

# CJ-series B7A Interface Unit

## CJ1W-B7A

CSM\_CJ1W-B7A\_DS\_E\_3\_1

**It transmits 16 points of I/O signals per word with a pair of cables.**

**Easy and minimized wiring effort,**

- The B7A Interface Unit and B7A Link Terminal can be used in the same way as a standard Basic I/O Unit and I/O Terminal without any need to worry about communications. This characteristic reduces the wiring when using more than one relatively remote sensor or actuator.

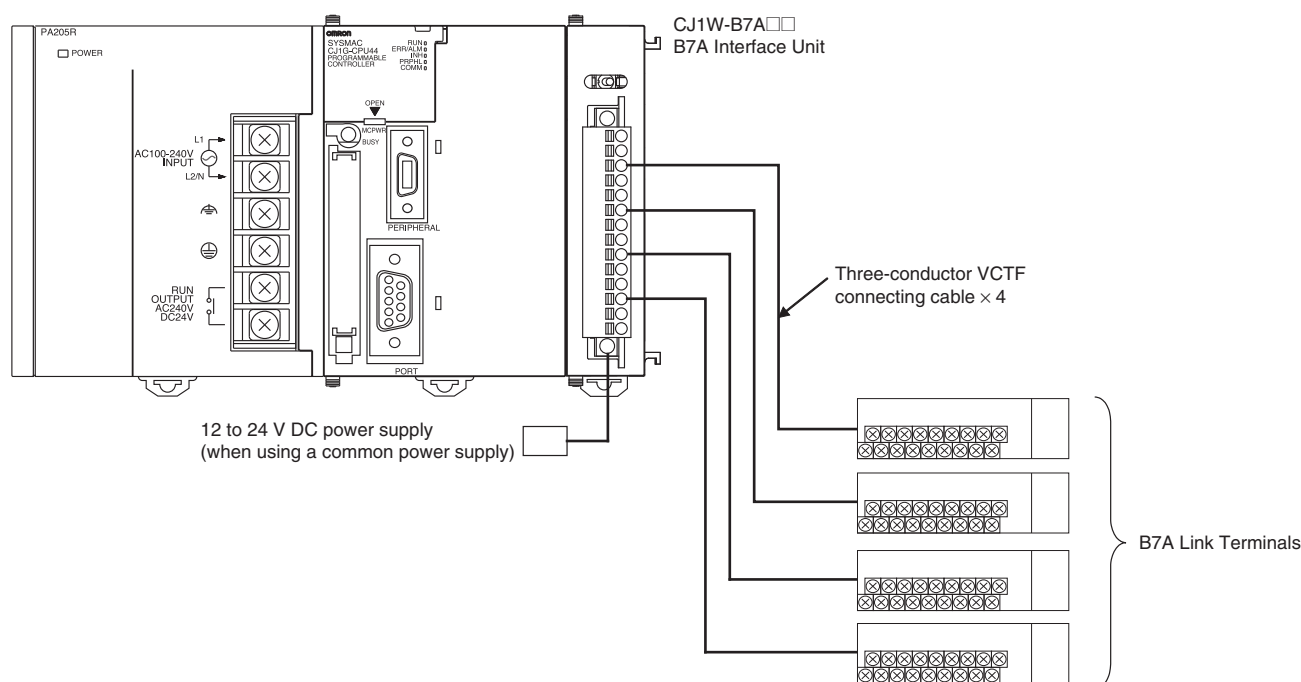


**CJ1W-B7A14**

## Features

- A CJ1W-B7A unit can transmit 64 points of I/O signals.
- The slim body can downsize machines to which CJ1W-B7A is connected.
- It is a basic I/O unit. No complicated setting and programs are required.

