OMRON

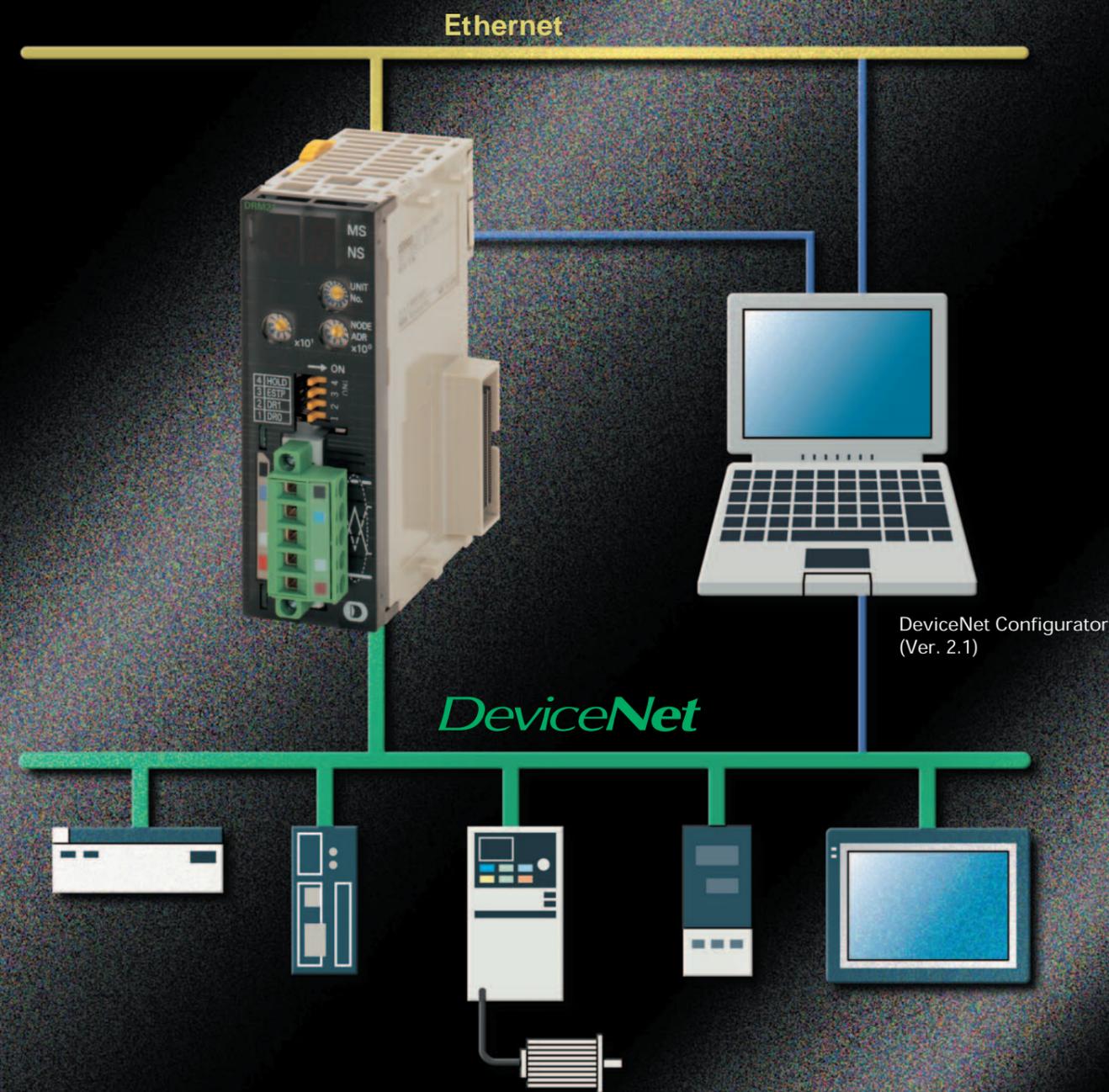## Smallest in the Industry, with Top-class Performance and Functions

DeviceNet™ Unit CJ1W-DRM21 for CJ-series PLCs

Ethernet

DeviceNet Configurator
(Ver. 2.1)

DeviceNet

The functionality of the CS-series DeviceNet Unit has been packed into the smallest dimensions in the industry. The CJ1W-DRM21 seamlessly joins networks for information exchange with the host PLC and has a large I/O capacity (2,000 words), enabling control with greater flexibility.

