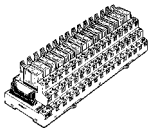
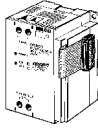
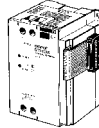
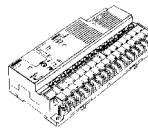
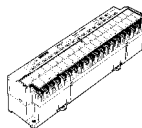
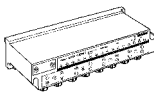
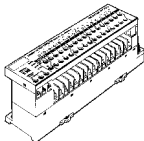
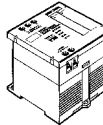
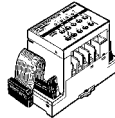
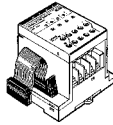


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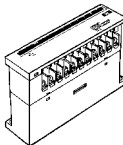
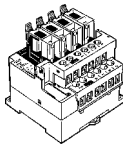
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Classification According to Terminal Characteristics

Classification	I/O Block Base	PROFIBUS	SYSMAC BUS		
Model	G70A	G71P	G71	G72C	
				G72C	G72C-V
Appearance	 234 x 75 x 64 (W x D x H)	 60 x 85 x 63.5 (W x D x H)	 60 x 85 x 63.5 (W x D x H)	 182 x 85 x 45 (W x D x H)	 202 x 45 x 63 (W x D x H)
Features	I/O Block conforming to VDE standards.	I/O Bus Unit conforming to DIN19245.	I/O Unit for G70A.	I/O Unit combined with I/O Block.	
Communication speed	---	9.6/19.2/500 kbps	187.5 kbps		
Relay	G2R	---	---	---	---
Output capacity	10 A	30 mA	30 mA	0.3 A	
I/O points	16	16	16	16	
Applicable PC Unit	---	C200H-PH	C200H-RM201/3G2A5-RM201		
Approved standards	VDE	---	UL/CSA	UL/CSA	
Other	Relays are sold separately.	I/O blocks are sold separately.		---	
Page	22	141	29	34	41

Classification	SYSMAC BUS	SYSMAC BUS/2			
Model	G720	G700			
		G700-U	G700-E	G700-T	G700-S
Appearance	 208 x 91 x 60 (W x D x H)	 60 x 85 x 63.5 (W x D x H)	 60 x 85 x 63.5 (W x D x H)	 182 x 85 x 45 (W x D x H)	 202 x 45 x 63 (W x D x H)
Features	I/O Unit combined with I/O Block incorporating IP67 input connector.	I/O Bus Unit conforming to DIN19245.	I/O Unit for G70A-ZOC.	I/O Unit combined with I/O Block.	
Communication speed	187.5 kbps	1.5 Mbps			
Relay	---	---	---	---	G7T
Output capacity	---	0.3 A	50 mA	0.3 A	2 A
I/O points	16	16	32	4	
Applicable PC Unit	C200H-RM201/ 3G2A5-RM201	CV500-RM221		G700-E	
Approved standards	---	---			
Other	---	---	I/O blocks are sold separately.	---	
Page	47	70	55	66	61

Note: The SYSMAC BUS and SYSMAC BUS/2 systems allow connection of a maximum of 32 I/O Units.

Classification	SYSMAC BUS				
Model	G730				
	G730-M	G730-V16	G730-V8	G730-V4	G730-R4
Appearance	 20 x 111 x 90 (W x D x H)	 115 x 50 x 67 (W x D x H)			 80 x 75 x 70 (W x D x H)
Features	General-purpose transmission system connecting to a variety of controllers. G730-M: Master G730-V16/-V8/-R4: I/O Unit combined with I/O Block				
Communication speed	187.5 kbps				
Relay	---	---			G2R
Output capacity	20 mA	0.3 A			5 A
I/O points	32	16	8	4	4
Applicable PC Unit	Receiving NPN output.	G730-M/N			
Approved standards	---				
Other	I/O blocks are sold separately.	Applicable Remote Masters for SYSMAC BUS: C200H-RM201 and 3G2A5-RM201			
Page	82	91			101

Note: The SYSMAC BUS system allows connection of a maximum of 32 I/O Units.

PC and I/O Terminal Connection

Name	Model	C20H/40H/60H/ (Other maker's PC)	CQM1	C200H/C1000H	CV500/CV1000
I/O Block	G70A	Using I/O connector (see note 1)	Connector connection	Connector connection	Connector connection (see note 2)
	G70A + G71P	Connection impossible	Connection impossible	Two wires (see note 6)	Connection impossible
I/O Unit	G70A + G71	Connection impossible	Connection impossible	Two wires (see note 3)	Two wires
I/O Unit (I/O Block)	G72C	Connection impossible	Connection impossible	Two wires	Two wires
	G720	Connection impossible	Connection impossible	Two wires	Two wires
	G730	Using I/O connector (see note 4)	Connection impossible	Two wires; using I/O connector (see note 4)	Two wires; using I/O connector (see note 4)
	G700	Connection impossible	Connection impossible	Connection impossible	Two wires (see note 5)

- Note:**
1. Connection of G70A and Loose Wires: page 22
 2. Connection of G70A and Connector: page 22
 3. SYSMAC BUS: page 13
 4. G730 Bus: page 15
 5. SYSMAC BUS/2: page 17
 6. PROFIBUS: page 19

■ Connection of G70A and PC Cards

CQM1's I/O Cards

I/O Unit	G70A-ZIM16-5	G70A-ZOC16-3	G70A-ZOC16-4
CQM1-ID213 (32)	G79-Ij C-j	---	---
CQM1-OD213 (32)	---	G79-Oj C-j	---
CQM1-ID212 (16)	G79-Yj C/G79-Aj C	---	---
CQM1-OD212 (16)	---	G79-Yj C/G79-Aj C	---
CQM1-OD214 (16 PNP)	---	---	G79-Yj C/G79-Aj C

Note: Data in parentheses represents the number of total points, the number of connectors, or the number of I/O points per connector. PNP or NPN description is required between the parentheses attached to Output Card model numbers.

C200H's I/O Cards

I/O Unit	G70A-ZIM16-5	G70A-ZOC16-3	G70A-ZOC16-4
C200H-ID215 (32)	G79-j C	---	---
C200H-MD215 (16/16)	G79-j C	G79-j C	---
C200H-OD215 (32)	---	G79-j C	---
C200H-ID216 (32)	G79-Ij C-j	---	---
C200H-ID217 (64)	G79-Ij C-j	---	---
C200H-OD218 (32)	---	G79-Oj C-j	---
C200H-OD219 (64)	---	G79-Oj C-j	---
C200H-ID212 (16)	G79-Yj C/G79-Aj C	---	---
C200H-OD212 (16)	---	G79-Yj C/G79-Aj C	---
C200H-OD214 (8 PNP)	---	---	G79-Yj C/G79-Aj C
C200H-OD217 (12 PNP)	---	---	G79-Yj C/G79-Aj C

C1000H's I/O Cards

I/O Unit	G70A-ZIM16-5	G70A-ZOC16-3	G70A-ZOC16-4
3G2A5-ID218 (32)	G79-Yj C/G79-Aj C	---	---
3G2A5-MD211CN (16/16)	G79-j C	G79-j C	---
3G2A5-OD215 (16)	---	G79-Yj C/G79-Aj C	---
3G2A5-ID218CN (32)	G79-j C	---	---
3G2A5-OD218 (32)	---	G79-Yj C/G79-Aj C	---
3G2A5-ID212 (64)	G79-Yj C/G79-Aj C	---	---
3G2A5-OD212 (32 PNP)	---	---	G79-Yj C/G79-Aj C
C500-OD219 (16)	G79-Ij C-j	---	---
3G2A5-OD213 (64)	---	G79-Oj C-j	---

Note: The G79 is an I/O cable.

■ SYSMAC C-series (SYSMAC BUS)

PC	I/O Unit	I/O Block	Page
C200H-RM201 or 3G2A5-RM201 (SYSMAC BUS)	G71-IC	G70A-ZIM	22, 29
	G71-OD	G70A-ZOC	
	G72-IN		34, 41
	G72-OUT		
	G720-VID16C		47
	G730-IN		82, 91, 101, 112
	G730-OUT		

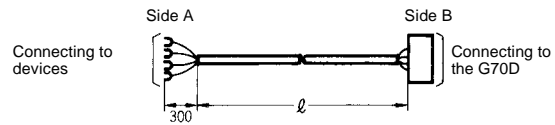
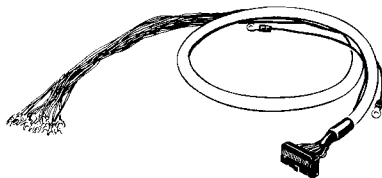
■ G79 Connecting Cables for I/O Terminals

Connecting Cables

With loose wires and crimp terminals		With loose wires		With connector	
Length (l)	Model	Length (l)	Model	Length (l)	Model
1 m	G79-Y100C	2 m	G79-A200C	1 m	G79-100C
1.5 m	G79-Y150C	5 m	G79-A500C	1.5 m	G79-150C
2 m	G79-Y200C			2 m	G79-200C
3 m	G79-Y300C			3 m	G79-300C
5 m	G79-Y500C			5 m	G79-500C

G79-Yj C Cable with Loose Wires and Crimp Terminals

Convenient for connecting screw terminals to I/O Terminals



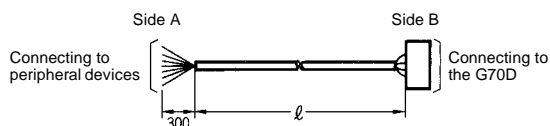
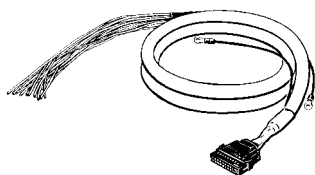
- Note:**
1. Keep the line capacity to 50 mA per I/O or less. Also, check the capacity of the relay drive element against the power consumption of the I/O relay before output applications.
 2. I/O Terminal connector pin numbers are written on the loose wires.
 3. Connector pin numbers correspond to G70A pin numbers.

Connections

Tube no.		Wire no.	Color of insulator	Dot mark	Dot color	Connector no.	
Side A	20	1	Light brown	J	Black	1	Side B
	10			J	Red	2	
	19	2	Yellow	J	Black	3	
	9			J	Red	4	
	18	3	Light green	J	Black	5	
	8			J	Red	6	
	17	4	Gray	J	Black	7	
	7			J	Red	8	
	16	5	White	J	Black	9	
	6			J	Red	10	
	15	6	Light brown	J J	Black	11	
	5			J J	Red	12	
	14	7	Yellow	J J	Black	13	
	4			J J	Red	14	
	13	8	Light green	J J	Black	15	
	3			J J	Red	16	
	12	9	Gray	J J	Black	17	
	2			J J	Red	18	
	11	10	White	J J	Black	19	
	1			J J	Red	20	

G79-Aj C Cable with Loose Wires

Device connection end provides loose wires.



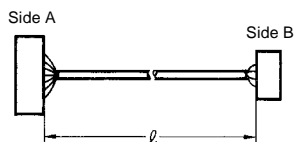
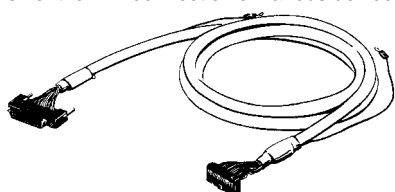
- Note:**
1. Loose wires are AWG24 (wire diameter: 0.6 mm).
 2. Connector pin numbers correspond to G70A pin numbers.

Connections

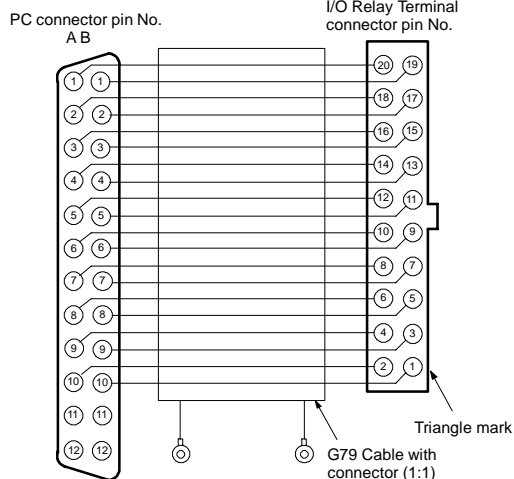
Tube no.	Wire no.	Color of insulator	Dot mark	Dot color	Connector no.	
Side A	1	Light brown	J	Black	20	Side B
			J	Red	19	
	2	Yellow	J	Black	18	
			J	Red	17	
	3	Light green	J	Black	16	
			J	Red	15	
	4	Gray	J	Black	14	
			J	Red	13	
	5	White	J	Black	12	
			J	Red	11	
	6	Light brown	J J	Black	10	
			J J	Red	9	
	7	Yellow	J J	Black	8	
			J J	Red	7	
	8	Light green	J J	Black	6	
			J J	Red	5	
	9	Gray	J J	Black	4	
			J J	Red	3	
	10	White	J J	Black	2	
			J J	Red	1	

G79-j C Cable with Connector (1:1)

Convenient for 1:1 connection of various devices to I/O Terminals.



Connections

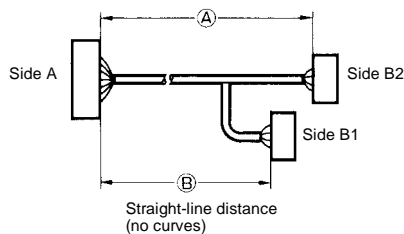
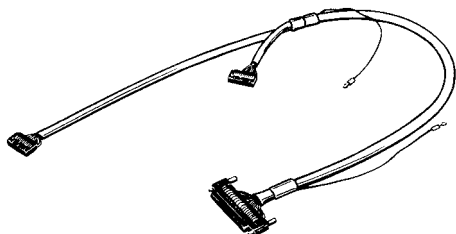


- Note:** Connector pin numbers correspond to G70A pin numbers.

G79-Oj C-j /-Ij C-j Cable with Connectors (1:2)

Both Input and Output Cables available (Input: connect to PC I/O Units, tape color: red; Output: connect to PC I/O Units, tape color: yellow)

Length		For input	For output
A	B	Model	Model
1 m	0.75 m	G79-I100C-75	G79-O100C-75
1.5 m	1.25 m	G79-I150C-125	G79-O150C-125
2 m	1.75 m	G79-I200C-175	G79-O200C-175
3 m	2.75 m	G79-I300C-275	G79-O300C-275
5 m	4.75 m	G79-I500C-475	G79-O500C-475



■ SYSMAC CV-series (SYSMAC BUS/2)

PC Unit	I/O Terminal	I/O Block	Page
CV500-RM221 (SYSMAC BUS/2)	G700-IN		55, 61, 66, 70
	G700-OUT		
C200H-RM201 or 3G2A5-RM201 (SYSMAC BUS)	G71-IC16-3	G70A-ZIM	22, 29
	G71-OD16	G70A-ZOC	
	G72-IN		34, 41
	G72-OUT		
	G720-VID16C		47
	G730-IN		82, 91, 101, 112
	G730-OUT		

Note: If I/O Terminals and/or I/O Blocks other than G700 Models are connected, the system functions will conform to those of the SYSMAC BUS system.

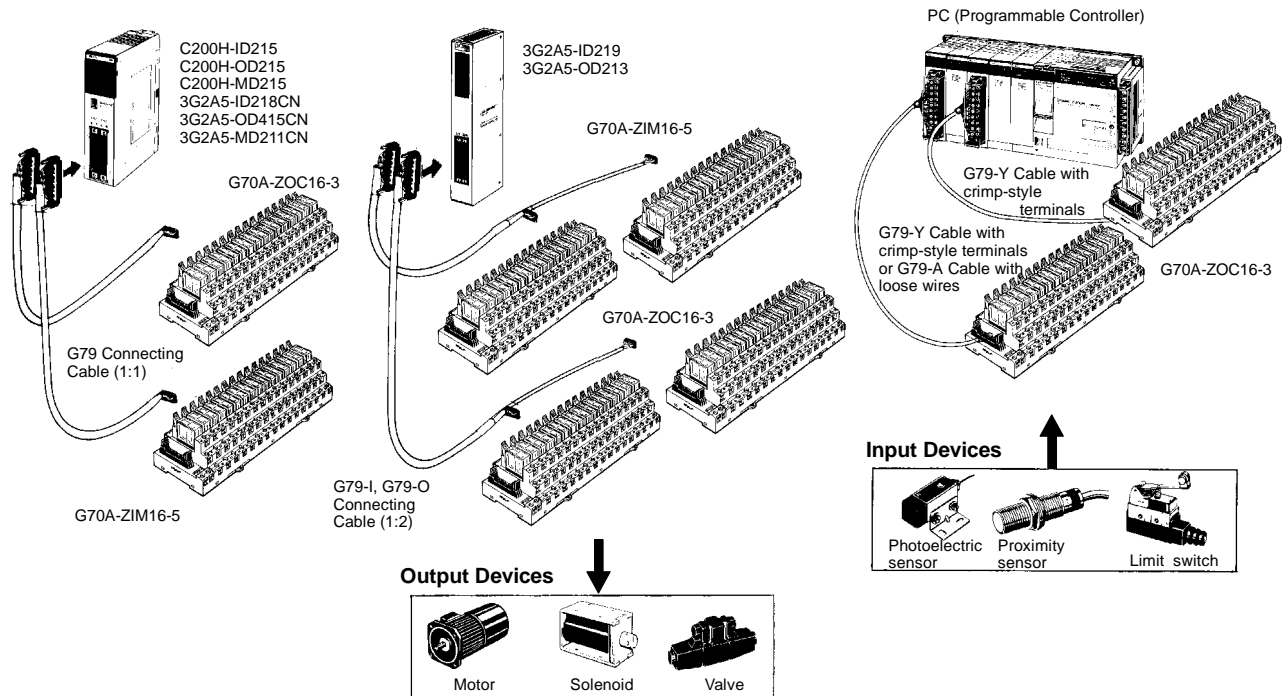
■ G71P PROFIBUS

PC Unit	I/O Terminal	I/O Block	Page
C200H-PFB21	G71P-IC	G70A-ZIM	22, 29
	G71P-OD	G70A-ZOC	

System Configuration

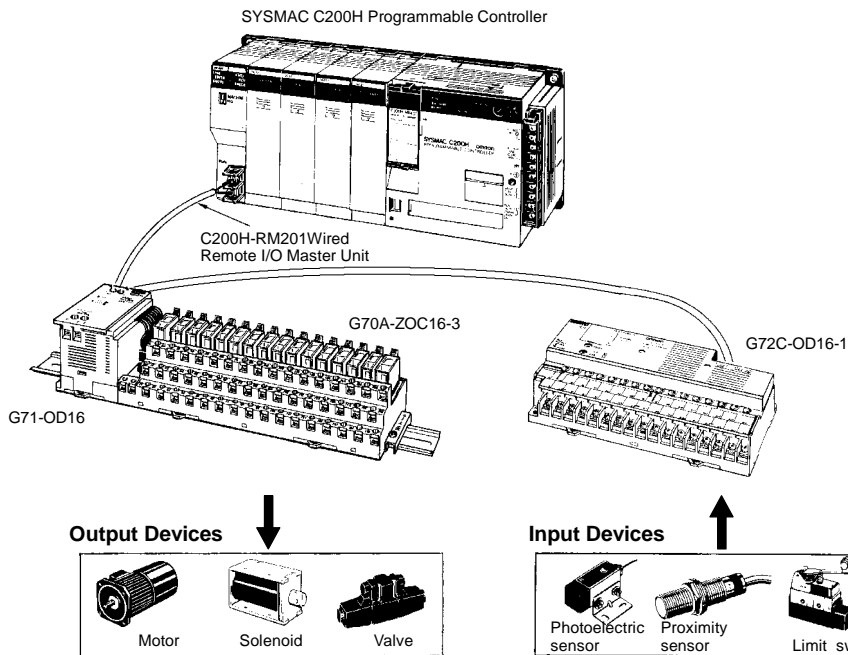
■ With G79 Connecting Cable

- Saves wiring effort and panel-mounting space.
- Prevents wiring mistakes.
- Reduces the number of wiring steps.