## System Configuration



## B7A Communications Specifications

| Item                                                              | Specifications                                                                                                                                                                                                                                                                                                                                                                                                       |                                                      |                                 |
|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|---------------------------------|
| Transmission method                                               | One-way time-sharing multiplex transmissions                                                                                                                                                                                                                                                                                                                                                                         |                                                      |                                 |
| Transmission delay<br>(communications delay on transmission path) | High-speed                                                                                                                                                                                                                                                                                                                                                                                                           | 3 ms typical, 5 ms max.                              |                                 |
|                                                                   | Standard                                                                                                                                                                                                                                                                                                                                                                                                             | 19.2 ms typical, 31 ms max.                          |                                 |
| Transmission points                                               | CJ1W-B7A14                                                                                                                                                                                                                                                                                                                                                                                                           | 64 inputs (4 ports)                                  |                                 |
|                                                                   | CJ1W-B7A04                                                                                                                                                                                                                                                                                                                                                                                                           | 64 outputs (4 ports)                                 |                                 |
|                                                                   | CJ1W-B7A22                                                                                                                                                                                                                                                                                                                                                                                                           | 32 inputs (2 ports), 32 outputs (2 ports)            |                                 |
| External power supply voltage *1                                  | 12 to 24 V DC (allowable voltage range: 10.8 to 26.4 V)                                                                                                                                                                                                                                                                                                                                                              |                                                      |                                 |
| External supply current *2                                        | CJ1W-B7A14                                                                                                                                                                                                                                                                                                                                                                                                           | 40 mA min.                                           |                                 |
|                                                                   | CJ1W-B7A04                                                                                                                                                                                                                                                                                                                                                                                                           | 150 mA min.                                          |                                 |
|                                                                   | CJ1W-B7A22                                                                                                                                                                                                                                                                                                                                                                                                           | 80 mA min.                                           |                                 |
| Minimum input time *3                                             | High-speed                                                                                                                                                                                                                                                                                                                                                                                                           | 16 ms                                                |                                 |
|                                                                   | Standard                                                                                                                                                                                                                                                                                                                                                                                                             | 2.4 ms                                               |                                 |
| Transmission distance                                             | High-speed                                                                                                                                                                                                                                                                                                                                                                                                           | Power supply on one side (common power supply)       | 10 m max.                       |
|                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      | 50 m max. (with shielded cable) |
|                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                      | Power supply on both sides (separate power supplies) | 10 m max.                       |
|                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                      | 100 m max. (with shielded cable)                     |                                 |
|                                                                   | Standard                                                                                                                                                                                                                                                                                                                                                                                                             | Power supply on one side (common power supply)       | 100 m max.                      |
| Power supply on both sides (separate power supplies)              |                                                                                                                                                                                                                                                                                                                                                                                                                      | 500 m max.                                           |                                 |
| Cables                                                            | VCTF, 0.75 mm <sup>2</sup> , 3 conductors (power supply on one side (common power supply))<br>VCTF, 0.75 mm <sup>2</sup> , 2 conductors (power supply on both sides (separate power supplies))<br>Shielded cable, 0.75 mm <sup>2</sup> , 3 conductors (power supply on one side (common power supply))<br>Shielded cable, 0.75 mm <sup>2</sup> , 2 conductors (power supply on both sides (separate power supplies)) |                                                      |                                 |

**Note:** 1. When separate power supplies are used, the B7A Interface Unit and B7A Link Terminal are supplied by separate external power supplies.  
 2. When a common power supply is used, the B7A Interface Unit and B7A Link Terminal are supplied by the same external power supply.

\*1. We recommend OMRON S8□□-series Power Supply Units for the external power supplies.

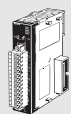
\*2. The capacity of the external supply current does not include the capacity required by the B7A Link Terminal.

\*3. The minimum input time is the minimum time required by the B7A Interface Unit to read the input signals from the CPU Unit.

## 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 type           | Name                                                                                | Specifications    |                          | No. of words allocated | Current consumption (A) |      | Model      | Standards |
|---------------------|-------------------------------------------------------------------------------------|-------------------|--------------------------|------------------------|-------------------------|------|------------|-----------|
|                     |                                                                                     | I/O points        | External connection      |                        | 5 V                     | 24 V |            |           |
| CJ1 Basic I/O Units |  | 64 inputs         | Removable terminal block | 4 words                | 0.07                    | —    | CJ1W-B7A14 | UC1, CE   |
|                     |                                                                                     | 64 outputs        |                          |                        | 0.07                    | —    | CJ1W-B7A04 |           |
|                     |                                                                                     | 32 inputs/outputs |                          |                        | 0.07                    | —    | CJ1W-B7A22 |           |