● DeviceNet is a registered trademark of the ODVA (Open DeviceNet Vendor Association, Inc.).

Note: Do not use this document to operate the Unit.

Authorized Distributor:

Note: Specifications subject to change without notice.

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# The CJ1W-DRM21 allows easier expansion of open DeviceNet networks and can also be used as a DeviceNet controller.
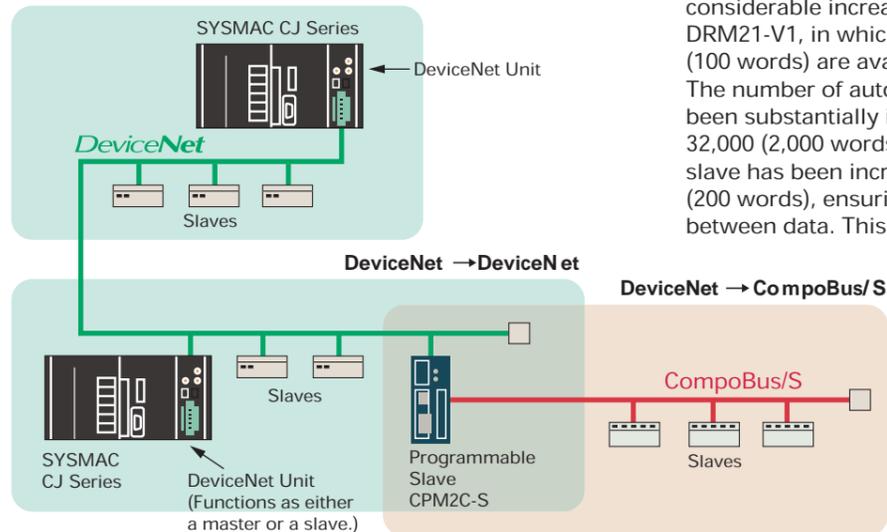
Seamlessly joining networks for information exchange with the host PLC.

The DeviceNet Unit enables information exchange between different levels of networks, such as DeviceNet, Controller Link, and Ethernet. This makes it possible to send instructions to and perform settings and monitoring for components on a DeviceNet network from a host device in an office using message communications.

Host
Controller Link Unit
DeviceNet Unit
SYSMAC CJ Series
Ethernet
Power supply
CPU Unit
Controller Link
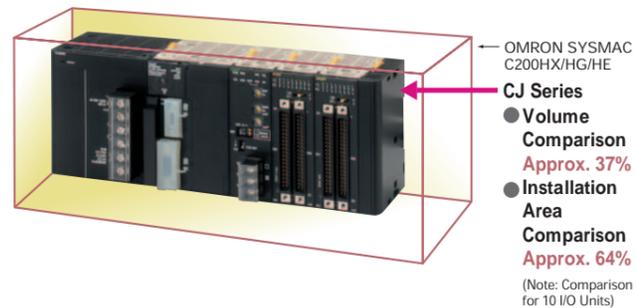*DeviceNet*
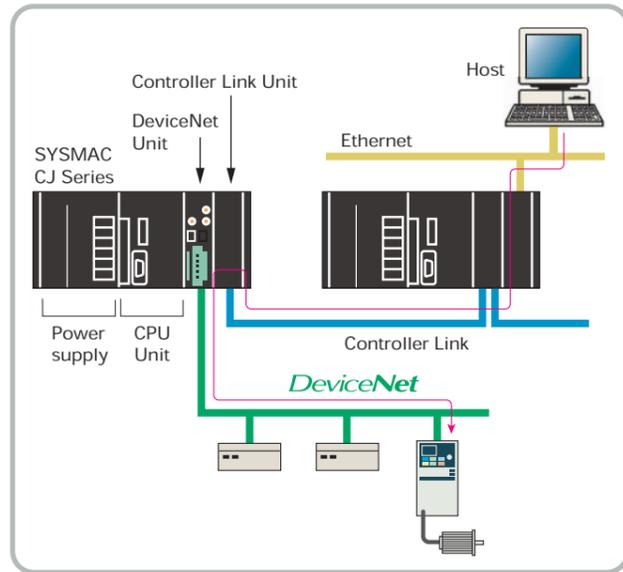
Easier DeviceNet-based network expansion.

