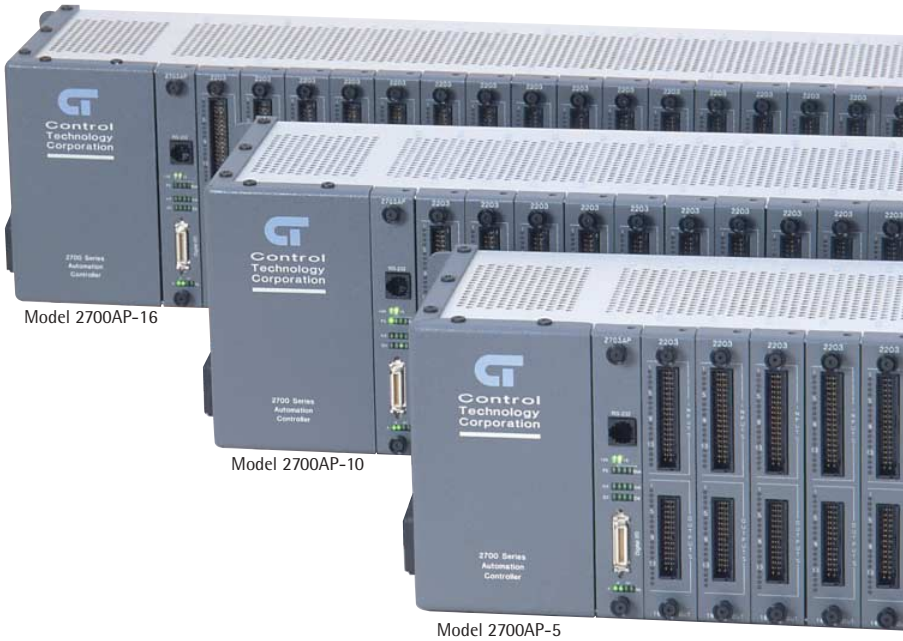
2700 Series Automation Controllers

Integrated, high-performance control

- Integrates machine sequencing, motion control, networking and analog data acquisition
- Easy programming
- Serial, Ethernet, DeviceNet communications
- Performance exceeds that of more costly controllers
- Up to 84 concurrent tasks



Model 2700AP-16

Model 2700AP-10

Model 2700AP-5

Totally Integrated Control

The 2700 Series Automation Controllers are high-performance control systems that accept a wide range of plug-in modules to accommodate specific applications. These controllers integrate machine sequencing, motion control, networking and analog data acquisition into a single control strategy. Discrete devices can be programmed independently during preliminary stages of the project and then combined with other devices at later stages, which simplifies troubleshooting and accelerates development. Supplied in an easily panel-mountable format, the 2700 Series accepts modules for every aspect of motion, digital and analog control, with additional modules for advanced serial, Ethernet and DeviceNet™ communications. Supported protocols include TCP/IP, UDP, and Modbus/TCP. The 2700 uses powerful, flexible communications avenues to integrate with other devices such as robots, which may have their own control programs.

Maximum Performance for Your Automation Dollar

The 2700 uses advanced technology, including a highly integrated plug-in CPU, to attain performance that exceeds the response metrics of much more costly systems. This performance level, combined with the controller's 128K user memory capacity and extended I/O and step capacities, makes the 2700 Series appropriate for any application that demands ultra fast response times or real-time, multitasking machine control. A multi-processor architecture distributes the workload, thereby increasing system performance. Multitasking for up to 84 independent tasks and advanced motion control commands enable you to design sophisticated solutions for the most complex applications.

2700 Series Automation Controllers

Integrated, high-performance control

2700AP-5 Automation Controller (5-slot)
2700AP-10 Automation Controller (10-slot)
2700AP-16 Automation Controller (16-slot)

2700AP Series Automation Controllers Specifications

System Resources

- 128K user memory
- 500 volatile registers
- 4500 non-volatile registers
- 16000+ element data table
- Real-time clock
- 24.576 MHz CPU processor

Typical Performance Specifications

- Sense input, jump to new step, change output in 0.2 msec
- Change servo profile in 1.0 msec
- Analog I/O Update per channel 2.083 msec

Software Resources

- 4096 program steps
- Multitasking operating system
- 84 simultaneous tasks
- 8 linkable software counters - 750 Hz

