

CJ-series Ethernet Unit

CJ1W-ETN21

CSM_CJ1W-ETN21_DS_E_6_11

Organically Connect the Production Site and Management

- Select the required communications services according to application needs to flexibly integrate PLCs with an Ethernet information network.

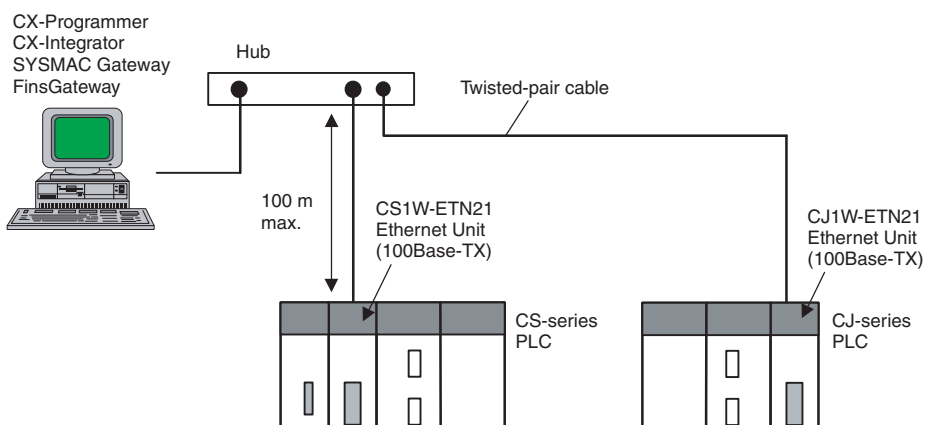


CJ1W-ETN21

Features

- Use Ethernet to implement various communications protocols.
- Implement FINS message communications using UDP/IP or TCP/IP with a user application on a host computer or with Support Software, such as the CX-Programmer.
- Use the clock on an SNTP server to automatically adjust the clocks in the PLCs connected to the Ethernet network. (An SNTP server is required separately.)
- An FTP server is built in, so files can be used to transfer PLC data between network PLCs and workstations or personal computers with an FTP client.
- Email can be used to send commands to the PLCs, or triggers can be set so that the PLCs will send PLC data or Ethernet Unit status to a host computer.
- The standard UDP/IP and TCP/IP protocols are supported to enable communications with a wide range of devices, workstations, personal computers, and Ethernet modules from other manufacturers.
- The SMTP/POP3/SNTP servers enable the use of host names instead of IP addresses. (A DNS server is required separately.)

System Configuration




Ordering Information

Applicable standards

Refer to the OMRON website (www.ia.omron.com) or ask your OMRON representative for the most recent applicable standards for each model.

Ethernet Unit


| Unit type | Product name | Specifications | | | No. of unit numbers allocated | Current consumption (A) | | Model |
|------------------|--|----------------------|--|--------------------|-------------------------------|-------------------------|------|------------|
| | | Communications cable | Communications functions | Units per CPU Unit | | 5 V | 24 V | |
| CJ1 CPU Bus Unit |  Ethernet Unit | 100Base-TX | FINS communications service (TCP/IP, UDP/IP), FTP server functions, socket services, mail transmission service, mail reception (remote command receive), automatic adjustment of PLC's built-in clock, server/host name specifications | 4 * | 1 | 0.37 | – | CJ1W-ETN21 |

Note: 1. There is no accessory for the CJ-series Ethernet Unit.

2. This unit cannot be used with the Machine Automation Controller NJ-series.

* Up to three Ethernet Units can be connected to a CJ1M-CPU1□-ETN CPU Unit. (Final order entry date for CJ1M:The end of March, 2021)

Industrial Switching Hubs

| Product name | Appearance | Functions | No. of ports | Accessories | Current consumption (A) | Model |
|---------------------------|---|---|--------------|------------------------|-------------------------|----------|
| Industrial Switching Hubs |  | Quality of Service (QoS): EtherNet/IP control data priority 10/100BASE-TX, Auto-Negotiation | 5 | Power supply connector | 0.07 | W4S1-05D |

Recommended Network Devices

The following products are recommended for use with the Ethernet Unit.

