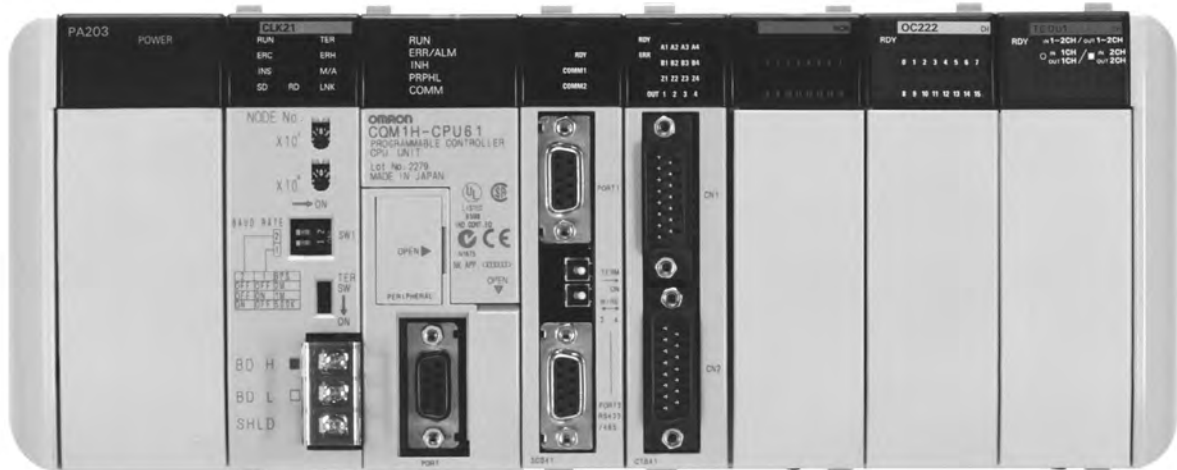## Modular PLC series

CQM1H

The original modular PLC system for versatile machine control

Distributed control with the high-speed, high-capacity Controller Link network

Use Controller Link to automatically exchange data between PLCs, and to maintain programs and data of all connected PLC's from a single PC. You can share operating data among machines without any programming, and centralize the supervision of machine productivity, production progress and quality data.

### Advanced inner boards enable flexible system configuration

Advanced Inner Boards can be added to the CPU Unit to respond flexibly to the applications of each machine. Use of the Serial Communications Board, for example, enables connection with peripheral components, like temperature controllers and bar-code readers, that are equipped with serial ports. This kind of flexibility lets you build systems that better match the specifications and scale of the machine or equipment being controlled.

I/O points and memory capacity doubled to provide an extra margin of control

The I/O capacity, program capacity, and Data memory have been doubled over those of previous CQM1 models. This gives you an extra margin of control to meet the data processing load that accompanies the growing complexity and advanced functions of today's control systems, and assures you of plenty of capacity for the I/O points of dedicated I/O Units for your applications.

OMRON

Establish distributed control with the Controller Link Network to transfer data easily between PLCs in the network.

