

## Bit Slave Units with Compact Connectors

**CRT1B-□D02JS(-1)/□D04JS(-1)**

## Bit slave of smallest class in industry

## Innovation in wiring for any type of machinery

- Available in 2 types: 2-point Bit Slave Unit and 4-point Bit Slave Unit.
- Compact size for installation in limited space. Save space and wiring since bit slave can be installed near I/O devices.
- Industry first bit slave connectable with round cables which can be easily purchased at a lower price. Connectable with flat cables, too for easy wiring. Cables are selectable depending on applications.



### Ordering Information

| Name               | Specifications |                    |     | Model          |
|--------------------|----------------|--------------------|-----|----------------|
| Compact Connectors | Inputs         | 2 inputs           | NPN | CRT1B-ID02JS   |
|                    |                | 2 outputs          | PNP | CRT1B-ID02JS-1 |
|                    | Outputs        | 2 inputs           | NPN | CRT1B-OD02JS   |
|                    |                | 2 outputs          | PNP | CRT1B-OD02JS-1 |
|                    | Inputs/Outputs | 1 input/1 output   | NPN | CRT1B-MD02JS   |
|                    |                | 1 input/1 output   | PNP | CRT1B-MD02JS-1 |
|                    | Inputs         | 4 inputs           | NPN | CRT1B-ID04JS   |
|                    |                | 4 outputs          | PNP | CRT1B-ID04JS-1 |
|                    | Outputs        | 4 inputs           | NPN | CRT1B-OD04JS   |
|                    |                | 4 outputs          | PNP | CRT1B-OD04JS-1 |
|                    | Inputs/Outputs | 2 inputs/2 outputs | NPN | CRT1B-MD04JS   |
|                    |                | 2 inputs/2 outputs | PNP | CRT1B-MD04JS-1 |
| Mounting Bracket   |                |                    |     | CRT1-ATT03     |

#### ● Peripheral Devices

##### For Round Cable I

| Name                                                                        | Model           |
|-----------------------------------------------------------------------------|-----------------|
| Open Type Connector (for Unit connection)<br>(Honda Tsushin Kogyo Co.,Ltd.) | HCN-TB4LMZG+ *1 |
| Terminating Resistor                                                        | DRS1-T          |

##### For Round Cable II

| Name                                                                        | Model           |
|-----------------------------------------------------------------------------|-----------------|
| Open Type Connector (for Unit connection)<br>(Honda Tsushin Kogyo Co.,Ltd.) | HCN-TB4LMZG+ *1 |
| Terminating Resistor                                                        | DCN4-TM4 *2     |
| Flat Connector Socket                                                       | DCN4-TR4 *2     |

Note: The DCN4-MD4 Multidrop Connector cannot be used with Bit Slaves with Compact Connectors. Use Open Type Connector from Honda Tsushin Kogyo Co., Ltd.

##### For Flat Cable I

| Name                          | Model       |
|-------------------------------|-------------|
| Flat Connector Socket         | DCN4-TR4 *2 |
| Flat Connector Plug           | DCN4-BR4 *2 |
| Flat Multidrop Connector Plug | DCN4-MR4 *2 |
| Terminating Resistor          | DCN4-TM4 *2 |
| Special Tools                 | DWT-A01     |

Note: The DCN4-MD4 Multidrop Connector cannot be used with Bit Slaves with Compact Connectors.

\*1 For information of HCN-TB4LMZG+, contact to Honda Tsushin Kogyo Co.,Ltd. Tel:+81-52-242-2111

\*2 The minimum quantity packaged is 10 Connectors.Oder the Connectors in multiples of 10.