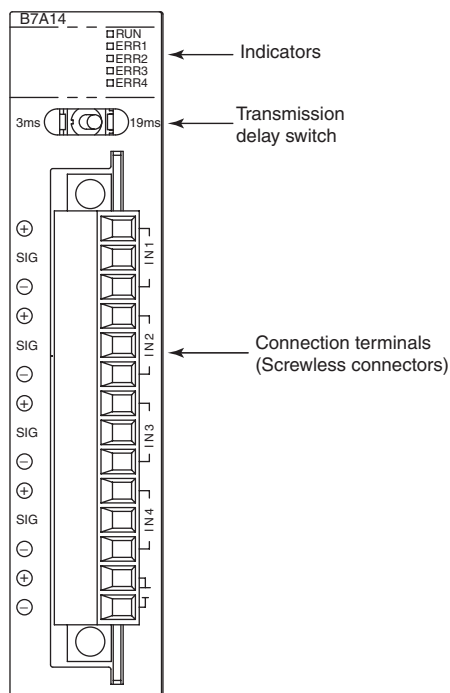
## Mountable Racks

| Model                                  | NJ system |                                  | CJ system (CJ1, CJ2) |                                       | CP1H system   | NSJ system     |                                       |
|----------------------------------------|-----------|----------------------------------|----------------------|---------------------------------------|---------------|----------------|---------------------------------------|
|                                        | CPU Rack  | Expansion Rack                   | CPU Rack             | Expansion Backplane                   | CP1H PLC      | NSJ Controller | Expansion Backplane                   |
| CJ1W-B7A14<br>CJ1W-B7A04<br>CJ1W-B7A22 | 10 Units  | 10 Units<br>(per Expansion Rack) | 10 Units             | 10 Units<br>(per Expansion Backplane) | Not Supported | Not Supported  | 10 Units<br>(per Expansion Backplane) |

## Specifications

| Items                                             | Mode | Standard mode                                                                                                                                      | High-speed mode |
|---------------------------------------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| I/O points                                        |      | IN 32 / OUT 32 (CJ1W-B7A22)<br>IN 64 (CJ1W-B7A14)<br>OUT 64 (CJ1W-B7A04)                                                                           |                 |
| Transmission method                               |      | One-way time-sharing multiplex transmissions                                                                                                       |                 |
| Transmission distance                             |      | 500m max.                                                                                                                                          | 100m max.       |
| Transmission delay                                |      | 19.2ms (typical)                                                                                                                                   | 3ms (typical)   |
| Minimum input time                                |      | 16ms                                                                                                                                               | 2.4ms           |
| Power Supply voltage<br>(allowable voltage range) |      | 12 to 24VDC<br>(10.8 to 26.4VDC)                                                                                                                   |                 |
| I/O memory Allocations                            |      | Each Unit is allocated 4 words in the I/O Area (which starts at CIO 0000). The words are allocated according to the mounting position of the Unit. |                 |
| Transmission error bit                            |      | A transmission error bit for each input port is allocated in the Basic I/O Unit Information Area.                                                  |                 |
| Cable                                             |      | VCTF, 0.75mm <sup>2</sup> recommended.                                                                                                             |                 |

## Parts and Names



### Terminal Arrangement

| Terminal | Name                    | Function                                                                                                              | Word | Appearance                                                                                                                                                                                                   |
|----------|-------------------------|-----------------------------------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1)      | Port 1 power supply: V1 | Connect to the + terminal of the B7A Link Terminal to be connected to port 1 (only when using a common power supply). | n    | <div>Connector with clamps</div> <div>(1) V1<br/>(2) SIG1<br/>(3) G1<br/>(4) V2<br/>(5) SIG2<br/>(6) G2<br/>(7) V3<br/>(8) SIG3<br/>(9) G3<br/>(10) V4<br/>(11) SIG4<br/>(12) G4<br/>(13) V<br/>(14) G</div> |
| (2)      | Port 1 signal: SIG1     | Connect to the SIG terminal of the B7A Link Terminal to be connected to port 1.                                       |      |                                                                                                                                                                                                              |
| (3)      | Port 1 ground: G1       | Connect to the – terminal of the B7A Link Terminal to be connected to port 1.                                         |      |                                                                                                                                                                                                              |
| (4)      | Port 2 power supply: V2 | Connect to the + terminal of the B7A Link Terminal to be connected to port 2 (only when using a common power supply). | n+1  |                                                                                                                                                                                                              |
| (5)      | Port 2 signal: SIG2     | Connect to the SIG terminal of the B7A Link Terminal to be connected to port 2.                                       |      |                                                                                                                                                                                                              |
| (6)      | Port 2 ground: G2       | Connect to the – terminal of the B7A Link Terminal to be connected to port 2.                                         |      |                                                                                                                                                                                                              |
| (7)      | Port 3 power supply: V3 | Connect to the + terminal of the B7A Link Terminal to be connected to port 3 (only when using a common power supply). | n+2  |                                                                                                                                                                                                              |
| (8)      | Port 3 signal: SIG3     | Connect to the SIG terminal of the B7A Link Terminal to be connected to port 3.                                       |      |                                                                                                                                                                                                              |
| (9)      | Port 3 ground: G3       | Connect to the – terminal of the B7A Link Terminal to be connected to port 3.                                         |      |                                                                                                                                                                                                              |
| (10)     | Port 4 power supply: V4 | Connect to the + terminal of the B7A Link Terminal to be connected to port 4 (only when using a common power supply). | n+3  |                                                                                                                                                                                                              |
| (11)     | Port 4 signal: SIG4     | Connect to the SIG terminal of the B7A Link Terminal to be connected to port 4.                                       |      |                                                                                                                                                                                                              |
| (12)     | Port 4 ground: G4       | Connect to the – terminal of the B7A Link Terminal to be connected to port 4.                                         |      |                                                                                                                                                                                                              |
| (13)     | + power supply: V       | Connect to the + terminal of the external power supply.                                                               | –    |                                                                                                                                                                                                              |
| (14)     | – power supply: G       | Connect to the – terminal of the external power supply.                                                               |      |                                                                                                                                                                                                              |