The CJ1W-DRM21 can function as either a master or a slave. This means that I/O data collected when used as a master is available to higher-level devices when used as a slave. Connecting a Programmable Slave makes it easy to create links to CompoBus/S, and devices on the network

SYSMAC CJ Series
DeviceNet Unit
DeviceNet
Slaves

DeviceNet → DeviceNet

DeviceNet → CompoBus/S

SYSMAC CJ Series
DeviceNet Unit (Functions as either a master or a slave.)
Slaves
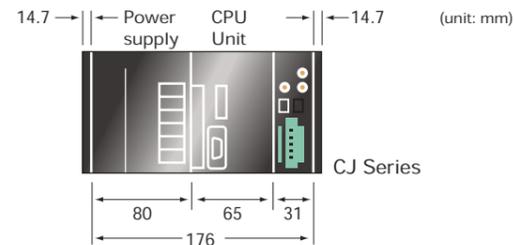Programmable Slave CPM2C-S
CompoBus/S
Slaves

CS1 functionality packed into the smallest dimensions in the industry.

The CJ1W-DRM21 has very compact dimensions, with 37% the volume and 64% the installation area of conventional models. Also, CJ-series PLCs do not have Backplanes, meaning fewer space restrictions. Create more efficient systems by installing the functionality required in the space allowed.

Significant Reductions in Installation Area and Volume

OMRON SYSMAC C200HX/HG/HE

CJ Series
● **Volume Comparison** Approx. 37%
● **Installation Area Comparison** Approx. 64%
(Note: Comparison for 10 I/O Units)

No Backplane Means Greater Flexibility

14.7 | Power supply | CPU Unit | 14.7   (unit: mm)

CJ Series

80   65   31
176

Large capacity (2,000 I/O words) for flexible control.

The CJ1W-DRM21 boasts 2,048 fixed allocation I/O points (128 words) and up to 3 Units can be mounted. This is a considerable increase over the conventional C200HW-DRM21-V1, in which only 1,600 fixed allocation I/O points (100 words) are available and only 1 Unit can be mounted. The number of automatically allocated I/O points has also been substantially increased from 4,800 (300 words) to 32,000 (2,000 words). The number of control points per slave has been increased from 512 (64 words) to 3,200 (200 words), ensuring a greater degree of consistency between data. This means that systems can be designed without being restricted by the number of control points, and can be changed or expanded easily to suit each application.

The DeviceNet Configurator (Ver. 2.1) allows easy user-set allocations and expansion of I/O capacity, ensuring the optimal use of DeviceNet for user applications.

● The Configurator can be used to monitor slaves on DeviceNet, including slaves made by other companies, and to change parameter settings. These features are particularly useful for checks and adjustments during setup or maintenance.
● Parameters and baud rates can be changed for slaves that require device-specific settings.
● A variety of methods can be used for online connection, such as connecting via special boards or cards, or connecting to the serial port of the PLC on which the DeviceNet Unit is mounted.

● Master parameters, such as for I/O allocation and slave registration, can be easily created using a wizard. Set up the DeviceNet network by simply following the instructions displayed on the screen.
● The number of masters that can be mounted on an OMRON PLC and the number of I/O points available are significantly greater.