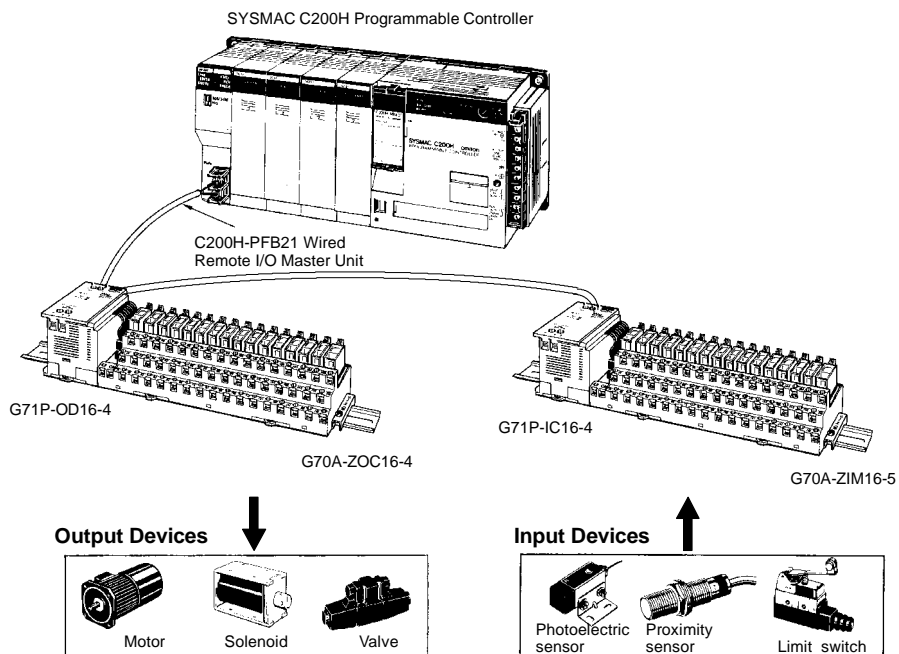
■ With OMRON G71 Remote Interface

- Greatly reduces the number of wiring steps.
- Prevents wiring mistakes.
- Copies smoothly with system changes.
- Reduces the total cost of the system.



■ With OMRON G71P PROFIBUS Remote Interface

- Makes it possible to construct multi-vendor systems.
- The communication protocol conforms to DIN19245.
- Transmission distances and speeds: 1,200 m at 9.6 kbps or 19.2 kbps, and 200 m at 500 kbps.



■ Mounted with Relay and SSR (G70A)

G2R

Applicable Models

Models	Coil ratings	Contact form	Accessory	Applicable I/O Model
G2R-1-SN	24 VDC	SPDT-NO/NC	Operation indicator	G70A-ZOC16-3 G70A-ZOC16-4
G2R-1A3-SN	12/24 VDC 110/230 VAC	SPST-NO		G70A-ZIM16-5
G2R-13-SN		SPDT-NO/NC		
G2R-1A3-SND	12/24 VDC	SPST-NO	Operation indicator + diode	
G2R-13-SND		SPDT-NO/NC		

Contact Ratings

Item	G2R-1-SN	
Load	Resistive load (cosφ = 1)	Inductive load (cosφ = 0.4; L/R = 7 ms)
Rated load	10 A at 250 VAC; 10 A at 30 VDC	7.5 A at 250 VAC; 5 A at 30 VDC
Rated carry current	10 A	
Max. operating voltage	400 VAC, 125 VDC	
Max. operating current	10 A	
Min. permissible load	100 mA at 5 VDC	
Max. switching capacity	2,500 VA, 300 W	1,875 VA, 150 W

G3R

Applicable Models

Models	Coil ratings	Contact form	Accessory	Applicable I/O Model
G3R-OA202SZN	5 to 24 VDC	SPST-NO (zero cross) for AC	Operation indicator	G70A-ZOC16-3 G70A-ZOC16-4
G3R-OA202SLN		SPST-NO for AC		
G3R-ODX02SN		SPST-NO for DC		
G3R-OD201SN	100 to 240 VAC, 5 VDC, 12 to 24 VDC	SPST-NO for DC		G70A-ZIM16-5
G3R-IAZR1SN				
G3R-IDZR1SN				
G3R-IDZR1SN-1		SPST-NO (high speed) for DC		

Ratings

Model	Applicable load voltage	Output current	Inrush current
G3R-OA202SZN	75 to 264 VAC	0.05 to 2 A	30 A (60 Hz, 1 cycle)
G3R-OA202SLN			
G3R-ODX02SN	4 to 60 VDC	0.01 to 2 A	8 A (10 ms)
G3R-OD201SN	40 to 200 VDC	0.01 to 1.5 A	8 A (10 ms)
G3R-IAZR1SN	4 to 32 VDC	0.1 to 100 mA	---
G3R-IDZR1SN			
G3R-IDZR1SN-1			

System Configuration

SYSMAC BUS

G71 , G72C, G720 12

Original BUS

G730 14

SYSMAC BUS/2

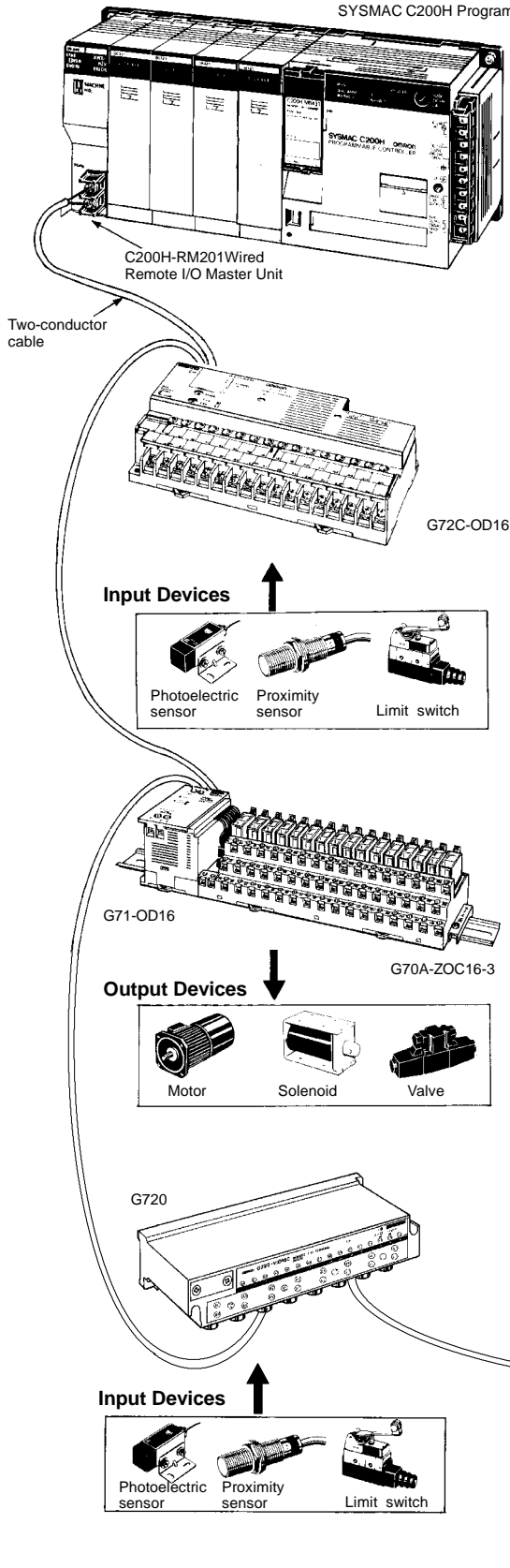
G700 16

PROFIBUS

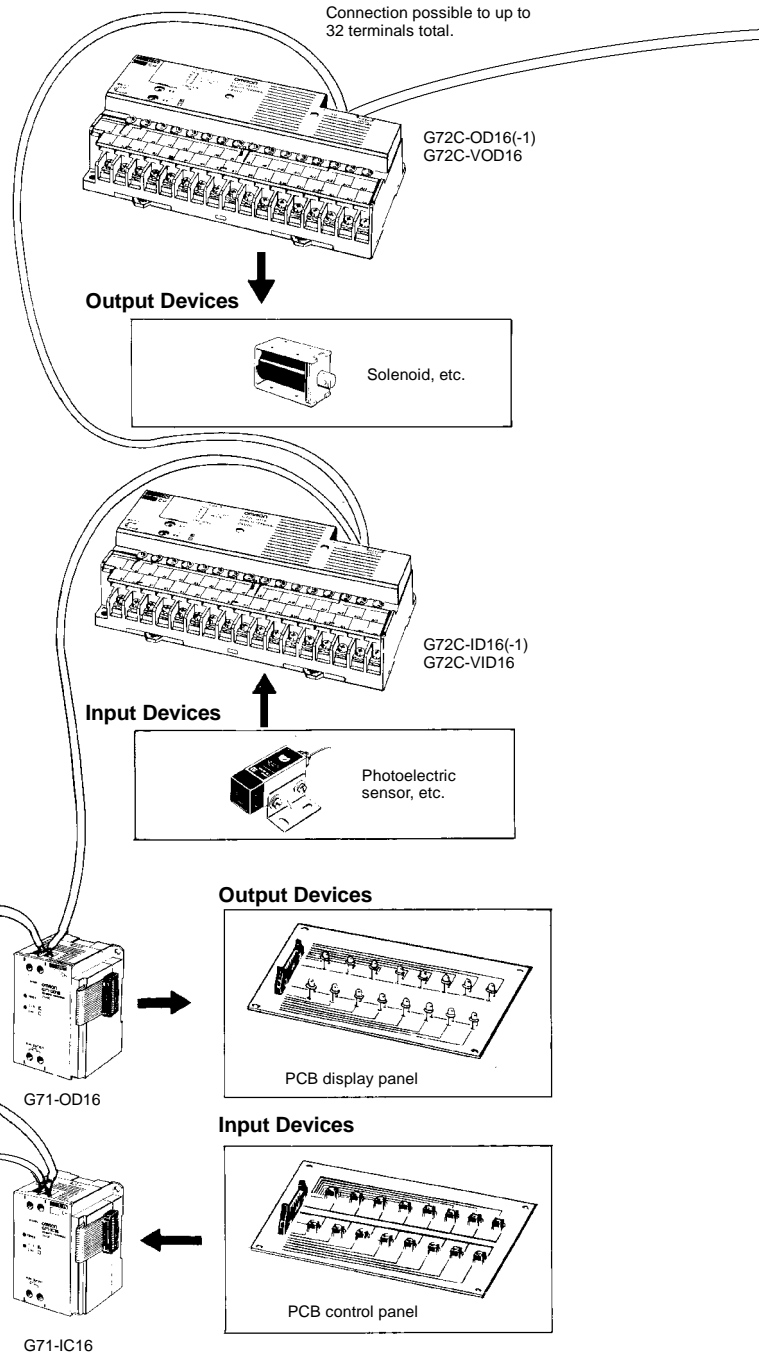
G71P 18

I/O Terminal (SYSMAC BUS)

SYSMAC C200H Programmable Controller



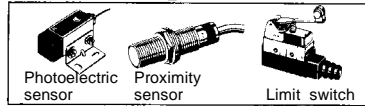
Remote Terminals and I/O Blocks can be connected in series with 2-conductor cables (VCTF 0.75 recommended) to construct a Local I/O Network with a maximum total transmission distance of 200 m and a transmission time of 2 ms multiplied by the number of G71 and G72C Remote Terminals in the Network. Up to 32 nodes can be designed into the Network. With each node consisting of a G72C Remote Terminal or a pair of G71 Remote Interface and I/O Block. All Remote Terminals and I/O Blocks must be provided with a power supply. Although the Network below use a C200H Programmable Controller (PC), a C500 PC can also be used.



For Input

G730-VID08 + G730-Y30/G730-VID16 + G730-Y30/
G730-VID04 + G730-Y31

Input Devices



For Output

G730-VOD08 + G730-Y30/G730-VID16 + G730-Y30/
G730-VOD04 + G730-Y31

For Input

G730-RID04/G730-RIA04

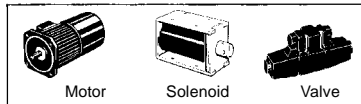
For Output

G730-ROC04

For Output (With Built-in Error Detecting Function)

G730-ROC04

Output Devices

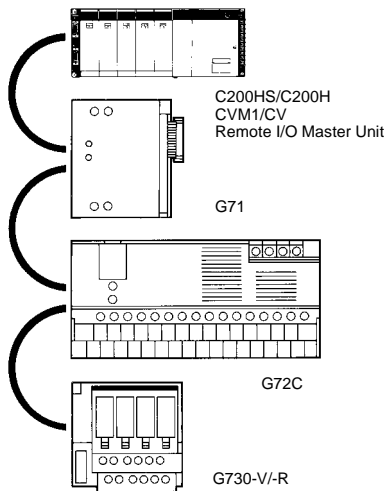


G730 Remote Terminals Connect to General-purpose Transmission Systems and Saves Wiring Effort

G730 Remote Terminals collectively transmit signals that are input from sensors and switches, and signals that are output to PCs, motors, and valves over a single two-conductor cable. It is possible to use G730 Remote Terminals as Remote I/O Units in SYSMAC BUS systems. G730 Remote Terminals connect to a variety of controllers via a G730-M Master Unit, thus making it possible to construct general-purpose transmission systems that save wiring effort and reduce mounting space.

■ Directly Connecting to OMRON's PCs and Wired SYSMAC BUS Systems

A G730-V or G730-R Remote Terminal directly connects to OMRON C-series PCs over a single two-conductor cable. It is possible to use G730 Remote Terminal and wired SYSMAC BUS Units such as G72C and G71 Units together in the same system. G730-V-series and G730-R-series Models are available with 16, 8, or 4 points and are ideal for small-scale applications or system expansion purposes.

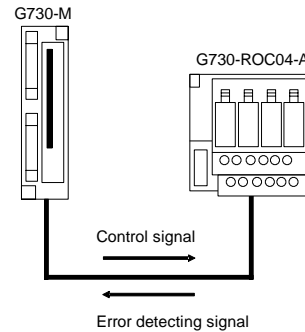


■ Constructing General-purpose Systems with Ease

A general-purpose transmission system can be constructed with ease by connecting the G730-M Master to a variety of controllers and personal computers. The Master alone allows 32-point signal transmission. A maximum of three G730-N Expansion Units can be connected to the Master. If three G730-N Expansion Units are connected to the Master, it will be possible to control a maximum of 128 points.

■ Constructing Safe Systems

G730-ROC04-A-series models are the world's first remote terminals with an error detecting function and indicator. With this function, the indicator will be lit if there is incorrect relay contact or contact weld. Furthermore, the error detecting signal will be fed back to the Master or PC.



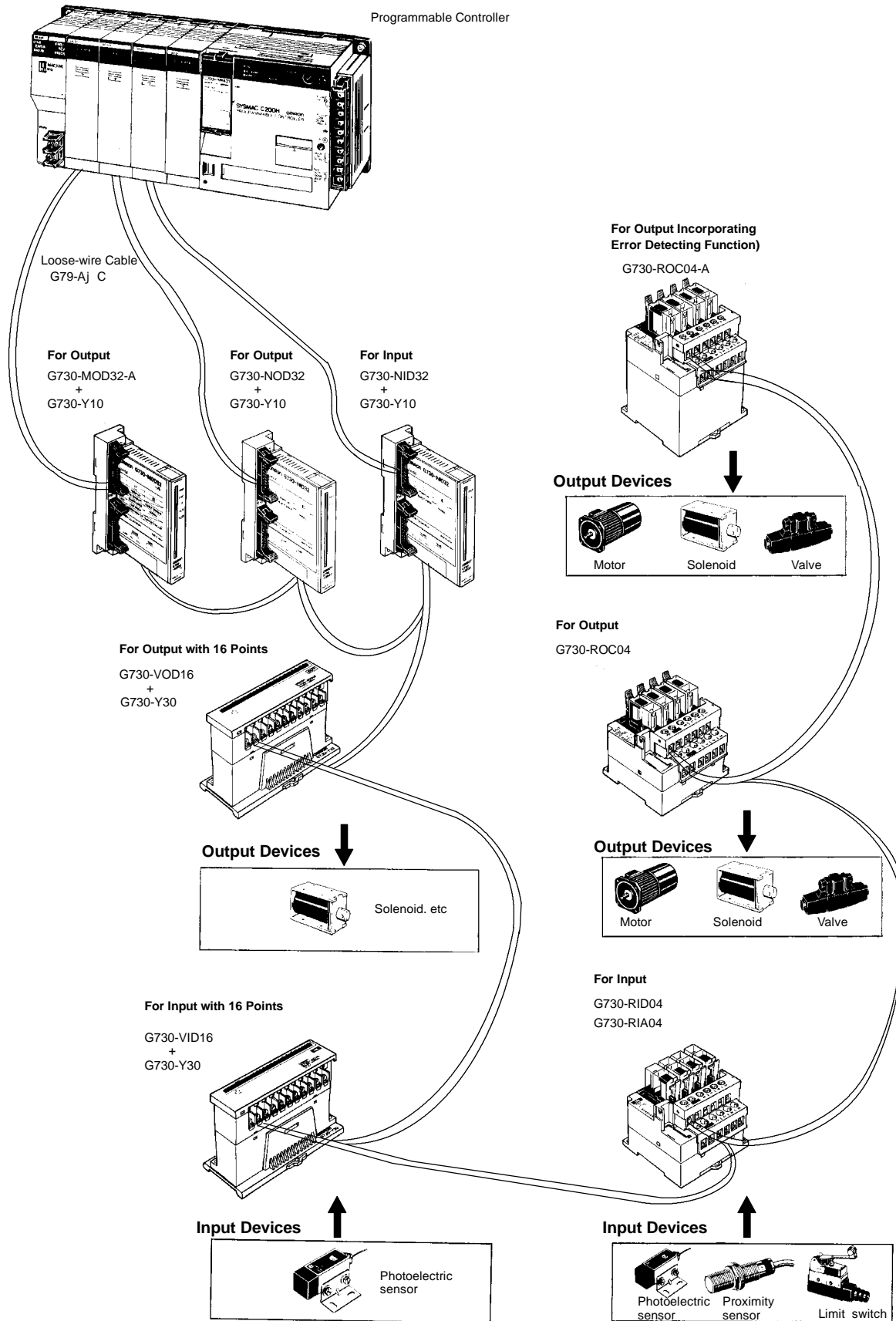
■ Constructing Low-cost Systems

A series of G730 Remote Terminals with 16, 8, or 4 I/O points is available. These input and output models can be freely combined, which makes it possible to adjust the number of I/O points according to the application and to construct low-cost systems. G730 Remote Terminals are ideal for small-scale lines and applications that do not require any I/O point.

■ Constructing Space-saving Systems

The G730-Vj D16 is approximately one-third the size of the conventional G72C(-V) and does not require much mounting space, thus making it possible to reduce the size of the panel. By using an adaptor, the G730-Vj D16 can be DIN-track mounted.

■ G730 I/O Terminal



G700 I/O Terminals Easily Connect to SYSMAC BUS/2 Remote I/O System

The SYSMAC BUS/2, a dedicated Remote I/O System for SYSMAC CV-series PCs, supports G700 I/O Terminals. As advanced models of the G71 and G72C, G700 I/O Terminals reduce the transmission delays to approximately one-tenth of the time taken by the G71 and G72C. The G700 Series also has a longer transmission distance and can control a larger number of I/O points. G700 I/O Terminals ensure ease-of-use and maintenance as well as safety in operation.

■ Flexibility

G700 I/O Terminals have both communications and terminals functions to enable flexibility in FA systems. Since each I/O Terminal can increase its I/O capacity to up to 32 points, FA lines can be easily enlarged.

■ Reduced Transmission Delay

G700 I/O Terminals feature high-speed transmissions (baud rate: 1.5 Mbps), with a maximum transmission delay of 5.2 ms, to achieve high-speed I/O signal transmission.

■ Easy Maintenance

G700 I/O Terminals have LED indicators with which the ON/OFF status and transmission status of I/O signals can be monitored, making it possible to easily locate malfunctions and operating errors.

■ Long-distance Transmission Capability

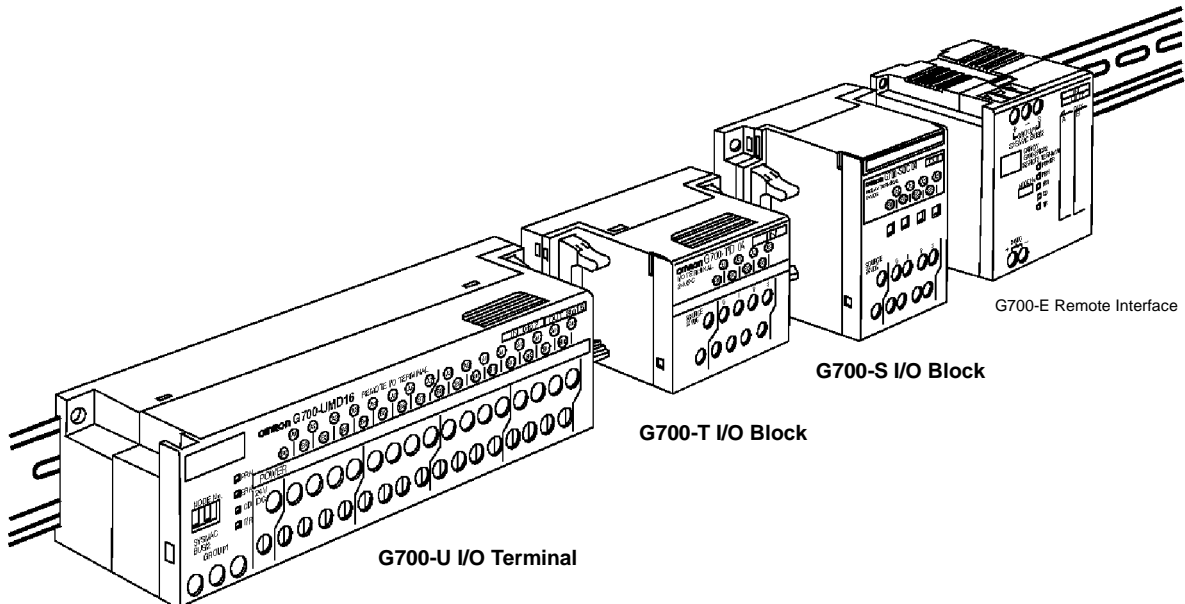
With a maximum transmission distance of 500 m, the G700 can be used in large FA networks.