| Part | Maker | Model number | Contact phone | |
|--|--------------------------|---------------------------|---------------|---|
| Sizes and conductor pairs: AWG 24 × 4 pairs | Cables | Kuramo Electric Co., Ltd. | KETH-SB | Kuramo Electric Co., Ltd. |
| | RJ45 Connectors | Panduit Corporation | MPS588 | Panduit Corporation, Japan Branch, Osaka Sales Office |
| Sizes and conductor pairs: AWG 22 × 2 pairs | Cables | Kuramo Electric Co., Ltd. | KETH-PSB-OMR | Kuramo Electric Co., Ltd. |
| | RJ45 Assembly Connectors | OMRON | XS6G-T421-1 | OMRON Corporation, Customer Support Center |
| Sizes and conductor pairs: 0.5 mm × 4 pairs | Cables | EtherNet compliant cable | | |
| | RJ45 Connectors | Panduit Corporation | MPS588 | Panduit Corporation, Japan Branch, Osaka Sales Office |
| Boots | TSUKO | MK Boots (VI) LB | TSUKO | |

Mountable Racks

| Model | NJ system | | CJ system (CJ1, CJ2) | | CP1H system | NSJ system *1 | |
|------------|---------------|----------------|---------------------------|---------------------|-------------|----------------|---------------------|
| | CPU Rack | Expansion Rack | CPU Rack | Expansion Backplane | CP1H PLC | NSJ Controller | Expansion Backplane |
| CJ1W-ETN21 | Not Supported | | 4 Units (per CPU Unit) *2 | | 2 Units *3 | Not supported | 4 Units *4 |

*1. Product no longer available to order.

*2. Up to three Ethernet Units can be connected to a CJ1M-CPU1□-ETN CPU Unit. (Final order entry date for CJ1M: The end of March, 2021)

*3. A CP1W-EXT01 CJ Unit Adaptor is required.

*4. If an Expansion Rack is used, the NSJW-CLK21-V1 or NSJW-ETN21 cannot be mounted to the NSJ Controller.

Ethernet Units Specifications

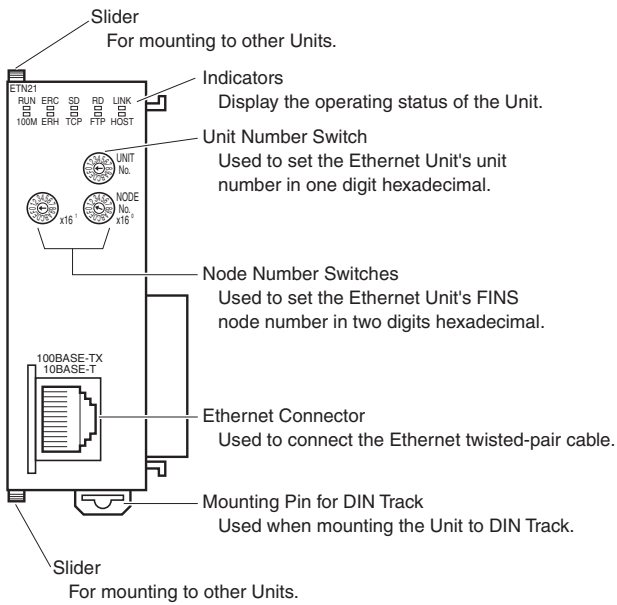
| Item | Specifications | | |
|-------------------------------------|--|---|---|
| Model number | CJ1W-ETN21 | | |
| Type | 100Base-TX (Can be used as 10Base-T) | | |
| Applicable PLCs | CJ-series PLCs | | |
| Unit classification | CJ-series CPU Bus Unit | | |
| Mounting location | CPU Rack or Expansion Rack | | |
| Number of Units that can be mounted | 4 max. (including Expansion Racks) | | |
| Transfer specifications | Media access method | CSMA/CD | |
| | Modulation method | Baseband | |
| | Transmission paths | Star form | |
| | Baud rate | 100 Mbit/s (100Base-TX) | 10 Mbit/s (10Base-TX) |
| | Transmission media | Unshielded twisted-pair (UDP) cable Categories: 5, 5e Shielded twisted-pair (STP) cable Categories: 100 Ω at 5, 5e | Unshielded twisted-pair (UDP) cable Categories: 3, 4, 5, 5e Shielded twisted-pair (STP) cable Categories: 100 Ω at 3, 4, 5, 5e |
| | Transmission distance | 100 m (distance between hub and node) | |
| Number of cascade connections | No restrictions if switching hubs are used. | | |
| Current consumption (Unit) | 370 mA max. at 5 V DC | | |
| Weight | 100 g max. | | |
| Dimensions | 31 × 90 × 65 mm (W × H × D) | | |
| Other general specifications | Other specifications conform to the general specifications of the CJ-series. | | |