SYSMAC CJ Series
Connection to Ethernet supported.
DeviceNet Configurator (Ver. 2.1)
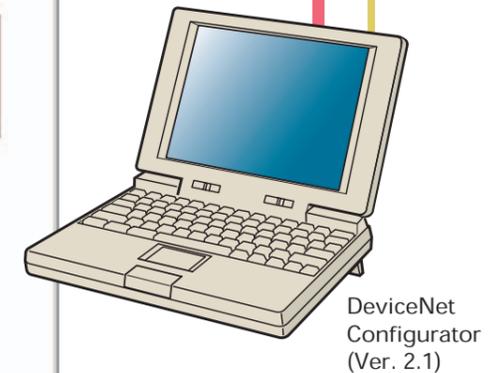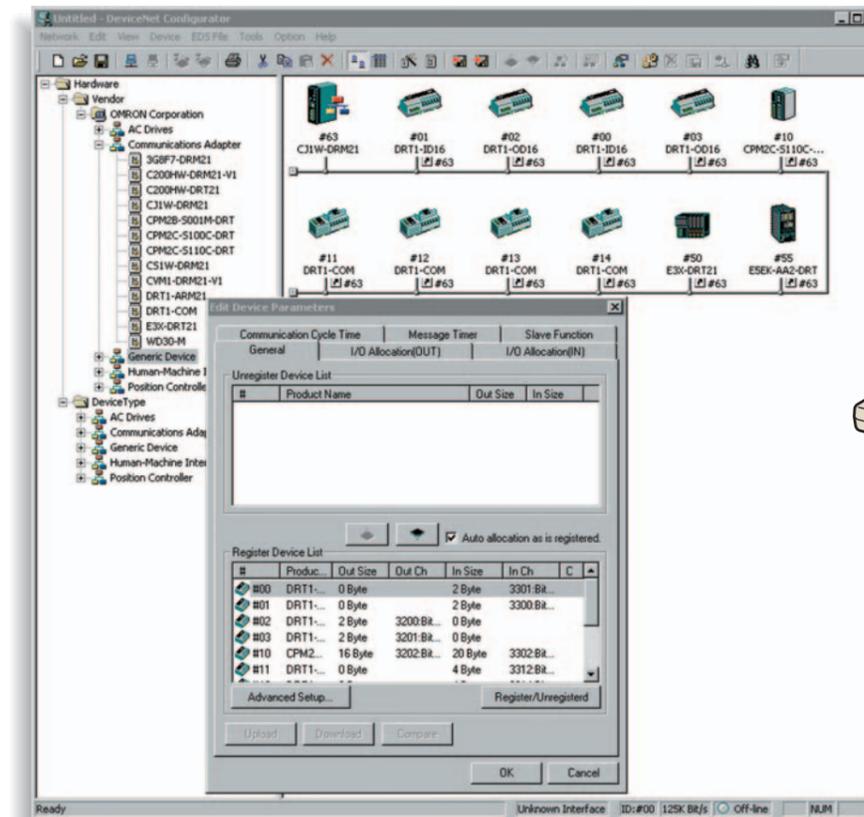
DeviceNet Configurator WS02-CFDC1-E

Item		Specifications
Operating environment	Hardware	Personal computer: IBM PC/AT or compatible CPU: Pentium 166 MHz or higher (with Windows NT) Memory: 32 Mbytes Hard disk space: A minimum of 15 Mbytes
	OS	Windows 95, 98, 2000, Me, or NT4.0
Network connection method	Dedicated Board/Card	3G8F7-DRM21-E: Dedicated PCI Board 3G8F5-DRM21-E: Dedicated ISA Board 3G8E2-DRM21-E: Dedicated PCMCIA Card
	Serial connection	Peripheral port or RS-232C port of CS/CJ-series CPU Unit, or RS-232C port of Serial Communications Board/Unit, on PLC with CS1W-DRM21 or CJ1W-DRM21 mounted.