Personal computer
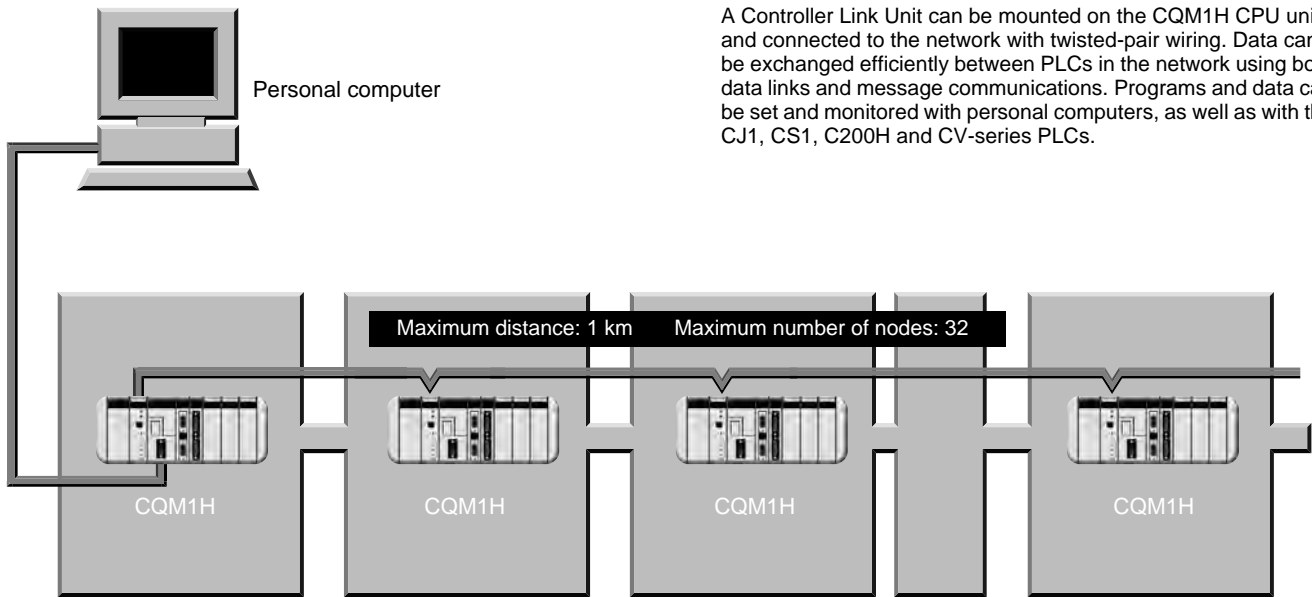
A Controller Link Unit can be mounted on the CQM1H CPU unit, and connected to the network with twisted-pair wiring. Data can be exchanged efficiently between PLCs in the network using both data links and message communications. Programs and data can be set and monitored with personal computers, as well as with the CJ1, CS1, C200H and CV-series PLCs.

Maximum distance: 1 km   Maximum number of nodes: 32

CQM1H   CQM1H   CQM1H   CQM1H

Advanced Inner Boards allow flexible system configurations.

A variety of advanced Inner Boards, such as the High-speed Counter Board and Serial Communications Board, are available. Mount the desired Inner Board in the CPU Unit to meet the requirements of each machine application. A Serial Communications Board can communicate with essentially any device with a serial port, such as temperature controllers or bar-code readers. The optimum system can be configured to match the specifications and scale of the machine or equipment being controlled.

Protocol macros

High-speed counter function operates at up to 500 kHz.

Increased capacity and speed provide extra capacity for control applications.

The program capacity, I/O capacity, and DM capacity have been doubled compared to the original CQM1 series. A 16 Kword Memory Cassette can be installed to accommodate the storage and transfer of the program. Furthermore, the execution times have been reduced from 0.50 ms to 0.375 ms for basic instructions and from 23.5 ms to 17.7 ms for special instructions (MOV). Overall, the cycle time has been reduced by about 25%.

Flexible System Configuration

The CQM1H does not require a Backplane and is constructed by connecting Units via a parallel bus connector at the side of each Unit, allowing flexible system configuration and the most efficient use of space. The CPU Unit contains 16 built-in DC input points. Two Inner Boards can be mounted in the CPU Unit. One Controller Link Unit (a Communications Unit) and a combined maximum of eleven I/O Units can also be connected.

Improve Communications Compatibility with the Serial Communications Board.

Connections can be easily made to general-purpose machine components and dedicated controllers. The Serial Communications Board (a CPU Inner Board) supports protocol macros. You can create macros for protocols to match the communications specifications of an external device, allowing data transfers with devices such as temperature controllers and bar code readers to be executed with a single PMCR instruction in the PLC program..

CQM1H

Bar code reader   Temperature controller   ID reader
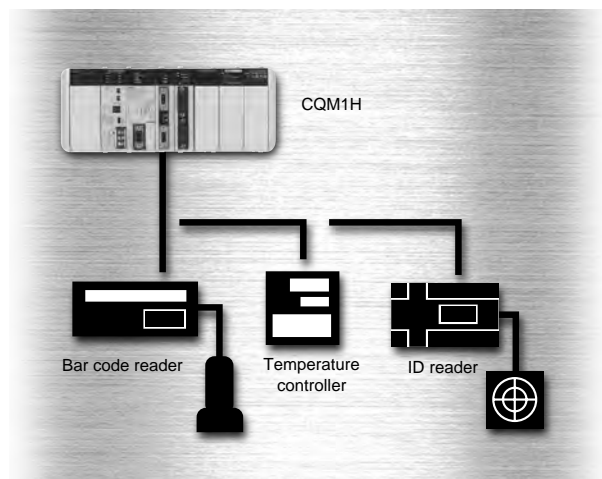
Establish High-speed/Long-distance Communications with CompoBus/S.

