CJ-series DeviceNet Unit

# CJ1W-DRM21

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## Smallest in the Industry! A DeviceNet Unit for the CJ Series that Boasts Industry-leading Performance and Functions

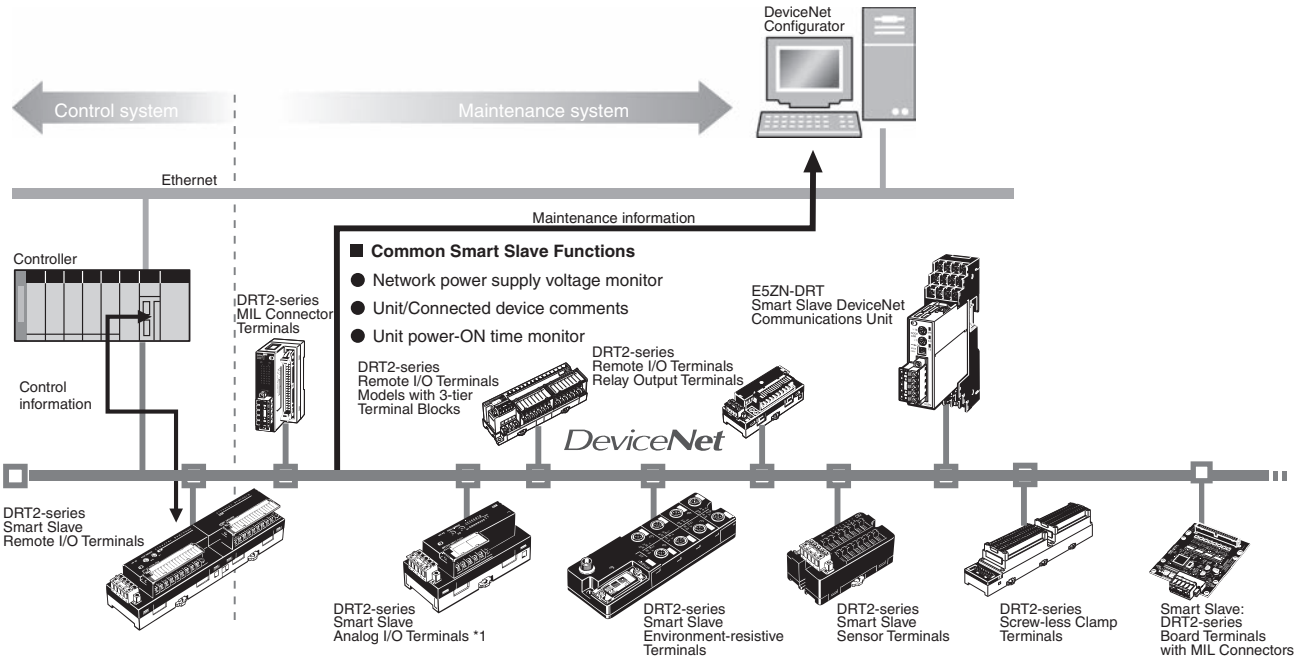


CJ1W-DRM21

## Features

- Allows control of up to 32,000 points (2,000 words) per master, and ensures a high degree of simultaneity between data.
- Can be used as both a master and a slave at the same time.
- Equipped with settings and monitor functions aimed at improving both design and startup efficiency. Achieve maximum performance by using in combination with a Configurator.
- Files of master and slave settings can be uploaded and downloaded using memory cards, allowing effective debugging and easier setup.

## System Configuration




### Reduce Setup Time

- Network power supply monitor function
- Input filter function
- Power-ON inrush current protection function
- Communications speed auto-detect function
- Scaling function
- User compensation function
- Cumulative counter
- Moving average processing function
- Number of A/D conversion points (conversion cycle) setting
- Peak/bottom hold function
- Top/valley hold function
- Percentage change calculation function

### Reduce Downtime

- Unit comments function
- Connected device comments function
- I/O power supply monitor function
- Sensor power supply short-circuit detection function
- External load short-circuit detection function
- Disconnected sensor detection function

### Improve Maintenance

- Operation time monitor function
- Contact operations counter (See note.)
- Unit conduction time monitor function
- Total ON time monitor function (See note.)
- Network power supply voltage monitor function
- Communications error log function
- Last maintenance date
- Comparator function
- Selectable output value after error

**Note:** The number of contact operations monitor function and the cumulative ON time monitor function cannot be used simultaneously for the same contact.

