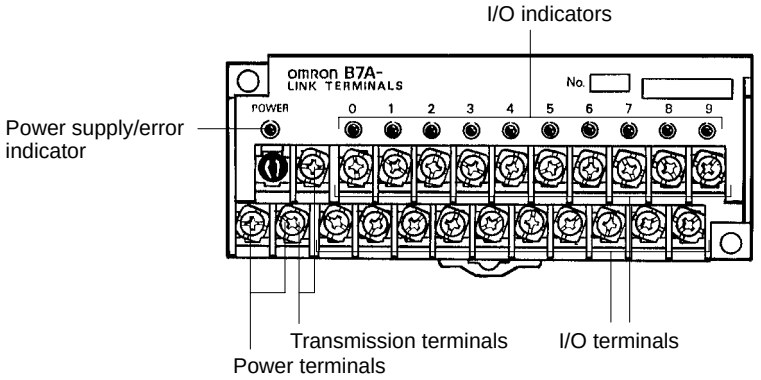
Output Models

Item	Screw terminal models	Modular models
	B7A-R10SC01	B7A-R10MC
Output configuration	NPN open collector	
Current consumption (see note 1)	80 mA max. with all output terminals ON	40 mA max. with all output terminals ON
Operating voltage range	12 to 24 VDC	
Rated load voltage	5 to 24 VDC	
Output residual voltage	0.8 V max.	
Output current	Sync. current, 100 mA max./point	Sync. current, 50 mA max./point
Error processing	HOLD	
Mounting strength	No damage when 49-N pull is applied for 1 min each in all directions (except in direction of DIN track)	---
Terminal strength	No damage when 49-N pull is applied for 1 min each in all directions	---
Tightening torque	0.78 to 1.18 N • m	---
Output logic (see note 2)	---	Active high (N/P terminals open) Active low (N/P terminals connected to 0 V)
Weight	Approx. 110 g	Approx. 21 g

Note: 1. Consumption when all 10 points are ON. Excludes external load current and error load current for Output Terminals.

2. Refer to *I/O Status* on page 102 for the relationship between the output logic and output ON/OFF status of the B7A.

Nomenclature



Indicator Operation

Indicator		Function
POWER (Input Terminal)	G	Lit when power is supplied and the Terminal is operating.
	N	Not lit when power is not supplied.
POWER/ERR (Output Terminal)	G	Lit when power is supplied and the Terminal is operating without error.
	R	Lit during transmission errors.
	N	Not lit when power is not supplied.
I/O	O	Lit when the input signals are ON.
	N	Not lit when the signals are OFF.

Note: G: Green indicator lit; R: Red indicator lit;
O: Orange indicator lit; N: Not lit

Recommended Solderless Terminals

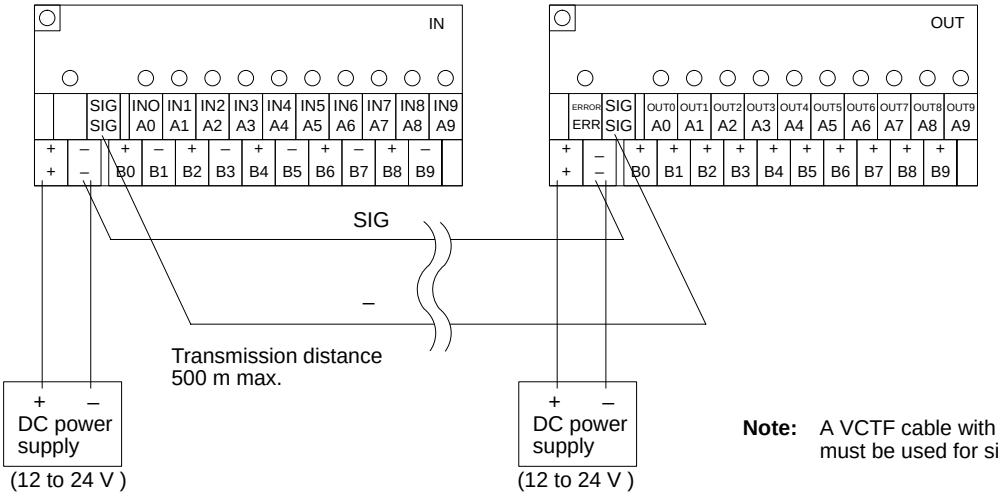
Wire	JIS specifications
0.75 mm^2 (AWG#18)	RAV 1.25 to 3.5 (vinyl-insulated round wire) or RAP 1.25 to 3.5 (nylon-insulated round wire)
1.25 mm^2 (AWG#16)	

Operation

■ Power Supply

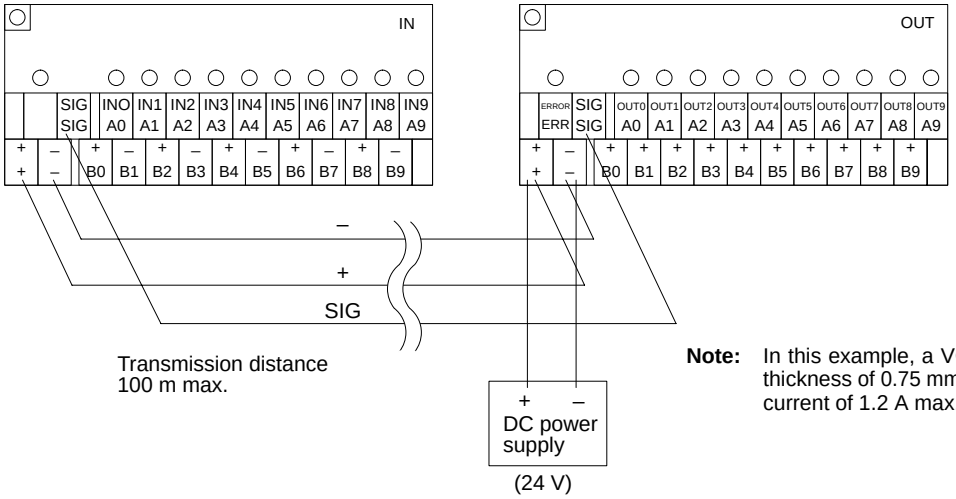
Screw Terminal Models

Connection of Independent Power Supplies



Note: A VCTF cable with a thickness of 0.75 mm^2 min. must be used for signal transmission.

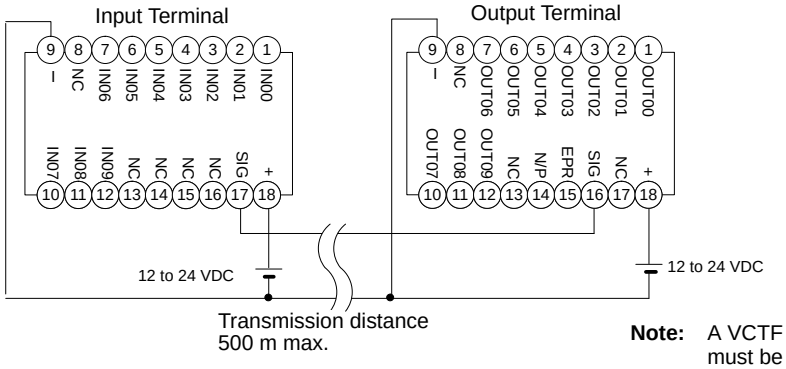
Connection of Single Power Supply to Input or Output Terminal



Note: In this example, a VCTF transmission cable with a thickness of 0.75 mm^2 min. is used, through which a current of 1.2 A max. can be transmitted.