I/O

- Up to 512 digital I/O, 256 analog I/O[1]
- 16 PLS outputs (main CPU). Actuation rate = 1 msec
- 8 additional PLS outputs available from each Model 2719 module installed. Actuation rate = 125 µsec.
- Quadrature encoder input with 32-bit counter and 2 high-speed registration inputs
- On board I/O - 4 Digital Inputs and 4 Digital Outputs

Motion

- Up to 16 axes of servo[1]
- Servo update rate: up to 125 µsec
- up to 6 MHz quadrature encoder feedback

Communication

- Ethernet connectivity supports TCP/IP, UDP, Modbus/TCP; Web enabled control
- Web standards supported include HTTP, XML, SOAP, SMTP, RMI
- DeviceNet
- Up to 13 RS-232 connections at rates up to 38.4 Kbps[1]

Other Specifications

Capacities[1]

Models 2700AP -5/10/16	
Module Slots:	5/10/16
Inputs:[2]	160/320/512
Outputs:[2]	120/320/512
Analog Inputs:	80/128/256
Servo Axes:	10/16/16
RS-232 Channels:	12/13/13

CPU Module On-board I/O	
Digital Inputs[3]	4
Digital Outputs[3]	4
Encoder Inputs[3]	1
Registration Inputs[3]	2
RS-232 Ports[4]	2

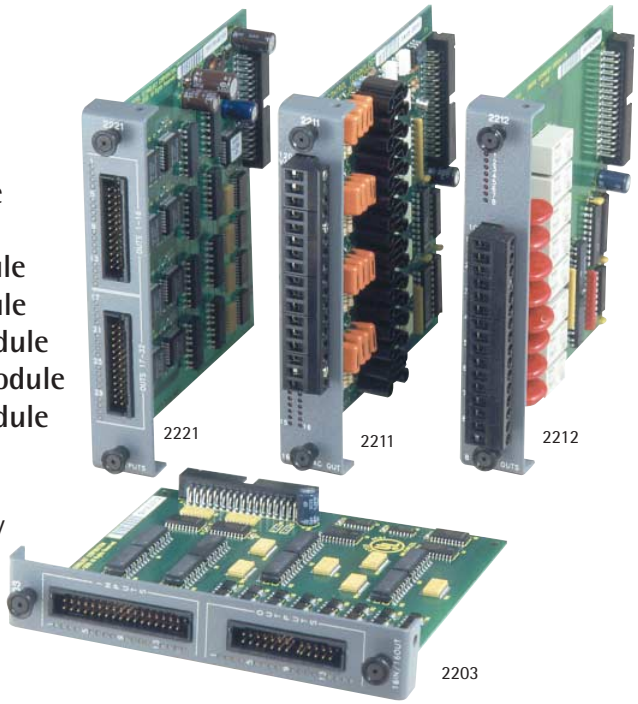
1. Not mutually inclusive
2. Slot limit
3. Requires Model 2346 distribution board.
4. Requires Model 2886 RS-232 connector to use the second communication port.

2700 Digital I/O Modules

Digital I/O control

Model 2201	32 Channel Input Module
Model 2202A	24 Channel Output Module
Model 2203	16In/16Out Module
Model 2203 SRC	16In/16Out Sourcing Module
Model 2210	16 Channel AC Input Module
Model 2211	16 Channel AC Output Module
Model 2212	8 Channel Relay Output Module
Model 2221	32 Channel DC Output Module

- High density I/O, low cost per I/O point
- Opto-isolation and other features for high reliability in harsh environments
- DC and AC models available



Specifications – Model 2201/2202A/2203/2221 Modules

Absolute Maximum Ratings	Min	Typical	Max
Applied input voltage - Note 1	0 VDC		27.0 VDC
Applied output voltage - Note 2	0 VDC		24.0 VDC
Output Current			
Single output			500 mA
Total limit			5 Amps
Specifications - Inputs			
Input "off" voltage (I_i = 0 mA)		24.0 VDC	26.4 VDC
Input "on" current (V_i = 0 V)		-2.10 mA	-2.85 mA
Input "on" current threshold (V_i = 8 V typ)		-1.0 mA	-1.85 mA
Input "off" current			
(typ leakage current allowable)			-250 µA
Specifications - Outputs 2202A/2221			
Output "on" voltage (I_o = 500 mA)		1.2 VDC	1.8 VDC
Output "off" leakage (applied V = 24 V) - Note 3		1.0 µA	10 µA
Specifications - Outputs 2203			
Output "on" voltage (I_o = 500 mA)		0.8 VDC	1.8 VDC
Output "off" leakage (applied V = 24 V) - Note 3		0.01 µA	0.75 µA

Notes: 1. Under normal operation, no external input voltage is applied - inputs should be externally switched to the input common.
2. An on-board protection diode returns to +24 V from each output.
3. In the off state, unconnected outputs are internally pulled to +5 V through a diode and an LED indicator.