Windows is a registered trademark of Microsoft Corporation in the U.S. and other countries.

Seamlessly join multi-vendor DeviceNet component networks to higher-level Ethernet networks.

Efficient DeviceNet management using the DeviceNet Configurator.
- **Configurator Software: WS02-CFDC1-E**
- **PCI Board: 3G8F7-DRM21-E**
- **ISA Board: 3G8F5-DRM21-E**
- **PCMCIA Card: 3G8E2-DRM21-E**
- Supports network construction functions. ● Supports free remote I/O allocation. ● Allows multiple masters to be used on one PLC. ● Allows multiple masters to be used in one network.

Host

NS Series

Memory Card

(Available soon)

Ethernet

Higher-level Network

Message communications

CS-series PLC

DeviceNet

● Up to 32,000 control points (2,000 words) per master. Simplifies the work of collecting quantitative data.

CJ Series
● Enables structural, standardized programming. ● Up to 288 cyclic tasks (available soon). ● Global subroutines (branched from multiple tasks, available soon).

Memory Card

Message communications

Seamless Communications

● Flexible branching (easy layout changes)

CompoBus/S

Fast, easy connections for all-round savings.
CompoBus/S
● High-speed communications - cycle time less than 1 ms. ● Reduced wiring using just one special cable. ● Significant reductions in wiring effort and installation time. ● Maximum number of slaves: 32; Maximum number of I/O points: 256.

Taking DeviceNet applications to a new level.
DeviceNet-compatible Programmable Slave with PLC functionality
CPM2C-S
● Slave data can be controlled from the master using multi-channel I/O links and message communications. ● Just one Unit required for each distributed block. Fewer interfaces are required for multipoint communications, enabling reductions in costs. ● Less wiring is required for terminal block expansions, connections to remote devices (such as signal lights or pushbutton switches), and connections to pneumatic valves and other non-OMRON products.

Remote I/O Terminal with 32 points and MIL connector

Special board

Inverter 3G3FV

Temperature Controller E5EK

Fiber Amplifier Communication Unit E3X-DRT21

Robot

Wireless Unit WD30-M

Wireless Unit WD30-S

Signal Converter K3FM-BIX

Analog input: 1 to 5 V, 16 points

Component Network

4

5

The CJ1W-DRM21 enables a variety of on-site improvements in productivity.

Improvements in design efficiency

User-set I/O allocations, which were previously possible only using the Configurator, can now be performed with allocated DM Area words. The Configurator has been upgraded to be compatible with the CS/CJ Series and boasts many new features. Not only can it be connected to a CS/CJ-series CPU Unit via the RS-232C port or the peripheral port, it also supports the offline construction of virtual networks.
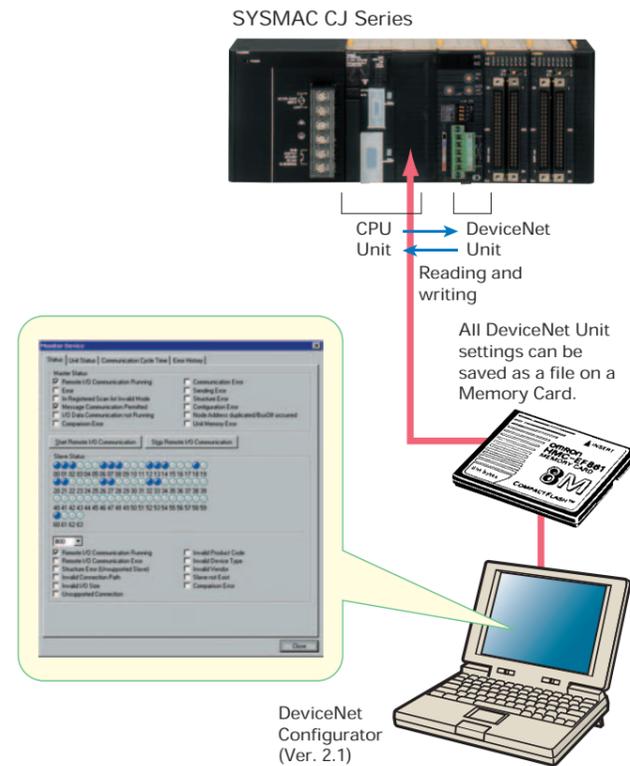
This means network settings that previously were only possible while connected can now be performed offline with ease, simplifying system design. Furthermore, if the Configurator is connected via the CS/CJ-series CPU Unit's peripheral port or RS-232C port, it does not need to participate as a node in the network.

