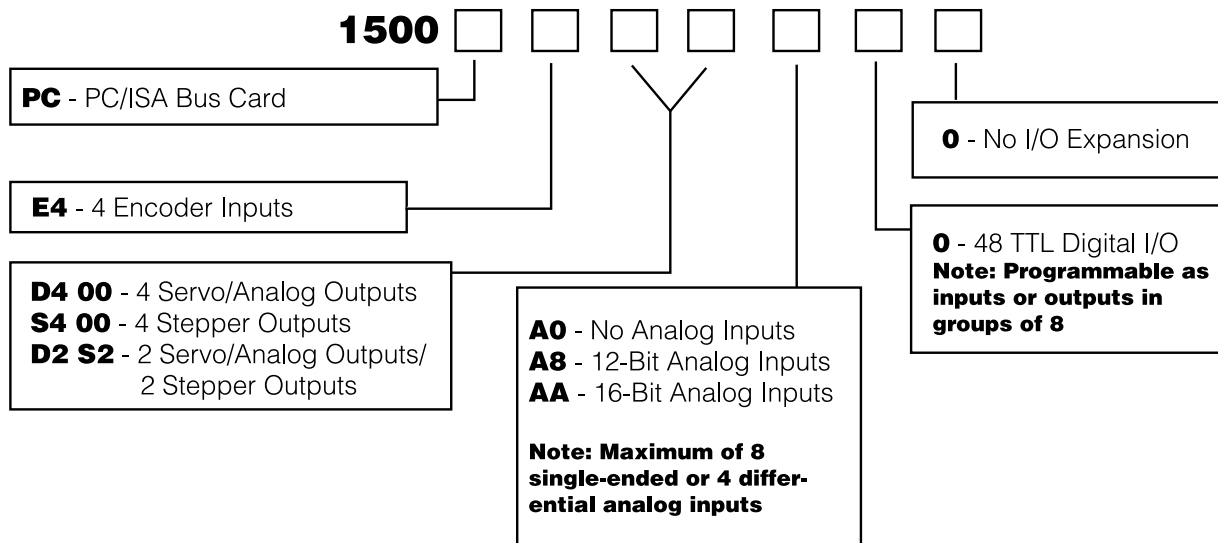
The ACR1500 is Compumotor's answer to affordable, high-performance control in a standalone package when low cost, real-time speed and ease of programming are most needed.

**ACR 1500 Exclusives**

- 4 axes of servo or stepper control
- 40 MFLOPS floating-point DSP
- 4 encoder inputs at 8 MHz (post-quadrature)
- User and system memory 128 KB standard
- 48 TTL I/O with an industry standard Opto 22, 50-pin connector
- Low-cost 16-bit bus
- High performance at a low cost



**ACR1500 Ordering**



**ACR1500 Specifications**

	Value
<b>Hardware</b>	
Axes/controller	1-4 axes
PC-Bus interface	ISA
Standalone option	NA
Processor	32- /64-bit floating-point DSP @ 40 MFLOPS / 40 MHz
Trajectory calculation	64-bit precision
User memory	128 KB
System memory	128 KB
Firmware	256 KB x 16 EPROM
Flash memory	128 KB
Size	Half-size ISA board
Operating system	Real-time system independent of PC
<b>Performance</b>	
Multi-tasking	8 coordinated systems, motion/PLC programs
Trajectory update	Every 200-750 usec
Servo update	75 usec/axis
Ladder Logic PLC	200-750 usec scan time
Interpolation	Linear, circular, sinusoidal, helical and elliptical, splines, NURBS, 3D arcs
Servo loop	PID, velocity feedforward, acceleration feedforward notch, LoPass filtering and programmable filtering
Position regulation	Hardware, < 1usec
Communications	ISA
<b>Communications</b>	
PC bus	Dual 512 x 8 hardware, FIFOs
Optional interface	NA
Protocols	Binary (PC), string and ASCII
<b>Inputs</b>	
Encoder input	4 (32-bit registers) up to 8 MHz post-quadrature
Analog input - Auxiliary	Up to 8 (12- or 16-bit)
<b>Command Signal</b>	
Analog outputs	Up to 4 (16-bit precision)
Stepper outputs	Up to 4 @ 1 MHz
<b>Digital I/O</b>	48 Opto 22-compatible, programmable as inputs or outputs in groups of 8
<b>Software Support</b>	
Standard language	Visual Basic, Visual C++, C++
Program tools	AcroVIEW Motion/PLC Program
Development tools	ActiveX controls/OCX controls
Operating system	Windows® NT, 98, 2000, XP
Additional firmware highlights	Triggered floating point electronic GEARING Triggered segmented electronic CAM On-the-fly position and velocity matching Ladder Logic PLC Interruptible moves Either analog or digital feedback for position or velocity loops Dual-encoder feedback Data teach and learn functions Parameter-based with over 15,000 addressable pre-defined hardware registers Sinusoidal commutation Automatic tangential tool operation