*1. Analog Output Terminal in this catalog have been discontinued.



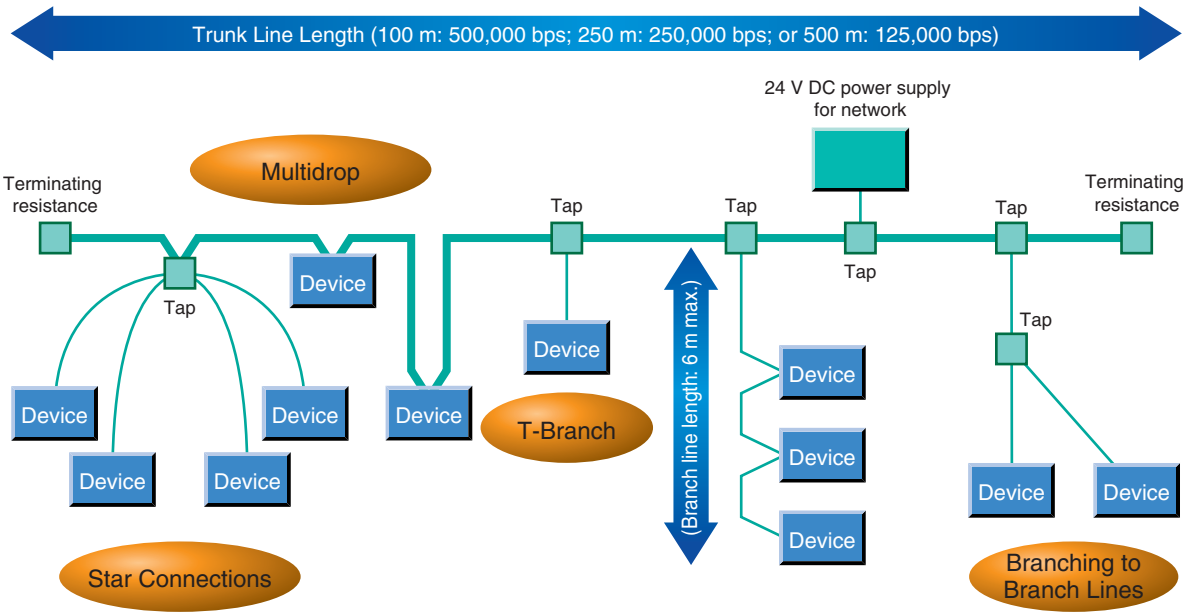
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# Communication Specifications

| Item | Specifications | | | |
|---|---|---|---|---|
| **Communications protocol** | DeviceNet | | | |
| **Connection methods** | Multi-drop and T-branch connections can be combined (for trunk and branch lines) *1 | | | |
| **Baud rate** | 500 Kbps, 250 Kbps, or 125 Kbps | | | |
| **Communications media** | Special 5-wire cables (2 signal lines, 2 power lines, 1 shield line)<br>Special 4-wire flat cables (2 signal lines, 2 power lines) | | | |
| **Communications distances for special 5-wire cables** | Baud rate | Network length | Branch line length | Total branch line length |
| | 500 kbps | 100 m max. | 6 m max. | 39 m max. |
| | 250 kbps | 250 m max. *2 | 6 m max. | 78 m max. |
| | 125 kbps | 500 m max. *2 | 6 m max. | 156 m max. |
| **Communications distances for special 4-wire flat cables** | Baud rate | Network length | Branch line length | Total branch line length |
| | 500 kbps | 75 m max. | 6 m max. | 35 m max. |
| | 250 kbps | 150 m max. | 6 m max. | 48 m max. |
| | 125 kbps | 265 m max. | 6 m max. | 135 m max. |
| **Communications power supply** | 24 V DC supplied externally | | | |
| **Max. number of nodes** | 64 nodes (including Masters, Slaves, and Configurator) | | | |

*1. Terminators are required at both ends of trunk line.
*2. Indicates the maximum network length when thick cables are used. Reduce the network length to 100 m max. when using thin cables.