■ Large I/O Capacity

A Remote I/O Master Unit in a SYSMAC BUS/2 can control up to 2,048 remote I/O points to enable large-scale FA systems.

■ Easy Operation

Operating modes and other operational settings are easily made using DIP switches.



Fuse Replacement

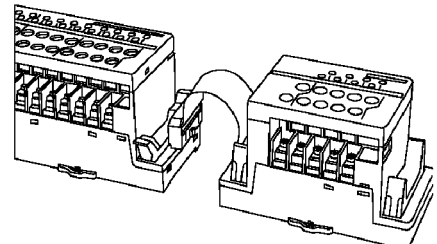
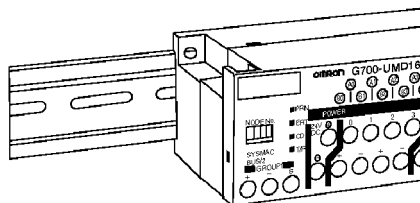
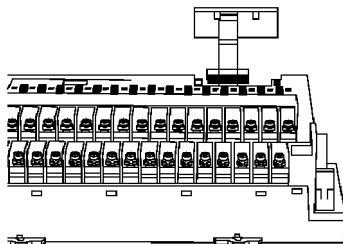
The fuse can be easily replaced without disconnecting the G700 from the FA network or removing the casing.

DIN Track/Screw Mounting

The G700 can be mounted to a DIN track or screw-mounted, as required by the application.

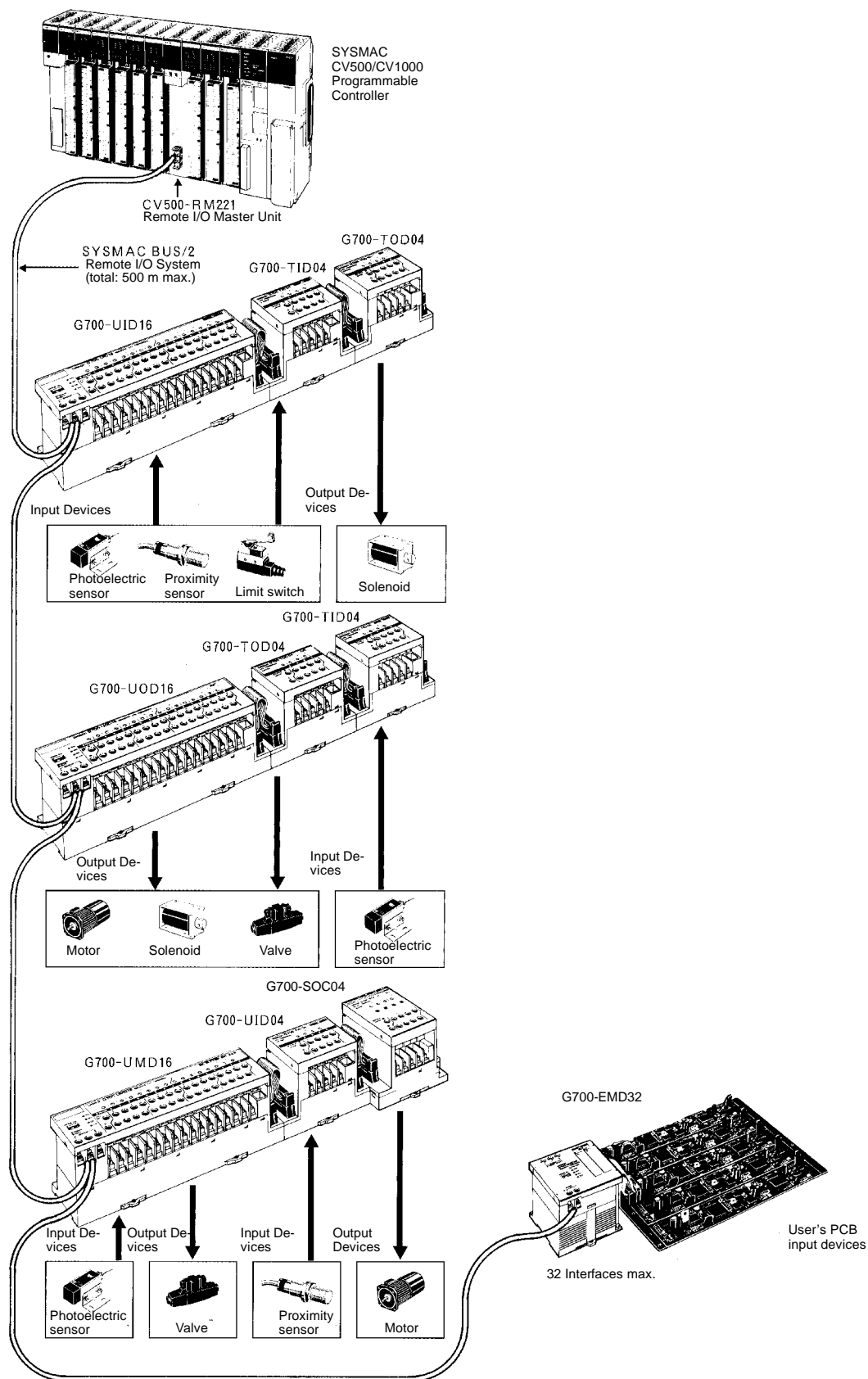
System Expansion through Simple Cable Connections

The G700-U, G700-T, and G700-S can be easily connected to one another with a single cable and connectors, thus making it possible to expand FA line capacity.



Connection Example

I/O Terminal (SYSMAC BUS/2)



■ G71P

Features

The G71P-j j 16-4 Remote Interface connects a G70A-j j j 16-j I/O Block or User's designing board to a PROFIBUS network.

The G71P-j j 16-4 acts as a PROFIBUS Slave which supports the complete PROFIBUS protocol and contains a PROFIBUS application program that covers the following operations:

- Automatic data exchange with a PROFIBUS Master similar to that in the SYSMAC BUS.
- 10 kinds of services.
- 10 Masters can be accessed at the same time.

The G71P-j j 16-4 Remote Interface has 16 I/O points of distributed control.

PROFIBUS

General Information

PROFIBUS is an international field bus standard which was originally specified by a group of equipment manufacturers and sponsored by the German Federal Ministry for Research and Technology.

PROFIBUS realizes a 3-layer stack (Layer 1, 2 and 7) corresponding to the ISO/OSI model of open communication.

The PROFIBUS protocol is defined in the German Standard "DIN19245". DIN19245-part 1 defines Layer 1 (physical layer) and Layer 2 (data link layer), and DIN19245-part 2 defines Layer 7 (application layer).

Layer 7 of the PROFIBUS protocol, FMS (Field Message Service) offers a subset of MAP Layer 7 services called MMS (Manufacturing Message Service).

System Configuration

In a PROFIBUS system, three different parameters must be defined before operation. These parameters are:

- Bus parameters
- Communication Reference List (CRL, or KBL in German)
- Object Dictionary (OD, or OV in German)

G71P-j j 16-4 PROFIBUS System provides 2 different ways of setting some of these parameters. These are:

- Default Configuration
- Configuration through communications

Services

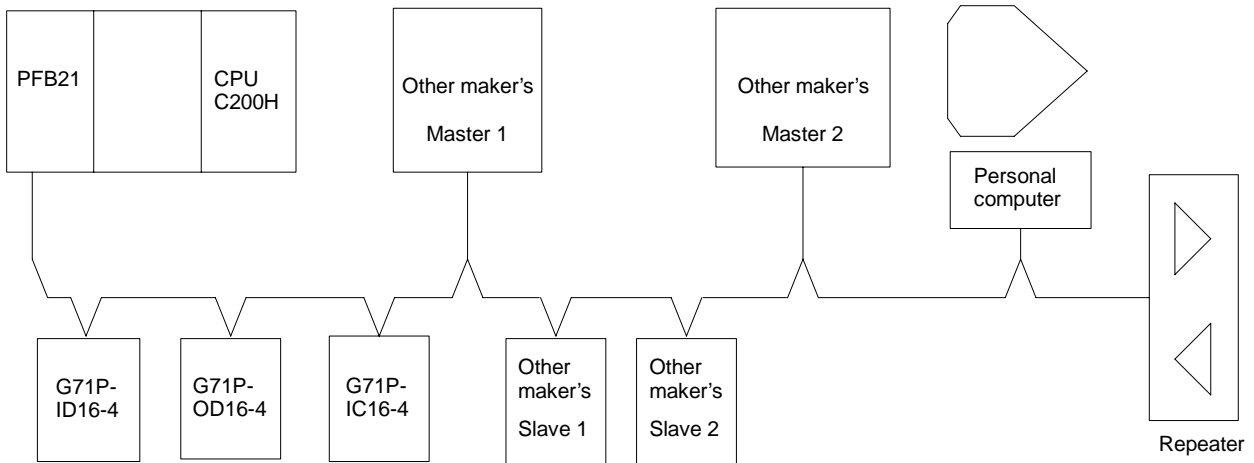
The G71P-j j 16-4 supports the complete PROFIBUS protocol. The following services are supported:

Service Description

Initiate	With this service a connection between two communication partners is established.
Abort	With this service an existing connection between two communication partners is aborted. An abort request or abort response is generated automatically without involving the application program.
Status	This service is used to read the statuses of the Unit and application program.
Identify	<p>This service allows a communication partner to read basic information about a virtual field device via the bus. The identification consists of:</p> <ul style="list-style-type: none"> • Vendor name • Model name • Revision <p>The listed strings and numbers in the identification list above are transmitted.</p>
Get-OD	This service accesses the Object Dictionary (OD). Addressing via the object name is not provided, but the object name is accessed in a subsequent Get-OD response. The short and long forms of the Get-OD service are supported.
Read	This service is used to read objects. Access must be made via the index. A cyclic Read is not possible since this would slow down the average reaction time of the whole system.
Write	This service is used to write objects. Access must be made via the index. A cyclic Write is not possible since this would slow down the average reaction time of the whole system.
Physical Read	With this service a direct read access to the physical memory of the processor is possible.
Physical Write	With this service a direct write access to the physical memory of the processor is possible.
Information Report	With this service a remote unit can transmit simple-variable objects, arrays, and records to a server.

PROFIBUS System Configuration

The following diagram shows the configuration of a PROFIBUS System.



Connections

At least one Remote I/O Master Unit is required to connect G71P-j j 16-4 Units to a PROFIBUS System. G71P-j j 16-4 Units must be bus-connected to a Master Unit.

Technical Data

I/O Block Base

G70A	21
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Remote Interface

G71	28
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Remote Terminal33

G72C	33
G72C-V	40

Remote I/O Terminal

G720	46
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Remote I/O Interface

G700-E	54
--------------	----

I/O Block

G700-S	60
G700-T	65

I/O Terminal

G700-U	69
--------------	----

Master Unit (Master/Expansion Unit)

G730-M/N	81
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Transistor Remote Terminal

G730-V	90
--------------	----

Relay-mounted Remote Terminal

G730-R	100
--------------	-----

Remote Terminal

G730-ROC04-A	111
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Remote Interface

G71P	140
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Reduces Wiring while Providing I/O Flexibility

- Mount I/O relays and I/O SSRs freely.
- Electric-shock preventive (finger-touch protection) terminal block incorporated conforming to VDE 0106.
- Connects to the PC and SBC easily via a connector.
- DIN track mounted.
- I/O Block conforming to VDE 0106.
- G2R relays are UL, CSA, IEC, VDE, SEV, SEMKO, DEMKO, and SET1 approved.

Ordering Information

Classification	Internal I/O circuit common	Rated voltage	Model
Output	NPN (+ common)	24 VDC	G70A-ZOC16-3
	PNP (- common)	24 VDC	G70A-ZOC16-4
Input	NPN/PNP	110 VDC max., 240 VAC max. (see note)	G70A-ZIM16-5

Note: Each relay to be mounted must incorporate a coil that has proper specifications within the maximum rated voltage range.

■ Suitable Relay/SSR

Classification	I/O Block Base	PCB Relay	Solid State Relay
Output	NPN: G70A-ZOC16-3 PNP: G70A-ZOC16-4	G2R-1-S G2R-1-SN	G3R-202SN-US-E G3R-202SLN-US-E G3RD-X02SN-US-E G3R-OA202SZN G3R-OA202SLN G3R-ODX02SN G3R-OD201SN
Input	G70A-ZIM16-5	G2R-1A3-SN G2R-13-SN G2R-1A3-SND G2R-13-SND	G3R-IAZR1SN G3R-IDZR1SN G3R-IDZR1SN-1

Note: G2R-13-SN has twin cross-bar contacts.

■ Connecting Sockets for I/O Terminal Expansion

Model	Number of poles
P2RF-05-E	1 pole (G2R: 1 pole usage)
P2RF-08-E	2 poles (G2R: 2 poles usage)

Specifications

■ Ratings/Characteristics

Item	G70A-ZOC16-3	G70A-ZOC16-4	G70A-ZIM16-5
Contact resistance	10 mW (excluding the resistance of the relay to be used)		
Permissible current	10 A		100 mA
Max. operating voltage	380 VAC, 125 VDC		30 VDC
Dielectric strength	4,000 VAC, 50/60 Hz for 1 min between connector and output terminals 2,000 VAC, 50/60 Hz for 1 min between output terminals 250 VAC, 50/60 Hz for 1 min between connectors		4,000 VAC, 50/60 Hz for 1 min between connector and input terminals 2,000 VAC, 50/60 Hz for 1 min between coil terminals 250 VAC, 50/60 Hz for 1 min between connectors
Insulation resistance	100 MW (at 500 V)		
Vibration resistance	Malfunction: 10 to 61.2 Hz, 0.2-mm double amplitude; 61.2 to 150 Hz, 1.5G		
Shock resistance	Malfunction: 200 m/s ² (approx. 20G)		
Noise immunity	Noise level: 2.0 kV; pulse width: 100 ns to 1 ms		
Ambient temperature	Operating: 0°C to 55°C (with no icing)		
Ambient humidity	Operating: 35% to 85%		
Coil surge absorption element	Diode: 1 A, 400 V		Varistor (see note)
Protection diode for inverse connection	Diode (2 A, withstand inverse voltage: 40 V)		
Tightening torque	6 kgf · cm (0.59 N · m)		

Note: Use a DC relay with a built-in diode because a DC relay without a built-in diode does not absorb any coil surge.

■ Relay (G2R-1-S, G2R-1-SN)

Coil Ratings

Rated voltage	24 VDC
Rated current (50/60 Hz)	21.8 mA
Coil resistance	1,100 W
Coil inductance (H) (ref. value)	Armature OFF 4.27
	Armature ON 8.55
Must operate voltage	70% min. of rated voltage
Must release voltage	15% min. of rated voltage
Max. voltage	110% of rated voltage
Power consumption	Approx. 0.53 W

Contact Ratings

Number of poles	1 pole	
Load	Resistive load (cosφ = 1)	Inductive load (cosφ = 0.4; L/R = 7 ms)
Rated load	10 A at 250 VAC; 10 A at 30 VDC	7.5 A at 250 VAC; 5 A at 30 VDC
Rated carry current	10 A	
Max. operating voltage	380 VAC, 125 VDC	
Max. operating current	10 A	
Max. switching capacity	2,500 VA, 300 W	1,875 VA, 150 W
Min. permissible load	100 mA at 5 VDC	

■ Relay (G2R-1A3-SN (SND), G2R-13-SN (SND))

Coil Ratings

Rated voltage		230 VAC	12 VDC	24 VDC
Rated current	50 Hz	3.7 mA	43.6 mA	21.8 mA
	60 Hz	3.1 mA		
Coil resistance		30,000 W	275 W	1,100 W
Must operate voltage		80% max. of rated voltage	70% max. of rated voltage	
Must release voltage		30% min. of rated voltage	15% min. of rated voltage	
Max. voltage		110% of rated voltage		
Power consumption		Approx. 0.7 W (60 Hz)	Approx. 0.53 W	

- Note:**
1. The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of +15%/-20% (AC rated current) or +10% (DC coil resistance).
 2. LEDs are used for the built-in operation indicator. For models equipped with these indications, the VAC rated current must be increased by approximately 1 mA; the VDC rated current, by approximately 4 mA.
 3. Operating characteristics are measured at a coil temperature of 23°C.

Contact Ratings

Refer to Ratings/Characteristics of G70A-ZIM16-5.

■ SSR

Ratings for G3R/G3R-E Series (UL/CSA Approved)

Input (AC Output, With Zero Cross Function)

Model	Rated voltage	Operating voltage	Impedance	Voltage level	
				Must operate voltage	Must release voltage
G3R-202SN-US-E	5 VDC	4 to 6 VDC	250 W+20%	3.5 VDC max.	0.375 VDC min.
	12 VDC	9.6 to 14.4 VDC	600 W+20%	8.4 VDC max.	0.9 VDC min.
	24 VDC	19.2 to 28.8 VDC	1.5 kW+20%	16.8 VDC max.	1.8 VDC min.

Input (AC Output, Without Zero Cross Function, and DC Output)

Model	Rated voltage	Operating voltage	Impedance	Voltage level	
				Must operate voltage	Must release voltage
G3R-202SLN-US-E	5 VDC	4 to 6 VDC	300 W+20%	3.5 VDC max.	0.375 VDC min.
G3RD-X02SN-US-E	12 VDC	9.6 to 14.4 VDC	750 W+20%	8.4 VDC max.	0.9 VDC min.
	24 VDC	19.2 to 28.8 VDC	1.5 kW+20%	16.8 VDC max.	1.8 VDC min.

Output

Model	Applicable load		
	Load voltage	Load current	Inrush current
G3R-202SN-US-E G3R-202SLN-US-E	75 to 264 VAC	0.1 to 2 A	30 A (60 Hz, 1 cycle)
G3R-X02SN-US-E	3 to 52.8 VDC	0.01 to 2 A	8 A (10 ms)

Characteristics for G3R/G3R-E Series

Item	G3R-202SLN-US-E	G3R-202SN-US-E	G3RD-X02SN-US-E
Operate time	1 ms max.	1/2 of load power supply cycle + 1 ms max.	1 ms max.
Release time	1/2 of load power supply cycle + 1 ms max.		1 ms max.
Output ON voltage drop	1.6 V (RMS) max.		1.5 V max.
Leakage current	2 mA max. (at 100 VAC); 5 mA max. (at 200 VAC)		0.1 mA max. (at 50 VDC)
Insulation resistance	100 MW min. (at 500 VDC)		
Dielectric strength	2,500 VAC, 50/60 Hz for 1 min		
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude		
Shock resistance	1,000 m/s ² (approx. 100G)		
Ambient temperature	Operating: -30°C to 80°C Storage: -30°C to 100°C		
Ambient humidity	Operating: 45% to 85%		
Weight	Approx. 18 g		

Ratings for G3R I/O Module

Input for Input Module

Model	Rated voltage	Operating voltage	Input current	Voltage level	
				Must operate voltage	Must release voltage
G3R-IAZR1SN	100 to 240 VAC	60 to 264 VAC	15 mA max.	60 VAC max.	20 VAC min.
G3R-IDZR1SN	5 VDC	4 to 6 VDC	8 mA max.	4 VDC max.	1 VDC min.
G3R-IDZR1SN	12 to 24 VDC	6.6 to 32 VDC		6.6 VDC max.	3.6 VDC min.
G3R-IDZR1SN-1	5 VDC	4 to 6 VDC		4 VDC max.	1 VDC min.
G3R-IDZR1SN-1	12 to 24 VDC	6.6 to 32 VDC		6.6 VDC max.	3.6 VDC min.