## ● Compact Connectors

The compact connectors use XA-series Connectors from JST Mfg. Co., Ltd. Special cable connectors must be attached for cables connecting to external devices if a Slave Unit with Compact Connectors is used.

| Name     |                | Applicable cable range |          |                               | Model         | Crimping Tool |
|----------|----------------|------------------------|----------|-------------------------------|---------------|---------------|
|          |                | mm <sup>2</sup>        | AWG#     | Wire sheath external diameter |               |               |
| Contacts | Loose terminal | 0.08 to 0.33           | 28 to 22 | 1.2 to 1.9                    | BXA-001T-P0.6 | YC-692R       |
|          | Chain terminal |                        |          |                               | SXA-001T-P0.6 | YRS-692       |
|          | Loose terminal | 0.22 to 0.5            | 24 to 20 | 1.5 to 1.9                    | BXA-01T-P0.6  | YC-701R       |
|          | Chain terminal |                        |          |                               | SXA-01T-P0.6  | YRS-701       |
| Housing  | ---            | ---                    | ---      | ---                           | XAP-03V-1     | ---           |

Note 1. Automated Crimp Tools are also available. For details, contact the manufacturer.

2. For information on the processing procedure, refer to the instruction manual included with the tool or contact the manufacturer (JST Mfg. Co., Ltd.).

## Performance Specifications

For Basic Performance Specifications of Slave Units, refer to page 30.

## Input Section Specifications

| Item                                              | Specification                                                                                     |                                                                |                                                                                                   |                                                                |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Model                                             | CRT1B-ID02JS                                                                                      | CRT1B-ID02JS-1                                                 | CRT1B-ID04JS                                                                                      | CRT1B-ID04JS-1                                                 |
| I/O capacity                                      | 2 inputs                                                                                          |                                                                | 4 inputs                                                                                          |                                                                |
| Internal I/O common                               | NPN                                                                                               | PNP                                                            | NPN                                                                                               | PNP                                                            |
| ON voltage                                        | 10.5 VDC min. (between each input terminal and the V terminal)                                    | 10.5 VDC min. (between each input terminal and the G terminal) | 10.5 VDC min. (between each input terminal and the V terminal)                                    | 10.5 VDC min. (between each input terminal and the G terminal) |
| OFF voltage                                       | ---                                                                                               | ---                                                            | ---                                                                                               | ---                                                            |
| OFF current                                       | 1.0 mA max.                                                                                       |                                                                | 1.0 mA max.                                                                                       |                                                                |
| Input current                                     | 3.0 mA min./input (at 10.5 VDC)                                                                   |                                                                | 3.0 mA min./input (at 10.5 VDC)                                                                   |                                                                |
| Sensor power supply voltage                       | Communications power supply voltage 0 V (max.)<br>Communications power supply voltage -1 V (min.) |                                                                | Communications power supply voltage 0 V (max.)<br>Communications power supply voltage -1 V (min.) |                                                                |
| ON delay                                          | 1.5 ms max.                                                                                       |                                                                | 1.5 ms max.                                                                                       |                                                                |
| OFF delay                                         | 1.5 ms max.                                                                                       |                                                                | 1.5 ms max.                                                                                       |                                                                |
| Number of circuits per common                     | 2 inputs/common                                                                                   |                                                                | 4 inputs/common                                                                                   |                                                                |
| Power short-circuit detection                     | Not supported.                                                                                    |                                                                | Not supported.                                                                                    |                                                                |
| Isolation method                                  | No isolation                                                                                      |                                                                | No isolation                                                                                      |                                                                |
| Input indicators                                  | LEDs (yellow)                                                                                     |                                                                | LEDs (yellow)                                                                                     |                                                                |
| Degree of protection                              | IEC standard IP20                                                                                 |                                                                | IEC standard IP20                                                                                 |                                                                |
| Installation                                      | M4 screw mounting using CRT1B-ATT03 Mounting Bracket                                              |                                                                | M4 screw mounting using CRT1B-ATT03 Mounting Bracket                                              |                                                                |
| Power supply type                                 | Network power supply                                                                              |                                                                | Network power supply                                                                              |                                                                |
| Communications power supply current consumption * | 25 mA max. for 24-VDC power supply voltage<br>30 mA max. for 14-VDC power supply voltage          |                                                                | 35 mA max. for 24-VDC power supply voltage<br>40 mA max. for 14-VDC power supply voltage          |                                                                |
| Input device supply current                       | 50 mA/point (G terminal)                                                                          | 50 mA/point (V terminal)                                       | 50 mA/point (G terminal)                                                                          | 50 mA/point (V terminal)                                       |
| Weight                                            | 16 g max.                                                                                         |                                                                | 21 g max.                                                                                         |                                                                |