Connect a CompoBus/S Master Unit to the CQM1H to establish high-speed or long-distance remote I/O communications with CompoBus/S Slaves.

CQM1-SRM21-V1
CompoBus/S
Master Unit

Maximum trunk line length: 500 m

Slave

Slave

Slave

Slave
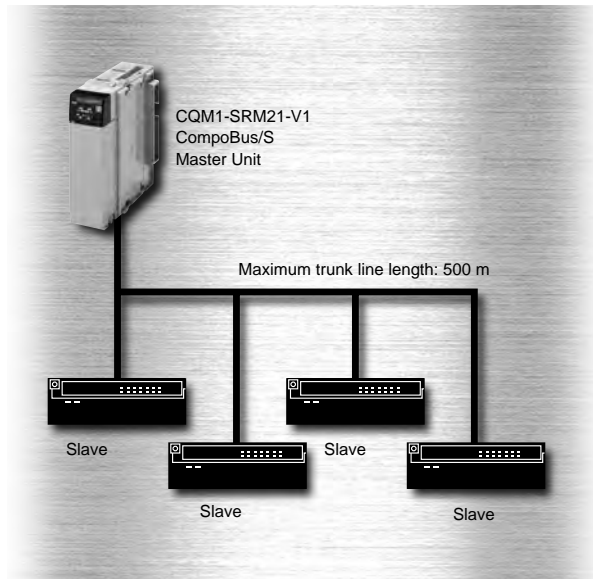
Use Existing System Components and Programs.

All existing CQM1 Power Supply Units, Basic I/O Units, Dedicated I/O Units, programs, Programming Consoles, and Memory Cassettes can be used, so a system upgrade can be performed very smoothly.

Easy-to-use Support Software

The Windows-based CX-Programmer Support Software reduces software development time and provides powerful monitoring and debugging functions. Data exchange with other Windows applications is available through ActiveX, OLE, OPC and standard file formats.

The CQM1H is equipped with the protocol macro function. Protocol macros allow specific serial communications protocols to be developed to transfer data to and from external devices. Custom protocol macros can be created easily with the Windows-based CX-Protocol Software.

Advanced Math and Communications Instructions

Many advanced instructions have been added to the CQM1H, including floating-point math instructions, exponential/logarithm instructions, trigonometric instructions, the TTIM (TOTALIZING TIMER) instruction, PMCR (PROTOCOL MACRO) instruction, STUP (CHANGE SERIAL PORT SETUP) instruction, and network (SEND, RECV, and CMND) instructions. These advanced instructions are easy-to use and simplify program development.

A Wealth of Monitoring and Setting Methods Greatly Improve the HMI.

Programming Devices and Programmable Terminals (PTs) can be connected to up to four communication ports. You can set up and monitor machine control from a PT while monitoring or programming from a Programming Console or a personal computer. It is also possible to monitor and program the PLC remotely from a personal computer connected through a modem.

- Omron's Programmable Terminals now support program and monitor functions for easy PLC maintenance.
- Program and monitor from a remote location by modem.

Personal computer

Programming Console

CQM1H

PT
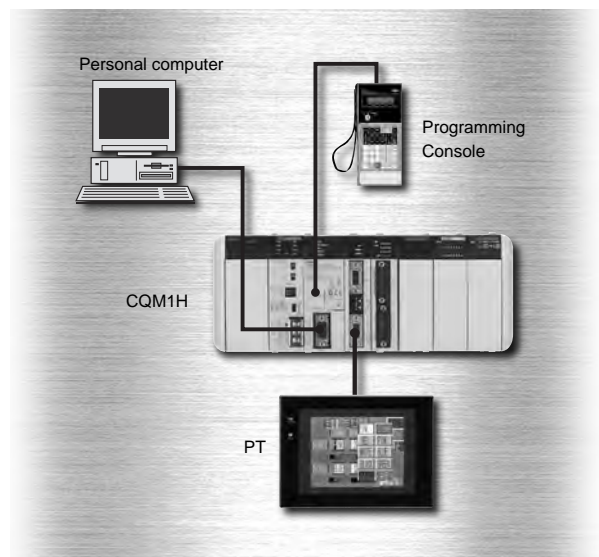
Flexible system configuration adds value to machine control. A high-performance, modular PLC for stand-alone or distributed control.

