OMRON®

CS1 Series Programmable Controller

System Overview

CPU Overview

Basic System Configuration

I/O Types and Allocations

Modules

Peripheral Hardware and Software

Instruction Set

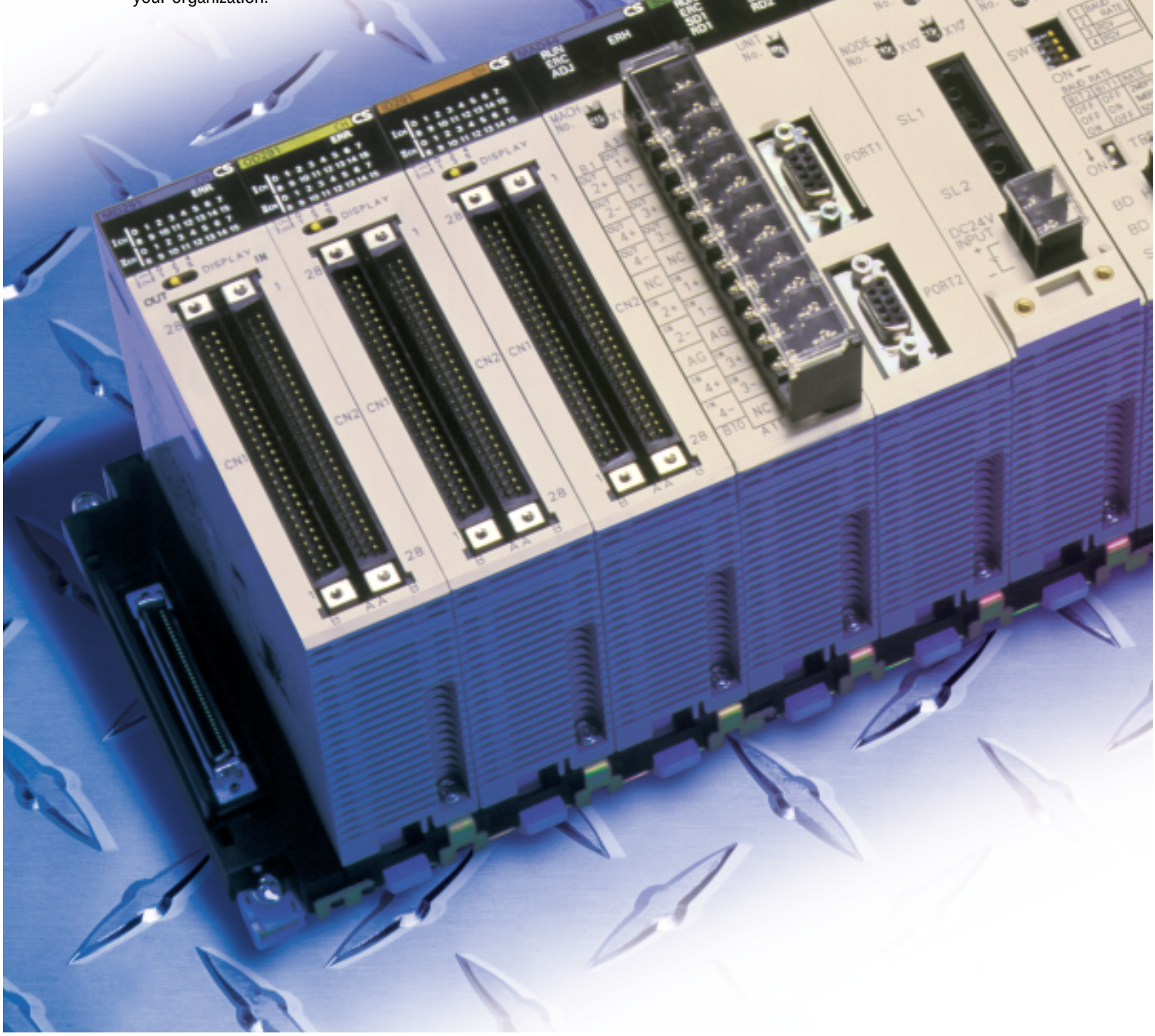
Ordering Guide

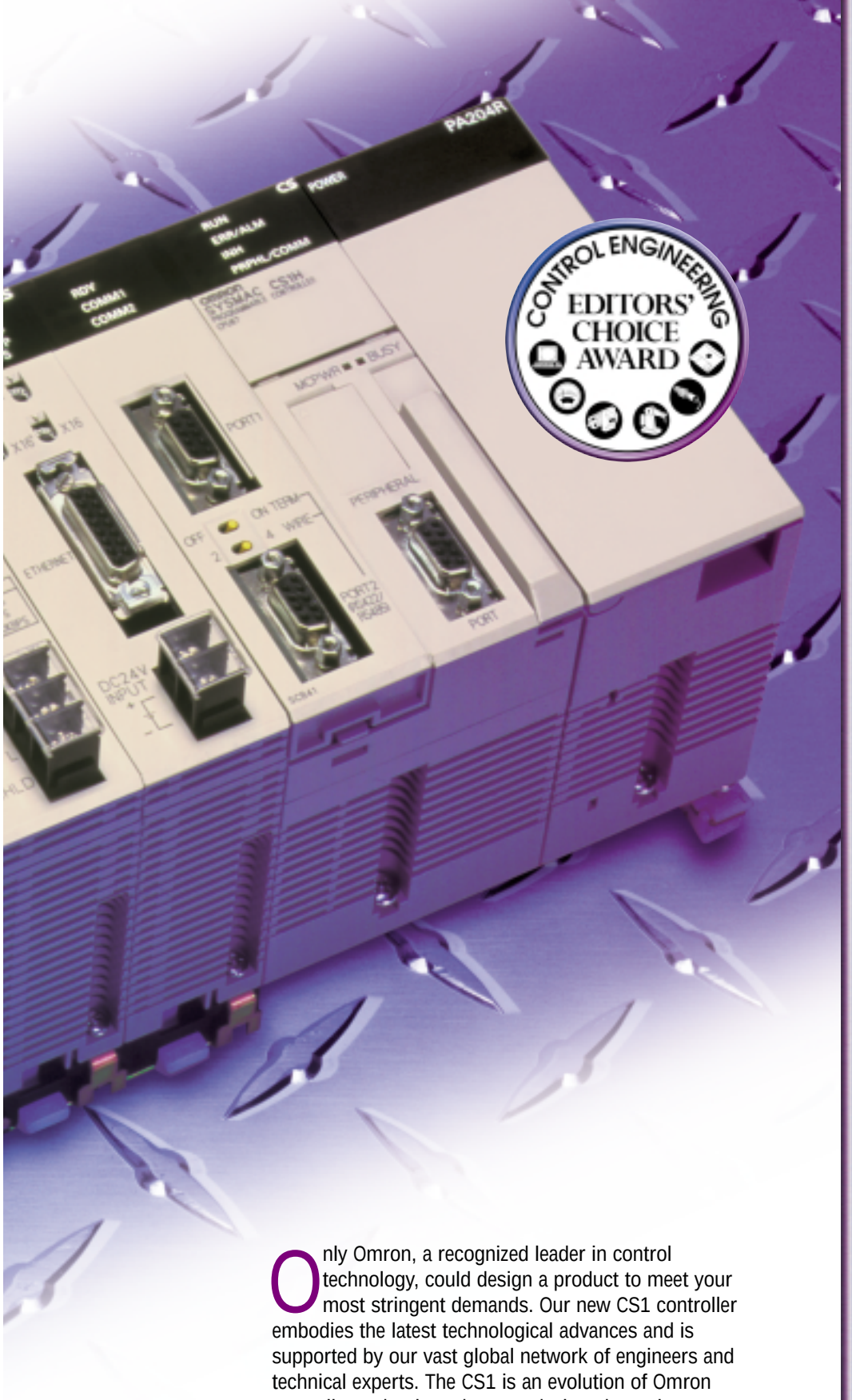
Reference Information

Conquering the demands of an automation environment...

Between intense competition and customer demands, there is little room for error. Your challenges include ever changing production schedules, adapting to product customization, increase of product quality, and the reduction of cost and development time of a product. Your control solution must satisfy your objectives and your customer's demands simultaneously.

The solution you choose must be powerful enough to meet your production demands and be easily understood through its life cycle, from initial programming to installation, and start up to maintenance, by people with different responsibilites (MIS, application engineers, etc.) within your organization.