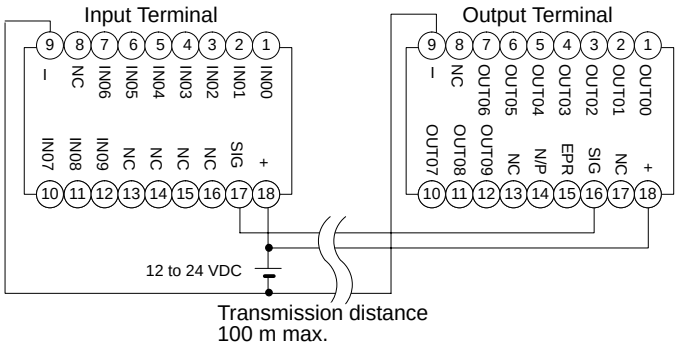
Modular Models

Connection of Independent Power Supplies



Note: A VCTF cable with a thickness of 0.75 mm^2 min. must be used for signal transmission.

Connection of Single Power Supply to Input or Output Terminal

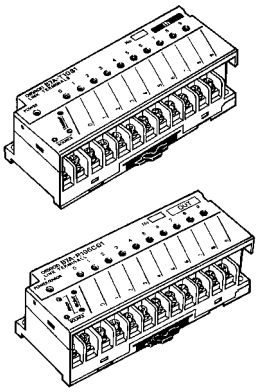


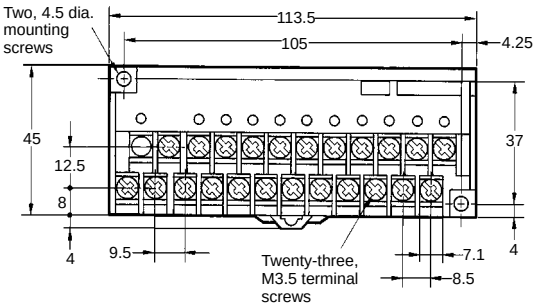
Note: In this example, a VCTF transmission cable with a thickness of 0.75 mm^2 min. is used, through which a current of 1.2 A max. can be transmitted.

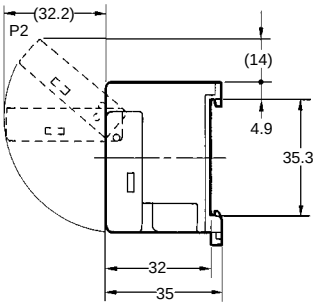
Dimensions

Note: All units are in millimeters unless otherwise indicated.

Screw Terminal Models

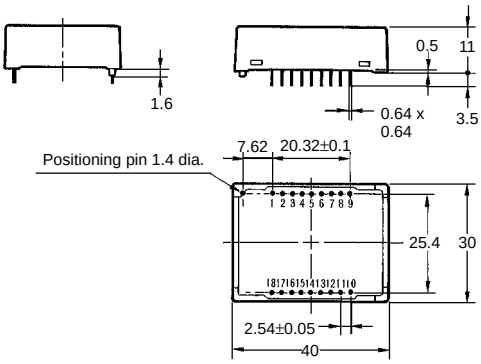




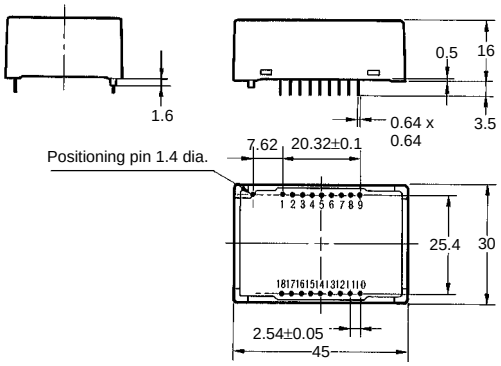


Modular Models

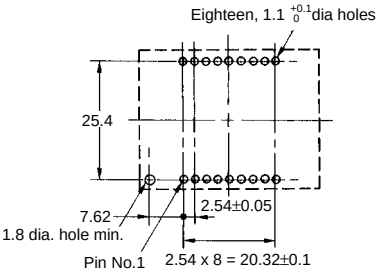
B7A-T10M2 (Input)



B7A-R10MC (Output)



Mounting Holes (Top View)

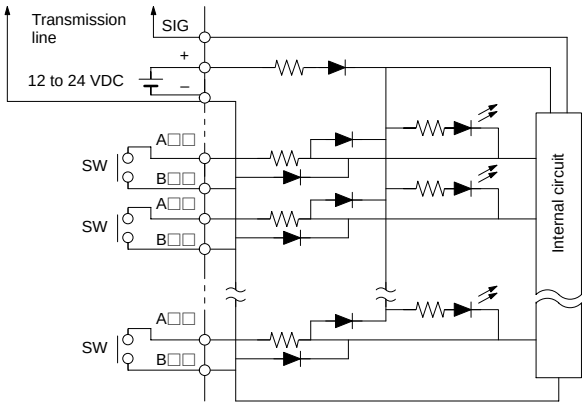


Installation

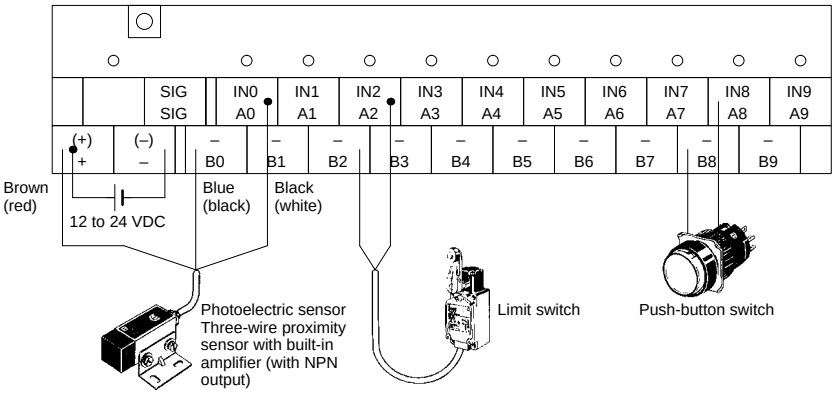
■ Internal Circuits and Terminal Arrangement

Screw Terminal Models

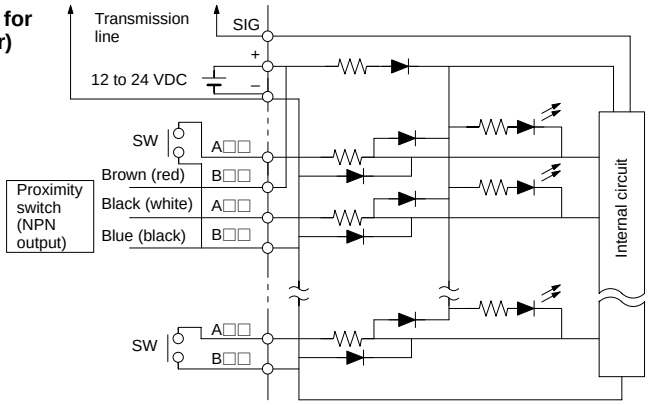
B7A-T10S1
(Input, Active Low)



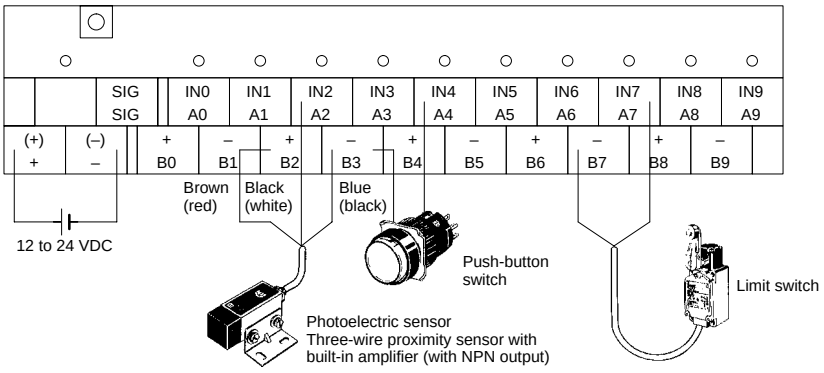
Note: A sensor with two-wire output cannot be connected.