\* The current consumption is for Bit Slave Unit communications current when all inputs are OFF, i.e., it does not include input device current consumption. The communications power supply is also used for the I/O power supply for sensors. Be sure to consider the sensor current consumption and the number of sensors connected in addition to the communications power.

The power supply current consumption is expressed by the following formula.

Communications power supply current consumption = Bit Slave Unit communications current consumption + (Bit Slave Unit input current × number of inputs used) + (sensor current consumption × number of sensors used)

## Output Section Specifications

| Item                                                        | Specification                                                                                       |                                                                          |                                                                                                     |                                                                          |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Model                                                       | CRT1B-OD02JS                                                                                        | CRT1B-OD02JS-1                                                           | CRT1B-OD04JS                                                                                        | CRT1B-OD04JS-1                                                           |
| I/O capacity                                                | 2 outputs                                                                                           |                                                                          | 4 outputs                                                                                           |                                                                          |
| Internal I/O common                                         | NPN                                                                                                 | PNP                                                                      | NPN                                                                                                 | PNP                                                                      |
| Rated output current                                        | 0.1 A/output                                                                                        |                                                                          | 0.1 A/output                                                                                        |                                                                          |
| Load power supply voltage                                   | Communications power supply voltage 0 V (max.)<br>Communications power supply voltage -1.2 V (min.) |                                                                          | Communications power supply voltage 0 V (max.)<br>Communications power supply voltage -1.2 V (min.) |                                                                          |
| Residual voltage                                            | 1.2 V max. (0.1 A DC,<br>between each output terminal<br>and G terminal)                            | 1.2 V max. (0.1 A DC,<br>between each output terminal<br>and V terminal) | 1.2 V max. (0.1 A DC,<br>between each output terminal<br>and G terminal)                            | 1.2 V max. (0.1 A DC,<br>between each output terminal<br>and V terminal) |
| Leakage current                                             | 0.1 mA max.                                                                                         |                                                                          | 0.1 mA max.                                                                                         |                                                                          |
| ON delay                                                    | 0.5 ms max.                                                                                         |                                                                          | 0.5 ms max.                                                                                         |                                                                          |
| OFF delay                                                   | 1.5 ms max.                                                                                         |                                                                          | 1.5 ms max.                                                                                         |                                                                          |
| Number of circuits per common                               | 2 outputs/common                                                                                    |                                                                          | 4 outputs/common                                                                                    |                                                                          |
| Load short-circuit detection                                | Not supported.                                                                                      |                                                                          | Not supported.                                                                                      |                                                                          |
| Isolation method                                            | No isolation                                                                                        |                                                                          | No isolation                                                                                        |                                                                          |
| Output indicators                                           | LEDs (yellow)                                                                                       |                                                                          | LEDs (yellow)                                                                                       |                                                                          |
| Degree of protection                                        | IEC standard IP20                                                                                   |                                                                          | IEC standard IP20                                                                                   |                                                                          |
| Installation                                                | M4 screw mounting using CRT1B-ATT03 Mounting Bracket                                                |                                                                          | M4 screw mounting using CRT1B-ATT03 Mounting Bracket                                                |                                                                          |
| Power supply type                                           | Network power supply                                                                                |                                                                          | Network power supply                                                                                |                                                                          |
| Communications power supply current consumption (See note.) | 25 mA max. for 24-VDC power supply voltage<br>30 mA max. for 14-VDC power supply voltage            |                                                                          | 30 mA max. for 24-VDC power supply voltage<br>35 mA max. for 14-VDC power supply voltage            |                                                                          |
| Output device supply current                                | 30 mA/point (G terminal)                                                                            | 30 mA/point (V terminal)                                                 | 30 mA/point (G terminal)                                                                            | 30 mA/point (V terminal)                                                 |
| Weight                                                      | 16 g max.                                                                                           |                                                                          | 21 g max.                                                                                           |                                                                          |