2700 Modules

Digital I/O control

Model 2203 SRC 16 In/16 Out Sourcing Module

Specifications - Model 2203 SRC Module

Absolute Maximum Ratings	Min	Typical	Max
Applied input voltage - Note 1	22.0 VDC	24.0 VDC	27.0 VDC
Applied output voltage - Note 2	0 VDC		24.0 VDC
Output current			
Single output			500 mA DC
Total limit			5 A
Operating Characteristics			
Output "on" voltage (I_o = 500 mA)		22.8 VDC	23.0 VDC
Output "off" leakage		1 µA DC	100 µA DC
(applied voltage = 24 VDC)			
Input "off" voltage (I_i = 0 mA)		0 VDC	
Input "on" current (V_i = 24 V)		2.10 mA DC	3.00 mA DC
Input "on" current threshold (V_i = 11 V typ)	3.0 mA DC	3.5 mA DC	
Input "off" current		250 µA DC	
(typ leakage current allowable)			

Notes: 1. Under normal operation, no external voltage is applied. Inputs should be externally switched to +24 VDC.
2. An on-board protection diode returns to each output from the +24 V Return.

Model 2210 16 Channel AC Input Module
Model 2211 16 Channel AC Output Module

Specifications - Model 2210, 2211 Modules

Absolute Maximum Ratings	Min	Typical	Max
Applied input voltage (2210)			135.0 VAC
Voltage applied to common terminal (2211)		135.0 VAC	
Output current - single output (2211)			0.75 A AC
Total module limit (2211)			10.0 A AC
Operating Characteristics			
Model 2210 Module			
Input threshold voltage		58.0 VAC	70.0 VAC
Input "on" current (V_i = 120 VAC)	2.0 mA AC	4.5 mA AC	5.5 mA AC
Operating Characteristics			
Model 2211 Module			
Output "on" voltage drop		1.6 VAC	2.2 VAC
Output "off" leakage current (V_o = 0 VAC)	4.7 mA AC	5.7 mA AC	

Model 2212 8 Channel Relay Output Module

Specifications - Model 2212 Module

Absolute Maximum Ratings	Min	Typical	Max
Switching voltage (DC)			30 VDC
Switching voltage (AC)			250 VAC
Maximum switching current			5 A
Operate time		5 msec	
Release time		4 msec	

2700 Analog I/O Modules

Advanced analog I/O control

Model 2220

Model 2220 Analog I/O Module

- 8 analog in, 8 analog out, 8 digital out
- On-board threshold triggering

Application Specific Versions

- **Model 2220-100 1 Hz filter for load cell/pressure transducer**
- **Model 2220-101 10 Hz filter for high noise environments**
- **Model 2220-102 1 Hz filter and on-board PID for temperature control**
- **Model 2220-103 Unfiltered and on-board PID for fast response**

Model 2720 Analog I/O Module

- 16 analog in, 16 analog out
- High-density, high-speed analog I/O

Specifications - Model 2220 and 2720 Modules

Absolute Maximum Ratings	Min	Typical	Max
Maximum analog input voltage			±15VDC
Minimum analog output load resistance	2.0kΩ		
Maximum output current			
Precision 10 volt reference output			60mA
Digital outputs (per output)			500mA
Analog isolation - voltage withstand (one minute duration max.)			1500 volts
Analog Input Specifications			
Differential input range	-10.000000 VDC		+10.000000 VDC
Common mode voltage range	-10 VDC		+10 VDC
Input resistance			10 MΩ
Input resolution (15-bit)		.00305 %FS	
Input accuracy (25°C, 8-sample filtering)		.00305 %FS	
Input conversion time (asynchronous)		2.083 msec	
Input filter settings **(2220)** (default = 1 sample)	2.083 msec	533.248 msec	
Input filter settings **(2720)** (default = 1 sample)	1.048 msec	25.6 msec	
Threshold triggering response (Analog input to digital output response)		2.25 msec	
Analog Output Specifications			
Output voltage range	-10.000 VDC		10.000 VDC
Output resolution		2.44 mV	
Digital Output Specifications			
On voltage (I_o = 500 mA)	0.8 VDC		1.2 VDC
Off leakage (applied V = 24 VDC)	1 µA DC		100 µA DC
Maximum output current-Note 1			500 mA DC

Note 1. All digital outputs are short circuit and over-current protected.