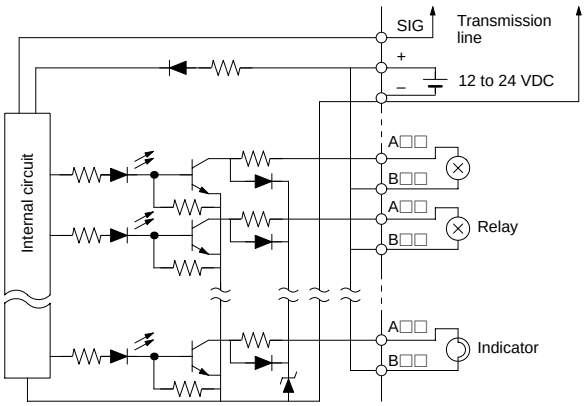
B7A-T10S3 (Input, Active Low for NPN 3-wire Sensor)



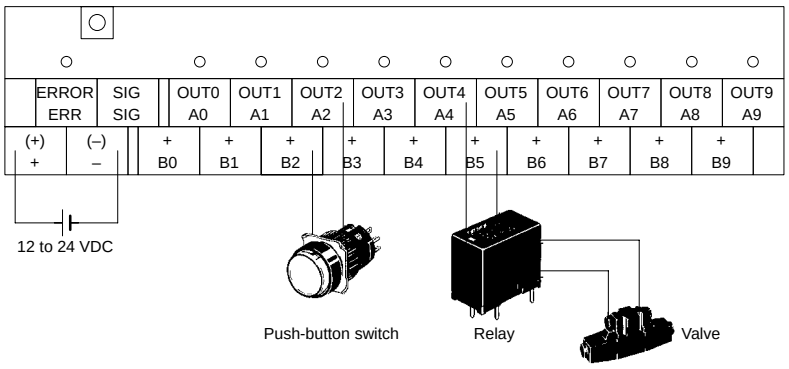
Note:
1. A sensor with two-wire output cannot be connected.
2. The wire colors have been changed in accordance with the revision of the Japanese Industrial Standards for photoelectric sensors and proximity sensors. The colors in parentheses refer to the old colors.
3. Do not short-circuit the SIG terminal with the positive power supply terminal, negative power supply terminal, or a B□□ terminal, otherwise the internal elements of the B7A will be damaged and no transmission will be possible.



B7A-R10SC01 (Output, NPN Open Collector)

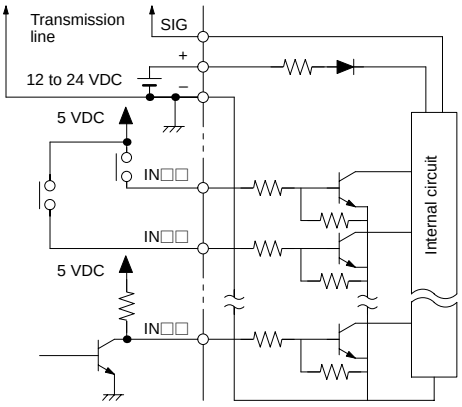


Note: Do not short-circuit any output A terminal with the corresponding B terminal, otherwise the internal elements of the B7A will be damaged.

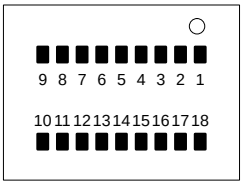


Modular Models

B7A-T10M2 (Input, Active High for TTL)



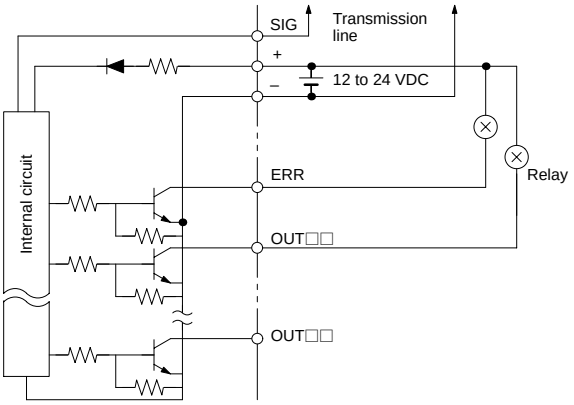
Top View



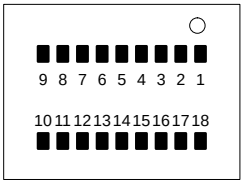
Note: Do not short-circuit the SIG terminal with the positive power supply terminal, negative power supply terminal, otherwise the internal elements of the B7A will be damaged and no transmission will be possible.

No.	Terminal
1	IN00
2	IN01
3	IN02
4	IN03
5	IN04
6	IN05
7	IN06
8	NC
9	–
10	IN07
11	IN08
12	IN09
13	NC
14	NC
15	NC
16	NC
17	SIG
18	+

B7A-R10MC (Output, NPN Open Collector)



Top View



Note: Do not short-circuit any output A terminal with the corresponding B terminal, otherwise the internal elements of the B7A will be damaged.

No.	Terminal
1	OUT00
2	OUT01
3	OUT02
4	OUT03
5	OUT04
6	OUT05
7	OUT06
8	NC
9	–
10	OUT07
11	OUT08
12	OUT09
13	NC
14	N/P
15	ERR
16	SIG
17	NC
18	+

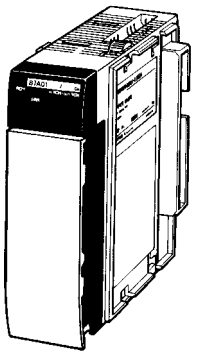
OMRON

B7A Interface Units for CQM1/CQM1H PLCs

CQM1-B7A□□

Ideal for reducing wiring between compact CQM1/CQM1H PLCs and I/O devices installed up to 500 m away

- Mount like any other PLC Unit to reduce wiring and save space.
- Select from the following 5 types according to the number of I/O points required: models with 16 inputs, 16 outputs, 32 inputs, 32 outputs, or 16 inputs and 16 outputs.
- Use like an I/O Unit to connect the CPU Unit to I/O devices such as switches and lamps in remote locations. No special consideration of communications is required.
- Both normal I/O delay and short I/O delay available with each model.



Ordering Information

■ Connectable B7A Link Terminals

Input Models

Type	Model	I/O delay time
Screw terminal models	B7A-T6□1	Normal speed: 19.2 ms
	B7AS-T6□1	
	B7A-T6□6	High speed: 3 ms
	B7AS-T6□6	
	B7AS-T3BS	Switchable
	B7AM-6BS	
Modular models	B7A-T6D2	Normal speed: 19.2 ms
	B7A-T6D7	High speed: 3 ms
Hybrid IC models	B7AH-T6D3	Normal speed: 19.2 ms
	B7AH-T6D8	High speed: 3 ms
PLC connector models	B7A-T6E3	Normal speed: 19.2 ms
	B7A-T6E8	High speed: 3 ms
	B7A-T3E3	Normal speed: 19.2 ms
	B7A-T3E8	High speed: 3 ms

Output Models

Type	Model	I/O delay time
Screw terminal models	B7A-R6□□1	Normal speed: 19.2 ms
	B7AS-R6□□1	
	B7A-R6□□6	High speed: 3 ms
	B7AS-R6□□6	
	B7AM-6BS	Switchable
	G70D-R6R□1-B7A	Normal speed: 19.2 ms
	G70D-R6M□1-B7A	
Modular models	B7A-R6A52	Normal speed: 19.2 ms
	B7A-R6A57	High speed: 3 ms
Hybrid IC models	B7AH-R6D53	Normal speed: 19.2 ms
	B7AH-R6D58	High speed: 3 ms
PLC connector models	B7A-R6A□3	Normal speed: 19.2 ms
	B7A-R6A□8	High speed: 3 ms
	B7A-R3A□3	Normal speed: 19.2 ms
	B7A-R3A□8	High speed: 3 ms

Note: Use combinations of B7A Interface Units and B7A Link Terminals that have the same I/O delay time. Connection is not possible for 10-point B7A LInk Terminals.