Only Omron, a recognized leader in control technology, could design a product to meet your most stringent demands. Our new CS1 controller embodies the latest technological advances and is supported by our vast global network of engineers and technical experts. The CS1 is an evolution of Omron controller technology that was designed to solve your control applications with:

- Flexible communications and connectivity
- Powerful information management
- Superior control performance
- Extensive maintenance functionality and easy migration
- An enhanced design and development environment

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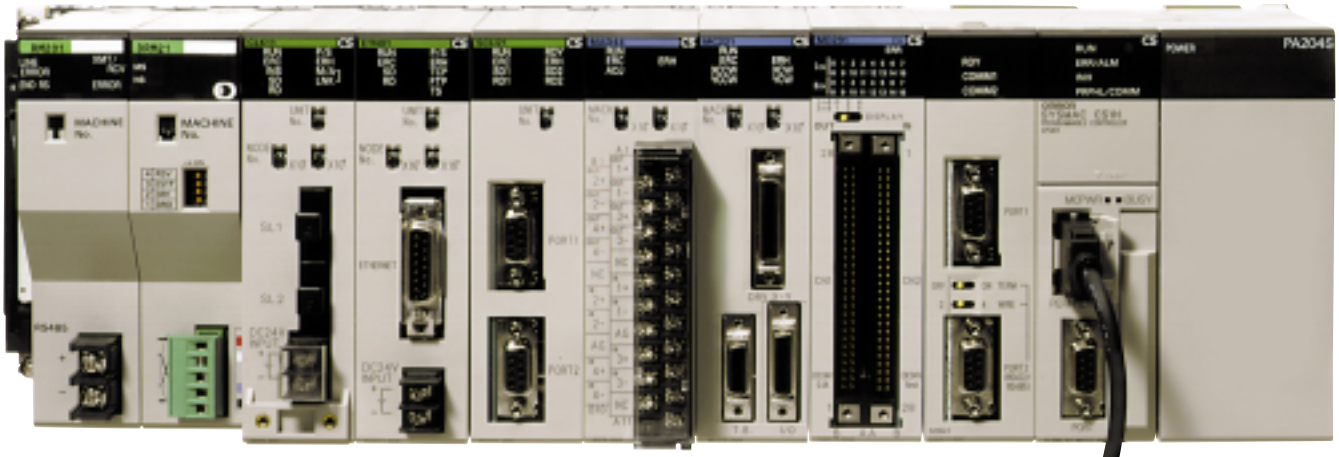
The greatest evolution in control infrastructure...

Enhanced control options

Networking and Communications

- Ethernet Module ***NEW***
- Supports 34 serial devices
- SMTP email messaging ***NEW***
- File transfer protocol (FTP) support ***NEW***
- TCP/IP and UDP/IP socket services
- Controller Link Modules ***NEW***
- CompoBus/S Master
- DeviceNet Master
- Profibus-DP Master ***NEW***



Control Flexibility

- Supports CS1 and C200H I/O
- 96-point high density I/O modules
- Supports up to 5120 I/O points
- 4 point and 8 point Analog Input/Output modules
- 2-, or 4-axis motion control modules
- Supports DeviceNet, CompoBus/S, or SYSMAC Bus remote I/O modules
- More than 50 Special I/O; networking, and communications I/O modules
- Over 50 basic I/O module options