2700 Analog I/O Modules

Standard analog I/O control

Model 2207 16 Channel Analog Input Module (0-10 VDC 1 part in 1000; 4-20 mA 1 part in 160)
Model 2207A 16 Channel Analog Input Module (0-10 VDC 1 part in 1000; 4-20 mA 1 part in 800)
Model 2207B 16 Channel Analog Input Module(0-10 VDC 1 part in 1000; 4-20 mA 1 part in 350)
Model 2209 Analog Output Module (±10 VDC 1 part in 4096)

Specifications - Models 2207, 2207A, 2207B Modules

Absolute Maximum Ratings	Min	Typical	Max
Applied Input Voltage - (Note 1)	0 VDC		27.0 VDC
Power Supply Capacity (+15 VDC)			100 mA
Reference Output Current (10.00 V)			26 mA
Reference Voltage			
Nominal output voltage		+10.000 VDC	
Accuracy		±4.88 mV	±9.76 mV
Analog Input Specifications			
Input Characteristics - normal mode			
Nominal sensing range	0 VDC		+10.00 VDC
Resolution		0.01 VDC	
Accuracy		±0.01 VDC	±0.03 VDC
Input Current		0.01 µA	1.0 µA
Input Characteristics - differential mode			
Common-mode voltage range	0 VDC		6.00 VDC
Nominal gain range	280		575
Input offset voltage adjust.		±4.5 mV	
Input impedance		10 kΩ	

Notes: 1. Application of a negative voltage will result in erroneous readings.

Specifications - Model 2209 Module

Absolute Maximum Ratings	Min	Typical	Max
Output Load Resistance	2.0 kΩ		
Power Supply Capacity (±15 VDC) - Note 1			60 mA
Reference Output Capacity (+10.000 VDC)			100 µA
Analog Input Specifications			
Analog Output Voltage Ranges			
Unipolar, 10 V span	0.000 VDC		+10.000 VDC
Bipolar, 10 V span	-5.000 VDC		+5.00 VDC
Bipolar, 20 V span	-10.000 VDC		+10.000 VDC
Output Resolution			
10 V span setting		2.44 mV	
20 V span setting		4.88 mV	
Output Accuracy			
10 V span setting		±2.44 mV	±4.88 mV
20 V span setting		±4.88 mV	±9.76 mV
Power Supply Output			
Negative Supply Voltage	-15.75 VDC		-14.25 VDC
Positive Supply Voltage	+14.25 VDC		+15.75 VDC
Reference Output Voltage	9.900 VDC		10.100 VDC

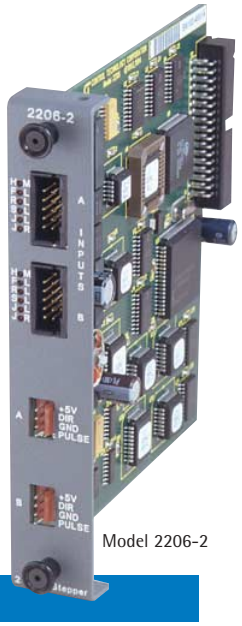
Notes: 1. The external capacity of the on-board ±15 volt supply must be reduced by the amount drawn from the analog outputs.