Specifications

■ Characteristics

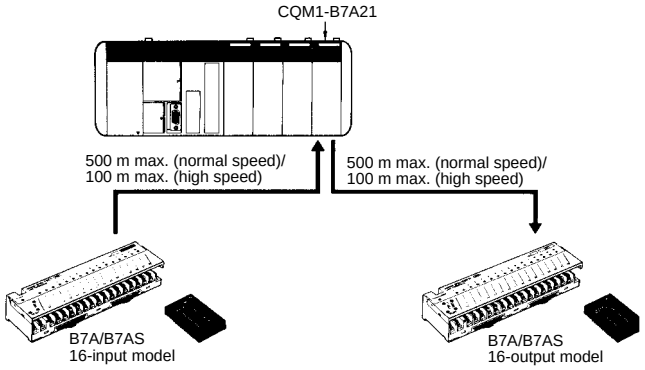
General

Item	CQM1-B7A12	CQM1-B7A13	CQM1-B7A02	CQM1-B7A03	CQM1-B7A21
Number of I/O points	16 inputs Input (reception): 16 points or 15 points and 1 error input	32 inputs Input (reception): 16 points or 15 points and 1 error input × 2 ports	16 outputs Output (transmission): 16 points	32 outputs Output (transmission): 16 points or 15 points and 1 error input × 2 ports	16 inputs and 16 outputs Input (transmission): 16 points or 15 points and 1 error input Output (reception): 16 points
Number of I/O Unit words allocated	1 input word	2 input words	1 output word	2 output words	1 input word and 1 output word (total: 2 words)
Communications method	Unidirectional, time-division multiplex				
I/O delay time	Normal speed (typical: 19.2 ms) or high speed (typical: 3 ms) (switchable)				
Transmission distance (see note 1)	Normal speed: 500 m max. High speed: 100 m max.				
Error processing	HOLD/LOAD OFF (switchable)		---		HOLD/LOAD OFF (input only) (switchable)
Internal current consumption	5 VDC, 100 mA max.				
External power supply (see note 2)	12 to 24 VDC ±10%, 0.11 A min.				

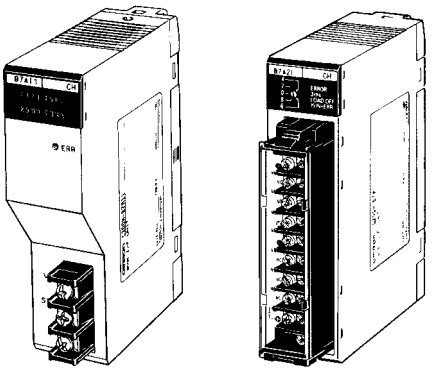
Note: 1. The maximum transmission distance varies depending on the wiring method.
2. The value for the external power supply does not include the power required by the B7A Link Terminals.

Installation

■ Example of Connection to a B7A Link Terminal (CQM1-B7A21)



Ideal for reducing wiring between CS1-series and C200HS/HX/HG/HE PLCs and I/O devices installed up to 500 m away



- Mount like any other PLC Unit to reduce wiring and save space.
- Select from the following 6 types according to the number of I/O points required: models with 16 inputs, 16 outputs, 32 inputs, 32 outputs, 16 inputs and 16 outputs, or 32 inputs and 32 outputs.
- I/O data exchange with B7A Link Terminals enables connection to I/O devices such as switches and lamps in remote locations without special consideration of communications.
- Use like a basic I/O Unit or Group-2 Unit. Special I/O Unit mounting restrictions do not apply.
- Both normal I/O delay and short I/O delay available with each model (except 16-input and 16-output models).

Ordering Information

■ Connectable B7A Link Terminals

Input Models

Type	Model	I/O delay time
Screw terminal models	B7A-T6□1	Normal speed: 19.2 ms
	B7AS-T6□1	
	B7A-T6□6	High speed: 3 ms
	B7AS-T6□6	
	B7AS-T3BS	Switchable
	B7AM-6BS	
Modular models	B7A-T6D2	Normal speed: 19.2 ms
	B7A-T6D7	High speed: 3 ms
Hybrid IC models	B7AH-T6D3	Normal speed: 19.2 ms
	B7AH-T6D8	High speed: 3 ms
PLC connector models	B7A-T6E3	Normal speed: 19.2 ms
	B7A-T6E8	High speed: 3 ms
	B7A-T3E3	Normal speed: 19.2 ms
	B7A-T3E8	High speed: 3 ms

Output Models

Type	Model	I/O delay time
Screw terminal models	B7A-R6□□1	Normal speed: 19.2 ms
	B7AS-R6□□1	
	B7A-R6□□6	High speed: 3 ms
	B7AS-R6□□6	
	B7AM-6BS	Switchable
	G70D-R6R□1-B7A	Normal speed: 19.2 ms
	G70D-R6M□1-B7A	
Modular models	B7A-R6A52	Normal speed: 19.2 ms
	B7A-R6A57	High speed: 3 ms
Hybrid IC models	B7AH-R6D53	Normal speed: 19.2 ms
	B7AH-R6D58	High speed: 3 ms
PLC connector models	B7A-R6A□3	Normal speed: 19.2 ms
	B7A-R6A□8	High speed: 3 ms
	B7A-R3A□3	Normal speed: 19.2 ms
	B7A-R3A□8	High speed: 3 ms

Note: Use combinations of B7A Interface Units and B7A Link Terminals that have the same I/O delay time. Connection is not possible for 10-point B7A LInk Terminals.

Specifications

■ Characteristics

General

Item	C200H-B7A12	C200H-B7A02	C200H-B7A21	C200H-B7A22	C200H-B7AI1	C200H-B7AO1
Number of I/O points	32 inputs Input (reception): 16 points or 15 points and 1 error input × 2 ports	32 outputs Output (transmission): 16 points × 2 ports	16 inputs and 16 outputs Input (reception): 16 points or 15 points and 1 error input Output (transmission): 16 points	32 inputs and 32 outputs Input (reception): 16 points or 15 points and 1 error input × 2 ports Output (transmission): 16 points × 2 ports	16 inputs Input (reception): 16 points or 15 points and 1 error input	16 outputs Output (transmission): 16 points
Number of I/O Unit words allocated	2 input words (Group-2)	2 output words (Group-2)	1 input word and 1 output word (total: 2 words; Group-2)	2 input words and 2 output words (total: 4 words; Group-2)	1 input word (basic I/O Unit)	1 output word (basic I/O Unit)
Communications method	Unidirectional, time-division multiplex					
I/O delay time	Normal speed (typical: 19.2 ms) or high speed (typical: 3 ms) (switchable)				Normal speed (typical: 19.2 ms)	
Transmission distance (see note 2)	Normal speed: 500 m max. High speed: 100 m max.				500 m max.	
Error processing	HOLD/LOAD OFF (switchable)	---	HOLD/LOAD OFF (input only) (switchable)		HOLD	---
Internal current consumption	5 VDC, 100 mA max.					
External power supply (see note 3)	12 to 24 VDC ±10%, 50 mA min.	12 to 24 VDC ±10%, 60 mA min.	12 to 24 VDC ±10%, 50 mA min.	12 to 24 VDC ±10%, 80 mA min.	12 to 24 VDC ±10%, 10 mA min.	12 to 24 VDC ±10%, 30 mA min.