\* The current consumption is for Bit Slave Unit communications current when all outputs are OFF, i.e., it does not include the output device load current consumption. The communications power supply is also used for the I/O power supply for actuators. Be sure to consider the actuator load current consumption and the number of sensors connected in addition to the communications power. The power supply current consumption is expressed by the following formula.

Communications power supply current consumption = Bit Slave Unit communications current consumption + (actual load current × number of actuators used)

# Input and Output Section Specifications

## ● 1-point Input and 1-point Output units

### Input Section Specification

| Item                                              | Specification                                                                                           |                                                                   |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Model                                             | CRT1B-MD02JS                                                                                            | CRT1B-MD02JS-1                                                    |
| I/O capacity                                      | 1 input                                                                                                 |                                                                   |
| Internal I/O common                               | NPN                                                                                                     | PNP                                                               |
| ON voltage                                        | 10.5 VDC min.<br>(between each input terminal and the V terminal)                                       | 10.5 VDC min.<br>(between each input terminal and the G terminal) |
| OFF voltage                                       | ---                                                                                                     | ---                                                               |
| OFF current                                       | 1.0 mA max.                                                                                             |                                                                   |
| Input current                                     | 3.0 mA min./input (at 10.5 VDC)                                                                         |                                                                   |
| Sensor power supply voltage                       | Communications power supply voltage<br>0 V (max.)<br>Communications power supply voltage<br>-1 V (min.) |                                                                   |
| ON delay                                          | 1.5 ms max.                                                                                             |                                                                   |
| OFF delay                                         | 1.5 ms max.                                                                                             |                                                                   |
| Number of circuits per common                     | 1 input/common                                                                                          |                                                                   |
| Power short-circuit detection                     | Not supported.                                                                                          |                                                                   |
| Isolation method                                  | No isolation                                                                                            |                                                                   |
| Input indicators                                  | LEDs (yellow)                                                                                           |                                                                   |
| Degree of protection                              | IEC standard IP20                                                                                       |                                                                   |
| Installation                                      | M4 screw mounting using CRT1B-ATT03 Mounting Bracket                                                    |                                                                   |
| Power supply type                                 | Network power supply                                                                                    |                                                                   |
| Communications power supply current consumption * | 25 mA max. for 24-VDC power supply voltage<br>30 mA max. for 14-VDC power supply voltage                |                                                                   |
| Input device supply current                       | 50 mA/point<br>(G terminal)                                                                             | 50 mA/point<br>(V terminal)                                       |
| Weight                                            | 16 g max.                                                                                               |                                                                   |

### Output Section Specification

| Item                          | Specification                                                                                             |                                                                     |
|-------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Model                         | CRT1B-MD02JS                                                                                              | CRT1B-MD02JS-1                                                      |
| I/O capacity                  | 1 output                                                                                                  |                                                                     |
| Internal I/O common           | NPN                                                                                                       | PNP                                                                 |
| Rated output current          | 0.1 A/output                                                                                              |                                                                     |
| Load power supply voltage     | Communications power supply voltage<br>0 V (max.)<br>Communications power supply voltage<br>-1.2 V (min.) |                                                                     |
| Residual voltage              | 1.2 V max. (DC, 0.1 A, between each output terminal and G terminal)                                       | 1.2 V max. (DC, 0.1 A, between each output terminal and V terminal) |
| Leakage current               | 0.1 mA max.                                                                                               |                                                                     |
| ON delay                      | 0.5 ms max.                                                                                               |                                                                     |
| OFF delay                     | 1.5 ms max.                                                                                               |                                                                     |
| Number of circuits per common | 1 output/common                                                                                           |                                                                     |
| Load short-circuit detection  | Not supported.                                                                                            |                                                                     |
| Isolation method              | No isolation                                                                                              |                                                                     |
| Output indicators             | LEDs (yellow)                                                                                             |                                                                     |
| Degree of protection          | IEC standard IP20                                                                                         |                                                                     |
| Installation                  | M4 screw mounting using CRT1B-ATT03 Mounting Bracket                                                      |                                                                     |
| Power supply type             | Network power supply                                                                                      |                                                                     |
| Output device supply current  | 30 mA/point<br>(G terminal)                                                                               | 30 mA/point<br>(V terminal)                                         |