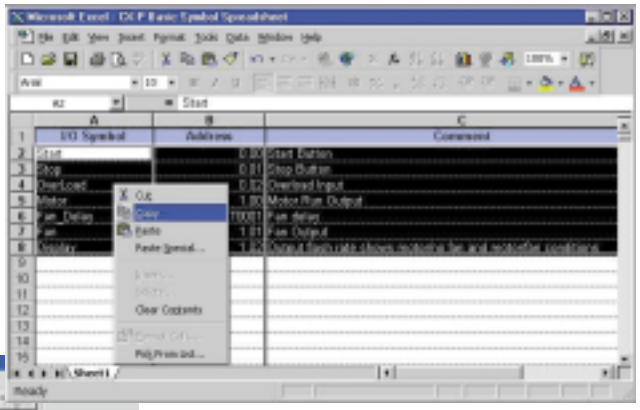
Processing Power and Speed

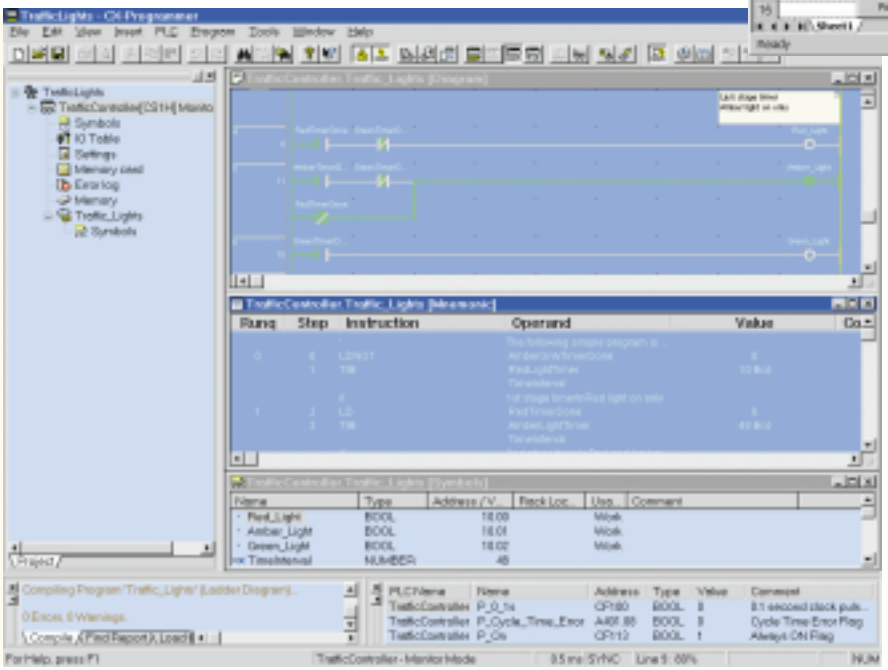
- 9 different CPU options
- 448K words of data memory capacity
- 250K program memory capacity
- 0.04µs execution time (basic instructions)
- Expand memory by 8, 15, or 30 MB with optional flash memory cards

and the software that powers it.

Quick, easy and powerful program design and development

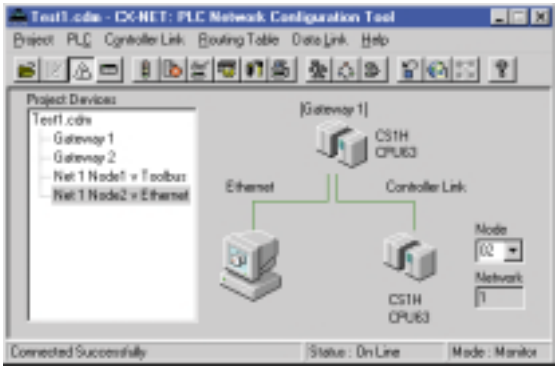
CX-Programmer, provides an enhanced design and development environment that reduces the time and costs associated with developing a control program. CX-Programmer combines power, flexibility, and cost-effectiveness in an intuitive, easy-to-use, software tool that helps a developer be more effective and efficient. Omron designed CX-Programmer to simplify all aspects of program development. You can use Microsoft® Excel to establish a database of I/O symbols and comments that can be directly imported to the 'symbols' section of CX-Programmer. Multi-task development environment is also supported where numerous developers can simultaneously create different tasks that can be easily linked together into one program or project file.





Viewing and monitoring

CX-Programmer gives you the option of using split screens to view multiple program tasks or memory areas within one or multiple controllers. You can open 'watch' windows to monitor specific memory areas within a controller. For simplified troubleshooting, use 'output windows' to display errors, search results, and program comparison results.