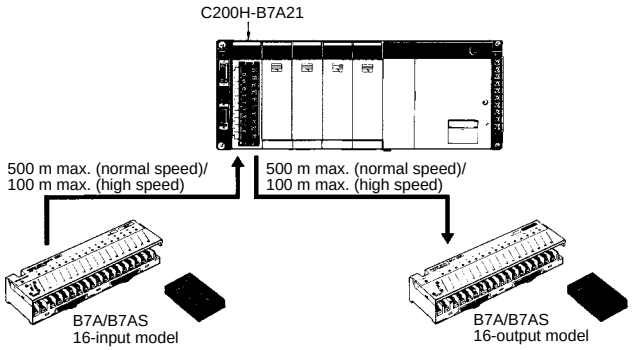
Note: 1. When using the C200H-B7A01 with a C200HS/C200H PLC, use a Backplane with "-V□" at the end of the model number. Normal operation will not be possible if any other type of Backplane is used.
The C200H-B7A01/12/21/22 cannot be used with a C200H-CPU01/02/03.

2. The maximum transmission distance varies depending on the wiring method.

3. The value for the external power supply does not include the power required by the B7A Link Terminals.

Installation

■ Example of Connection to a B7A Link Terminal (C200H-B7A21)



Operation

Note: The undermentioned is common for all B7A-series Link Terminals.

■ Connection of B7A and Programmable Controller

Each terminal of the B7A should be used for only single signal transmission without a transmission host. Therefore the B7A cannot be connected to OMRON's SYSMAC BUS Remote I/O System. To transmit signals from the B7A to a PLC, connect the B7A's terminals to an I/O Unit mounted on the PLC.

Refer to *B7A-series Models with PLC Connectors and Connecting PLCs* on page 39 for details.

Recommended Combinations of I/O Unit and B7A

Output

Model	Conditions of PLC	C500 I/O Unit			C200H I/O Unit				
		ID213	ID218	ID219	ID212	ID215	ID501	ID216	ID217
		12 to 24 VDC	12 to 24 VDC	24 VDC	24 VDC	24 VDC	5 VDC	24 VDC	24 VDC
		+ common	+/– common	+ common	+/– common	+/– common	+/– common	+/– common	+/– common
		16 points	32 points	64 points	16 points	32 points	32 points	32 points	64 points
B7A-R6B11 B7A-R6B31 B7A-R6B16 B7A-R6B36 B7A-R6A52 B7A-R6A57 B7AS-R6B11 B7AS-R6B31 B7AS-R6B16 B7AS-R6B36 B7AM-6BS B7AM-8B11 B7AM-8B31 B7AM-8B16 B7AM-8B36 B7A-R10SC01 B7A-R10MC	DC or AC/DC input and + common or +/– common (– common if the PLC with non-voltage input is used.)	Yes	Yes	Yes	Yes	Yes	Yes (see note 1)	Yes	Yes
B7A-R6F11 B7A-R6F31 B7A-R6F16 B7A-R6F36	DC or AC/DC input and – common or +/– common (+ common if the PLC with non-voltage input is used.)	No	Yes	No	Yes	Yes	No	Yes	Yes

Input

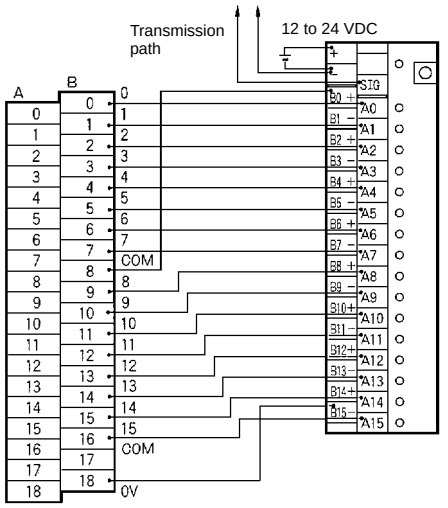
Model	Conditions of PLC	C500 I/O Unit			C200H I/O Unit				
		OC221	OD212	OD412	OC225	OD215	OD212	OD218	OD219
		Relay output	PNP output	NPN output	Relay	NPN output	NPN output	NPN output	NPN output
		24 VDC	12 to 24 VDC	12 to 48 VDC	24 VDC	5 to 24 VDC	24 VDC	5 to 24 VDC	24 VDC
		16 points	32 points	32 points	16 points	32 points	16 points	32 points	64 points
B7A-T6A1 B7A-T6A6 B7A-T6B1 B7A-T6B6 B7AS-T6B1 B7AS-T6B6 B7AM-6BS B7AM-8B11 B7AM-8B31 B7AM-8B16 B7AM-8B36 B7A-T10S1 B7A-T10S3	NPN transistor output (residual voltage must be 1.6 V max. if the B7A has 10 output points.) Relay output	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
B7A-T6C1 B7A-T6C6	PNP transistor output, relay output	Yes	Yes	No	Yes	No	No	No	No
B7A-T6D2 B7A-T6D7	TTL output (see note 1), PNP transistor output	See note 2	Yes	See note 2	See note 2	See note 2	See note 2	See note 2	See note 2
B7A-T10M2	TTL output (see note 1)	See note 2	See note 2	See note 2	See note 2	See note 2	See note 2	See note 2	See note 2

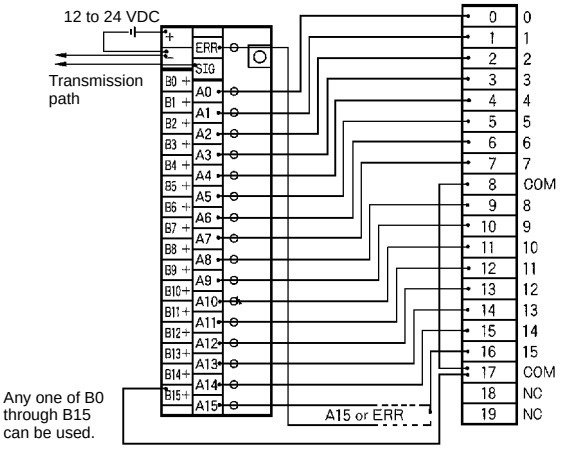
Note: 1. An independent power supply for the PLC is required due to the difference in operating voltage between the PLC and B7A.

2. An external interface unit is required.

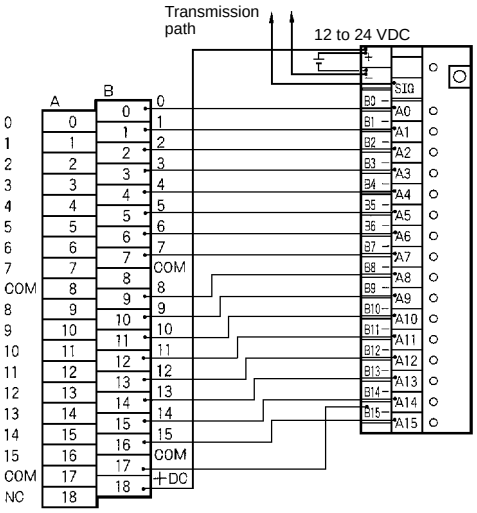
Examples of Connections with PLC I/O Units