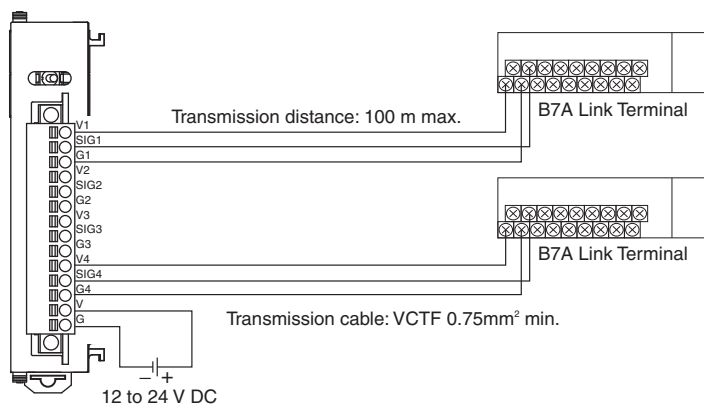
**Note:** Terminals V1, V2, V3, V4, and V are connected internally in the Unit, and terminals G1, G2, G3, G4, and G are connected internally in the Unit.

## Wiring Methods

### Standard Mode

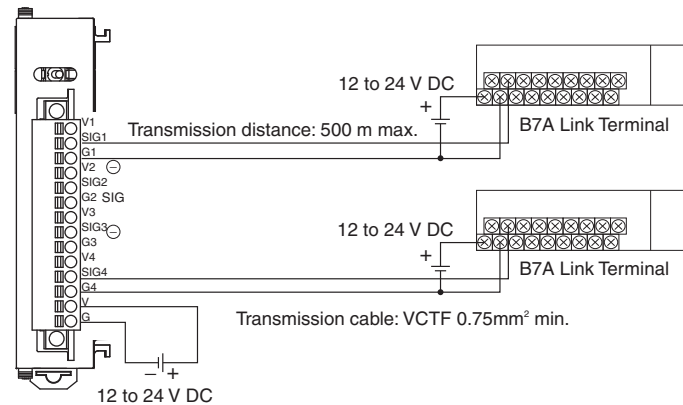
#### Power Supply on One Side (Common Power Supply)