2700 Motion Modules

Stepper control

Model 2206-1 Single Axis Stepper Motor Module
Model 2206-2 Dual Axis Stepper Motor Module

- Supports full-, half-, and microstepping drives
- Close coupling of 2206 CPU and controller's main CPU provides dynamic, on-the-fly reprofiling, with current theoretical position and velocity available on demand
- Use of servo command language supports absolute positioning, relative positioning and continuous velocity-based moves. Automatic home-seeking also supported.
- Motion parameters can be derived from any other controller resource and organized in a data table, accelerating system design and job customization
- Motor tuning may be accomplished in minutes



Model 2206-2

Specifications - Model 2206-1 and 2206-2 Modules

Absolute Maximum Ratings	Min	Typ	Max
+5 V Supply Output Current - Note 1 (for powering external drive inputs)			96 mA
Pulse and Direction Outputs			
Low V_{OL} (I_{OL} = 24 mA)	0.36 VDC		0.44 VDC
High V_{OH} (I_{OH} = 24 mA)	4.44 VDC		5.25 VDC
Pulse Width (jumper configurable)			
For microstepping drives		1.3 µsec	
For half- and full-step drives		34 µsec	
Auxiliary Inputs			
Off Voltage (I_i = 0 mA)-Note 2		24.0 VDC	26.4 VDC
On Current (V_i = 0 V)		2.1 mA	2.5 mA
Threshold			
low-to-high		8.5 VDC	
high-to-low		7.5 VDC	
Performance Specifications			
Velocity Range	4 Steps/sec		250,000 Steps/sec
Resolution of Max. Velocity Setting		3.9 Steps/sec	
Accel. and Decel. Settings			130,000,000 Steps/sec^2
Resolution of Accel/Decel Setting		15.3 Steps/sec^2	
Position Range	-2,147,483,648 Steps		2,147,483,647 Steps
Relative Motion Command Range	-2,147,483,648 Steps		2,147,483,647 Steps

Notes:

1. Powered from the controller's 24 V supply
2. Dependent on the controller's auxiliary supply voltage (24 V typ).

For programming flexibility, the 2206 uses the following Quickstep™ servo commands: Profile Servo, Turn Servo, Stop Servo, Search and Zero Servo, Zero Servo, Monitor Servo, If Servo, and Store Servo.
Each axis provides six auxiliary inputs, each with an LED indicator, performing the following functions:

SOFT STOP - stops motor motion.
FWD-LIM - inhibits motion in the forward direction.
REV-LIM - inhibits motion in the reverse direction.
HOME - establishes a home (zero) reference point for absolute positioning.
JOG CW and JOG CCW - turns the motor cw or ccw at the programmed rate.
START - A programmable option replacing **JOG CW** that allows a motion to wait for this input.

2700 Motion Modules

Servo control

Model 2219-1.5 Single Axis Servo Control Module
Model 2219-2 Dual Axis Servo Control Module
Model 2719 Dual Axis Servo Control Module

- Advanced servo features: electronic gearing, move-on-gear, registration, multi-count automatic homing
- Multiple loop control with velocity and acceleration feedforward plus filter modes to resolve difficult stability problems and expedite tuning
- Differential quadrature and differential index/marker encoder inputs
- Six dedicated Inputs/axis (HOME, START, KILL, FWD-LIM, REV-LIM, REGISTATION)
- Model 2719 adds: enhanced performance and resolution, 125 µsec loops; extended command set. S-curve and parabolic ramping. Eight on-board PLS outputs.

Model 2719

Specifications – Model 2219 and 2719 Modules

All parameters apply to both modules unless specified otherwise.

Absolute Maximum Ratings	Min	Typical	Max
Performance Specifications – Note 1			
2219 maximum velocity setting	1 count/sec		4,000,000 counts/sec
2719 maximum velocity setting	1 count/sec		6,000,000 counts/sec
Accel. and decel. settings	1 count/sec^2		130,000,000 counts/sec^2
Position range (+/- 1 count)	-2,147,483,648 counts		2,147,483,647 counts
2219 servo loop update		488 µsec	
2719 servo loop update		125 µsec	
Encoder input voltage	0.0 VDC		+5.0 VDC
I/O Specifications			
Command Outputs			
Nominal voltage range	-10.0 VDC		+10.0 VDC
Command load resistance	2 kΩ		
2219 resolution (13-bit) 1LSB		2.44 mV	
2719 resolution (16-bit) 1LSB		305 µV	
Differential Encoder Inputs			
Nominal input range (max 500 mA/ module)		0.0 VDC	+5.0 VDC
Open-circuit voltage (I_i = 0 mA)		5.0 VDC	5.38 VDC
Logic-low current (V_i = 0 V)		1.1 mA	1.2 mA
Registration Auxiliary Input			
Off voltage (I_i = 0 mA) - Note 3		24.0 VDC	26.4 VDC
On current (V_i = 0 V.)		-2.28 mA	
Threshold			
low-to-high		5.1 VDC	
high-to-low		4.9 VDC	