## 2-Axes, Standalone Control

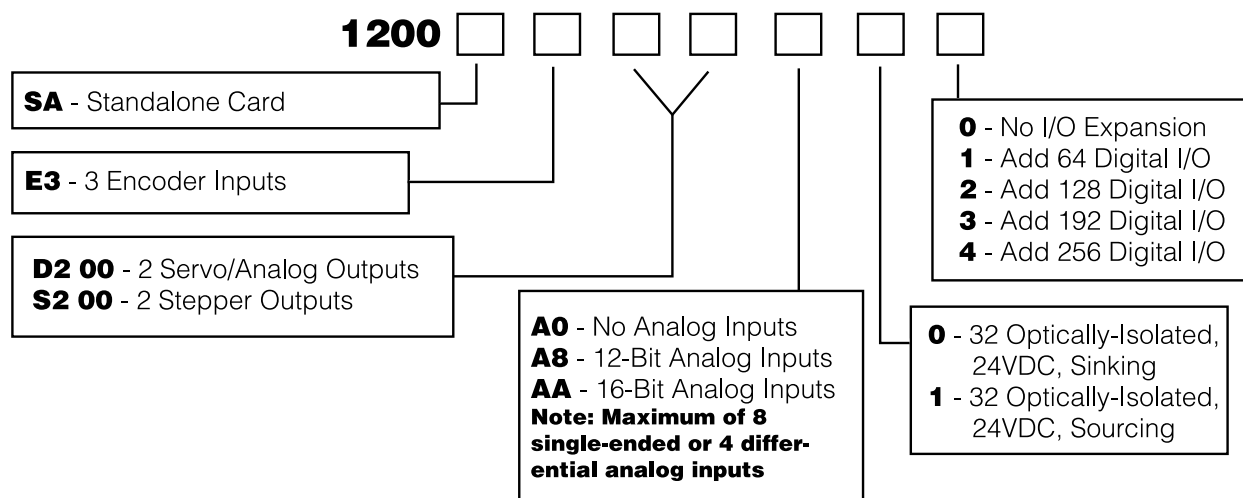
The ACR1200 is Compumotor's OEM two-axes standalone controller. The ACR1200 is a standalone controller card only and offers no PC port as an option. It comes with two serial ports—RS232 and RS422—and has the ability to run two servo loops with up to three encoders at 20 MHz. It can also be equipped with eight analog inputs through a 12- or 16-bit analog/digital converter and introduce these inputs into the servo loop. Because of the modular design of our outputs, it is possible to control 2 servo or 2 stepper axes on the same controller. This level of control has previously not been available at this price. All of Compumotor's Acroloop products utilize the same system software and programming language; this assures users complete flexibility in upgrading their hardware while maintaining their investment in program development.

The ACR1200 is Compumotor's answer to affordable, high-performance, standalone control when low cost, real-time speed and ease of programming are most needed.

### ACR 1200 Exclusives

- 2 axes of servo or stepper control
- 40 MFLOPS floating-point DSP
- Up to 3 encoder inputs at 20 MHz
- Standard user and system memory of 128 KB each
- Encoder loss and encoder fault protection
- High performance at a low cost
- Standard 32 optically isolated, 24 VDC I/O (expandable to 160 optically isolated, 24 VDC I/O)

### ACR1200 Ordering



**ACR1200 Specifications**

**Hardware**

- Axes/controller
- PC-Bus interface
- Standalone option
- Processor
- Trajectory calculation
- User memory
- System memory
- Firmware
- Flash memory
- Size
- Operating system

**Performance**

- Multi-tasking
- Trajectory update
- Servo update
- Ladder Logic PLC
- Interpolation
- Servo loop

- Position regulation
- Communications

**Communications**

- PC bus
- Optional interface
- Protocols

**Inputs**

- Encoder input
- Analog input - Auxiliary

**Command Signal**

- Analog outputs
- Stepper outputs

**Digital I/O**

**Software Support**

- Standard language
- Program tools
- Development tools
- Operating system
- Additional firmware highlights

**Value**

2 axes  
 NA (standalone only)  
 Yes  
 32- /64-bit floating-point DSP @ 40 MFLOPS / 40 MHz  
 64-bit precision  
 128 KB  
 128 KB  
 2 128 KB x 16 EPROMS  
 128 KB  
 8" W x 5" H  
 Real-time system independent of PC

8 coordinated systems, motion/PLC programs  
 Every 200-750 usec  
 75 usec/axis  
 200-750 usec scan time  
 Linear, circular, sinusoidal, helical and elliptical, splines, NURBS, 3D arcs  
 PID, velocity feedforward, acceleration feedforward notch, LoPass filtering and programmable filtering  
 Hardware, < 1usec  
 Simultaneous, serial ports

NA  
 2 serial ports (RS232 and/or RS422)  
 String and ASCII

3 (32-bit registers), up to 20 MHz post quadrature  
 Up to 8 (12- or 16-bit)

Up to 2 (16-bit precision)  
 Up to 2 @ 1 MHz  
 32, 24 VDC optically-isolated (expandable to 160)

Visual Basic, Visual C++, C++  
 AcroVIEW Motion/PLC Program  
 ActiveX controls/OCX controls  
 Windows® NT, 98, 2000, XP  
 Triggered floating point electronic GEARING  
 Triggered segmented electronic CAM  
 On-the-fly position and velocity matching  
 Ladder Logic PLC  
 Interruptible moves  
 Either analog or digital feedback for position or velocity loops  
 Dual-encoder feedback  
 Data teach and learn functions  
 Parameter-based with over 15,000 addressable pre-defined hardware registers  
 Sinusoidal commutation  
 NURBS and splines  
 3D arcs  
 Automatic tangential tool operation