SYSMAC CJ Series

Programming Console

DeviceNet Unit
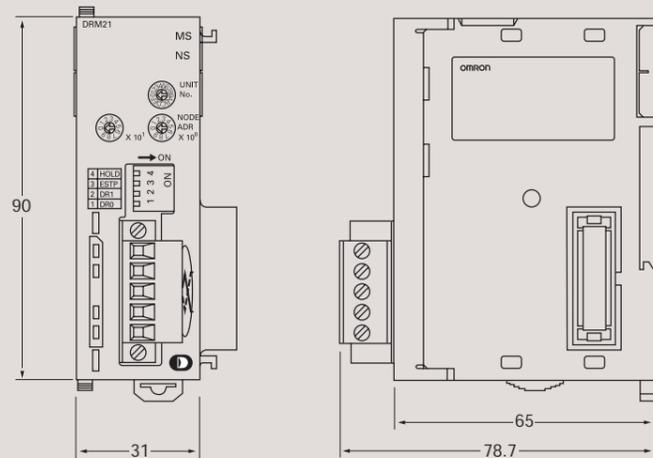
DeviceNet Configurator (Ver. 2.1)
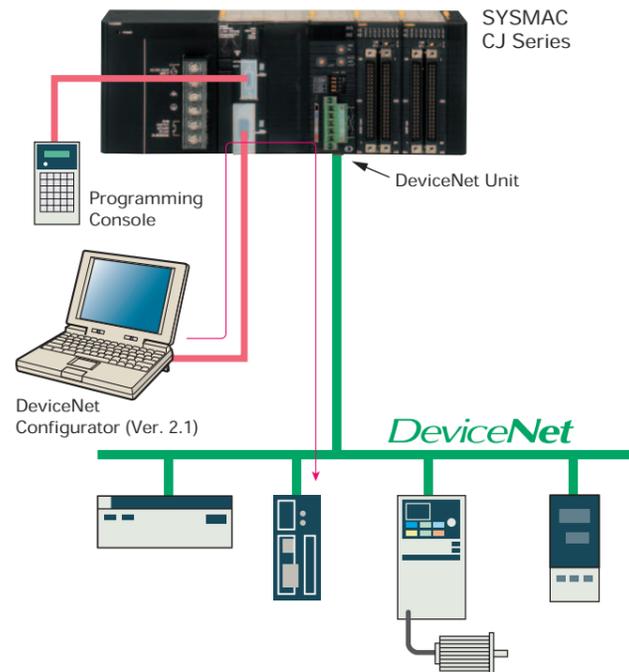
DeviceNet

Improvements in debugging and setup efficiency

With this DeviceNet Unit, setup files can be downloaded from or uploaded to CS1 Memory Cards, enabling swift on-site response when setting up mass-production systems.
Faster system debugging and troubleshooting are possible using the Unit status data. Furthermore, the DeviceNet Configurator (Ver. 2.1) enables easy monitoring of the status and settings for network devices, and error data for masters.

SYSMAC CJ Series

CPU Unit — DeviceNet Unit
Reading and writing

All DeviceNet Unit settings can be saved as a file on a Memory Card.