Notes:

1. In Performance Specifications, the term "count" refers to one edge transition on either encoder input for that axis. Velocity resolution within 1 count/sec.
2. PID parameters are programmed as relative values in the range of 0 to 255. Acceleration (A_{ff}) and Velocity feedforward (V_{ff}) range from 0 to 32767.
3. Dependent on controller auxiliary supply voltage (24 V. typ).
4. Ratio Range for both axis following and ratio control is +1 to 32767 minimum and +32767 to 1 maximum. Depending on the application, high ratios may result in instability.

2700 Communication Modules

Ethernet Modules


Model 2717

Model 2217T Networking Communications Module

- Ethernet 10BaseT support and two RS-232 ports; supports CTNET protocol

Model 2717 Networking Communications Module

- 10/100Base T support, two RS-232 ports and:
  - Provides patented Internet/Intranet access to plant floor data
  - Supports TCP/IP, UDP, Modbus/TCP and CTNET protocols
  - Enables desktop monitoring and control from standard browsers
  - Has on-board flash file system accessible via FTP protocol

Specifications - Model 2217 Module

Description	Min	Typical	Max
Absolute Maximum Ratings			
Current draw from on-board +5 V Supply			110 mA DC
Operating Characteristics			
RS-232 Transmitters		±5 VDC	±12 VDC
RS-232 Receivers	±3 VDC		±12 VDC
Ethernet Transceivers (10 Megabits/sec) - Note 1			1.5 VAC PP
CTNET Performance Specifications			
Host Communications			
Single register transaction from 2217		1-2 msec	
Single register transaction from 2703AP - Note 2		3-5 msec	
16-register read from 2700AP - Note 2		6-7 msec	
50-register read from 2700AP - Note 2		8-9 msec	
Peer-to-Peer Communications			
Single register transaction from 2217		9-11 msec	
Single register transaction from 2703AP		10-13 msec	

Notes: 1. This conforms to IEEE Standard 802.3.
2. This value is derived with high communications priority active or when one task is running.

Specifications - Model 2717 Module

Description	Min	Typical	Max
Operating Characteristics			
RS-232 Transmitters		±5 VDC	±12 VDC
RS-232 Receivers	±3 VDC		±12 VDC
Common Mode Voltage Range	-10 VDC		+10 VDC
RS-485 Common Mode Rejection	-7 VDC		+12 VDC
RS-485 Hysteresis		70 mVDC	
Ethernet Transceivers (10/100 Megabits/sec) - Note 1			1.5 VAC PP

Performance Specifications

Description	CTNET	UDP	TCP/IP	Modbus/TCP
Host Communications in msec				
Single-Register Transaction from 2717	1-2	2-4	3.5-4	6-8
Single-Register Transaction from 2703AP	3-5	5-8	7-10	10-12
16-Register Read from 2700AP - Note 2	6-7	9-11	10-12	12-14
50-Register Read from 2700AP - Note 2	8-9	10-12	11-13	16-17

Notes: 1. This conforms to IEEE Standard 802.3.
2. This value is derived with high communications priority active or when one task is running.

2700 Communication Modules

DeviceNet™ and serial modules

Model 2716D

Model 2716D DeviceNet module

- Controller may be configured as master, slave or both
- Monitor mode identifies and interrogates any device on the DeviceNet network; nodes selectable via on-board switches
- Supports bit-strobe, poll, change-of-state, cyclic, and explicit messaging
- 125K, 250K, and 500K baud rates are supported
- ODVA compliant

Specifications - Model 2716D Module

Absolute Maximum Ratings	Min	Typical	Max
Current draw from on-board +5V supply			250 mA DC
RS-232 Operating Characteristics			
RS-232 Transmitters		±5 VDC	±12 VDC
RS-232 Receivers	±3 VDC		±12 VDC
Common Mode Voltage Range	-10 VDC		+10 VDC
RS-485 Operating Characteristics			
RS-485 common mode rejection	-7 VDC		+12 VDC
RS-485 hysteresis - Note 1		70 mVDC	