B7A Interface Unit



#### Power Supply on Both Sides (Separate Power Supplies)

B7A Interface Unit

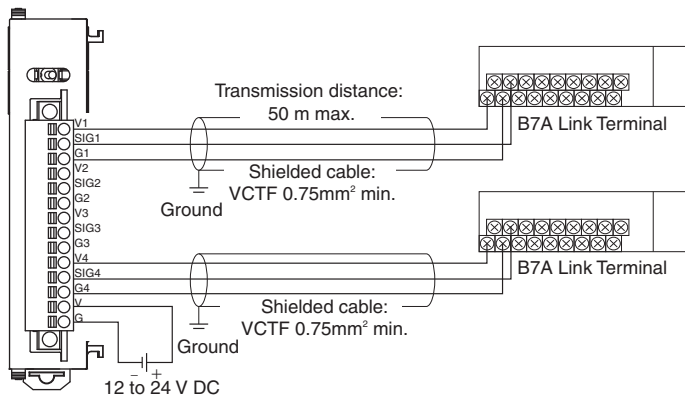


### High-speed Mode

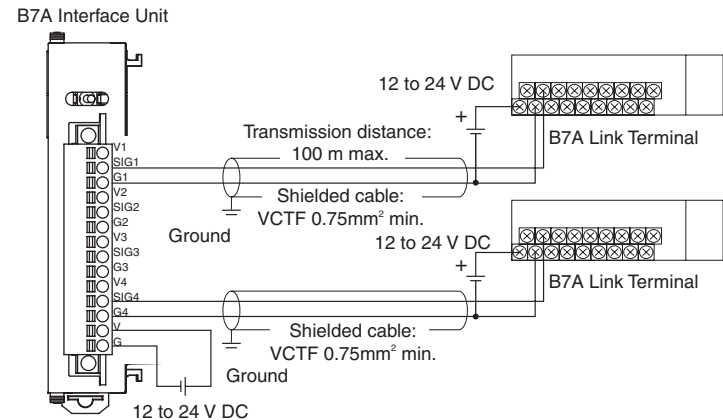
**Note:** If shielded cable is not used, the maximum transmission distance is 10 m regardless of whether a common or separate power supplies are used. (Use VCTF cable of 0.75 mm<sup>2</sup> or higher.)

#### Power Supply on One Side (Common Power Supply)

B7A Interface Unit



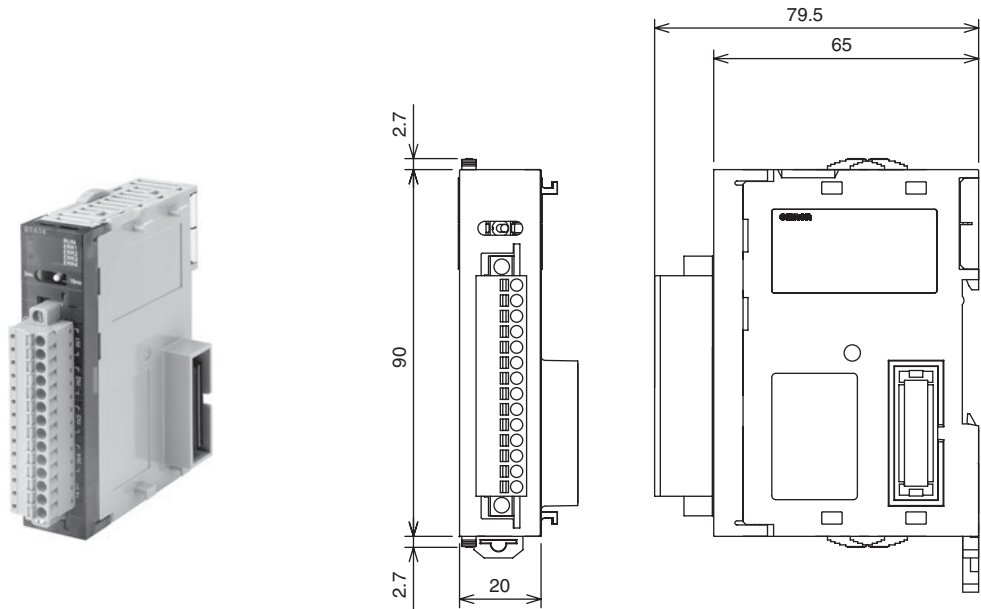
Power Supply on Both Sides (Separate Power Supplies)



Dimensions

(Unit: mm)

CJ1W-B7A14/04/22



Related Manual

| Cat.No. | Name                                                                                                                                         | Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| W472    | CJ-series CJ2 CPU Unit<br>Hardware User's Manual<br>CJ2H-CPU6□-EIP<br>CJ2H-CPU6□<br>CJ2M-CPU□□                                               | Describes the following for CJ2 CPU Units: <ul style="list-style-type: none"><li>• Overview and features</li><li>• Basic system configuration</li><li>• Part nomenclature and functions</li><li>• Mounting and setting procedure</li><li>• Remedies for errors</li></ul> Also refer to the Software User's Manual (W473).                                                                                                                                                                       |
| W393    | SYSMAC CJ Series<br>CJ1H-CPU□□H-R,<br>CJ1G/H-CPU□□H, CJ1G-CPU□□P, CJ1G-<br>CPU□□, CJ1M-CPU□□<br>Programmable Controllers<br>OPERATION MANUAL | Provides an outlines of and describes the design, installation, maintenance, and other basic operations for the CJ-series PLCs.                                                                                                                                                                                                                                                                                                                                                                 |
| W500    | NJ-series CPU Unit<br>Hardware User's Manual<br>NJ501-□□□□                                                                                   | An introduction to the entire NJ-series system is provided along with the following information on a Controller built with an NJ501 CPU Unit. <ul style="list-style-type: none"><li>• Features and system configuration</li><li>• Introduction</li><li>• Part names and functions</li><li>• General specifications</li><li>• Installation and wiring</li><li>• Maintenance and inspection</li></ul> Use this manual together with the NJ-series CPU Unit Software User's Manual (Cat. No.W501). |

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