Hardware interface

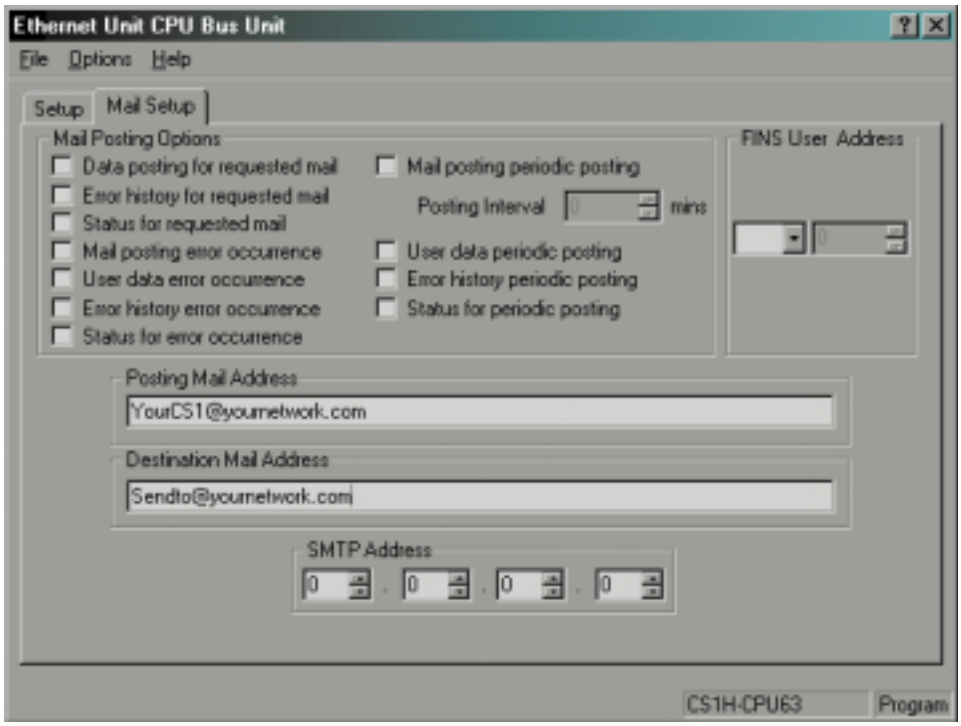
CX-Programmer contains built-in software communications drivers (CX-Server) and Omron's network configuration tool (CX-Net) to facilitate seamless connections from your PC to the controller. Establish a direct PC connection or a remote connection via modem or network. It is also possible to establish a connection with a controller up to two network layers away from your PC's local network for programming and/or monitoring requirements.

On demand performance and communication flexibility...

Full support for a wide variety of communication platforms as well as connectivity options

Use the CS1's communications and connectivity power to achieve fast, powerful, and open connections and communications throughout an automation environment.

- Full support of numerous network types and layers including Ethernet, Controller Link, DeviceNet, Profibus-DP, and CompoBus/S
- Configure these networks easily with CX-Programmer, containing Omron's network configuration tool, CX-Net
- Use Omron's FINS protocols to seamlessly and automatically communicate among different network layers and types
- The CS1 Series supports up to 34 serial connections, allowing you to interface with a variety of Omron and third party devices
- Create custom communication sequences with Omron's Protocol Macro function



Access factory floor production information from an office network

The CS1's powerful information management capabilities make it the perfect link between factory and office networks.

- Flash memory cards with 8, 15, or 30 M byte capacity for easy file storage and data transfer
- Use CX-Programmer to perform drag and drop file transfer between the controller's memory, flash memory card, and a networked or connected PC
- Schedule production data downloads from a CS1 to your office computers
- Configure CS1 to send a customized email message that includes: error log, production data, etc. to a desired individual's PC, pager, or other devices.

and the control that you need.

The industry's most diversified range of memory and programming options

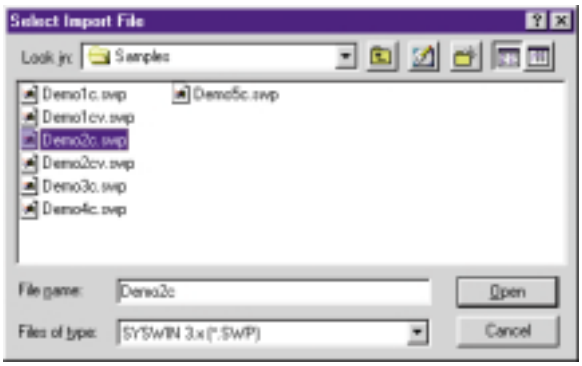
The CS1 Series gives you superior control performance and optimal power capacity to handle any application. It is the only controller you need for your applications because it offers a choice of nine processors, supports floating point math, and handles up to 5120 local I/O points. These nine processors provide:

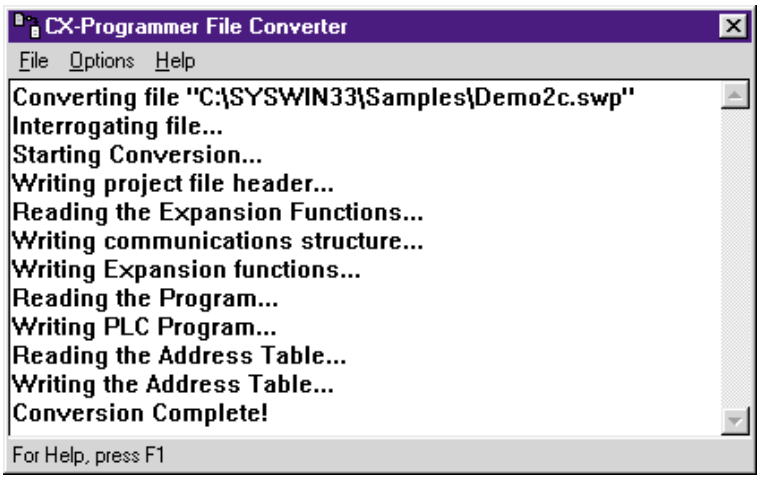
- Support of programs up to 250 K steps in size
- Up to 448 K words of data memory directly within the CPU
- Your choice of 400 programming instructions
- Dual RISC processors for dedicated scans of logic and I/O bus
- A variety of interrupts to optimize control of an application

Upgrade to our most powerful platform without sacrificing your existing programs and installed base of hardware

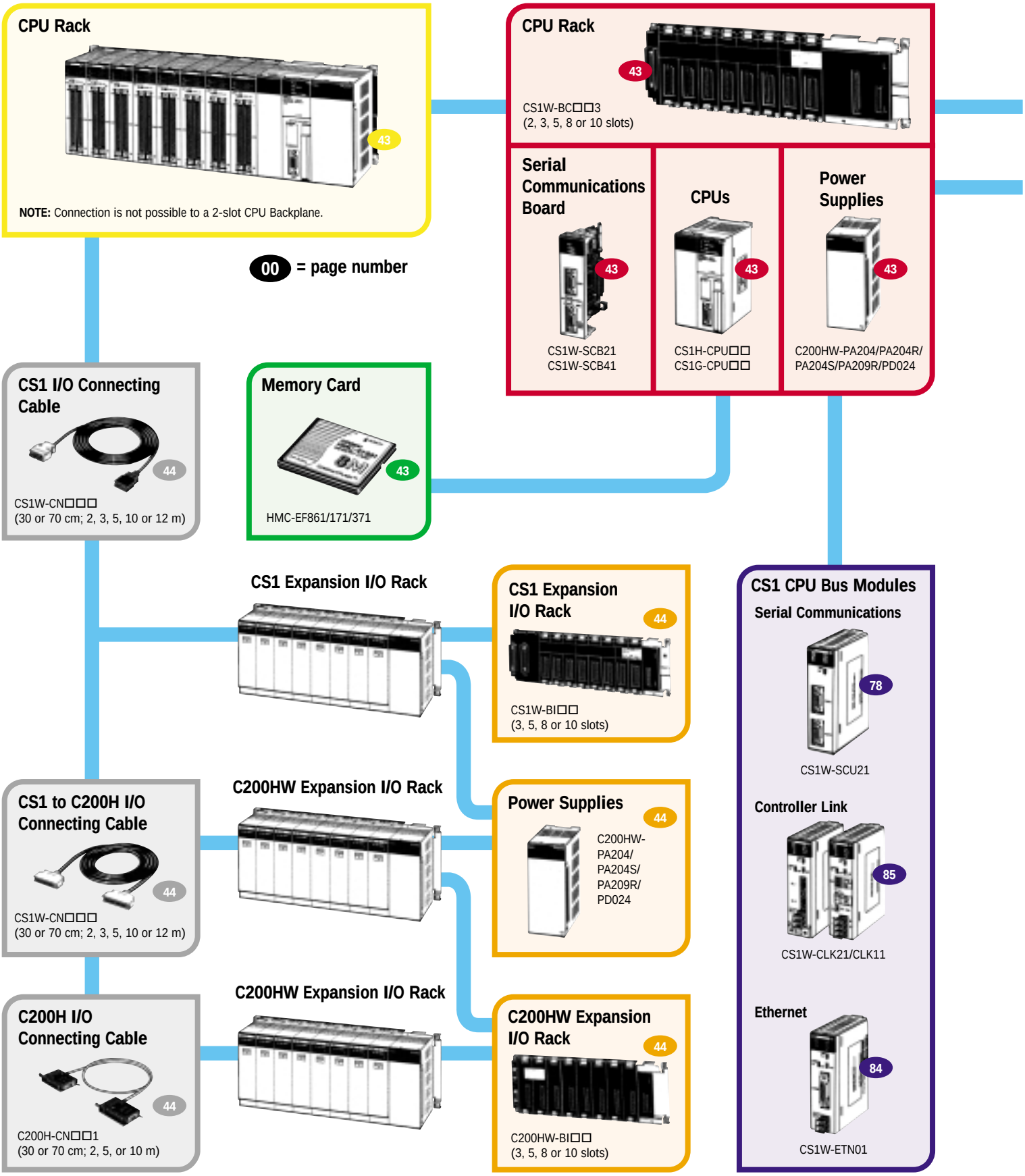
The CS1 Series has built-in tools to minimize maintenance issues while retaining the value of your investment in hardware, programming and training.