\* The current consumption is for Bit Slave Unit communications current when all inputs are OFF, i.e., it does not include input device current consumption. The communications power supply is also used for the I/O power supply for sensors. Be sure to consider the sensor current consumption and the number of sensors connected in addition to the communications power. The power supply current consumption is expressed by the following formula.

Communications power supply current consumption = Bit Slave Unit communications current consumption + (Bit Slave Unit input current × number of inputs used) + (sensor current consumption × number of sensors used)

● 2-points Inputs and 2-points Outputs units

Input Section Specification

| Item                                              | Specification                                                                                           |                                                                   |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Model                                             | CRT1B-MD04JS                                                                                            | CRT1B-MD04JS-1                                                    |
| I/O capacity                                      | 2 inputs                                                                                                |                                                                   |
| Internal I/O common                               | NPN                                                                                                     | PNP                                                               |
| ON voltage                                        | 10.5 VDC min.<br>(between each input terminal and the V terminal)                                       | 10.5 VDC min.<br>(between each input terminal and the G terminal) |
| OFF voltage                                       | ---                                                                                                     | ---                                                               |
| OFF current                                       | 1.0 mA max.                                                                                             |                                                                   |
| Input current                                     | 3.0 mA min./input (at 10.5 VDC)                                                                         |                                                                   |
| Sensor power supply voltage                       | Communications power supply voltage<br>0 V (max.)<br>Communications power supply voltage<br>-1 V (min.) |                                                                   |
| ON delay                                          | 1.5 ms max.                                                                                             |                                                                   |
| OFF delay                                         | 1.5 ms max.                                                                                             |                                                                   |
| Number of circuits per common                     | 2 inputs/common                                                                                         |                                                                   |
| Power short-circuit detection                     | Not supported.                                                                                          |                                                                   |
| Isolation method                                  | No isolation                                                                                            |                                                                   |
| Input indicators                                  | LEDs (yellow)                                                                                           |                                                                   |
| Degree of protection                              | IEC standard IP20                                                                                       |                                                                   |
| Installation                                      | M4 screw mounting using CRT1B-ATT03 Mounting Bracket                                                    |                                                                   |
| Power supply type                                 | Network power supply                                                                                    |                                                                   |
| Communications power supply current consumption * | 35 mA max. for 24-VDC power supply voltage<br>40 mA max. for 14-VDC power supply voltage                |                                                                   |
| Input device supply current                       | 50 mA/point<br>(G terminal)                                                                             | 50 mA/point<br>(V terminal)                                       |
| Weight                                            | 21 g max.                                                                                               |                                                                   |