Communications Specifications

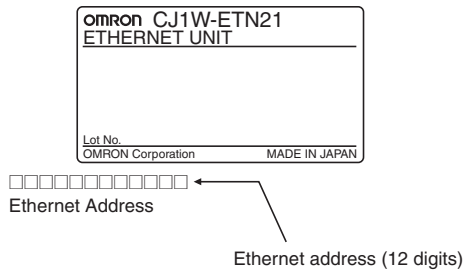
| Item | Ethernet Unit | |
|---------------------------------|---|--|
| Model number | CJ1W-ETN21 | |
| Physical layer | 100BASE-TX, 10BASE-T | |
| Number of nodes on FINS network | 254 | |
| Server specification | Specification by IP address or host name specifications (DNS client function) | |
| Communications service | FINS communications service | FINS/UDP FINS/TCP |
| | FTP server function | The CPU Unit's file memory (Memory Card or EM file memory) can be read/written. |
| | Automatic clock information adjustment | The CPU Unit's internal clock data can be automatically adjusted to the clock data received from the SNTP server |
| | Web functions | The Unit settings can be made and status can be read from the Web browser using the Web server. |
| | Mail functions | Mail send functions Mail receive functions |
| | Socket service function | TCP socket services UDP socket services |
| | FINS commands | RESET |
| | | CONTROLLER DATA READ |
| | | CONTROLLER STATUS READ |
| | | ECHOBACK TEST |
| | | BROADCAST TEST (READ RESULTS) |
| | | BROADCAST TEST (SEND TEST DATA) |
| | | ERROR LOG READ |
| | | ERROR LOG CLEAR |
| | | REQUEST TO OPEN UDP SOCKET |
| | | REQUEST TO RECEIVE UDP SOCKET |
| | | REQUEST TO SEND UDP SOCKET |
| | | REQUEST TO CLOSE UDP SOCKET |
| | | REQUEST TO OPEN TCP SOCKET (PASSIVE) |
| | | REQUEST TO OPEN TCP SOCKET (ACTIVE) |
| | | REQUEST TO RECEIVE TCP SOCKET |
| | | REQUEST TO SEND TCP SOCKET |
| | | REQUEST TO CLOSE TCP SOCKET |
| | | EXECUTE PING COMMAND |
| | | REQUEST TO CHANGE REMOTE NODE FOR FINS/TCP CONNECTION |
| | | REQUEST TO READ STATUS FOR FINS/TCP CONNECTION |
| | IP ADDRESS TABLE WRITE | |
| IP ADDRESS WRITE | | |
| IP ADDRESS TABLE READ | | |
| IP ROUTING TABLE READ | | |
| PROTOCOL STATUS READ | | |
| MEMORY STATUS READ | | |
| SOCKET STATUS READ | | |
| ADDRESS DATA READ | | |
| IP ADDRESS READ | | |

External Interface

CJ1W-ETN21



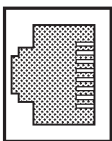
Each communications device connected to the Ethernet network is allocated a unique Ethernet address. For the Ethernet Unit, this Ethernet address is shown on the right side of the Unit as a 12-digit hexadecimal number.



Ethernet Connectors

The following standards and specifications apply to the connectors for the Ethernet twisted-pair cable.

- Electrical specifications: Conforming to IEEE802.3 standards.
- Connector structure: RJ45 8-pin Modular Connector (conforming to ISO 8877)



| Connector pin | Signal name | Abbr. | Signal direction |
|---------------|---------------------|-------|------------------|
| 1 | Transmission data + | TD+ | Output |
| 2 | Transmission data - | TD- | Output |
| 3 | Reception data + | RD+ | Input |
| 4 | Not used. | - | - |
| 5 | Not used. | - | - |
| 6 | Reception data - | RD- | Input |
| 7 | Not used. | - | - |
| 8 | Not used. | - | - |
| Hood | Frame ground | FG | - |

Unit Version Upgrade Information

Unit Version 1.3

| Upgrade | Details |
|---|--|
| Web function added | The unit settings and status monitoring for the Ethernet Unit can be easily performed from a Web browser. |
| Function prohibiting access using FINS/UDP from nodes with dynamically changed IP addresses | Access to change the remote IP address from a node using FINS/UDP can be prohibited (IP address protection). |