- Dual bus I/O backplane supports existing C200H Series and CS1 Series I/O modules
- Connects directly to existing C200H Alpha or CV/CVM1 network types
- Program conversion utilities within CX-Programmer can import existing program files already developed for current Omron platforms
- Access module revision data, program tasks, and data memory information of multiple controllers through a single or multiple PC connection(s)
- Log up to 20 of the most recent errors including error code and time of occurrence
- Use data trace function to perform scheduled or cyclic time chart monitoring of selected memory locations





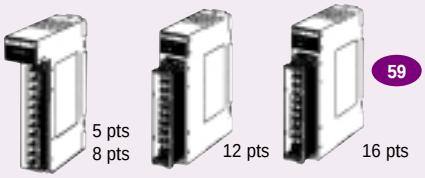
Multiple configuration options for a customized application solution.



Basic I/O Modules

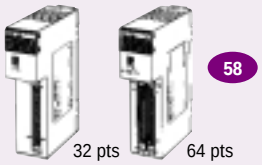
C200H Basic I/O

Input Modules: C200H-I□□□□
AC, DC, or AC/DC inputs

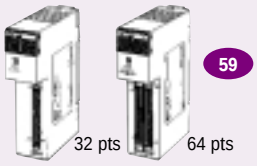


Output Modules: C200H-O□□□□

C200H Group 2 High-density I/O

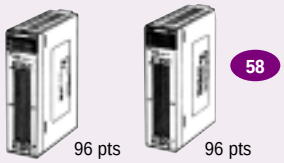


Input Modules: C200H-I□□□□



Output Modules: C200H-O□□□□

CS1 High-density I/O



Input Modules: CS1W-ID29□
Output Modules: CS1W-OD29□

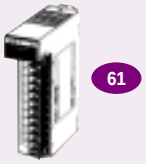
Input Modules: CS1W-MD29□
48 inputs/48 outputs

B7A Interface Modules

16 pts

Interrupt Input Module

Must be mounted to CPU Backplane.



C200HS-INT01

Analog Timer Module

C200H-TM001

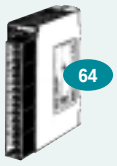
Special I/O Modules

High-density Input
C200H-ID□□□

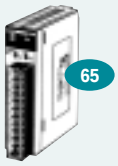
High-density Output
C200H-OD□□□

DC Input/ Transistor Output:
C200H-MD□□□
16 inputs/16 outputs

Analog Input
C200H-AD003
CS1W-AD0□1



Analog Output
C200H-DA003/004
CS1W-DA0□1



Analog I/O
CS1W-MAD44
C200H-MAD01

Temperature Sensor Input
C200H-TS□□□

Temperature Control
C200H-TC□□□
C200H-TV□□□

Process Control
C200H-PID0□

Fuzzy Logic
C200H-FZ001

Cam Positioner
C200H-CP114

Position Control
C200HW-NC□□□

2-axis Motion Control
C200H-MC221

2-axis/4-axis Motion Control
CS1W-MC□□□

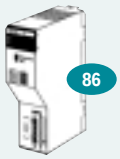
High-speed Counter
C200H-CT□□□

RFID Sensor
C200H-IDS□□

ASCII/Basic
C200H-ASC□□

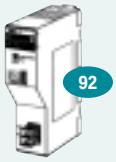
Voice
C200H-OV001

DeviceNet (CompoBus/D) Master
C200HW-DRM21-V1

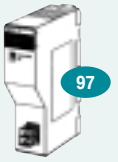


DeviceNet (CompoBus/D) I/O Link
C200HW-DRT21

Profibus-DP Master
C200HW-PRM21



CompoBus/S Master
C200HW-SRM21-V1



SYSMAC-Bus Remote I/O Master
C200H-RM□□□