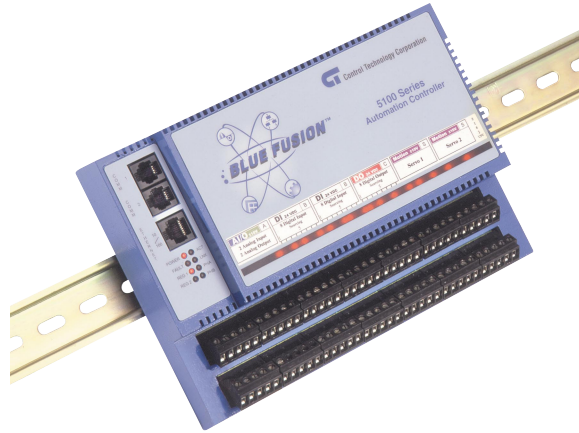


5100 Series Automation Controllers

Web Enabled Automation



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- **Monitoring and control via Web browser over secure Ethernet connections**

- **Compact size, DIN rail mountable**

- **Built-in XML support**

- **Up to 50 I/O points**

- **Up to 6-1/2 motion axes**

Blue Fusion: a new approach to control

The 5100 series is part of Control Technology Corporation's Blue Fusion family of automation controllers, combining fully configurable I/O, motion control and enterprise connectivity into a single compact package – at a price that's lower than many non-networkable controllers. With built-in 10/100 Base T Ethernet connections, the 5100 supports the protocols that put your devices on the Web over secure connections, including:

- HTTP (Hypertext Transfer Protocol), the standard protocol used to transport information over Internets and Intranets to any standard desktop browser
- SOAP (Simple Object Access Protocol), a powerful new protocol for integrating and transferring business information over a Microsoft framework.
- SMTP (Simple Mail Transfer Protocol), a standard protocol for transporting email messages to conventional and pager-based email systems.
- RMI (Remote Method Invocation), a Java-based messaging protocol that provides users with web-based read/write access to controller variables using Java and JavaScript. Users can monitor, diagnose, and modify controller parameters remotely over secure connections, reducing support travel costs and downtime. Remote access also enables engineering resources to support multiple sites concurrently from a single location, increasing effectiveness.

I/O, motion control, and UI integration

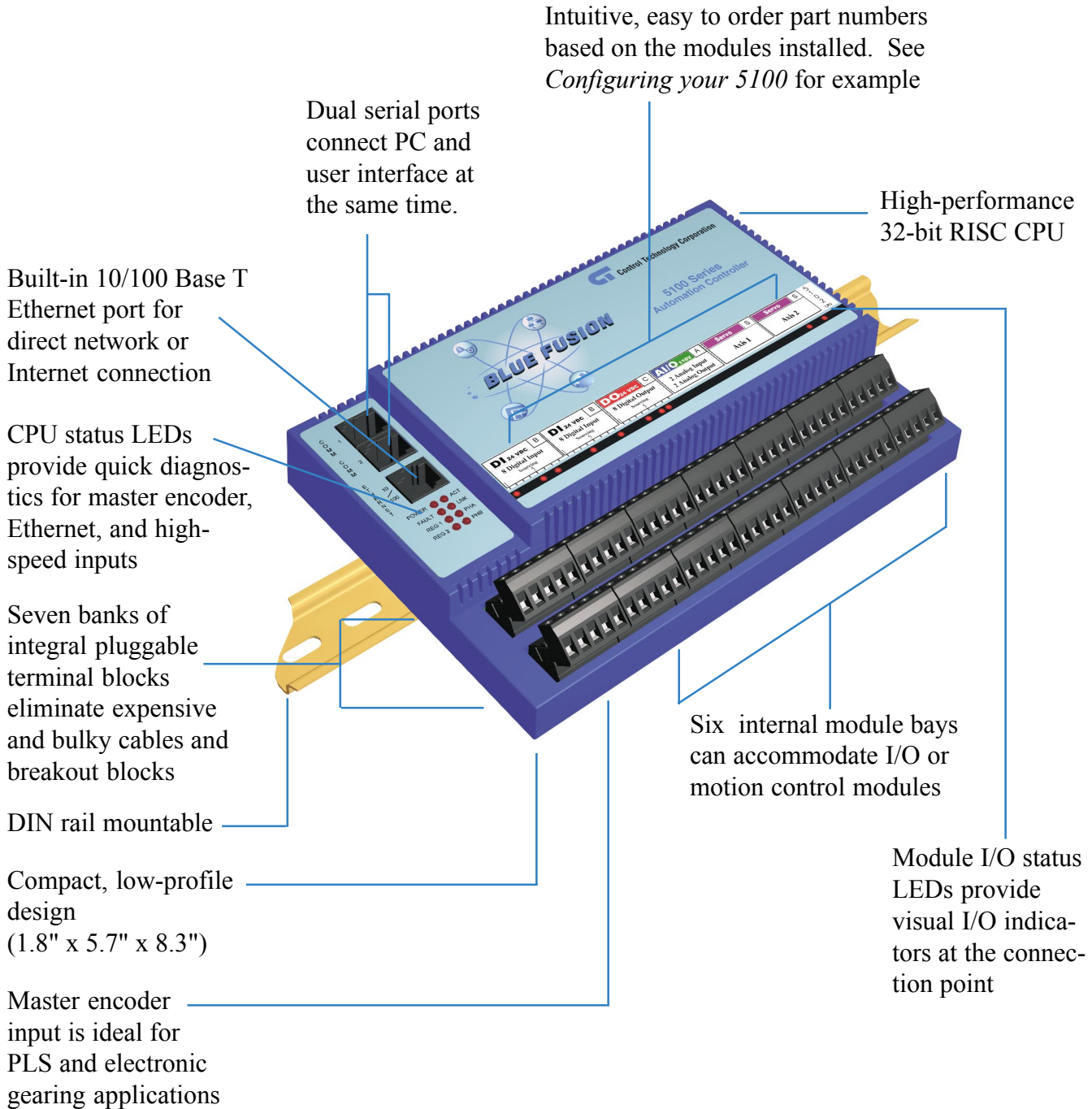
With six internal bays available for function modules, the 5100 can integrate up to 50 digital and analog I/O points and up to 6 -1/2 axes of stepper or servo control, while two serial ports are available for HMIs, programming interface, or other serial devices. Programming is done with Quickstep™, CTC's easy to learn step-based language, which enables users to bring on components of a project modularly, accelerating and simplifying system development.