DeviceNet Configurator (Ver. 2.1)

External Dimensions
(unit: mm)

90

31

65

78.7

Specifications

Available Models

Compatible PLCs		Maximum number of control points			Model
		Fixed allocations	User-set allocations		
			Using allocated DM Area words	Using Configurator	
CJ1 Series	When used as a Master	Inputs: 1,024 points Outputs: 1,024 points Total: 2,048 points (128 words)	Inputs: 8,000 points Outputs: 8,000 points Total: 16,000 points (1,000 words)	Inputs: 8,000 points x 2 blocks Outputs: 8,000 points x 2 blocks Total: 32,000 points (2,000 words)	CJ1W-DRM21
	When used as a Slave	Inputs: 16 points Outputs: 16 points Total: 32 points (2 words)	Inputs: 1,600 points Outputs: 1,600 points Total: 3,200 points (200 words)	Inputs: 1,600 points x 1 block Outputs: 1,600 points x 2 blocks Total: 4,800 points (300 words)	

Communications Specifications (Conform to DeviceNet Communications)

Item	Specifications
Communications protocol	DeviceNet
Connection form	Combinations of multi-drop and T-branch connections (See note 1.)
Baud rate	500 kbps, 250 kbps, 125 kbps (switchable)
Communications media	Special 5-wire cables (2 signal lines, 2 power lines, 1 shield line)

Communications distances	Baud rate	Network length (See note 2.)	Drop line length	Total drop line length
	500 kbps	100 m max. (See note 3.)	6 m max.	39 m max.
	250 kbps	250 m max. (See note 3.)	6 m max.	78 m max.
	125 kbps	500 m max. (See note 3.)	6 m max.	156 m max.

Maximum number of nodes	64 nodes (This figure includes the master. The maximum number of connectable slaves is 63.)
Error controls	CRC error check, node address duplication check, scan list verification

Note 1: Connect external terminating resistance.
Note 2: Distance between the farthest nodes.
Note 3: If thin, special cables are used for the main lines, this figure will be 100 m max.

Master/Slave Specifications

Item			Specifications
Communications power supply voltage			11 to 25 VDC (supplied from the communications connector) (See note 1.)
Current consumption			Communications power supply: 18 mA max.; Internal circuit power supply: 290 mA max.
Maximum number of connectable slaves	Remote I/O communications or message communications		63 Units (See note 2.)
Maximum number of I/O points per DeviceNet Unit	Fixed allocations		When used as a master	2,048 points
			When used as a slave	32 points
	User-set allocations	Using allocated DM Area words	When used as a master	16,000 points
			When used as a slave	3,200 points
		Using Configurator	When used as a master	32,000 points
			When used as a slave	4,800 points
Number of words allocated	Fixed allocations		When used as a master	64 input words, 64 output words, 25 words for software switches and status area
			When used as a slave	1 input word, 1 output word (See note 3.)
	User-set allocations	Using allocated DM Area words	When used as a master	500 input words, 500 output words, 25 words for software switches and status area
			When used as a slave	100 input words, 100 output words (See note 3.), 25 words for software switches and status area
		Using Configurator	When used as a master	500 input words x 2 blocks, 500 output words x 2 blocks, 25 words for software switches and status area
			When used as a slave	100 input words x 1 block (See note 3.), 100 output words x 2 blocks, 25 words for software switches and status area
Message communications	Maximum message length		542 bytes (See note 4.)
Number of Units that can be mounted to PLC	Fixed allocations		3 Units
	User-set allocations		16 Units
Weight			118 g

Note 1: For details on communications power supply specifications, refer to the operation manual.
Note 2: One node is used to connect to the master and so the maximum number of connectable slaves is 63.
Note 3: When the DeviceNet Unit is used as a slave, "input" and "output" respectively refer to input from the master to the slave and output from the slave to the master.
Note 4: The maximum message length includes the command code when using the CMND instruction.
Note 5: The CJ1W-DRM21 cannot perform message communications with the E5ZE-8□D1□B. Use the E5ZE-8□D1□B-V2, which is a later version.