Output for Input Module

Model	Logic supply voltage	Logic supply current
G3R-IAZR1SN	4 to 32 VDC	0.1 to 100 mA
G3R-IDZR1SN		
G3R-IDZR1SN-1		

Input for Output Module

Model	Rated voltage	Operating voltage	Input current	Voltage level	
				Must operate voltage	Must release voltage
G3R-OA202SZN (with zero cross function)	5 to 24 VDC	4 to 32 VDC	15 mA max. (at 25°C)	4 VDC max.	1 VDC min.
G3R-OA202SLN (without zero cross function)					
G3R-ODX02XN					
G3R-OD201SN					

Output for Output Module

Model	Applicable load		
	Load voltage	Load current	Inrush current
G3R-OA202SZN	75 to 264 VAC	0.05 to 2 A	30 A (60 Hz, 1 cycle)
G3R-OA202SLN			
G3R-ODX02XN	4 to 60 VDC	0.01 to 2 A	8 A (10 ms)
G3R-OD201SN	40 to 200 VDC	0.01 to 1.5 A	8 A (10 ms)

Characteristics for G3R I/O Module

Input Module

Item	G3R-IAZR1SN	G3R-IDZR1SN	G3R-IDZR1SN-1
Operate time	20 ms max.	0.1 ms max.	20 ms max.
Release time			
Response frequency	10 Hz	1 kHz	10 Hz
Output ON voltage drop	1.6 V max.		
Leakage current	5 μ A max.		
Insulation resistance	100 MW min. (at 500 VDC)		
Dielectric strength	4,000 VAC, 50/60 Hz for 1 min		
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude		
Shock resistance	1,000 m/s ² (approx. 100G)		
Ambient temperature	Operating: -30°C to 80°C Storage: -30°C to 100°C		
Ambient humidity	Operating: 45% to 85%		
Weight	Approx. 18 g		

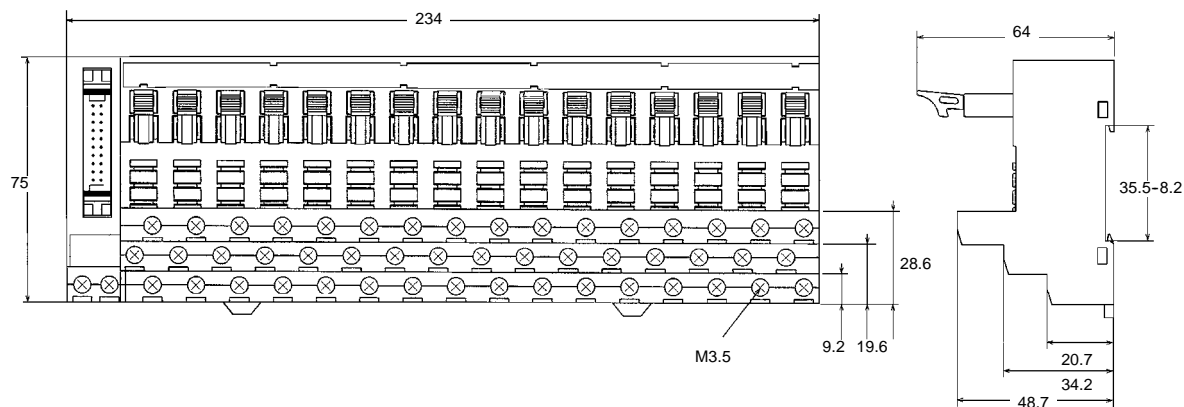
Output Module

Item	G3R-OA202SZN	G3R-OA202SLN	G3R-ODX02SN	G3R-OD201SN
Operate time	1/2 of load power supply cycle + 1 ms max.		1 ms max.	
Release time			2 ms max.	
Response frequency	20 Hz		100 Hz	
Output ON voltage drop	1.6 V max.			2.5 V max.
Leakage current	1.5 mA max.		1 mA max.	
Insulation resistance	100 MW min. (at 500 VDC)			
Dielectric strength	4,000 VAC, 50/60 Hz for 1 min			
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude			
Shock resistance	1,000 m/s ² (approx. 100G)			
Ambient temperature	Operating: -30°C to 80°C Storage: -30°C to 100°C			
Ambient humidity	Operating: 45% to 85%			
Weight	Approx. 18 g			

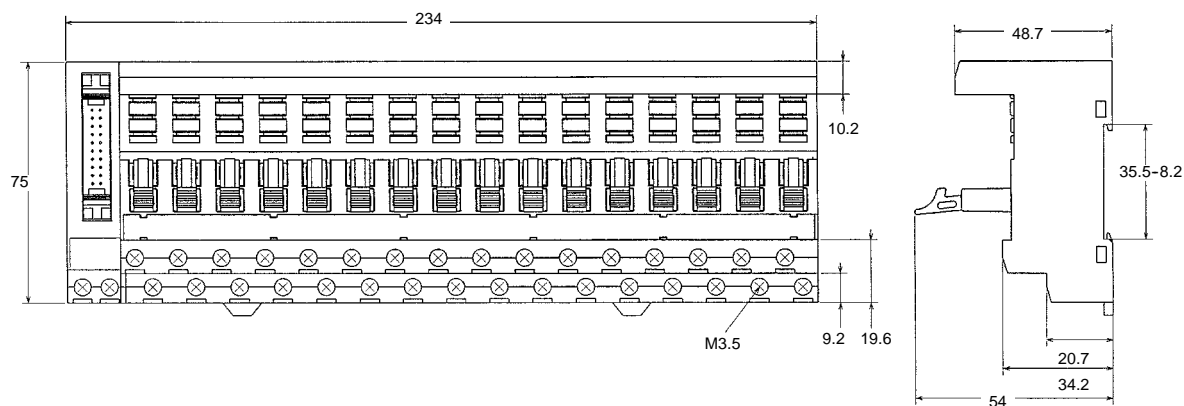
Dimensions

Note: All units are in millimeters unless otherwise indicated.

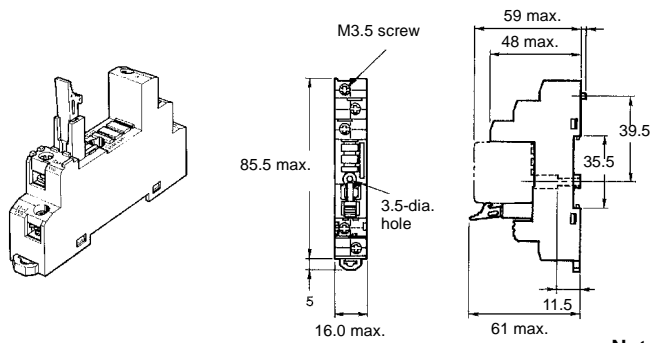
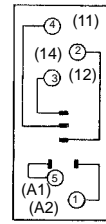
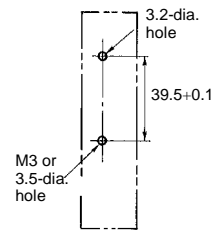
G70A-ZOC16 (Output)



G70A-ZIM16 (Input)

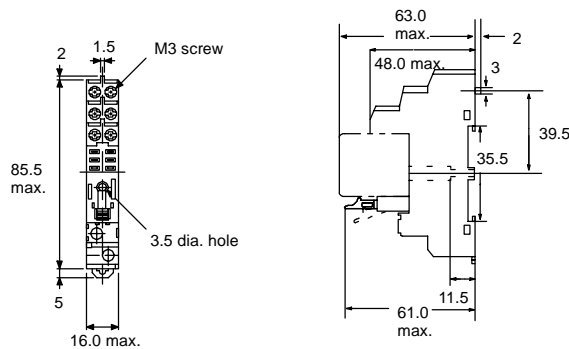
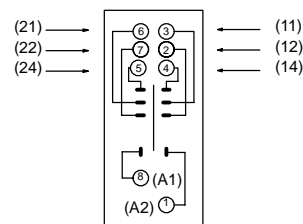
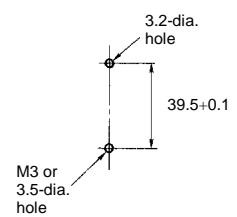


P2RF-05-E

Terminal Arrangement
(Top View)Mounting Holes
(for Surface Mounting)

Note: Pin numbers in parentheses apply to DIN standard.

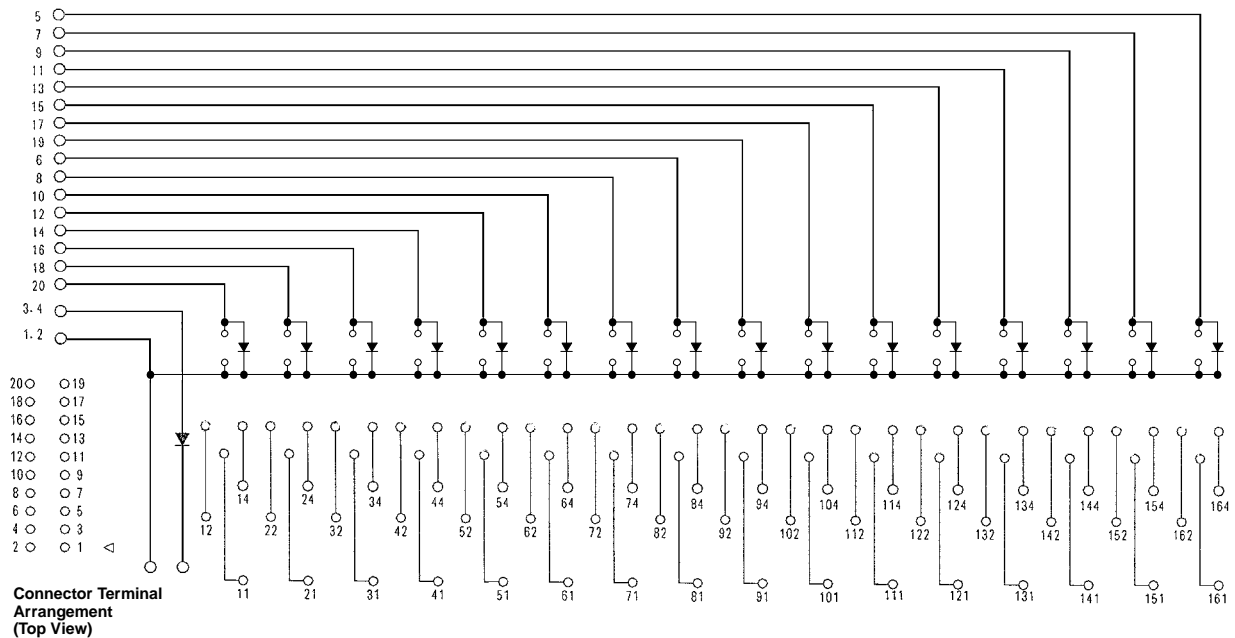
P2RF-08-E

Terminal Arrangement
(Top View)Mounting Holes
(for Surface Mounting)

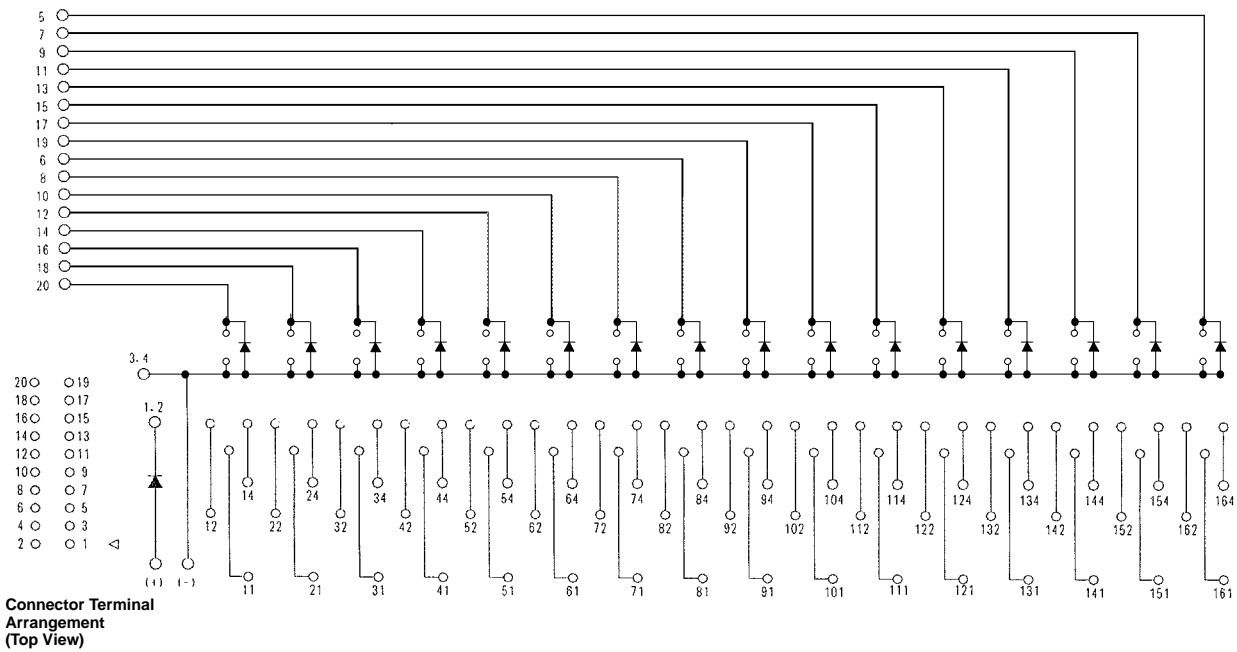
Installation

■ Terminal Arrangement/Internal Connection

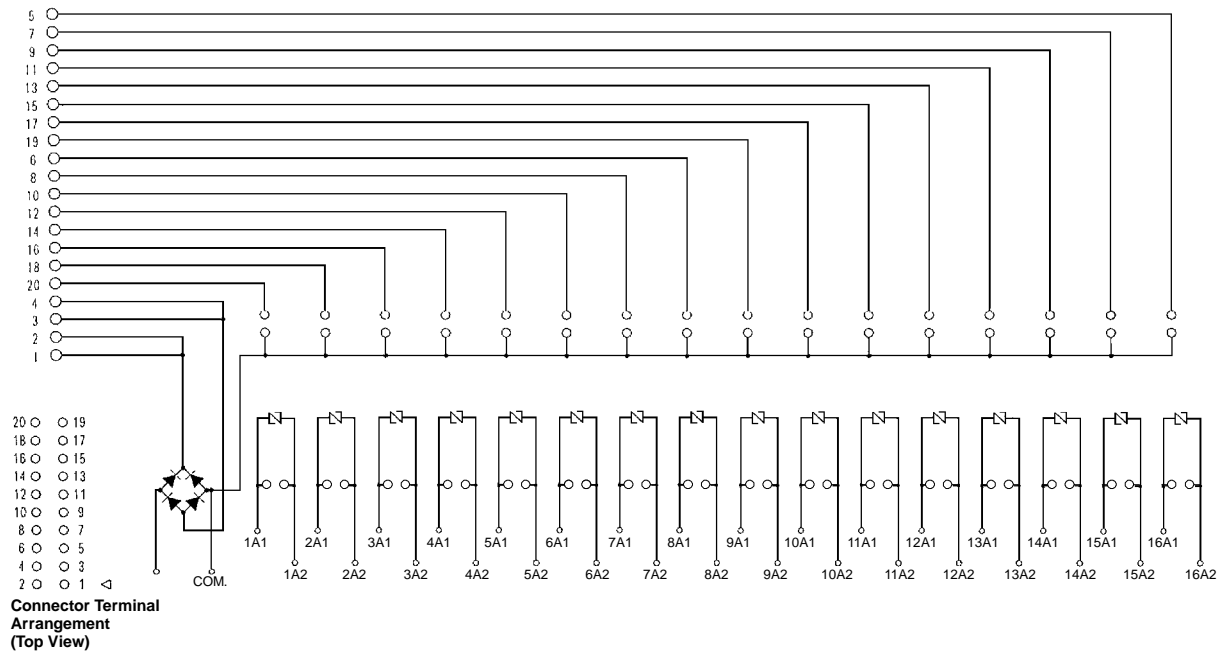
G70A-ZOC16-3 (NPN)



G70A-ZOC16-4 (PNP)



G70A-ZIM16-5 (NPN/PNP)



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Remote Interface

G71

Used in Combination with G70A or G7TC I/O Blocks

- Effectively reduces wiring requirements while lowering the cost of distributed communications control.
- Each pair of Remote Interfaces and I/O Blocks is easily connected through a single connector to provide 16 input/output points of distributed control.
- Two-conductor cable communications are possible with OMRON Wired Remote I/O Master Units (C500-RM201 or C200H-RM201)
- Isolated transmission lines ensure excellent noise immunity.
- DIN track mounting ensures easy installation, while diagnostic functions provide troubleshooting ease.

Ordering Information

Classification	Internal I/O circuit common	Rated voltage	Model
For input	NPN (+ common)	24 VDC	G71-IC16
			G71-IC16-3
For output	NPN (- common)	24 VDC	G71-OD16

Remote Interface and I/O Block Combinations

Applicable I/O Block			Remote Interface
AC input block	110/120 VAC	G7TC-IA16 110/120 VAC	G71-IC16 24 VDC
	220/240 VAC	G7TC-IA16 220/240 VAC	
	230 VAC (see note 2)	G70A-ZIM16-5 + G2R-1-SN-AP3 230 VAC	G71-IC16-3 24 VDC
DC input block	24 VDC	G7TC-ID16 24 VDC	G71-IC16 24 VDC
	24 VDC (see note 2)	G70A-ZIM16-5 + G2R-1-SN(D)-AP3 24 VDC	G71-IC16-3 24 VDC
Output block	24 VDC	G7TC-OC16 24 VDC G7TC-OC08 24 VDC G70A-ZOC16-3 + G2R-1-SN 24 VDC	G71-OD16 24 VDC

- Note:**
1. Do not connect the G71 with the G7TC-OC16-1 or G7TC-OC08-1 (PNP output, - common). Due to the difference in polarity, the G71 will be damaged if the G71 and G7TC-OC16(or 08)-1 are connected to each other.
Use the G7TC-OC16 or G7TC-OC08 (NPN output, + common) instead, to connect to the G71.
 2. The rated voltages and relay models are typical examples. Refer to the *G70A Datasheet (J87)* for details.

Specifications

■ Ratings

G71-IC16/IC16-3 Input

Rated input voltage	24 VDC
Input current	6.7 mA/point
ON delay time (see note)	9 ms max.
OFF delay time (see note)	14.5 ms max.
Number of circuits	16 points (8 points/common)
ON voltage	15 VDC max.
OFF voltage	5.6 VDC max.

Note: Transistor inputs with an ON-delay time of 1 ms, and OFF-delay time of 1.45 ms are available.