Unit Version 1.4

| Upgrade | Details |
|---|--|
| ETN11-compatible mode added to the ETN21 settings for FINS/UDP. | A mode compatible with the CS1W-ETN11/CJ1W-ETN11 was added in the operating specifications for FINS/UDP messages sent from a different UDP port number than the FINS/UDP port number set in the Ethernet Unit. |

Unit Version 1.5

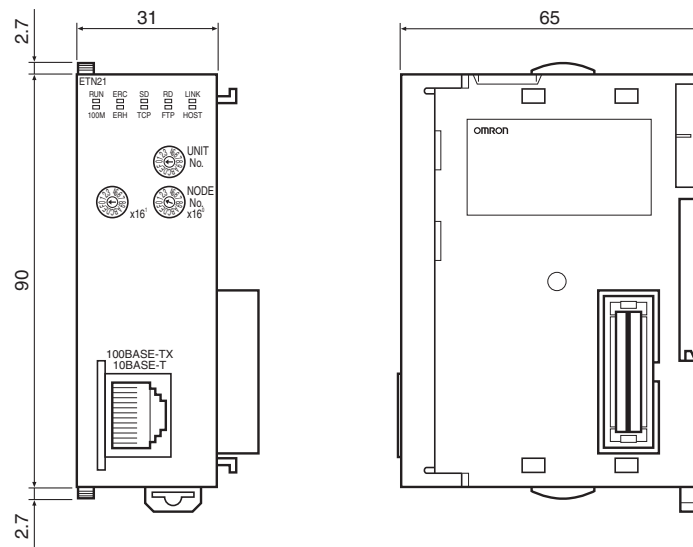
| Upgrade | Details |
|--|--|
| CIDR function added to subnet mask settings | An option setting was added to the subnet mask settings to enable CIDR. Enabling CIDR allows you to use classless IP addresses in the subnet mask setting. |
| High-speed option added for socket service | This option can be set to improve communications performance for the socket service that is implemented by manipulating dedicated control bits. The performance is the same as the previous version if this option is not set. |
| Linger option added to socket options for TCP open requests. | A linger option can now be set in the options for passive or active TCP open requests. |
| Location of node address switches changed on CJ1W-ETN21 | The location of the node address switches was changed. The setting method and setting range remain the same. |

Note: CX-Programmer version 8.2 or higher is required for unit version 1.5 functions.

Dimensions

(Unit: mm)

CJ1W-ETN21



Related Manuals

| Man.No. | Model | Name | Contents |
|---------|--|---|--|
| W420 | CS1W-ETN21 CJ1W-ETN21 | Ethernet Units Operation Manual Construction of Networks | Provides information on operating and installing 100Base-TX Ethernet Units, including details on basic settings and FINS communications. Refer to the Communications Commands Reference Manual (W342) for details on FINS commands that can be sent to CS-series and CJ-series CPU Units when using the FINS communications service. |
| W421 | CS1W-ETN21 CJ1W-ETN21 | Ethernet Units Operation Manual Construction of Applications | Provides information on constructing host applications for 100Base-TX Ethernet Units, including functions for sending/receiving mail, socket service, automatic clock adjustment, FTP server functions, and FINS communications. |
| W342 | CS1G/H-CPU□□H CS1G/H-CPU-□□EV1 CS1D-CPU□□HA CS1D-CPU□□SA CS1D-CPU□□H CS1D-CPU□□S CJ1M-CPU□□ CS1W-SCU21-V1 CS1W-SCB21-V1/41-V1 CJ1G/H-CPU□□H CJ1G-CPU□□P CJ1G-CPU□□ CJ1W-SCU21-V1/41-V1 | Communications Commands Reference Manual | Describes the C-series (Host Link) and FINS communications commands used when sending communications commands to CS-series and CJ-series CPU Units. |
| W463 | CXONE-AL□□D-V□ | CX-One Setup Manual | Describes operating procedures for the CX-One FA Integrated Tool Package. Refer to this manual for operating procedures for the CX-One FA Integrated Tool Package. |
| W464 | CXONE-AL□□D-V□ | CS/CJ/CP/NSJ-series CX-Integrator Network Configuration Software Operation Manual | Describes the operating procedures for the CX-Integrator. |

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