Output Section Specification

| Item                          | Specification                                                                                             |                                                                     |
|-------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Model                         | CRT1B-MD04JS                                                                                              | CRT1B-MD04JS-1                                                      |
| I/O capacity                  | 2 outputs                                                                                                 |                                                                     |
| Internal I/O common           | NPN                                                                                                       | PNP                                                                 |
| Rated output current          | 0.1 A/output                                                                                              |                                                                     |
| Load power supply voltage     | Communications power supply voltage<br>0 V (max.)<br>Communications power supply voltage<br>-1.2 V (min.) |                                                                     |
| Residual voltage              | 1.2 V max. (DC, 0.1 A, between each output terminal and G terminal)                                       | 1.2 V max. (DC, 0.1 A, between each output terminal and V terminal) |
| Leakage current               | 0.1 mA max.                                                                                               |                                                                     |
| ON delay                      | 0.5 ms max.                                                                                               |                                                                     |
| OFF delay                     | 1.5 ms max.                                                                                               |                                                                     |
| Number of circuits per common | 2 outputs/common                                                                                          |                                                                     |
| Load short-circuit detection  | Not supported.                                                                                            |                                                                     |
| Isolation method              | No isolation                                                                                              |                                                                     |
| Output indicators             | LEDs (yellow)                                                                                             |                                                                     |
| Degree of protection          | IEC standard IP20                                                                                         |                                                                     |
| Installation                  | M4 screw mounting using CRT1B-ATT03 Mounting Bracket                                                      |                                                                     |
| Power supply type             | Network power supply                                                                                      |                                                                     |
| Output device supply current  | 30 mA/point<br>(G terminal)                                                                               | 30 mA/point<br>(V terminal)                                         |

\* The current consumption is for Bit Slave Unit communications current when all inputs are OFF, i.e., it does not include input device current consumption. The communications power supply is also used for the I/O power supply for sensors. Be sure to consider the sensor current consumption and the number of sensors connected in addition to the communications power. The power supply current consumption is expressed by the following formula.

Communications power supply current consumption = Bit Slave Unit communications current consumption + (Bit Slave Unit input current × number of inputs used) + (sensor current consumption × number of sensors used)

Wiring

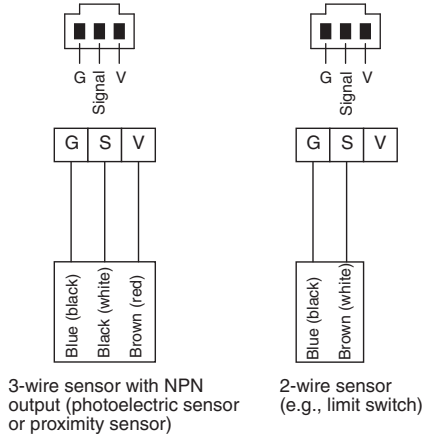
Wire colors have been changed according to revisions in the JIS standards for photoelectric and proximity sensors. The colors in parentheses are the wire colors prior to the revisions.

The I/O connector section uses compact connectors. Pin arrangements and signals are shown below. The figure of connector shows the side to insert cables.

●2-points Inputs/4-points Inputs type

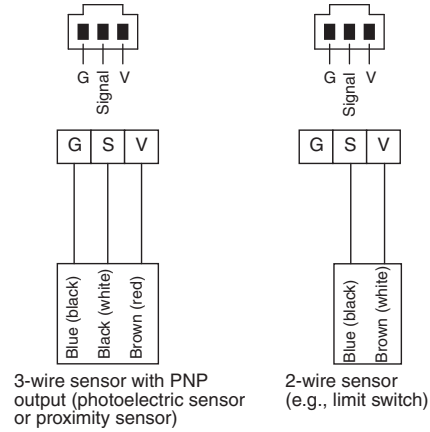
CRT1B-ID02JS (NPN)

CRT1B-ID04JS (NPN)



CRT1B-ID02JS-1 (PNP)

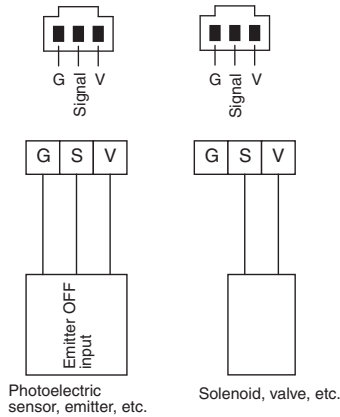
CRT1B-ID04JS-1 (PNP)



●2-points Outputs/4-points Outputs type

CRT1B-OD02JS (NPN)

CRT1B-OD04JS (NPN)



CRT1B-OD02JS-1 (PNP)

CRT1B-OD04JS-1 (PNP)