SYSMAC CQM1H

In response to growing demands for more advanced functions and higher speeds in machine control, the CQM1H lets you add value through greater power. This compact PLC boasts a long list of leading-edge functions, including distributed control compatibility, versatile Inner Boards for easy, add-on expandability, increased program and DM capacity, and an efficient, Windows-based development environment. Let the CQM1H help you start building machines that easily beat the competition.

CPU Units

Four CPU Unit models are available. Two of them support Inner Boards and a Controller Link Unit. You can select the CPU Unit that best suits your application according to program capacity, I/O capacity, memory size, and RS-232C port communication functions. The following table shows the specifications of each CPU Unit.
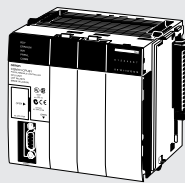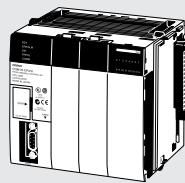
CQM1H-CPU61   CQM1H-CPU51   CQM1H-CPU21   CQM1H-CPU11
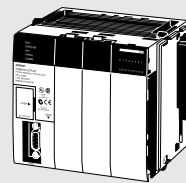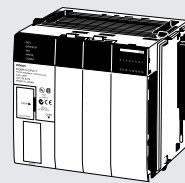
Power Supply Units

Both AC and DC Power Supply Units are available. The AC Power Supply Units require a power supply input in the range 100 to 240 V AC and two models are equipped with a 24-V DC power supply output. The CQM1H's left End Cover is part of the Power Supply Unit. Refer to the CQM1H Operation Manual (W363) for details on selecting a Power Supply Unit.
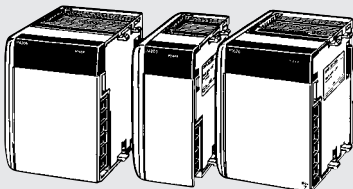
■ AC Power Supply Units
CQM1-PA206
CQM1-PA216

■ AC Power Supply Units
CQM1-PA203

■ DC Power Supply Units
CQM1-PD026

Memory Cassettes (Optional)

Memory Cassettes are available with flash memory, EEPROM and EPROM.Store data on the Memory Cassette to avoid losing program or DM data in the event of battery expiration or careless programming/monitoring operations. The program and data can be transferred between the CPU Unit's RAM and the Memory Cassette. (Data can be transferred from the CPU Unit's RAM to Memory Cassettes with flash memory or EEPROM only.)

●Built-in clock
When a Memory Cassette with a built-in clock is installed, time and date information can be used in the program.
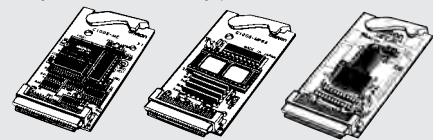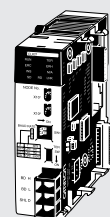
■EEP-ROM   ■EP-ROM   ■Flash memory

Controller Link Unit

Connect a Controller Link Unit to the CQM1H to integrate it into a Controller Link Network. Large quantities of data can be transferred easily and flexibly with personal computers, as well as with other CS1, CJ1, C200H and CV-series PLCs.
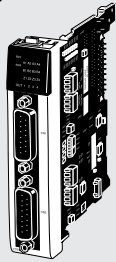
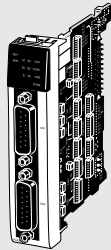* The CQM1H-CPU51 and CQM1H-CPU61 support Controller Link Units.
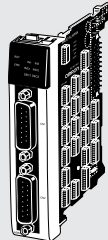
CQM1H-CLK21

Inner Boards

The six Inner Boards are shown below. Inner Boards can be mounted in slot 1 or slot 2 of a CQM1H-CPU51 or CQM1H-CPU61. (Some Inner Boards can be mounted only in slot 1 or only in slot 2.)
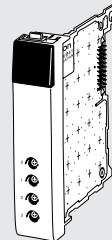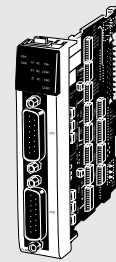
■ High-speed Counter Board
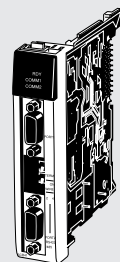CQM1H-CTB41

■ Pulse I/O Board
CQM1H-PLB21

■ Absolute encoder Board
CQM1H-ABB21

■ Analog setting Board
CQM1H-AVB41

■ Analog I/O Board
CQM1H-MAB42

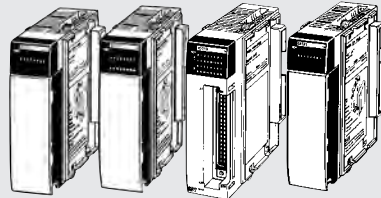■ Serial Communications Board
CQM1H-SCB41

Input Units

Select from AC or DC Input Units with 8 to 32 input points.