G71-OD16 Output

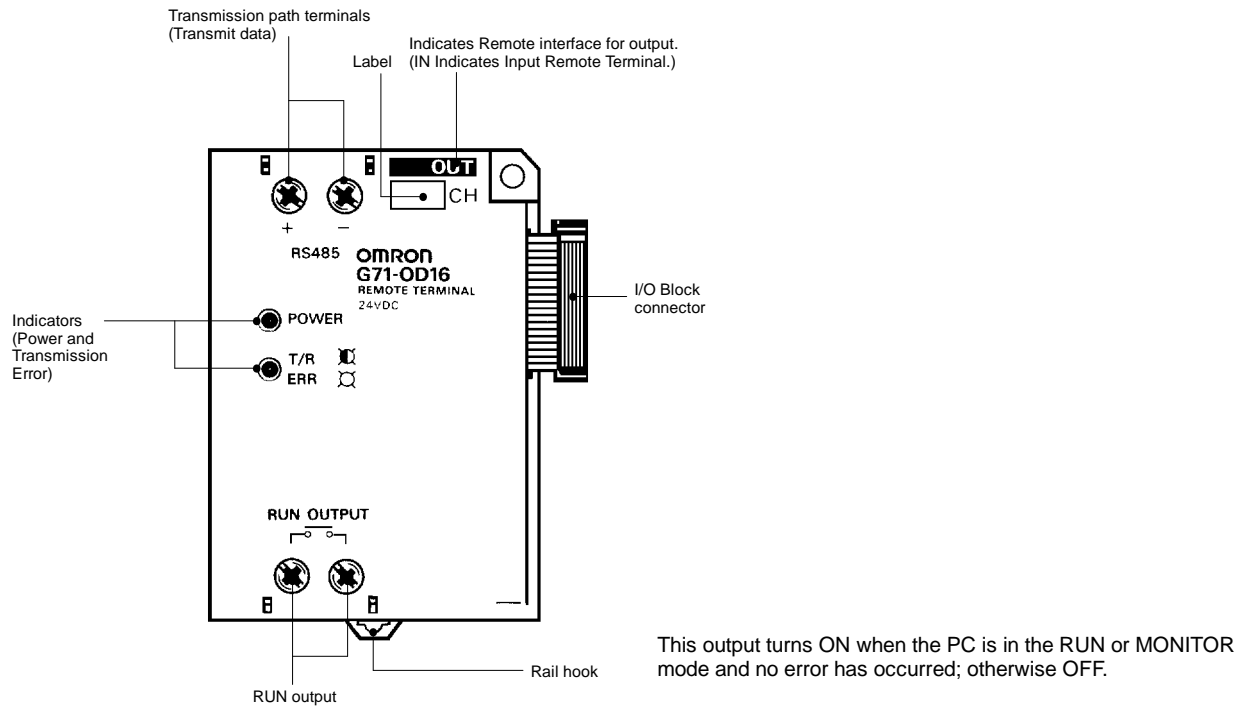
Rated input voltage	24 VDC
Rated output current	30 mA/point
Residual voltage	1.2 V max.
Leakage current	100 μ A max.
Number of circuits	16 points (8 points/common)

■ Characteristics

Communication system	Two-conductor, half duplex
Synchronization method	Asynchronous
Transmission speed (baud rate)	187.5 kbps (transmission time: 2 ms max. per Remote Interface Unit)
Transmission distance	200 m (total length)
Transmission path	Two-conductor cable (VCTF 0.75 x DPDT recommended)
Interface	RS-485
Operating voltage range	24 VDC +10%/-15%
Current consumption (see note)	24 VDC: 200 mA max. for input terminal; 500 mA max. for output terminal
RUN output	SPST-NO contact output (closed during operation) Contact capacity: 100,000 operations at 2 A, 250 VAC (cos ϕ = 1)
Diagnosis	Transmission error check (BCC plus inverted two-transmission verification check), CPU error monitor
Insulation resistance	20 MW min. (at 250 VDC) between transmission circuits and RUN output circuit 20 MW min. (at 250 VDC) between RUN output circuit and power circuits 20 MW min. (at 250 VDC) between transmission circuits and power circuits
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min between transmission circuits and RUN output circuit 2,000 VAC, 50/60 Hz for 1 min between RUN output circuit and power circuits 500 VAC, 50/60 Hz for 1 min between transmission circuits and power circuits
Noise immunity	Noise level: 1.5 kV; pulse width: 100 ns to 1 ms
Vibration resistance	10 to 55 Hz, 0.75-mm double amplitude for 2 hrs each in X, Y, and Z directions (both mounted and not mounted to DIN track)
Shock resistance	50G, 3 times each in X, Y, and Z directions
Ambient temperature	Operating: 0°C to 55°C Storage: -20°C to 65°C
Ambient humidity	Operating: 35% to 85%
Mounting strength	No damage when 5 kgf (4.9 N) pull load was applied for 1 s in all directions (except for 1 kgf (0.9 N) in direction of rail)
Terminal strength	No abnormality when 5 kgf (4.9 N) pull load was applied for 1 s in all directions
Weight	Approx. 200 g

Note: Consumption for both G71 Remote Interface and G7TC I/O Block when all 16 points are ON. Includes G7T relay coil current for Remote Output Interface. Maximum current consumption when all points are OFF is as follows: 40 mA at 24 VDC.

Nomenclature

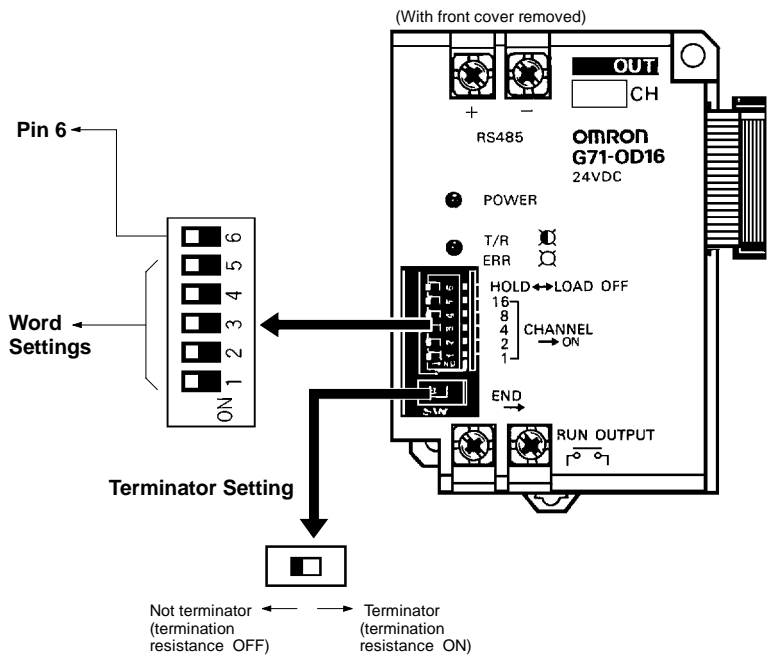


LED Operation

Display		Meaning
POWER	Lit	Lit when power is supplied and the unit is operating.
	Not lit	Not lit when power supply is abnormal.
T/R ERR	Flashing	Flashes during normal data transmission.
	Lit	Lit during standby and transmission error.
	Not lit	Not lit during CPU (watchdog timer) error.

Operation

■ Setting the Front-panel DIP Switch



Note: The terminator setting also sets the termination resistance. Be sure to set only one terminator per Remote I/O Master Unit and be sure it is the Unit farthest from the Master. (Set to OFF at the factory).
Set word numbers in backwards order from 31. (Set to 31 at the factory).
See G72C-5 for system configurations and operating precautions.

Output HOLD/STOP Mode

(for Remote Output Interface only)

Pin 6	
HOLD	STOP
OUT channel status is held during a slave transmission error.	All OUT channel bits go OFF for a slave transmission error. (see note)

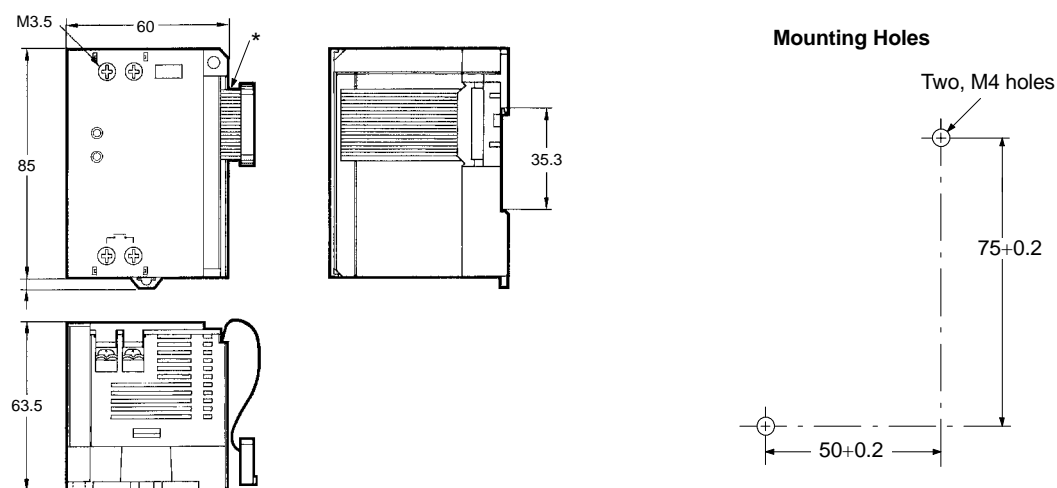
Note: A slave transmission error results if no data or abnormal data is sent from the Master Unit. (Factory-set to STOP mode.)

Word Settings

Word	Pin				
	1	2	3	4	5
0	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF
.
28	OFF	OFF	ON	ON	ON
29	ON	OFF	ON	ON	ON
30	OFF	ON	ON	ON	ON
31	ON	ON	ON	ON	ON

Dimensions

Note: All units are in millimeters unless otherwise indicated.

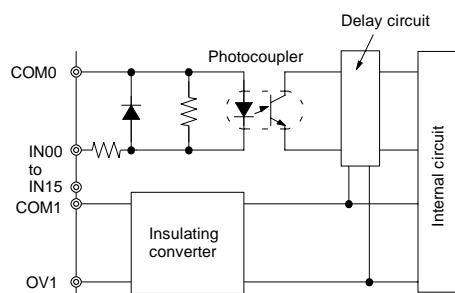


*A flat cable with a length of 85 mm can be used.

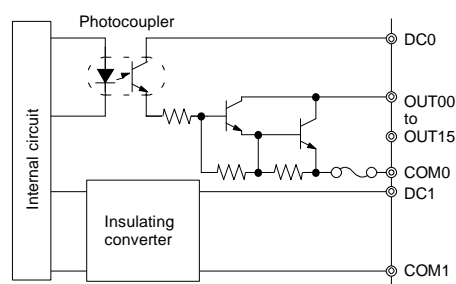
Installation

Internal Circuit

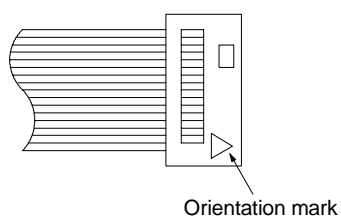
Input (NPN: + Common)



Output (NPN: - Common)



Terminal Arrangement



G71-IC16

IN08	IN00
IN09	IN01
IN10	IN02
IN11	IN03
IN12	IN04
IN13	IN05
IN14	IN06
IN15	IN07
COM1	COM0
OV1	NC

G71-IC16-3

IN08	IN00
IN09	IN01
IN10	IN02
IN11	IN03
IN12	IN04
IN13	IN05
IN14	IN06
IN15	IN07
OV1	NC
COM1	COM0

G71-OD16

OUT08	OUT00
OUT09	OUT01
OUT10	OUT02
OUT11	OUT03
OUT12	OUT04
OUT13	OUT05
OUT14	OUT06
OUT15	OUT07
COM1	COM0
DC1	DC0

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Remote Terminal

G72C

Combines the Terminal Block with a Transmission Capability to Reduce Wiring and Save Space

- Each terminal is provided with 16 input/output points that can be connected to a Remote I/O Master Unit (3G2A5-RM201 or C200H-RM201) through a two-conductor cable.
- Can share transmission lines with the G71 Remote Interface and G7TC I/O Block.
- Power terminals are provided for I/O devices.
- Flat-profile design has a height of only 45 mm, while DIN track- and screw-mounting capabilities provide installation flexibility.
- Isolated transmission lines eliminate noise interference.
- I/O signals can be confirmed with the easy-to-see LED indicators.

Ordering Information

Classification	Internal I/O circuit common	Rated voltage	Model
For input	NPN (+ common)	24 VDC	G72C-ID16
	PNP (- common)		G72C-ID16-1
For output	NPN (- common)	24 VDC	G72C-OD16
	PNP (- common)		G72C-OD16-1

Specifications

■ Ratings

G72C-ID16-1 Input

Rated input voltage	24 VDC
Input current	9.7 mA/point
ON delay time	1.5 ms max.
OFF delay time	1.5 ms max.
Number of circuits	16 points (8 points/common)
ON voltage	15 VDC max.
OFF voltage	5.6 VDC max.
Insulation method	Photocoupler
Input indication	LEDs (green)

G72C-OD16-1 Output

Rated input voltage	24 VDC
Rated output current	0.3 A/point
Residual voltage	1.2 V max.
Leakage current	100 μ A max.
Number of circuits	16 points (8 points/common)
Insulation method	Photocoupler
Input indication	LEDs (green)

■ Characteristics

Communication system	Two-conductor, half duplex
Synchronization method	Asynchronous
Transmission speed (baud rate)	187.5 kbps (transmission time: 2 ms max. per G72C)
Transmission distance	200 m (total length)
Transmission path	Two-conductor cable (VCTF 0.75 x DPDT recommended)
Interface	RS-485
Operating voltage range	24 VDC $+10\%/-15\%$
Current consumption (see note)	24 VDC: 200 mA max.
RUN output	SPST-NO contact output (closed during operation) Contact capacity: 100,000 operations at 2 A, 250 VAC (cosφ = 1)
Diagnosis	Transmission error check (BCC plus inverted two-transmission verification check), CPU error monitor
Insulation resistance	20 MW min. (at 250 VDC)
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min between RUN output circuit and other terminals 500 VAC, 50/60 Hz for 1 min for other terminals
Noise immunity	Noise level: 1.5 kV; pulse width: 100 ns to 1 ms
Vibration resistance	10 to 55 Hz, 0.75-mm double amplitude for 2 hrs each in X, Y, and Z directions (both mounted and not mounted to DIN track)
Shock resistance	50G, 3 times each in X, Y, and Z directions
Ambient temperature	Operating: 0°C to 55°C Storage: -20°C to 65°C
Ambient humidity	Operating: 35% to 85%
Mounting strength	No damage when 5 kgf (4.9 N) pull load was applied for 1 s in all directions (except for 1 kgf (0.9 N) in direction of rail)
Terminal strength	No abnormality when 5 kgf (4.9 N) pull load was applied for 1 s in all directions
Weight	Approx. 380 g

Note: Consumption when all 16 points are ON. Excludes external current for Remote Input Terminal and external load current for Remote Output Terminal. Maximum current consumption for both input and output when all points are OFF will be 40 mA at 24 VDC.

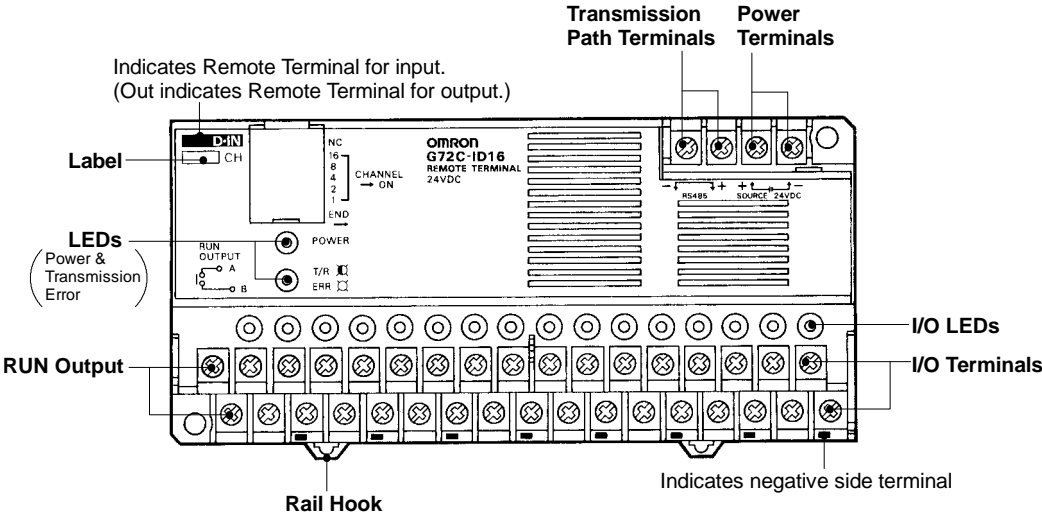
■ Approved Standards

UL (File No. E41515)

CSA (File No. LR31928)

The G72C-ID16/-OD16 has received UL and CSA approvals.

Nomenclature

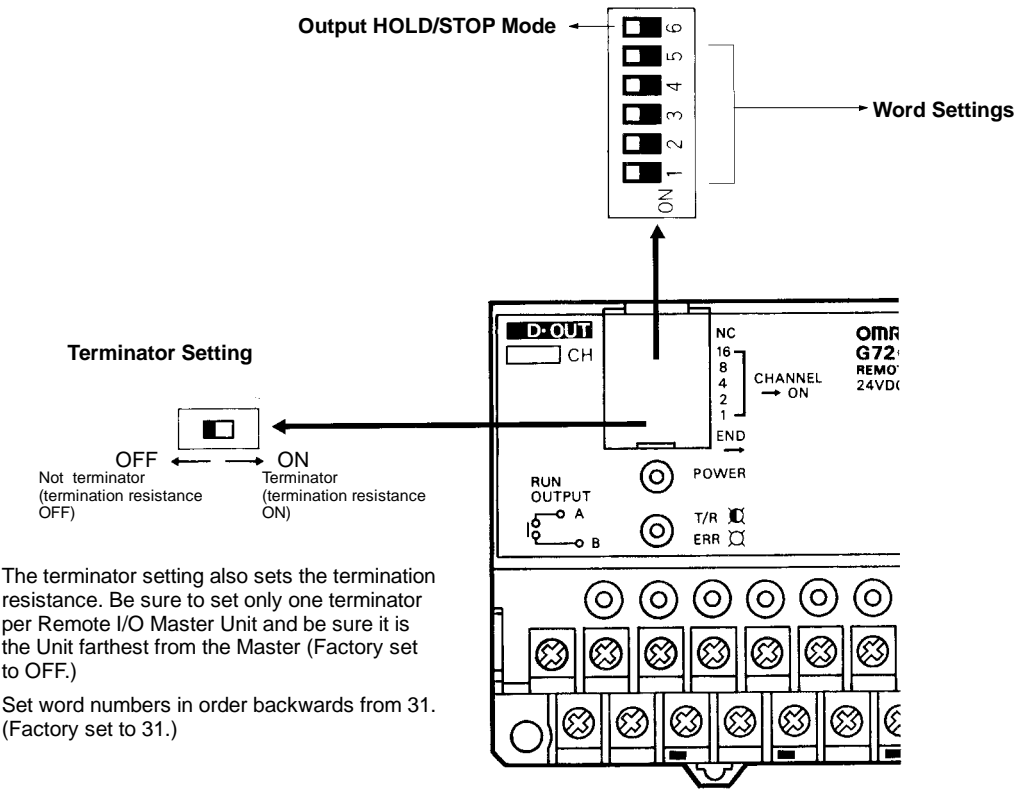


LED Operation

Display		Meaning
POWER	Lit	Lit when power is supplied and the unit is operating.
	Not lit	Not lit when power supply is abnormal.
T/R ERR	Flashing	Flashes during normal data transmission.
	Lit	Lit during standby and transmission error.
	Not lit	Not lit during CPU (watchdog timer) error.

Operation

■ Setting



Output HOLD/STOP Mode

(for Remote Output Interface only)

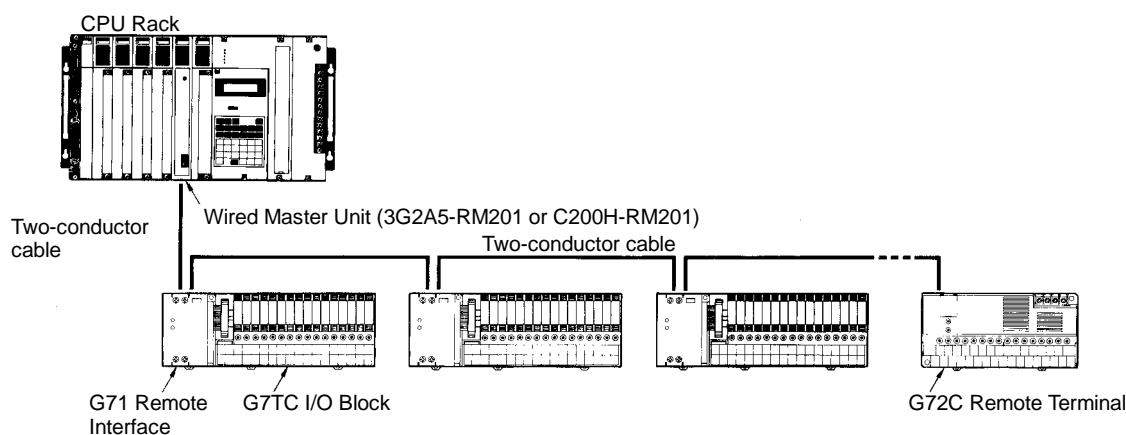
Pin 6	
HOLD	STOP
OUT channel status is held during a slave transmission error.	All OUT channel bits go OFF for a slave transmission error. (see note)

Note: A slave transmission error results if no data or abnormal data is sent from the Master Unit. (Factory-set to STOP mode.)