## Network Specifications



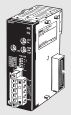



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# Ordering Information

**International Standards**

- The standards are abbreviated as follows: U: UL, U1: UL(Class I Division 2 Products for Hazardous Locations), C: CSA, UC: cULus, UC1: cULus (Class I Division 2 Products for Hazardous Locations), CU: cUL, N: NK, L: Lloyd, and CE: EC Directives.
- Contact your OMRON representative for further details and applicable conditions for these standards.

| Unit classification | Product name | Specifications | Communications | No. of unit numbers allocated | Current consumption (A) | | Model |
|---|---|---|---|---|---|---|---|
| | | | | | 5 V | 24 V | |
| **CJ1 CPU Bus Unit** |  | Equipped with Master and Slave functionality. Controls for up to 32,000 points per Master. | • Remote I/O Communications Master (fixed allocations or user-set allocations)<br>• Remote I/O Communications Slave (fixed allocations or user-set allocations)<br>• Message communications | 1 | 0.29 | – | **CJ1W-DRM21** |

**Note:** When using with the Machine Automation Controller NJ Series, note the following points:
- Simple backup function cannot be used.
- DeviceNet configurator cannot be used. Use CX-Integrator.

## Software

### How to Select Required Support Software for Your Controller

The required Support Software depends on the Controller to connect. Please check the following table when purchasing the Support Software.

| Item | Omron PLC System | Omron Machine Automation Controller System |
|---|---|---|
| **Controller** | CS, CJ, CP, and other series | NJ-series |
| **Software** | FA Integrated Tool Package CX-One | Automation Software Sysmac Studio |

### FA Integrated Tool Package CX-One

| Product name | Specifications | Number of licenses | Media | Model | Standards |
|---|---|---|---|---|---|
| **FA Integrated Tool Package CX-One Ver.4.□** | The CX-One is a comprehensive software package that integrates Support Software for OMRON PLCs and components.<br><br>CX-One Version 4.□ includes CX-Integrator Ver.3.□. | 1 license *1 | DVD | **CXONE-AL01D-V4** | – |

**Note:** For details, refer to the CX-One Catalog (Cat. No. R134), visit your local OMRON website.
*1. Multi licenses (3, 10, 30, or 50 licenses) and DVD media without licenses are also available for the CX-One.

### Automation Software Sysmac Studio

The Sysmac Studio is the software that provides an integrated environment for setting, programming, debugging and maintenance of machine automation controllers including the NJ/NX-series CPU Units, NY-series Industrial PC, EtherCAT Slave, and the HMI.

For details, refer to your local OMRON website and *Sysmac Studio Catalog* (Cat. No. P138).



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# Specifications

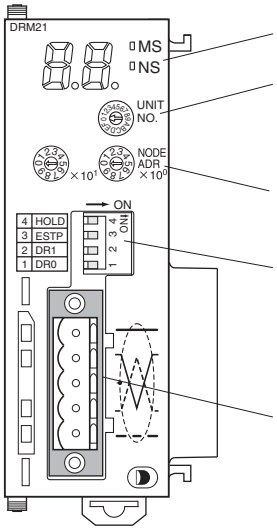
| | | | | |
|---|---|---|---|---|
| **Communications power supply voltage** | | | | 11 to 25 VDC *1 |
| **Current consumption** | | | | Communications: 18 mA max.<br>Internal circuit: 290 mA max. |
| **Max. number of connectable slaves** | **Remote I/O, explicit message service** | | | 63 *2 |
| **Max. number of I/O points** | **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 allocated words** | **Fixed allocations** | | **When used as a master** | 64 input and 64 output words<br>Software switch/status area: 25 words |
| | | | **When used as a slave** | 1 input word, 1 output word *3 |
| | **User-set allocations** | **Using allocated DM Area words** | **When used as a master** | 500 input and 500 output words<br>Software switch/status area: 25 words |
| | | | **When used as a slave** | 100 input and 100 output words *3<br>Software switch/status area: 25 words |
| | | **Using Configurator** | **When used as a master** | 500 input words x 2 blocks, 500 output words x 2 blocks<br>Software switch/Status area: 25 words |
| | | | **When used as a slave** | 100 input words x 1 blocks, 100 output words x 2 blocks<br>(See note 3.)<br>Software switch/Status area: 25 words |
| **Message communications** | **Max. message length** | | | 542 bytes *4 |
| **Applicable Controllers** | | | | CJ/NJ Series |
| **Max. number of Units mountable to Controller** | **Fixed allocations** | | | 3 |
| | **User-set allocations** | | | 16 |
| **Weight** | | | | 118 g max. |

*1. Refer to the DeviceNet Operation Manual (W267) for the communications power supply specifications.
*2. The Device Unit uses a node, and so connection is possible to 63 slaves only.
*3. When the DeviceNet is used as a slave, "input" and "output" respectively refer to input from the slave to the master and output from the master to the slave.
*4. The maximum message length includes the command code when using the CMND instruction. (SendCmd instruction with NJ-series controller)



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# External Interface




Indicators

Unit No. switch

This switch sets the unit number of the DeviceNet Unit as a one-digit hexadecimal value.