■ DC Input Units
CQM1-ID211
CQM1-ID111
CQM1-ID212
CQM1-ID213
CQM1-ID214
CQM1-ID112

■ AC Input Units
CQM1-IA121
CQM1-IA221

CQM1-ID211

CQM1-ID212

CQM1-ID213

CQM1-IA121

Output Units

Select from relay outputs, transistor outputs or triac outputs with 8 to 32 output points.
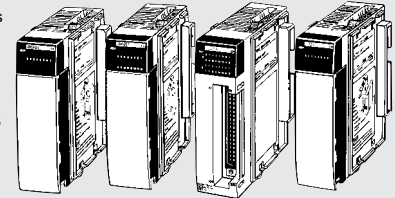
■ Relay Contact Output Units
CQM1-OC221
CQM1-OC222
CQM1-OC224

■ Transistor Output Units
CQM1-OD211
CQM1-OD212
CQM1-OD213
CQM1-OD214
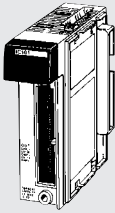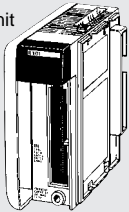CQM1-OD215
CQM1-OD216

■ AC Output Units
CQM1-OA221
CQM1-OA222

CQM1-OC221

CQM1-OD211

CQM1-OD213

CQM1-OA221

I/O Expansion Units

■ CQM1H-IC101
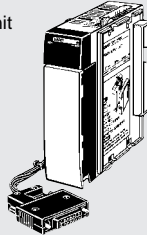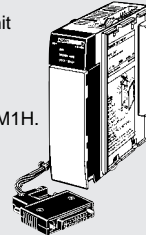I/O Control Unit

■ I/O Interface Unit
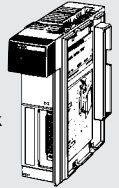CQM1H-II101

Dedicated I/O Units

■ Analog Output Unit
CQM1-DA022
Performs digital-to-analog conversion for two outputs.

■ Analog Intput Unit
CQM1H-AD042
Receives 4 analog voltage or current inputs into the CQM1H.

■ PROFIBUS-DP I/O Link Unit
CQM1-PRT21
PROFIBUS-DP slave unit provides an I/O link of 2 to 8 I/O words with any Master Unit.

■ CompoBus/S Master Unit
CQM1-SRM21-V1
A high-speed Remote I/O Master Unit that controls up to 128 I/O points supports a long-distance communication up to 500 m.
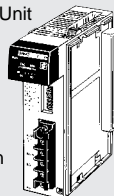
■ DeviceNet I/O Link Unit
CQM1-DRT21
Operates as a DeviceNet slave to establish an I/O link of 32 I/O points with a DeviceNet Master.
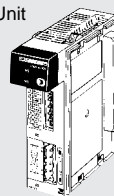
■ AS-Interface Master Unit
CQM1-ARM21
Controls up to 31 standard AS-Interface slaves. No special configuration tools are required.

■ Safety Relay Unit
CQM1-SF200
Monitors safety circuit status and allows space saving.
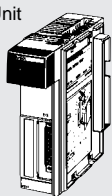
■ Temperature Control Units
CQM1-TC00□
CQM1-TC10□
CQM1-TC20□
CQM1-TC30□
One Unit can receive data from two or four temperature sensors and executes advanced PID control.
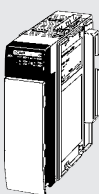
■ Linear Sensor Interface Units
CQM1-LSE01/02
Make high-speed and high-precision measurements of analog inputs from linear sensors and convert the measurements to numeric data for processing.

■ B7A Interface Unit
CQM1-B7A□□
Five Units are available that can connect with B7A Link Terminals.