Word Settings

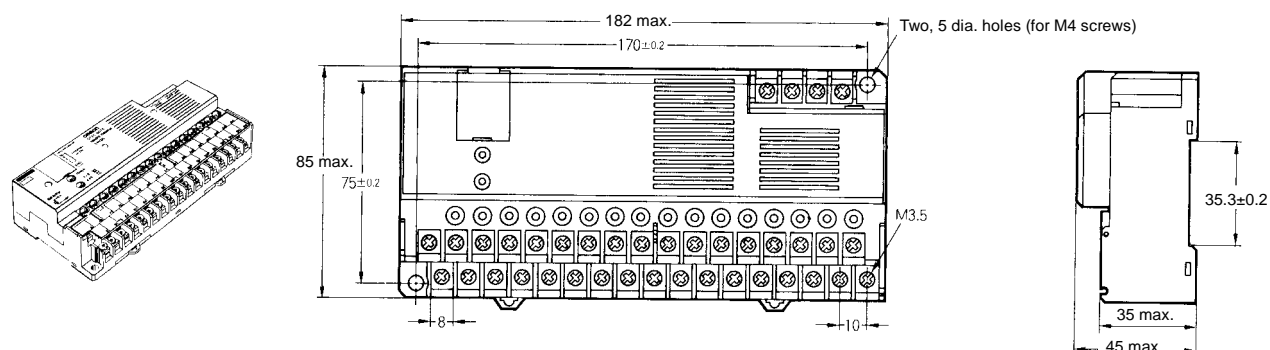
Word	Pin				
	1	2	3	4	5
0	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF
.
28	OFF	OFF	ON	ON	ON
29	ON	OFF	ON	ON	ON
30	OFF	ON	ON	ON	ON
31	ON	ON	ON	ON	ON

System Configuration



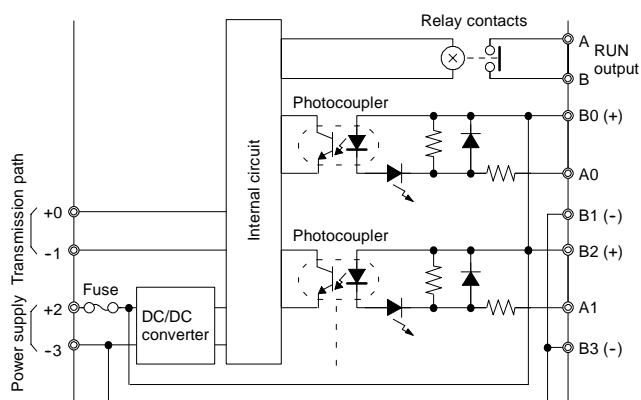
Dimensions

Note: All units are in millimeters unless otherwise indicated.

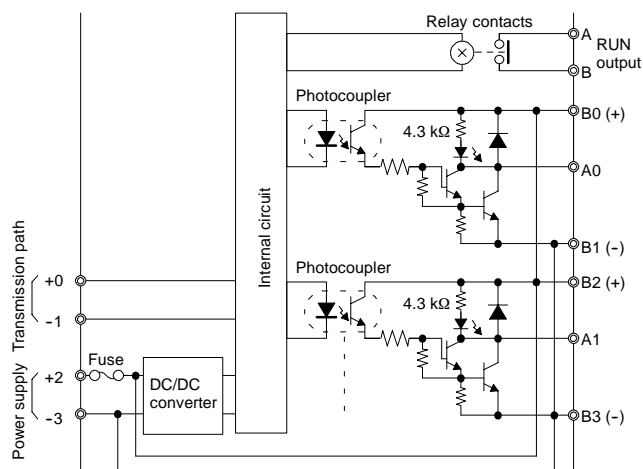


■ Internal Circuits

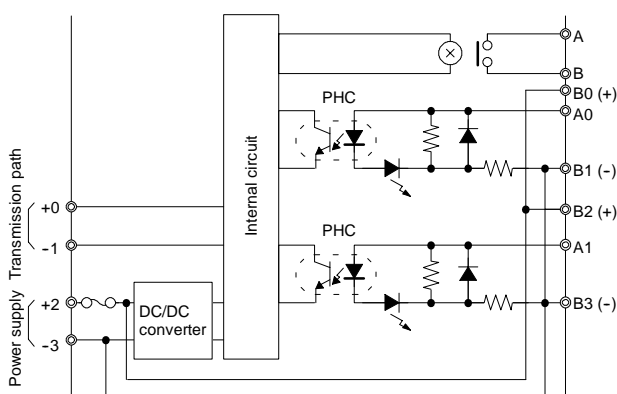
G72C-ID16 for Input



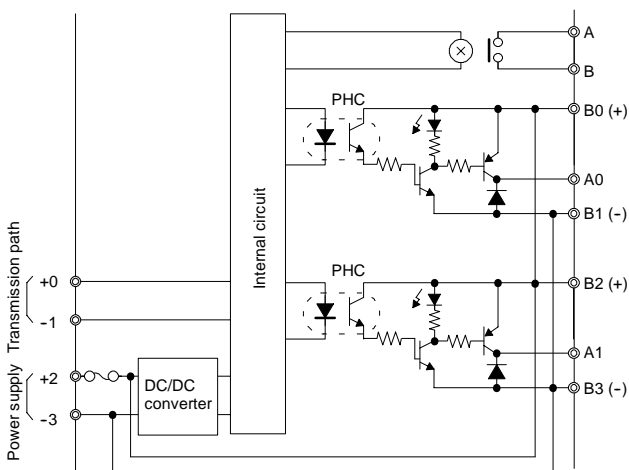
G72C-OD16 for Output



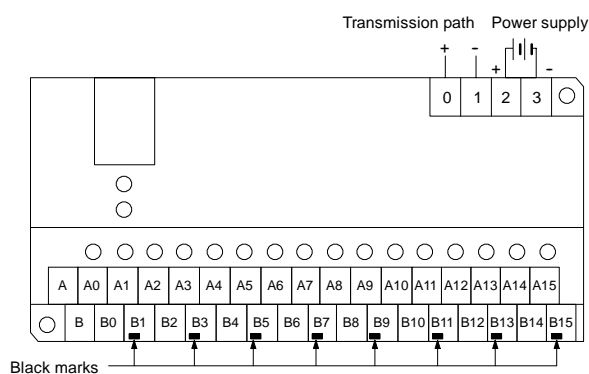
G72C-ID16-1 for Input



G72C-OD16-1 for Output



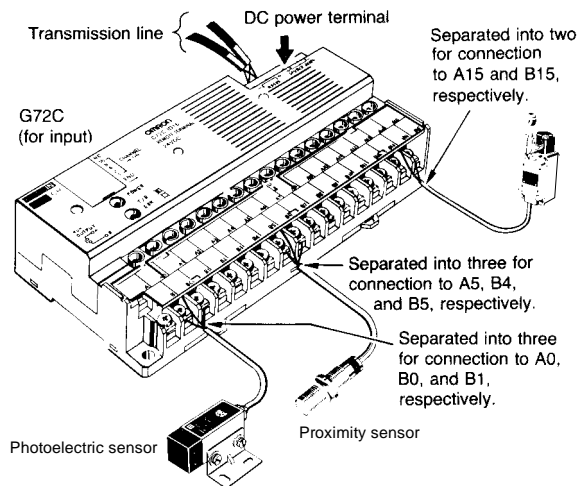
■ Terminal Arrangement



Note: Positive power terminal no. 2 at the upper-right part is internally connected to the B0, B2, B4, B6, B8, B10, B12, and B14 I/O terminals at the lower part, and negative power terminal no. 3 at the upper-right part is internally connected to the B1, B3, B5, B7, B9, B11, B13, and B15 I/O terminals at the lower part and have black marks.

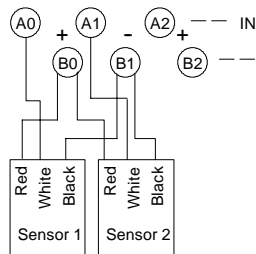
■ Connection with I/O Devices

(Repeater terminal block for sensor/load power wiring is not required.)

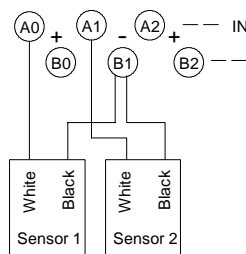


For Input

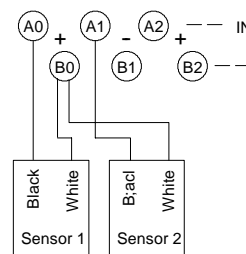
Three-wire Connection



Two-wire Connection G72C-ID16

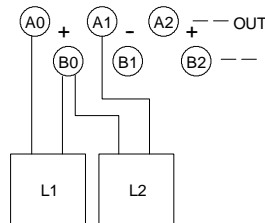


Two-wire Connection G72C-ID16-1

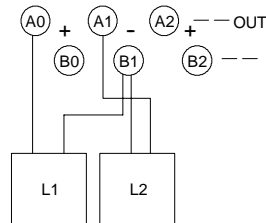


For Output

G72C-OD16



G72C-OD16-1



Precautions

Proper Application

Each node can consist of either a G72C Remote Terminal or a G71 Remote Interface and G71C I/O Block pair.

Each Remote I/O Subsystem connected to a Master Unit can contain up to 32 nodes.

Never connect or disconnect a G71 Remote Interface without first turning off the power. Failure to turn off the power can result in operational errors.

All Units are available as 24-VDC Input or 24-VDC Output Models. Be sure to supply the correct power to each Unit and combine only compatible units.

I/O specifications are provided in the following. Proper combinations can be checked with label colors.

The G71 Remote Output Interface corresponds to NPN (- common). Use the NPN-output G71C Models (+ common) when connecting.

Always confirm that all G71 and G72C Units have been turned on before turning providing power to the Master.

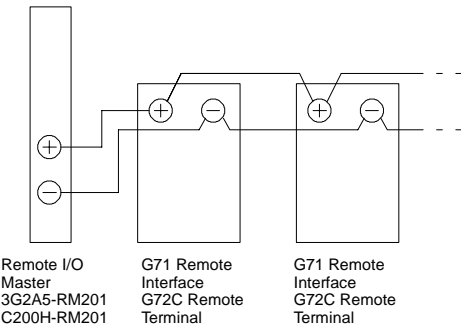
	G71 Remote Interface		G7TC I/O Block		G72C Remote Terminal	
	Model	Label color	Model	Label display (color)	Model	Label color
Input	G71-IC16	Red	G7TC-IA16/ID16	US16 (red)	G72C-ID16	Red
Output	G71-OD16	Yellow	G7TC-OC16/OC08	OS16/OS08 (yellow)	G72C-OD16	Yellow

Note: Do not connect a G71 Remote Interface to a G7TC-OC16-1 I/O Block, which is a PNP Model (– common) and therefore incompatible.

Connections

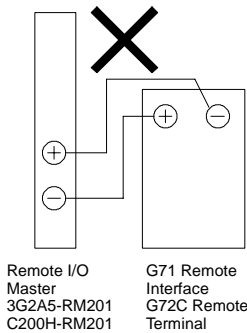
Correct Example

Always wire in order from the Master, connecting positive to positive and negative to negative, without branching.



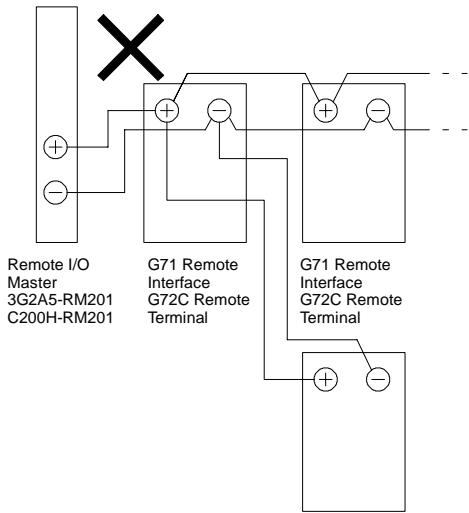
Incorrect Example 1

The wiring below is incorrect because positive has been connected to negative.



Incorrect Example 2

The wiring below is incorrect because a branch has been created.



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Remote Terminal

G72C-V

Slim-profile Remote Terminal Combines the Terminal Block with a Transmission Capability

- Slim-profile design has a depth of only 45 mm against a width of 202 mm and a height of 63 mm.
- Each Terminal Unit is provided with 16 input/output points that can be connected to a Remote I/O Master Unit (3G2A5-RM201 or C200H-RM201) through a two-wire cable.
- Power terminals are provided for I/O devices.
- Can share transmission lines with the G71 Remote Interface and G7TC or G72C I/O Block.
- Isolated transmission lines eliminate noise interference.
- DIN track- and screw-mounting capabilities provide installation flexibility.

Ordering Information

Classification	Internal I/O circuit common	I/O points	Rated voltage	Model
For input	NPN (+ common)	16 points	24 VDC	G72C-VID16
For output	NPN (- common)		24 VDC	G72C-VOD16

Note: UL and CSA approvals are pending.

Specifications

■ Ratings

G72C-VID16 Input

Input current	9.7 mA/point
ON delay time	1.5 ms max.
OFF delay time	1.5 ms max.
Number of circuits	16 points (8 points/common)
ON voltage	15 VDC max.
OFF voltage	5.6 VDC max.
Insulation method	Photocoupler
Input indication	LEDs (green)

G72C-VOD16 Output

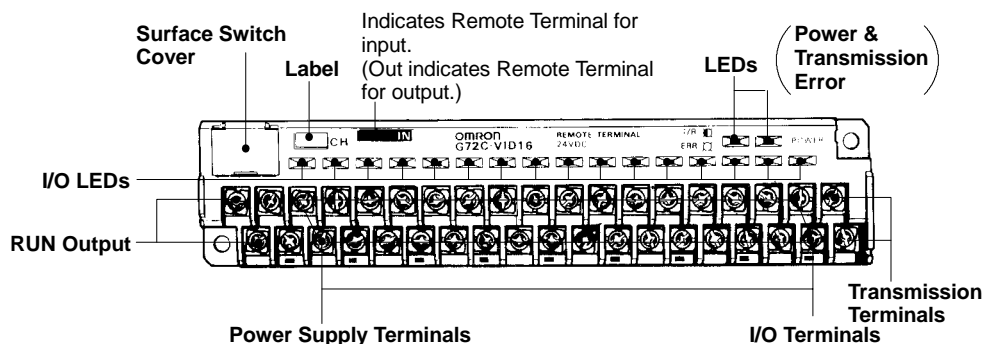
Rated output current	0.3 A/point, 2.4 A/unit
Residual voltage	1.2 V max.
Leakage current	100 μ A max.
Number of circuits	16 points (8 points/common)
Insulation method	Photocoupler
Input indication	LEDs (green)

■ Characteristics

Communication system	Two-conductor, half duplex
Synchronization method	Asynchronous
Transmission speed (baud rate)	187.5 kbps (transmission time: 2 ms max. per G72C-V)
Transmission distance	200 m (total length)
Transmission path	Two-conductor cable (VCTF 0.75 x DPDT recommended)
Interface	RS-485
Operating voltage range	24 VDC +10%/-15%
Current consumption (see note)	24 VDC: 200 mA max.
RUN output	SPST-NO contact output (closed during operation) Contact capacity: 100,000 operations at 2 A, 250 VAC (cosφ = 1)
Diagnosis	Transmission error check (BCC plus inverted two-transmission verification check), CPU error monitor
Insulation resistance	20 MW min. (at 250 VDC)
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min between RUN output circuit and other terminals 500 VAC, 50/60 Hz for 1 min for other terminals
Noise immunity	Noise level: 1.5 kV; pulse width: 100 ns to 1 ms
Vibration resistance	10 to 55 Hz, 0.75-mm double amplitude for 2 hrs each in X, Y, and Z directions (both mounted and not mounted to DIN track)
Shock resistance	500 m/s ² (approx. 50G)
Ambient temperature	Operating: 0°C to 55°C
Ambient humidity	Operating: 35% to 85%
Mounting strength	No damage when 5 kgf (4.9 N) pull load was applied for 1 s in all directions (except for 1 kgf (0.9 N) in direction of rail)
Terminal strength	No abnormality when 5 kgf (4.9 N) pull load was applied for 1 s in all directions
Weight	Approx. 380 g

Note: Consumption when all 16 points are ON. Excludes external sensor current for Remote Input Terminal and external load current for Remote Output Terminal. Maximum current consumption for both input and output when all points are OFF will be 40 mA at 24 VDC.

Nomenclature



LED Operation

Display		Meaning
POWER	Lit	Lit when power is supplied and the unit is operating.
	Not lit	Not lit when power supply is abnormal.
T/R ERR	Flashing	Flashes during normal data transmission.
	Lit	Lit during standby and transmission error.
	Not lit	Not lit during CPU (watchdog timer) error.

Operation

■ Setting

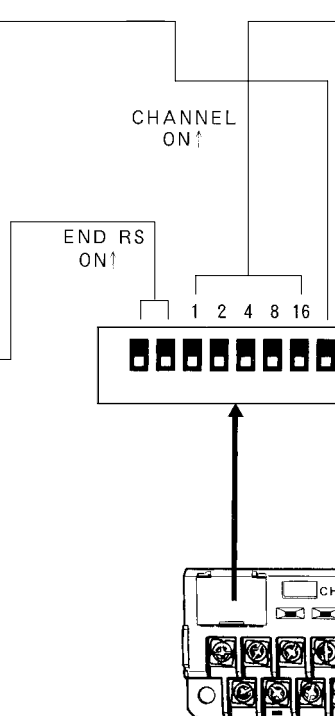
Output HOLD/STOP Mode

Word Settings

Terminator Setting

The terminator setting also sets the termination resistance. Be sure to set only one terminator per Remote I/O Master Unit and be sure it is the Unit farthest from the Master. (Factory set to OFF.)

Set the word numbers in order backwards from 31 (Factory set to 31.)



Output HOLD/STOP Mode

(for Remote Output Interface only)

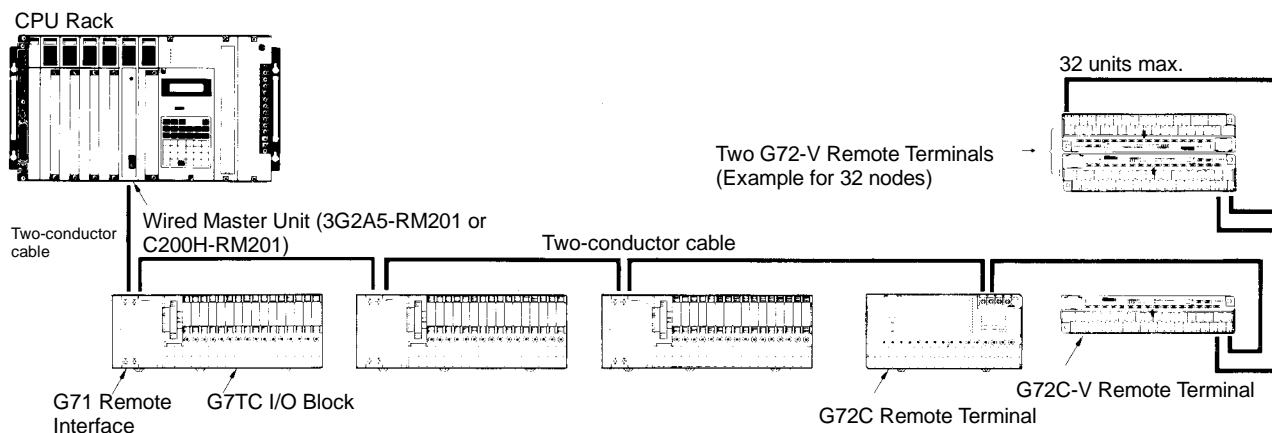
Pin 6	
HOLD	STOP
OUT channel status is held during a slave transmission error.	All OUT channel bits go OFF for a slave transmission error. (see note)

Note: A slave transmission error results if no data or abnormal data is sent from the Master Unit. (Factory-set to STOP mode.)

Word Settings

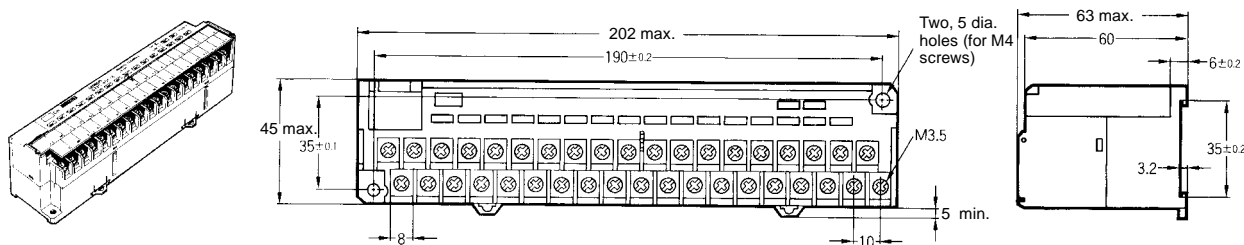
Word	Pin				
	1	2	3	4	5
0	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF
.
28	OFF	OFF	ON	ON	ON
29	ON	OFF	ON	ON	ON
30	OFF	ON	ON	ON	ON
31	ON	ON	ON	ON	ON

System Configuration



Dimensions

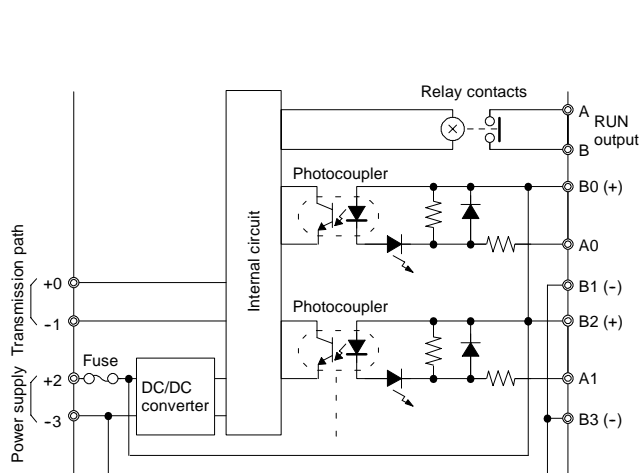
Note: All units are in millimeters unless otherwise indicated.