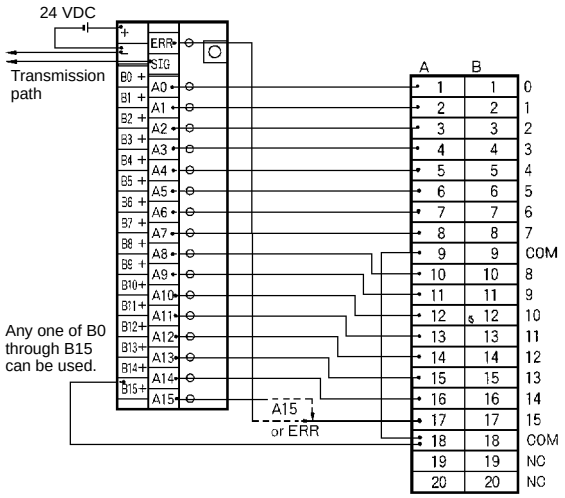
PLC output	B7A input	B7A output	PLC input
3G2A5-OD212	B7A-T6C□	B7A-R6B□□	3G2A5-ID213





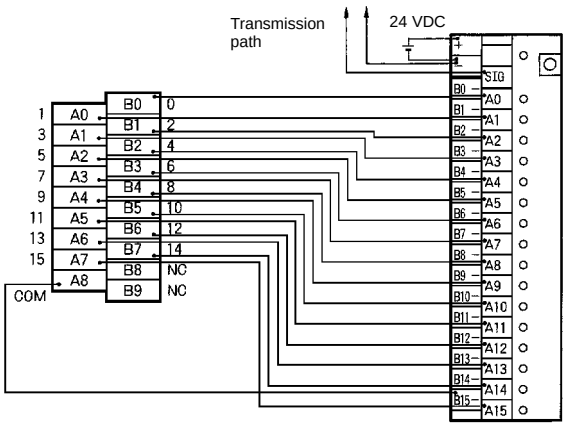
3G2A5-OD412	B7A-T6A□	B7A-R6B□□	3G2A5-ID219

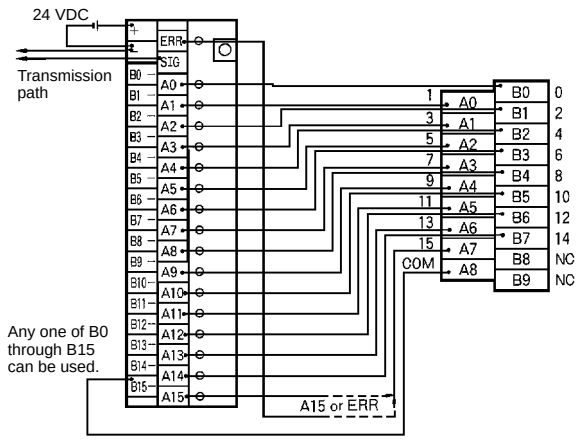




Note: The B7A-T6B□ can be connected in the same method.

C200H-OC225	B7A-T6A□	B7A-R6F□□	C200H-ID212

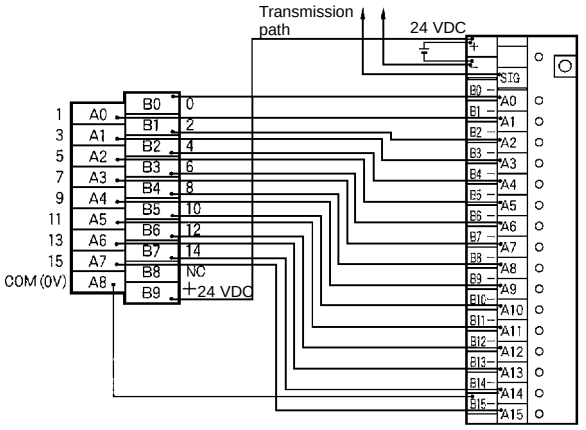




Note: The B7A-T6B□ can be connected in the same method.

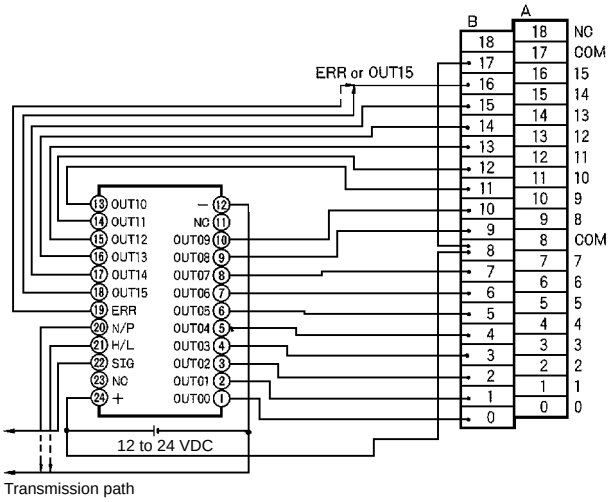
PLC output	B7A input	B7A output	PLC input

C200H-OD212 **B7A-T6A□**

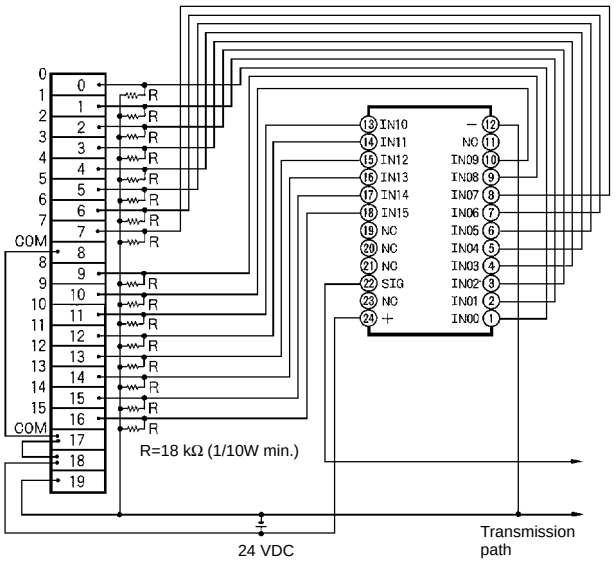


Note: The B7A-T6B□ can be connected in the same method.

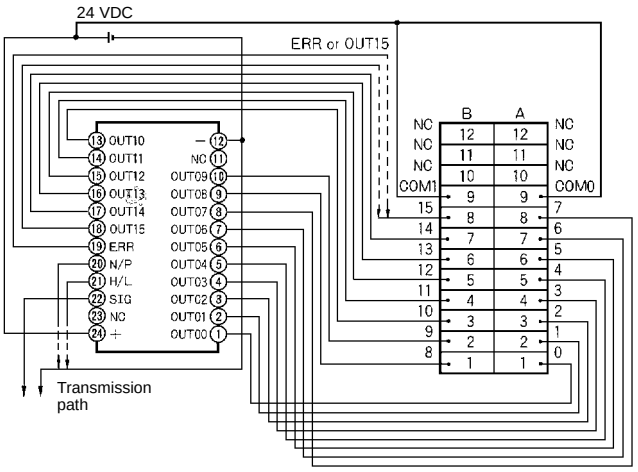
B7A-R6A5□ **3G2A5-ID218**



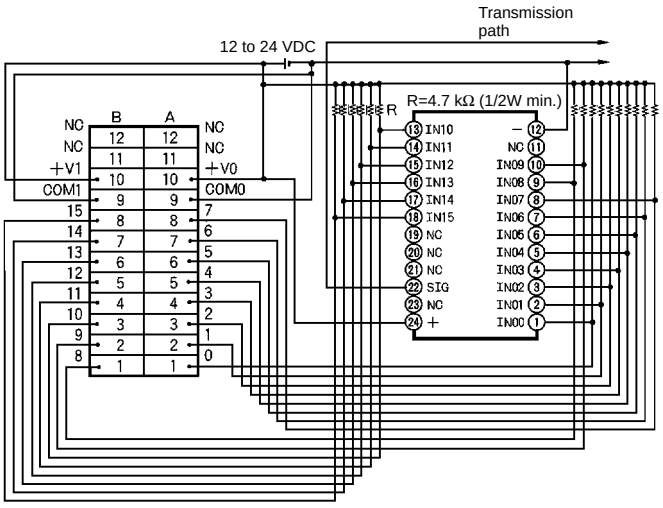
3G2A5-OC221 **B7A-T6D□**



B7A-R6A5□ **C200H-ID215**



C200H-OD215 **B7A-T6D□**



■ Peripheral Circuits of Modular Model

Input Interface Circuit

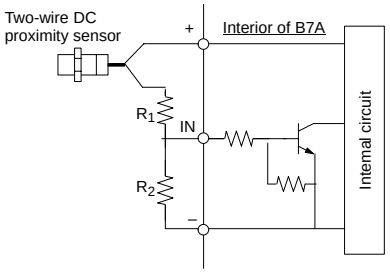
The modular model has a minimum ON discrimination voltage of 2.2 V and a maximum OFF discrimination voltage of 0.8 V, which are suitable for TTL circuits. If sensors are used for input, the following input circuits are required.