Note 1. Combined impedance is less than 1 RS-485 load, up to 32 devices on a bus

Serial Modules

Model 2716

Model 2716 RS-232 Communications Module

- Two RS-232 ports plus an additional RS-485 port
- Six baud rates from 1200 to 38,400 supported
- Special purpose registers can read individual characters from port's buffer or parse out numeric data from ASCII strings
- Independent 32-bit processor offloads communications tasks from main CPU for better performance

Specifications - Model 2716 Module

RS-232 Operating Characteristics	Min	Typical	Max
RS-232 Transmitters		±5 VDC	±12 VDC
RS-232 Receivers	±3 VDC		±12 VDC
Common Mode Voltage Range	-10 VDC		+10 VDC
RS-485 Operating Characteristics			
RS-485 common mode rejection	-7 VDC		+12 VDC
RS-485 hysteresis - Note 1			70 mVDC

Note 1: Combined impedance is less than 1 RS-485 load, up to 32 devices on a bus

2700 Series Automation Controllers

Configuring your 2700 controller

The 2700AP-5, -10, and -16 can accommodate 5, 10, and 16 modules respectively. The following modules are compatible with all models of the 2700:

Supported Modules

Models 2201, 2202, 2203, 2203SRC, and 2221 DC Input and Output Modules
Model 2206 Single or Dual-axis Stepping Motor Modules
Models 2207 and 2209 Analog Input and Output Modules
Models 2210 and 2211 AC Input and Output Modules
Model 2212 8-channel Relay Module
Model 2220 and 2720 Precision Analog Input and Output Modules
Models 2219 and 2719 Dual-axis Servo Control Modules
Models 2216 and 2716 Dual Channel RS-232 Modules
Model 2716D DeviceNet Module
Model 2217 and 2717 Ethernet Communications Modules

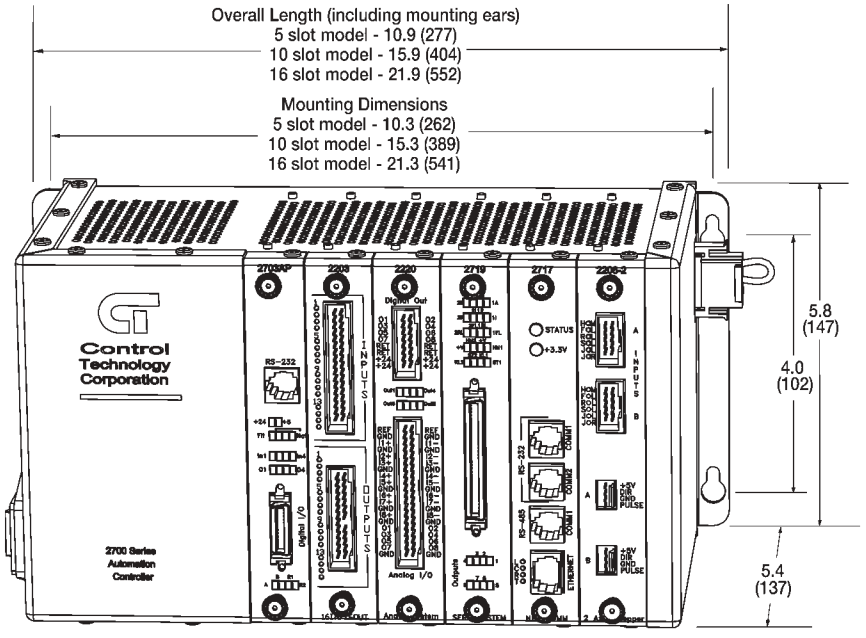
Refer to pages 22 - 29 for further specifications of these modules. Recommended accessories for each module are listed on the following page.

Specifications - Model 2700 Controller

Absolute Maximum Ratings	Min	Typical	Max
A.C. Voltage Range			
120 V Mode 50/60Hz	100.0 VAC	120.0 VAC	132.0 VAC
240 V Mode 50/60Hz	200.0 VAC	240.0 VAC	264.0 VAC
Current Requirement			
120 V Mode		0.9 Amp	1.5 Amp
240 V Mode		0.45 Amp	0.75 Amp
Power Supply Capacities			
+24 V I/O Supply			1.5 Amp
+5 V Logic Supply			5.0 Amp
RS-232 Transmitters	±3 VDC	±5 VDC	±12 VDC
RS-232 Receivers	±3 VDC	±5 VDC	±12 VDC
Common Mode Voltage Range	-10 VDC		+10 VDC
Encoder Power-Supply Capacity (+5V)			250.0 mA
CPU Power Requirement (5V)		0.4 Amp	0.6 Amp
Lithium-cell RAM (4 yrs. unpowered)		128K Bytes	

Dimensions

Dimensions are in inches (mm).