Easy to install

With compact 8.3" x 5.7" dimensions, the 5100 fits easily into the most cramped system designs and is also DIN rail mountable. Integral pluggable terminal blocks eliminate bulky cables and breakout blocks.

Blue Fusion 5100 Series Automation Controllers

Integrating Digital and Analog I/O, Motion Control, User Interface, and Enterprise Connectivity



Configuring Your 5100

CTC has designed the 5100 series to be easily configurable to meet a wide variety of applications. Ordering is simple: you just select your CPU option and then add the modules needed for your application. Each controller has six internal module bays that can accommodate any combination of I/O or Motion modules. The 5100 module options as well as a sample configuration are shown below.

Note: Modules can only be installed during the controller fabrication process and are not field configurable.

5100 Series Part Numbers

5100 Series part numbers specify:

- whether there is an encoder option installed
- modules installed

Example

We'll use the controller featured at left as an example. Its part number is:

5102-BBCASS

Encoder digits. Specify 5101 for Standard CPU (no encoder), 5102 for encoder option.

Module Bay configuration. Function modules are designated by letters. Each I/O module occupies one bay and has a single-letter designation. Each servo module occupies two bays and has a two-letter designation (listed at right). Up to six bays may be configured in any combination.

This controller has:

- the encoder option installed (5102)
- the following modules installed:
 - B 8 digital DC inputs
 - B 8 digital DC inputs
 - C 8 digital DC outputs
 - A 2 analog inputs and 2 analog outputs
 - SS 2 axis servo motion controller

Module Options

You may choose modules to occupy up to six bays in each controller. Each module occupies one bay except for the servo controller, which occupies two bays. For larger applications, controllers may be networked in peer-to-peer configurations.

AIO ±10V	A
2 Analog Input	
2 Analog Output	

A: 2 Analog Inputs and 2 Analog Outputs
14-bit resolution

DI 24 VDC	B
8 Digital Input	
Sourcing	
5	

B: 8 Digital DC Inputs
24 VDC optically isolated

DO 24 VDC	C
8 Digital Output	
Sourcing	
5	

C: 8 Digital DC Outputs
24 VDC optically isolated

Servo	S	Servo	S
Axis 1		Axis 2	

SS: 2 Axis Servo Controller

Provides precise control of two servo motors by adding a high-performance motion co-processor in each module. Servo position loop rates are maintained at 250 µs per axis at encoder feedback rates of up to 6 MHz regardless of other controller operations. Each module also contains two high-speed inputs that latch encoder position within 1 encoder count for precise registration. Axes can operate independently or be electronically geared to other axes or the master encoder within the 5100 controller. Interfaces directly with velocity or torque mode drives via 16-bit ±10V commands.