Two-wire DC Sensor Input

If a two-wire DC sensor is used for input, current limit resistor R_1 and leakage current diverter R_2 are required as shown in the diagram below. The following table lists R_1 and R_2 values for the E2E-XD-N Two-wire DC Proximity Sensor (with a current leakage of 0.8 mA maximum, a residual voltage of 3 V maximum, and a minimum control output current of 3 mA).

Input Interface (E2E-XD-N)

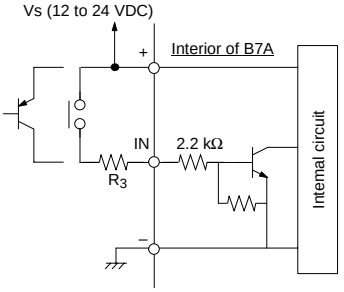
Supply voltage	12 V	24 V
R_1	1,800 Ω	5,600 Ω
R_2	820 Ω	820 Ω



Input with B7A and Common Power Supply (12 to 24 VDC) (10-point Modular Model only)

The 10-point modular model has an input voltage range of 0 to 5 VDC. If a common power supply is connected, current limit resistor R_3 is required as shown in the diagram below. Use the following formula to calculate the value of R_3.

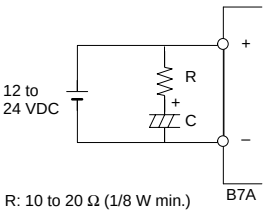
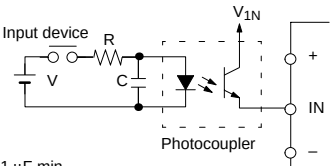
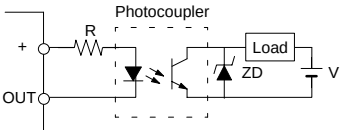
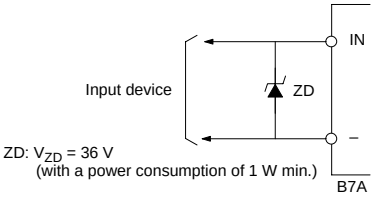
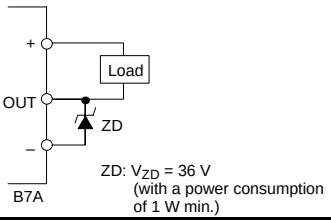
$$R_3 = \frac{\text{Supply voltage } V_S \text{ (V)} - 1.4 \text{ (V)}}{\text{Input current } (2 \times 10^{-3} \text{ (A)})} - 2{,}200\ (\Omega)$$



Note: The 16-point module's input voltage range is 0 V to the power supply voltage. Therefore no current limit resistor is required.

Noise Protection Circuits

If there is a possibility of noise interference from the power supply, input, and/or output lines, add the following noise protection circuits.

Power supply noise protection circuit	Input noise protection circuit	Output noise protection circuit
 R: 10 to 20 Ω (1/8 W min.) C: 33 μF min. with a dielectric strength of 50 V min.	 C: 0.1 μF min. R: Photocoupler input current limit resistor	 R: Photocoupler input current limit resistor ZD: V_{ZD} = 36 V (with a power consumption of 1 W min.)
	 ZD: V_{ZD} = 36 V (with a power consumption of 1 W min.)	 ZD: V_{ZD} = 36 V (with a power consumption of 1 W min.)

■ Transmission Errors and Output Signals

Transmission errors occur in the following cases:

- When the signal or 0-V wire is disconnected.
- When the signal is influenced by high-level external noise or the signal is excessively deformed because the length of the transmission path is more than the permissible distance.
- When the supply voltage to the Link Terminals are not within the operating voltage range (12 to 24 V ±10%).
- Immediately after the Link Terminals are turned on. (An error is reset within 300 ms after the power is turned on.)

Output Signals

HOLD: When an error occurs, the output signals just before the occurrence of the error will be maintained.

LOAD OFF: When an error occurs, all output signals will be turned OFF.

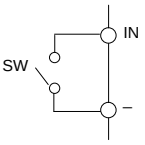
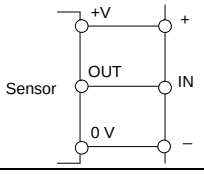
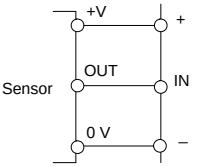
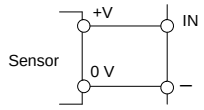
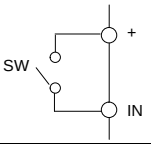
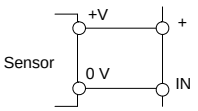
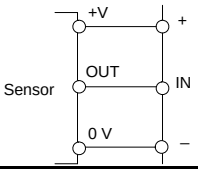
Automatic Reset

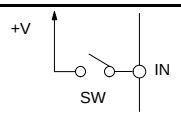
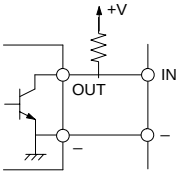
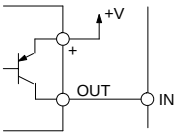
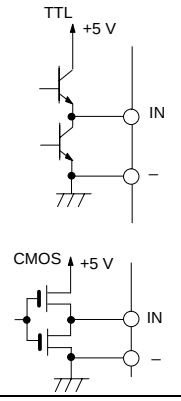
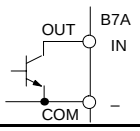
When the error is corrected, the Link Terminals will automatically reset themselves.

■ I/O Status

Signal Configuration

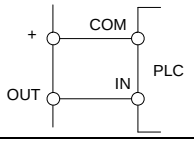
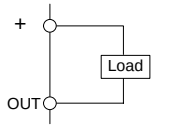
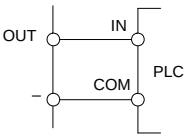
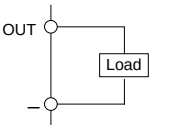
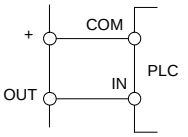
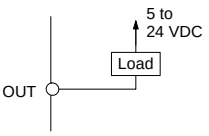
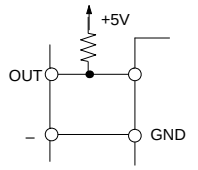
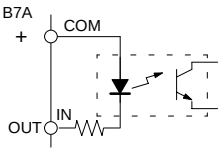
Input Models