Node address switches

These switches set the node address as a two-digit decimal value.

DIP switch

The pins have the following functions:
Pins 1 and 2: Baud rate
Pin 3: Continue/Stop communications for error (when used as a Master)
Pin 4: Hold/clear I/O for communications error (when used as a Slave)

Communications connector

Connect the Network communications cable to this connector. The communications power for this Unit is also supplied through this connector. A parallel connector with screws (XW4B-O5C1-H1-D) is provided for node connection.

## Communications Connectors

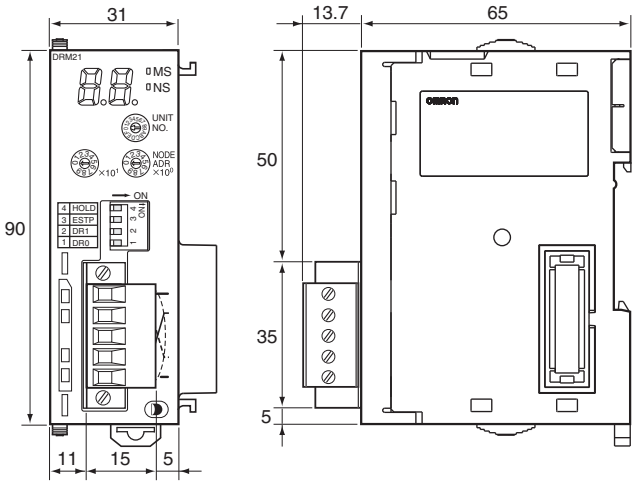
Color stickers that match communications cable colors are attached to the communications connectors. Match the colors when connecting communications cables to the connectors. These colors are given in the following table

| Color | Signal |
|---|---|
| Black | Power line, negative voltage (V–) |
| Blue | Communications line, low (CAN L) |
| – | Shield |
| White | Communications line, high (CAN H) |
| Red | Power line, positive voltage (V+) |

# Dimensions

**(Unit: mm)**








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# Related Manuals

| Manual name | Cat. No. | Model numbers | Application | Description |
|---|---|---|---|---|
| CS/CJ Series DeviceNet Unit Operation Manual | W380 | CS1W-DRM21(-V1)<br>CJ1W-DRM21 | Learning about the functions and operating procedure for CS/CJ Series DeviceNet Units. | The functions and operating procedures when the CS/CJ Series DeviceNet Unit is used in CS/CJ series system configuration are described. |
| CJ-series DeviceNet Units Operation Manual for NJ-series CPU Unit | W497 | CJ1W-DRM21 | Learning about the functions and operating procedures when the CJ-series DeviceNet Unit is used in an NJ-series system configuration. | The functions and operating procedures when the CJ-series DeviceNet Unit is used in an NJ-series system configuration are described. |
| DeviceNet Configurator Ver. 2. □ Operation Manual | W382 | – | Learning about the operating procedures for DeviceNet Configurator. | The operating procedures for DeviceNet Configurator are described in details. |
| DeviceNet Operation Manual | W267 | – | Learning about the communications specifications and wiring methods common among the DeviceNet communications networks. | The communications specifications and wiring methods common among the DeviceNet communications networks are described. Please read this manual and familiarize yourself with the functions and characteristics of the DeviceNet before use. |
| DRT2 Series DeviceNet Slaves Operation Manual | W404 | DRT2-ID/OD/<br>MD32SL(H)(-1)<br>DRT2-MD16S<br>DRT2 Series | Learning about the DRT2 Series DeviceNet Slaves. | The types of DRT2 DeviceNet Slaves, the functions, specifications, and operating procedures are described in details. |
| GT1 Series DeviceNet Multiple I/O Terminal Operation Manual | W348 | DRT1-COM<br>GT1 Series | Learning about the Multiple I/O Terminal, which is a type of DeviceNet Slave. | The types of Multiple I/O Terminal, which are kinds of DeviceNet Slaves, are provided. Also, their functions, specifications, and operating procedures are described in details. |
| CX-Integrator Ver.2. □ Operation Manual | W464 | – | Learning about the CX-Integrator that is used to set up the DeviceNet networks and to make settings. | The operating procedures for CX-Integrator are described. |



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