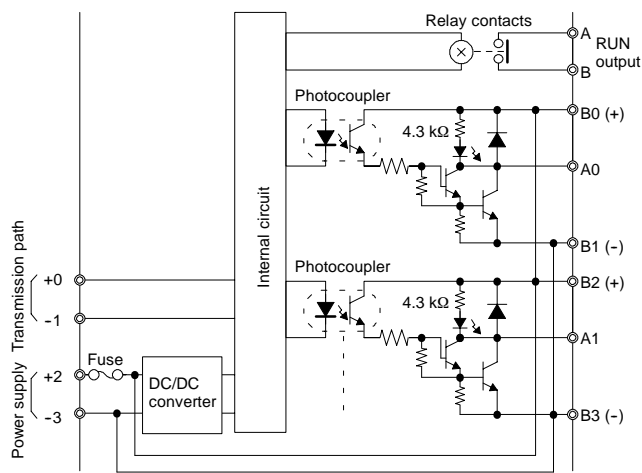
Installation

Internal Circuits

G72C-VID16 for Input, NPN (+ Common)

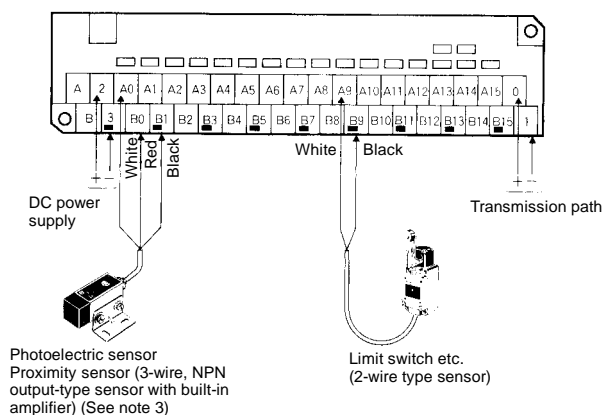


G72C-VOD16 for Output, NPN (- Common)

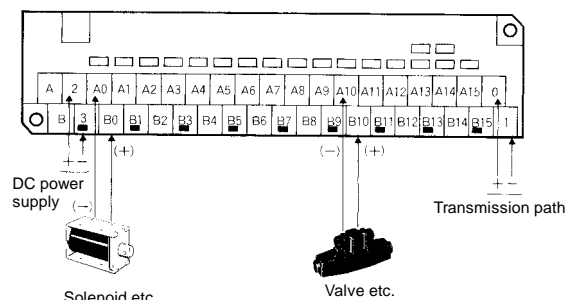


■ Terminal Arrangement and I/O Device Connection Examples

G72C-VID16 for Input



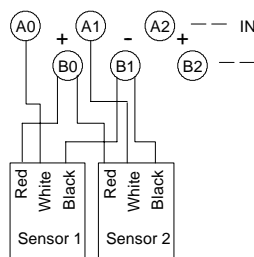
G72C-VOD16 for Output



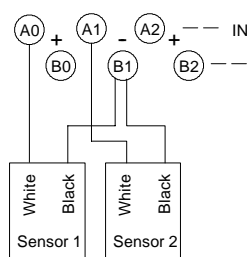
- Note:**
1. Positive power terminal no. 2 at the upper-right part is internally connected to the B0, B2, B4, B6, B8, B10, B12, and B14 I/O terminals at the lower part, and negative power terminal no. 3 at the upper-right part is internally connected to the B1, B3, B5, B7, B9, B11, B13, and B15 I/O terminals at the lower part and have black marks.
 2. The capacity of the DC power supply should be large enough to cover the total power consumption of the G72C-V's LED indicators and I/O devices.
 3. Three-wire PNP output sensors cannot be connected.

For Input

Three-wire Connection

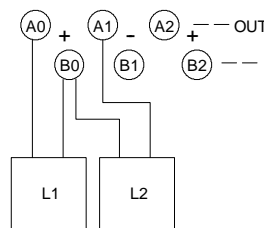


Two-wire Connection



For Output

G72C-OD16



Precautions

Proper Application

Each node can consist of either a G72C Remote Terminal or a G71 Remote Interface and G7TC I/O Block pair.

Each Remote I/O Subsystem connected to a Master Unit can contain up to 32 nodes.

Never connect or disconnect a G71 Remote Interface without first turning off the power. Failure to turn off the power can result in operational errors.

All Units are available as 24-VDC Input or 24-VDC Output Models. Be sure to supply the correct power to each Unit and combine only compatible units.

I/O specifications are provided in the following. Proper combinations can be checked with label colors.

The G71 Remote Output Interface corresponds to NPN (- common). Use the NPN-output G7TC Models (+ common) when connecting.

Always confirm that all G71 and G72C Units have been turned on before turning providing power to the Master.

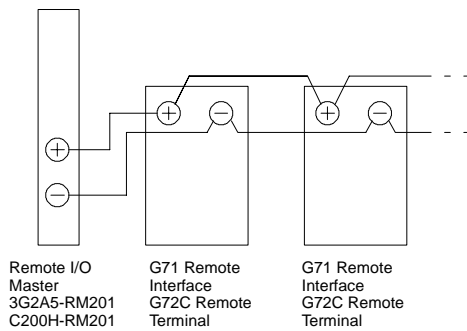
	G71 Remote Interface		G7TC I/O Block		G72C Remote Terminal	
	Model	Label color	Model	Label display (color)	Model	Label color
Input	G71-IC16	Red	G7TC-IA16/ID16	US16 (red)	G72C-ID16	Red
Output	G71-OD16	Yellow	G7TC-OC16/OC08	OS16/OS08 (yellow)	G72C-OD16	Yellow

Note: Do not connect a G71 Remote Interface to a G7TC-OC16-1 I/O Block, which is a PNP Model (- common) and therefore incompatible.

Connections

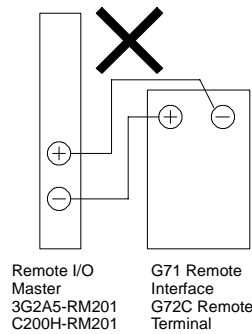
Correct Example

Always wire in order from the Master, connecting positive to positive and negative to negative, without branching.



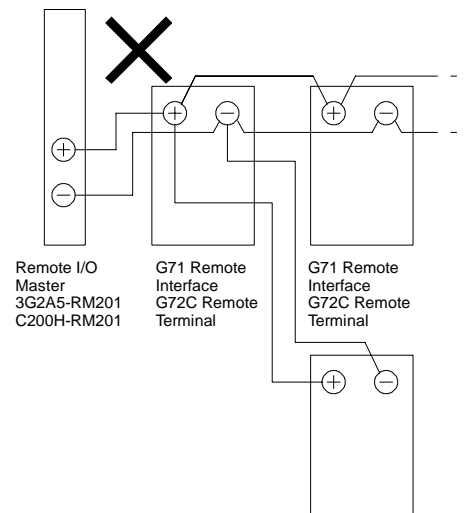
Incorrect Example 1

The wiring below is incorrect because positive has been connected to negative.



Incorrect Example 2

The wiring below is incorrect because a branch has been created.



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Remote I/O Terminal

G720

Space-saving Remote I/O Terminal with Consolidated Functions Reduces Wiring

- Vertical type with 202 (W) x 63 (H) x 45 (D).
- Each Output Terminal transmits 16-point signals to the C500-or C200H-RM201 Remote I/O Master Unit and the Input Terminal receives 16-point signals from the Remote I/O Master Unit.
- Can share transmission lines with the G71, G7TC, or G72C.
- Isolated transmission lines eliminate noise interference.
- I/O signals can be confirmed with the easy-to-see LED indicators.

Ordering Information

Internal I/O circuit common	Rated voltage	Model
NPN	24 VDC	G720-VID16C

■ Accessories (Order Separately)

Mounting Track	PFP-100N, PFP-50N, PFP-100N2
End Plates	PFP-M
Spacers	PFP-S

Specifications

■ Ratings

Input Terminal

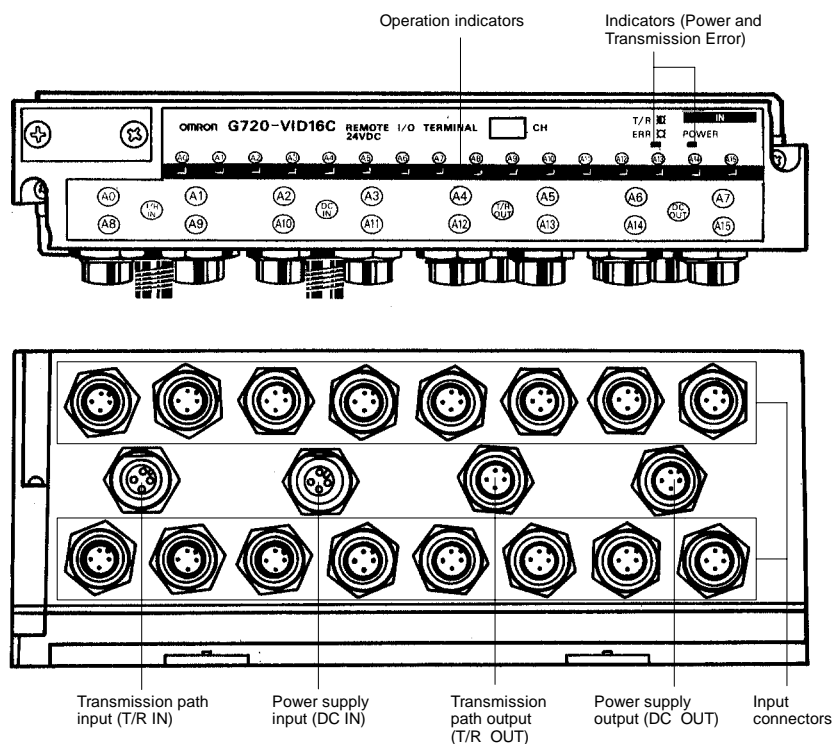
Rated input voltage	24 VDC
Input current	9.7 mA/point
ON delay time	1.5 ms max.
OFF delay time	1.5 ms max.
Number of circuits	16 points/common
ON voltage	15 VDC max.
OFF voltage	5.6 VDC min.
Insulation method	Photocoupler
Input indication	LEDs (green)

■ Characteristics

Communication method	Two-conductor, half duplex
Synchronization method	Asynchronous
Transmission distance	200 m (total length)
Transmission speed (baud rate)	187.5 kbps (transmission time: 2 ms max. per G720)
Interface	RS-485
Operating voltage range	24 VDC +10%/-15%
Current consumption	24 VDC: 200 mA max. (see Note)
Diagnosis	Transmission error check (BCC plus inverted 2-transmission verification check) and CPU error monitor
Insulation resistance	20 MW min. (at 250 VDC)
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min between transmission circuits and DIN rail
Noise immunity	Noise level: 1.5 kV; pulse width: 100 ns to 1 ms (transmission path line winding noise only)
Vibration resistance	10 to 55 Hz, 0.75-mm double amplitude for 2 hrs each in X, Y, and Z directions (both mounted and not mounted to DIN rail)
Shock resistance	300 m/s ² (approx. 30G)
Ambient temperature	Operating: 0°C to 55°C Storage: -20°C to 65°C
Ambient humidity	Operating: 35% to 85%
Mounting strength	No damage when 5 kgf (49N) pull load was applied for 1 s in all directions (except for 1 kgf (9.8 N) in direction of rail)
Enclosure rating	Drip-proof construction
Weight	Approx. 680 g

Note: The current consumption shows the current that is consumed when all 16 points are ON excluding the current consumed by the external sensor. When all points are OFF, the current consumption will be 40 mA max. at 24 VDC.

Nomenclature

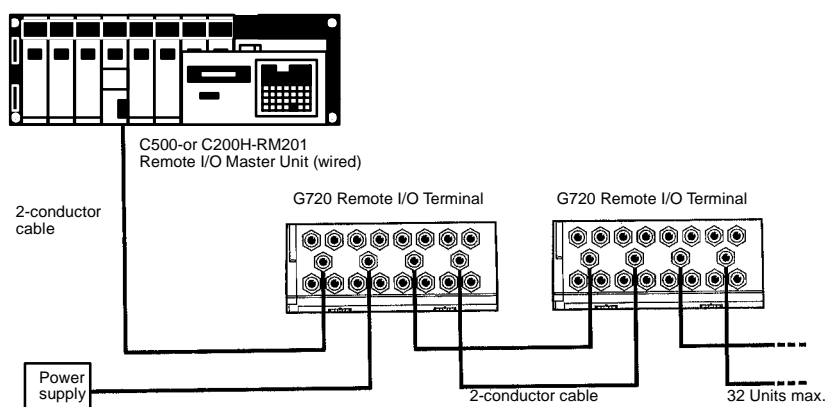


LED Operation

Display		Function
POWER	Lit	Lit when power is supplied and the unit is operating.
	Not lit	Not lit when power supply is abnormal.
T/R ERR	Flashing	Flashes during normal data transmission.
	Lit	Lit during standby and transmission error.
	Not lit	Not lit during CPU (watchdog timer) error.

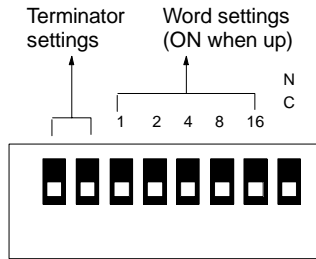
Operation

■ System Configuration



■ Setting the Back-panel DIP Switch

Turn off the power supply before setting the DIP switch.



Terminator Settings

To specify the Terminal as the terminator and connect terminator resistance, turn ON both pins. These pins must be turned ON on only the End Slave for each Master. The terminals are not factory-set as a terminator.

Assign words to the Terminals starting backward from word 31. The Terminal is factory-set to word 31.

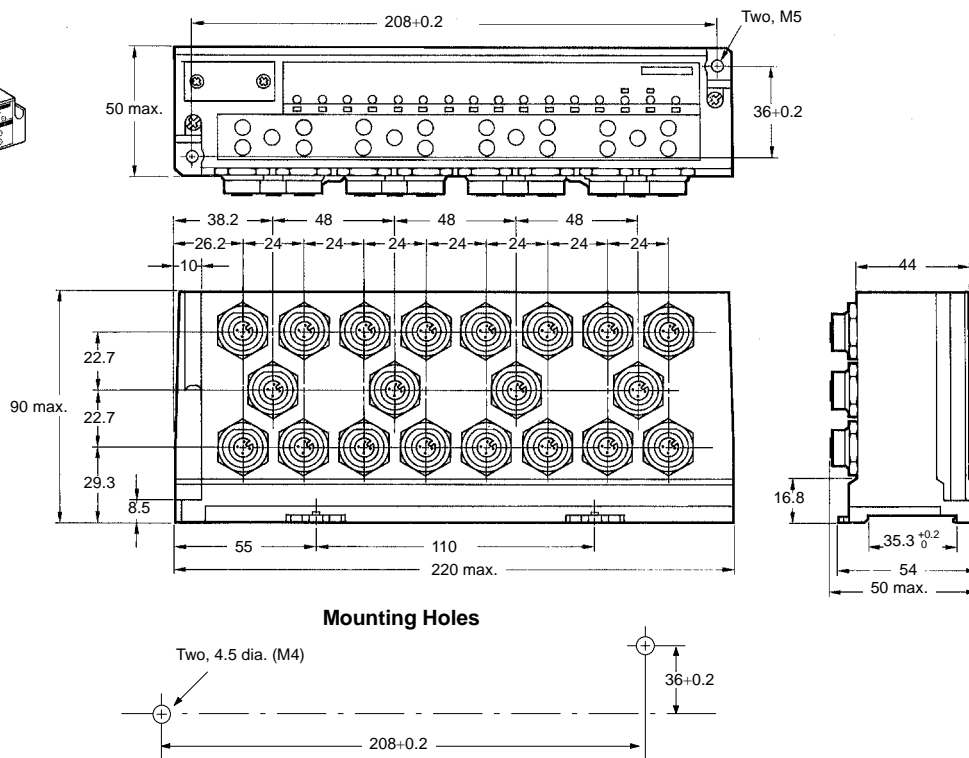
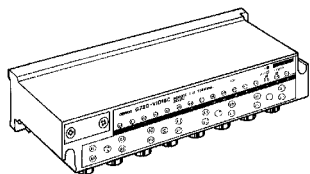
Word Settings

Word	Pin					Word	Pin				
	1	2	4	8	16		1	2	4	8	16
0	OFF	OFF	OFF	OFF	OFF	16	OFF	OFF	OFF	OFF	ON
1	ON	OFF	OFF	OFF	OFF	17	ON	OFF	OFF	OFF	ON
2	OFF	ON	OFF	OFF	OFF	18	OFF	ON	OFF	OFF	ON
3	ON	ON	OFF	OFF	OFF	19	ON	ON	OFF	OFF	ON
4	OFF	OFF	ON	OFF	OFF	20	OFF	OFF	ON	OFF	ON
5	ON	OFF	ON	OFF	OFF	21	ON	OFF	ON	OFF	ON
6	OFF	ON	ON	OFF	OFF	22	OFF	ON	ON	OFF	ON
7	ON	ON	ON	OFF	OFF	23	ON	ON	ON	OFF	ON
8	OFF	OFF	OFF	ON	OFF	24	OFF	OFF	OFF	ON	ON
9	ON	OFF	OFF	ON	OFF	25	ON	OFF	OFF	ON	ON
10	OFF	ON	OFF	ON	OFF	26	OFF	ON	OFF	ON	ON
11	ON	ON	OFF	ON	OFF	27	ON	ON	OFF	ON	ON
12	OFF	OFF	ON	ON	OFF	28	OFF	OFF	ON	ON	ON
13	ON	OFF	ON	ON	OFF	29	ON	OFF	ON	ON	ON
14	OFF	ON	ON	ON	OFF	30	OFF	ON	ON	ON	ON
15	ON	ON	ON	ON	OFF	31	ON	ON	ON	ON	ON

Dimensions

Note: All units are in millimeters unless otherwise indicated.

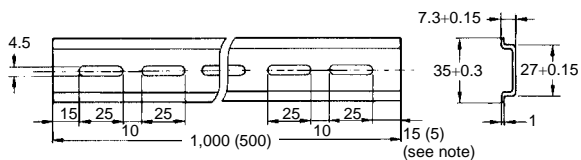
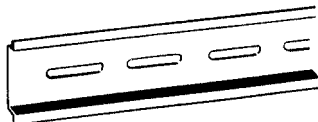
G720-VID16C



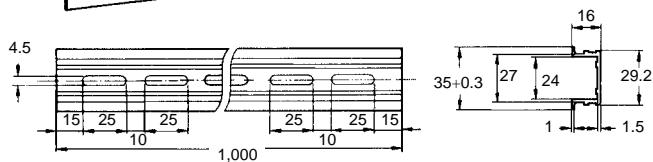
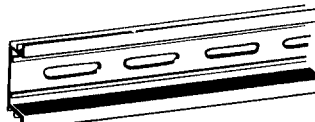
Accessories

Mounting Track

PFP-100N/PFP-50N



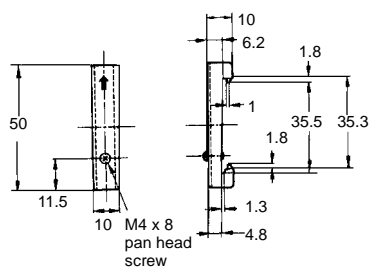
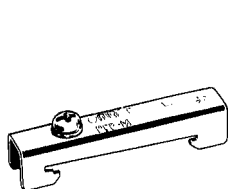
PFP-100N2



Note: The values shown in parenthesis are for the PFP-50N.