Stepper	T	Stepper	T
Axis 1		Axis 2	

TT: 2 Axis Stepper Controller

Supports 1 MHz maximum step rate with resolution within ±1 Step/sec, and position range of ±2.1 billion steps. An on-board processor offloads the data-intensive functions of motion control from the controller's main CPU. The advanced command set used for servo may also be used for stepper, maximizing stepper capabilities. Three auxiliary inputs and one registration input are available for each axis.

Model 5100 Specifications

Other Specifications

Capacities*

Model 5101

Module Bays:	6
Inputs:	48
Outputs:	48
Analog Inputs:	12
Analog Outputs:	12
Servo Axes:	6
Ethernet Ports:	1
Master Encoders:	0
RS-232 Channels:	2

Model 5102

Module Bays:	6
Inputs:	50
Outputs:	48
Analog Inputs:	12
Analog Outputs:	12
Servo Axes:	6-1/2
Ethernet Ports:	1
Master Encoders:	1
RS-232 Channels:	2

*Not mutually inclusive

Protocols Supported

CTNET
TCP/IP
UDP
ModBus/IP Server
ModBus/IP Client
Peer to Peer
FTP (File Transfer Protocol) and Telnet also supported.

More Information

To receive further detailed information about Control Technology products, contact our Systems Specialists at:



**Control
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General Specifications

	Min	Typical	Max	Units
Controller				
Ambient Temperature (operating)	0		50	°C
Applied Input Voltage	18.0	24.0	27.0	VDC
Current Requirement		.4	.6	A DC
Master Encoder (option)				
Max Data Rate			3	MHz
Encoder Supply Voltage	0.0	5.0	5.25	VDC
Encoder Supply Output Current			130	mA
Differential Encoder Input				
Nominal Input Range	0.0	5.0		VDC
Open-circuit Voltage ($I_i = 0$ mA)		5.0	5.38	VDC
Logic-low Current ($I_i = 0$ V)		1.1	1.2	mA
Registration Input Specifications				
Off Voltage ($I_i = 0$ mA)		24.0	26.4	VDC
On Current ($I_i = 0$ V)		1.2		mA
Threshold				
low-to-high		16		VDC
high-to-low		15		VDC
Digital Input Module				
Input off voltage ($I_i = 0$ mA)	0			VDC
Input on current ($V_i = 24$ V)		1.2	1.5	mA DC
Input on current threshold ($V_i = 16$ V typical)		0.8	0.9	mA DC
Input off current (typical leakage current allowable)		250		µA DC
Digital Output Module				
Output on voltage ($I_o = 350$ mA)		22.8	23.0	VDC
Output current			350	mA DC
Total limit per controller			3	A DC
Output off leakage (applied voltage = 24VDC)			100	µA DC
Analog Input Module				
Differential Input Range (Full Scale)	-10.000		+10.000	VDC
Common Mode Voltage Range	-10		+10	VDC
Input Resistance	10			MΩ
Input Resolution (14-Bit)		.0061		%FS
Input Accuracy		.0061	.012	%FS
Analog Output Module				
Output Voltage Range (12-bit)	-10.000		+10.000	VDC
Output Resolution		2.44		mV
Output Settling Time				
-10.000 to +10.000 V			3.28	mS
0 to 5.000 V			1.64	mS
Servo Control Module				
Command Outputs				
Nominal Voltage Range	-10.0		+10.0	VDC
Maximum Velocity Setting	1		6,000,000	PPS
Resolution of Maximum Velocity	1			PPS
Acceleration and Deceleration Settings			130,000,000	PPS ²
Resolution of Accel and Decel Settings	1			PPS ²
Position range	-2,147,483,648		2,147,483,647	steps
Relative Motion Command Range	-2,147,483,648		2,147,483,647	steps
Communications				
RS-232 Transmitters		±5	±10	VDC
RS-232 Receivers	±3		±10	VDC
Common Mode Voltage Range	-10		+10	VDC
Ethernet Transceivers (10/100 Megabits/sec)			1.5	VAC PP