Type	Applicable model	ON/OFF	Circuit	Suitable input example
Screw terminals	B7A-T6A1 B7A-T6A6 B7AM-6BS B7AM-8B11 B7AM-8B31 B7AM-8B16 B7AM-8B36 B7A-T10S1	For switches ON: Switch is closed. OFF: Switch is open.		A3G Pushbutton Switch (microload) WL01□ Limit Switch
	B7A-T10S3	For photoelectric sensors and proximity sensors (NPN) ON: Sensor signal is ON (residual voltage is 1.6 V max.). OFF: Sensor signal is OFF.		E2E-X□E Proximity Sensor E3S Photoelectric sensor
	B7A-T6B1 B7AS-T6B1 B7A-T6B6 B7AS-T6B6 B7AM-6BS B7AM-8B11 B7AM-8B31 B7AM-8B16 B7AM-8B36	For photoelectric sensors and proximity sensors (NPN) ON: Sensor signal is ON (residual voltage is 4 V max.). OFF: Sensor signal is OFF.		
	B7A-T6A1 B7A-T6A6 B7A/S-T6B1 B7A/S-T6B6 B7AM-6BS B7AM-8B11 B7AM-8B31 B7AM-8B16 B7AM-8B36	For proximity sensors (two-wire sensor with DC output) ON: Sensor signal is ON (residual voltage is 4 V max.). OFF: Sensor signal is OFF (leakage current is 1.5 mA max.).		E2E-XD-N 2-wire DC Inductive Proximity Sensor
	B7A-T6C1 B7A-T6C6 B7AM-8F31	For switches ON: Switch is closed. OFF: Switch is open.		A3G Pushbutton Switch (microload) WL01□ Limit Switch
		For proximity sensors (two-wire sensor with DC output) ON: Sensor signal is ON (residual voltage is 4 V max.). OFF: Sensor signal is OFF (leakage current is 1.5 mA max.).		E2E-XD-N 2-wire DC Inductive Proximity Sensor
		For photoelectric sensors and proximity sensors (PNP) ON: Sensor signal is ON (residual voltage is 4 V max.). OFF: Sensor signal is OFF.		E2E-X□F Proximity Sensor E3S Photoelectric sensor (B-type)

Type	Applicable model	ON/OFF	Circuit	Suitable input example
Module (see note)	B7A-T6D2 B7A-T6D7 B7A-T10M2	For switches ON: Switch is closed. OFF: Switch is open.		A3G Pushbutton Switch (microload) WL01□ Limit Switch
		For NPN open-collector inputs ON: Transistor is OFF. OFF: Transistor is ON. (residual voltage is 0.8 V max.)		3G2A5-OD213 C200H-OD215 PLC Transistor Output Unit
		For PNP open-collector inputs ON: Transistor is ON. OFF: Transistor is OFF.		C200H-OD216 C200H-OD217 PLC PNP Output Unit
		For IC (TTL, CMOS) inputs ON: Output is 2.2 V min. OFF: Output is 0.8 V max.		3G2A5-OD501CN C200H-OD501 PLC TTL Output Unit
PLC connector	B7A-T6E3 B7A-T6E8 B7A-T3E3 B7A-T3E8	For PLC output unit, NPN open collector ON: Transistor ON OFF: Transistor OFF		---

Note: The positive input voltage range of the B7A-T6D□ modular model is 0 to 24 VDC and the positive input voltage of the B7A-T10M2 modular model is 5 VDC.

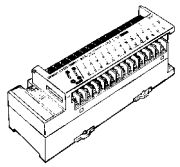
Output Models

Type	Output configuration	Applicable model	ON/OFF	Circuit
Screw terminals	NPN open collector	B7A/S-R6B11 B7A/S-R6B31 B7A/S-R6B16 B7A/S-R6B36 B7AM-6BS B7AM-8B11 B7AM-8B31 B7AM-8B16 B7AM-8B36 B7A-R10SC01	For PLC input ON: PLC is ON. OFF: PLC is OFF.	
			For relays and solenoids ON: Operates. OFF: Reset.	
	PNP open collector	B7A-R6F11 B7A-R6F31 B7A-R6F16 B7A-R6F36 B7AM-8F31	For PLC input ON: PLC is ON. OFF: PLC is OFF.	
			For relays and solenoids ON: Operates. OFF: Reset.	
Module	NPN open collector	B7A-R6A52 B7A-R6A57 B7A-R10MC	For PLC input ON: PLC is ON. OFF: PLC is OFF.	
			For relays and display terminal ON: Operates. OFF: Reset.	
			For IC (TTL, CMOS) ON: Input is Low. OFF: Input is High.	
PLC connector	NPN open collector	B7A-R6A13 B7A-R6A18 B7A-R6A33 B7A-R6A38 B7A-R3A13 B7A-R3A18 B7A-R3A33 B7A-R3A38	For PLC input unit + common photocoupler input ON: PLC is ON. OFF: PLC is OFF.	

I/O ON/OFF Conditions

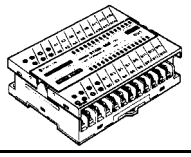
Input		Output			
		Screw terminal	Module		PLC connector
			Active high (N/P open)	Active low (N/P 0 V)	
Screw terminal	ON	ON	OFF	ON	ON
	OFF	OFF	ON	OFF	OFF
Module	ON	ON	OFF	ON	ON
	OFF	OFF	ON	OFF	OFF
PLC connector	ON	ON	OFF	ON	ON
	OFF	OFF	ON	OFF	OFF

Terminals with 16 Relay Outputs

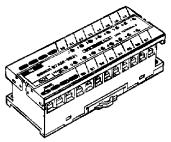
Appearance	Model	I/O classification	Relay configuration	I/O delay time (typical)	Error processing (see note)	Approved standards
	**G70D-R6R11-B7A**	Output	Relay output	Normal speed 19.2 ms	HOLD	---
	G70D-R6R31-B7A				LOAD OFF	
	G70D-R6M11-B7A		Power MOS FET relay output		HOLD	
	G70D-R6M31-B7A				LOAD OFF	

I/O Combination Models

Screw Terminal Model (with 16 Input and 16 Output Points)

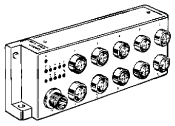
Appearance	Model	I/O configuration	I/O delay time (typical)	Error processing	Approved standards
	**B7AM-6BS**	NPN compatible/ NPN open collector 100 mA/point	Normal speed 19.2 ms High speed 3 ms (switch selectable)	HOLD/ LOAD OFF (switch setting)	---

Screw Terminal Models (with 8 Input and 8 Output Points)

Appearance	Model	I/O configuration	I/O delay time (typical)	Error processing	Approved standards
	**B7AM-8B11**	NPN compatible/ NPN open collector 100 mA/point	Normal speed 19.2 ms	HOLD	---
	B7AM-8B31			LOAD OFF	
	B7AM-8B16		High speed 3 ms	HOLD	
	B7AM-8B36			LOAD OFF	
	B7AM-8F31	PNP compatible/ PNP open collector 100 mA/point	Normal speed 19.2 ms	LOAD OFF	

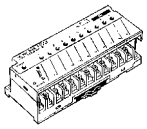
Terminals with FA Connector (M12)

10-point Terminal Models

Appearance	Model	I/O configuration	I/O delay time (typical)	Contact arrangement	Approved standards
	**B7AC-T10A1**	NPN compatible	19.2 ms	Type A	U, CU, CE
	B7AC-T10A1-A		19.2 ms/3 ms (switchable)		---
	B7AC-T10A1-B	PNP compatible	19.2 ms/3 ms (switchable)		

10-point Terminals

Screw Terminal Models

Appearance	Model	I/O classification	I/O configuration	Internal I/O common	Error processing (see note 1)	Approved standards
	**B7A-T10S1 (see note 2)**	Input	NPN compatible (No two-wire sensor can be connected.)	– common	---	U, C, CE
	B7A-T10S3 (see note 2)			+/– common	---	
	B7A-R10SC01	Output	NPN open collector 100 mA/point	+ common	HOLD	

Note: 1. HOLD: The previous output condition will be on hold when an error results.

2. The 10-point B7A-T10S1 and 10-point B7A-T10S3 are different from each other in terminal configuration. Refer to page 91 for details.