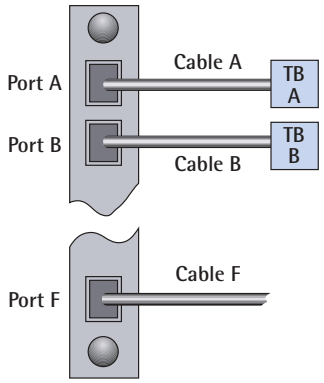


2700 Series Automation Controllers

Model 2700 ordering guide

Accessory Ordering

The table below lists the accessories recommended for each of the 2700's modules. Ports on each module are designated by the letters A, B, C, D, E, F, starting with "A" for the first port at the top of the faceplate and continuing down for all other ports present on that faceplate. Example: the 2206-2's third port from the top of the faceplate is port C. It is a Stepper (pulse/direction signals) port and it requires a cable whose part number is 2287. Terminal blocks are only applicable to ports A and B on selected modules and are not listed for any other ports.



2700 Module Connection Table

Module #	Module Description	Connector Kit (1)	Cable A	TB A	Cable B	TB B	Cable C	Cable D	Cable E	Cable F
2201	32 Channel Input Module	2251	DI 2276	2376**	DI 2276	2376**	-	-	-	-
2202A	24 Channel Output Module	2252	DO(16) 2275	2375**	DO(8) 2274	2375**	-	-	-	-
2203	16In/16Out Module	2253	DI 2276	2376**	DO 2275	2375**	-	-	-	-
2203 SRC	16In/16Out Module	2253	DI 2276	-	DO 2275	-	-	-	-	-
2206-1	Single Axis Stepper Module	2256-1	DedIn 2270	-	Step 2287	-	-	-	-	-
2206-2	Dual Axis Stepper Module	2256-2	DedIn 2270	-	DedIn 2270	-	Step 2287	Step 2287	-	-
2207 (all models)	16 Channel Analog Input Module	2257	AI 2278	-	-	-	-	-	-	-
2209	Analog Output Module	2259	AO 2279	-	-	-	-	-	-	-
2210, 2211, 2212	C I/O - Relay Output Module	N/A	Front pluggable Terminal Block included w/ module							
2219-1.5, 1CF	Single Axis Servo Control Module 1.5 or Cam following	2269-1	Cmd 2289C	-	Enc 2289E	-	DedIn 2289L	-	-	-
2219-2	Dual Axis Servo Control Module	2269-2	Cmd 2289C	-	Cmd 2289C	-	Enc 2289E	Enc 2289E	DedIn 2289L	DedIn 2289L
2220 (pig tail cables)	Analog I/O Module	2260	DO 2273	-	AI/AO 2280	-	-	-	-	-
2220	Analog I/O Module (thermocouple configuration)	N/A	AO 2331	2334 (J or K) or 2335 (J, K or -)	Signal 2332	-	-	-	-	-
2221	32 Channel Output Module	2252	DO 2275	2375**	DO 2275	2375**	-	-	-	-
2703AP	2700AP CPU	-	-	Ser(2) 2886	Dist Block 2346-CBL	Dist Block 2346	-	-	-	-
2719	Dual Axis Servo Control Module	-	2345-CBL	2345	-	-	-	-	-	-
2720 (pig tail cables)	Analog I/O Module	2260 (2 req'd)	AI/AO 2280	-	AI/AO 2280	-	-	-	-	-
2720	Analog I/O Module	-	AO 2331	Dist Block 2335	AO 2331	Dist Block 2335	-	-	-	-

Port types:

DI = Digital Input
DO = Digital Output. #Inputs specified in parentheses.
DedIn = Dedicated Input
Step = Stepper (pulse/direction signals)
AI = Analog Input
AO = Analog Output

Cmd = Command
Enc = Encoder
Signal = Signal
Ser(2) = RS-232 splitter
Dist block =Distribution block

(1) connector kits include enough mating connectors and pins for the entire module
** Terminal Block and Cable Set