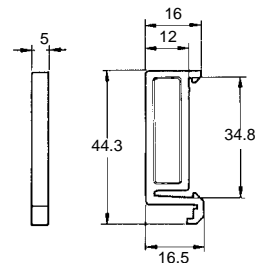
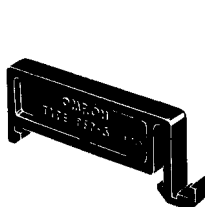
End Plates

PFP-M



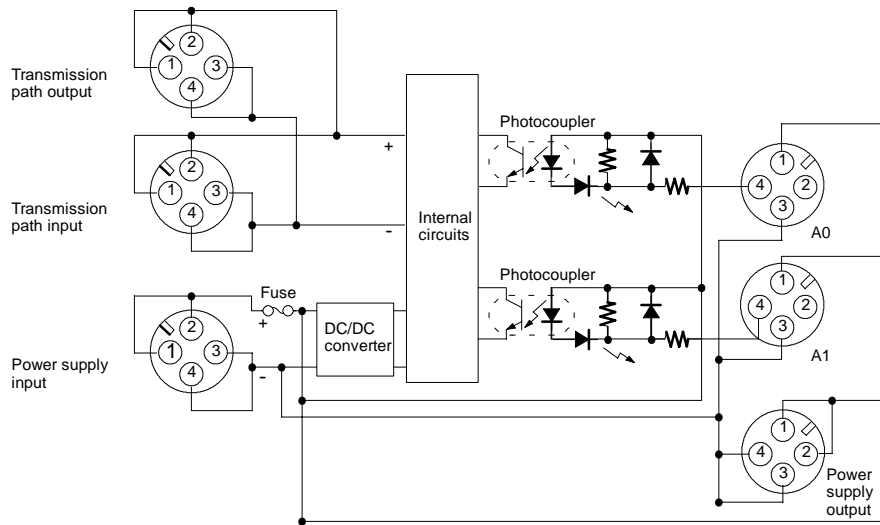
Spacers

PFP-S



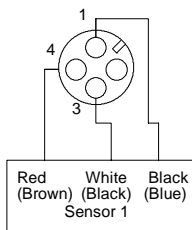
Installation

■ Internal Circuit Configuration

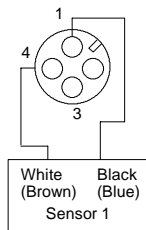


■ External Circuit Configuration

Three-wire Connection



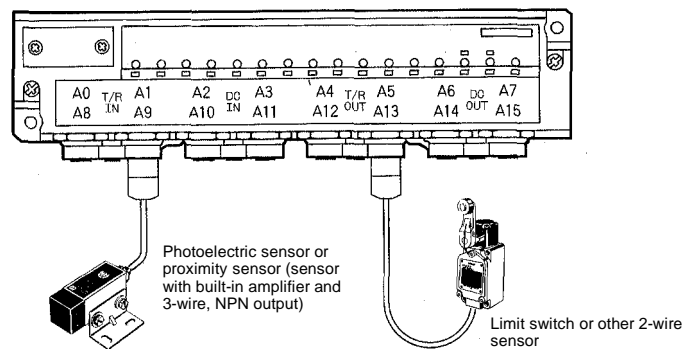
Two-wire Connection



■ Terminal Arrangement/I/O Device Connection Examples

A power supply relay terminal block is not required for sensors/loads.

Input Terminal

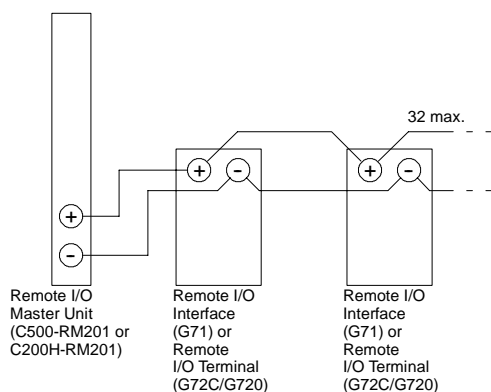


Precautions

Connection Example

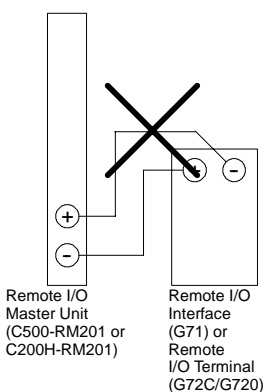
Correct Example

Connect the Slaves in series starting from the Master.



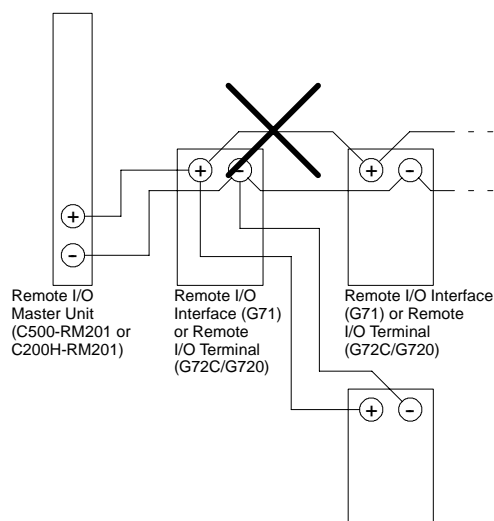
Incorrect Example 1

Do not reverse polarity.



Incorrect Example 2

Do not branch connections.



Recommended Connecting Methods of OMRON's Sensor and Connector with Cable

When connecting a sensor I/O connector to OMRON's sensor, refer to the following table and select the colors of the cable conductor covers for the purposes of unification and easy maintenance.

Connector terminal number	Recommended color	Sensor output stage		
		Two-wire	Three-wire	Four-wire
1	Red	Not used	Power supply (+V)	Power supply (+V)
2	Orange (see note)	Not used	Not used	Output (2)
3	Black	Power supply (0 V)	Power supply (0 V)	Power supply (0 V)
4	White	Output (1)	Output (1)	Output (1)

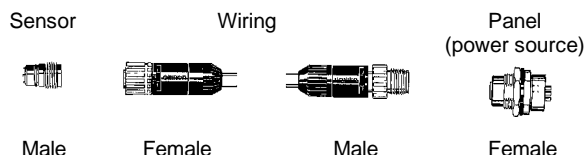
Recommended Cables

Any cable available on the market with an external diameter of 3 to 6 mm with a conductor size of 0.18 to 0.75 mm² (crimp-type) or 0.5 mm² (solder-type) can be used as a cable for an Assembly-type Connector. If water-tight and oil resistive capabilities are required, use the following cable.

Maker: Shinagawa Densen
Model: S-FLEX [V1] SKCVV

Connector Wiring

When configuring a system using a Sensor I/O Connector, for safety reasons, always attach a male connector to the sensor cable and a female connector to the sensor end of the power source cable when wiring from a Sensor I/O Connector to the control panel. Similarly, the power supply end of the connector cable should be male, and the power outlet connector should be female.



Inserting and Removing the Connector

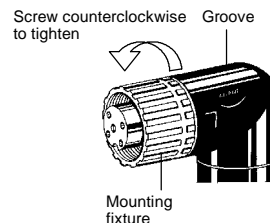
Be sure to turn off the power before inserting or removing any connector.

Before mating any connector, insert the mateable part fully, and tighten the anchors so as not to damage the threads.

When tightening the anchors, do not use a tool, but tighten firmly (4 to 5 kgf \$ cm (0.39 to 0.49 N \$ m)) by hand so that the threads cannot be seen.

When removing a connector, do not loosen the cap, but loosen the anchor.

Loosen the anchor in the direction of the groove.



Tightening the Cap

1. Use of pliers or other tools may damage the cap. Tighten the cap firmly by hand. (4 to 5 kgf \$ cm) (0.39 to 0.49 N \$ m)
2. If the cap is not on tight enough, it may not be possible to use the IP67 protective housing. Also, it may become loose from vibration.

The Protective Housing

Do not use the IP67 device in a place where it will be continually under stress. This may decrease its protective ability.

The IP67 is not completely waterproof. Do not use it in a place where it will be continually underwater.

The IP67 body is made of resin. Do not step on it, or put heavy objects on top of it.

Assembly Instructions (for XS2B/XS2C/XS2G)

Check the Final Diameters of the Connector and Cable

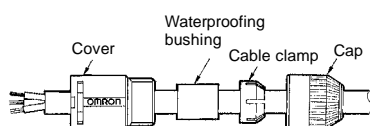
Recommended cables are 6-mm (diameter 5 to 6 mm), 4-mm (diameter 4 to 5 mm), and 3-mm (diameter 3 to 4 mm).

Before assembling, make sure that a proper size cable is used.

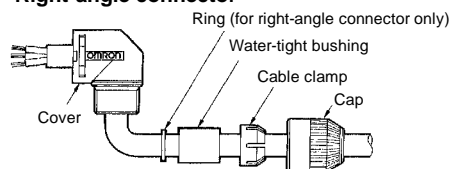
The cable clamp for the 6-mm cable is white. The cable clamp for the 4-mm and the 3-mm cable is black.

Insertion

Straight Connector

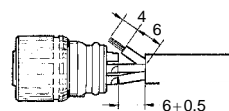


Right-angle connector



If using a cable that has been prepared as shown previously, assemble all parts as shown here.

Wiring (Connecting the Cable Terminals)



The wire should extend 10 mm (0.39 in.) from the cable sheath, and the core should be exposed 4 mm (0.16 in.) from the covering.

The core guide and the solder cup should be pre-soldered before final soldering.

Soldering iron: 30 to 60 W

Iron temperature: 280°C to 340°C

Soldering time: Under 3 seconds

If the cable length is more than 6.5 mm (0.26 in.) after soldering, then the protective housing cannot be used.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Remote I/O Interface

G700-E

A Wiring Block with Communications Features in Input, Output, or I/O Models

- Accepts signals from Remote I/O Master Unit (CV500-RM221) via shielded twisted-pair cable (B200-TW) up to 500 m away.
- Connects to G7TC I/O Block easily via one-piece connector (G700-CN050).
- Output Terminals feature open-collector outputs for greater applicability.
- Communications status indicators (LED).
- Mount to DIN track or via screws.

Ordering Information

Classification	Internal I/O circuit common	Rated voltage	Model
Input	NPN (+ common)	24 VDC	G700-EID32
Output	NPN (– common)	24 VDC	G700-EOD32
Input/output (mixed)	Input (+ common); output (– common)	24 VDC	G700-EMD32

■ Accessories (Order Separately)

G700-CN050 Connecting Cable

G700-EMD32's input and output connectors are different to each other in shape.

Length (/)	Model
500 mm	G700-CN050

Specifications

■ Transmissions

Communication method	1: N polling
Coding method	Manchester coding
Topology	Wired multi-drop
Baud rate	1.5 M bps
Transmission delay	5.2 ms max.*
Transmission distance	500 m max.
No. of connecting nodes	32 max. per Remote I/O Master Unit (do not exceed the I/O capacity of the PC)
Communications cable	Shielded Twisted-pair Cable B200-TW
Error control method	CRC-CCITT inverted double transmission collation
Interface	Dedicated interface

*Set the transmission delay of the PC to 0 when the G700-U or G700-E is connected.

■ Characteristics

Power supply voltage	24 VDC
Operating voltage range	21.6 to 26.4 VDC
Current consumption	2.0 W max. (excluding I/O current consumption)
Insulation resistance	20 MW min. (at 250 VDC) between transmission circuit and power supply circuit
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between transmission circuit and power supply circuit
Noise immunity	Noise level: 1.5 kV min.; pulse width: 100 ns, 1 ms
Vibration resistance	Malfunction: 10 to 55 Hz, 0.25-mm double amplitude
Shock resistance	Malfunction: 200 m/s ² (approx. 20G)
Ambient temperature	Operating: 0% to 55°C Storage: -20% to 65°C
Ambient humidity	35% to 85%
Ambient atmosphere	No corrosive gas
Mounting strength	No damage when 5 kgf (49 N) pull load was applied for 1 s in all directions (except for 1 kgf (9.8 N) in direction of track).
Terminal strength	No damage when 5 kgf (49 N) pull load was applied for 1 s in all directions.
Weight	Approx. 200 g

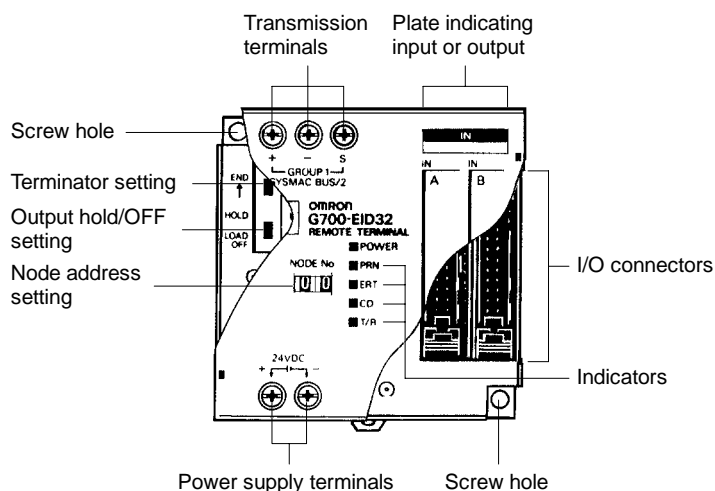
Inputs

Item	G700-EID32	G700-EMD32
Input current	7 mA max./point	
ON delay	1.5 ms max.	
OFF delay	1.5 ms max.	
Number of circuits	16 points/common; 1 common	
ON voltage	6 VDC max. (The voltage between the 24-VDC power supply terminal (+) and input terminals A0 to A15.)	
OFF voltage	3 VDC min. (The voltage between the 24-VDC power supply terminal (+) and input terminals A0 to A15.)	
Insulation method	Photocoupler	

Outputs

Item	G700-EOD32	G700-EMD32
Rated output current	50 mA max./point	
Residual voltage	1.2 V max.	
Leakage current	100 mA max.	
Number of circuits	16 points/common; 1 common	
Insulation method	Photocoupler	

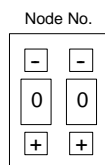
Nomenclature



Operation

■ Surface Switch Setting

Node Address Setting (Node No. Switch)





Each Remote I/O Subsystem connected to a Remote I/O Master Unit can contain up to 32 nodes (slaves). Use the thumbwheel rotary switch (2-digit, decimal) of the G700-E to set the node address (a 2-digit value) in numerical order from 00 to 31.

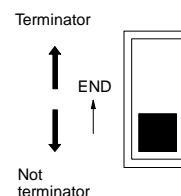
The PC recognizes the node addresses when the G700-E Units are turned on or when the I/O table is made. Address changes after that will not be recognized.

The node address is set to 00 before shipping.

Output Mode: HOLD/ OFF

Switch setting	Mode	Description
HOLD  LOAD OFF	Hold mode	When a transmission error has occurred, the G700-E maintains the previous output status. To clear the output, select the OFF mode.
HOLD  LOAD OFF	OFF mode	When a transmission error has occurred, the G700-E turns OFF all output status.

Terminator Setting



The terminator setting sets the termination resistance. Set only one terminator per Remote I/O Master Unit and be sure that the Unit farthest from the Master is set as terminator.

The PC recognizes the terminator when the G700-E Unit is turned on. Address changes after that will not be recognized.

No terminator setting is made before shipping.

■ Function of Indicators

Signal	Color	Name	ON	OFF
POWER	Green	Power supply	Power is supplied and the unit is operating.	Power is turned off.
PRN	Green	Host program indicator	The host users program is running.	The host user's program is not running or a transmission error has occurred.
ERT	Red	Transmission error indicator	An cyclic error has occurred.	The cyclic error of the Remote Terminal has been solved.
CD	Orange	Reception indicator	The I/O Terminal has received some data addressed to itself or other Unit.	The transmission paths have been short-circuited.
T/R	Orange	Transmission indicator	Cyclic data is being transmitted.	Cyclic data transmission has been interrupted or has not been executed.

■ Operation of Indicators

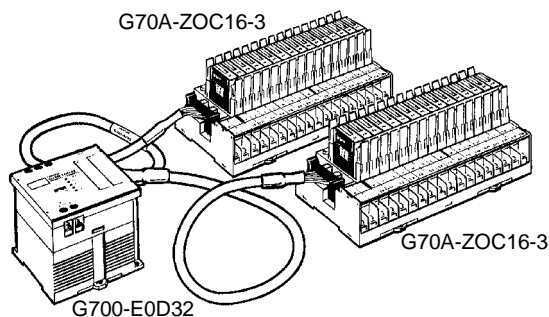
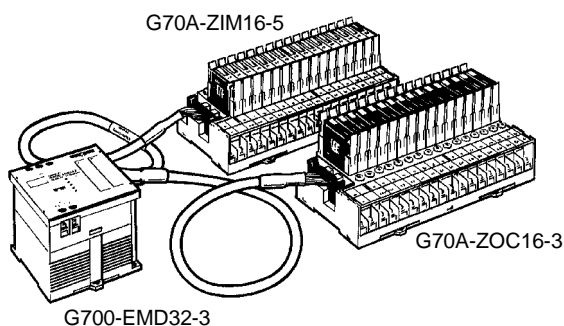
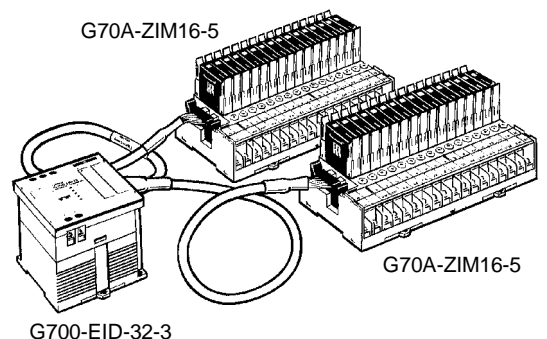
Normal Operation

Status	POWER	PRN	ERT	CD	T/R	Remarks
Initialization	ON	OFF	OFF	ON	OFF	This status will last for a very short time. If this status continues for an extended time, the I/O Terminal must be in an abnormal status.
During cyclic transmission or interruption of user's program	ON	OFF	OFF	ON	ON	---
During cyclic transmission or execution of user's program	ON	ON	OFF	ON	ON	---

Operation for Errors

Error	POWER	PRN	ERT	CD	T/R	Countermeasure
Power failure of the Unit	OFF	OFF	OFF	OFF	OFF	Turn power on.
Remote Terminals in the main system not ready	ON	OFF	OFF	OFF	OFF	Turn on the host system.
Cable disconnection	ON	OFF	OFF	OFF	OFF	Connect the cable.
Wrong address setting	ON	OFF	OFF	ON	OFF	Reset the address and restart.
Double address setting	ON	OFF	OFF	ON	OFF	Reset the address and restart.
I/F error with the host user of the subsystem	ON	---	---	---	---	Check the I/F of the subsystem and host controller.
Interruption of data transmission during cyclic transmission	ON	OFF	OFF	OFF	OFF	Restart cyclic transmission.
Power failure in the host system during cyclic transmission	ON	OFF	OFF	OFF	OFF	Check the host system.
Deterioration of the transmission paths	ON	OFF	OFF	OFF	OFF	Check the transmission paths.

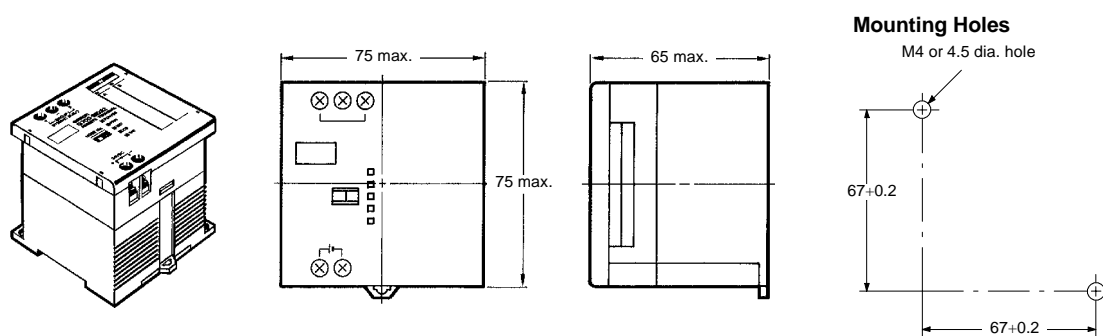
■ Connection Examples to G700-E and G70A



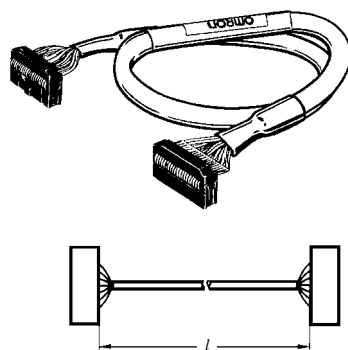
Make sure that the G700-E's I/O connectors are correctly connected to the G70A Input Block and Output Block.

Dimensions

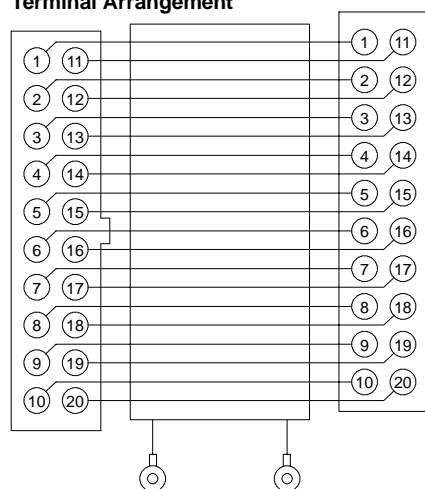
Note: All units are in millimeters unless otherwise indicated.



G700-CN050 Connecting Cable



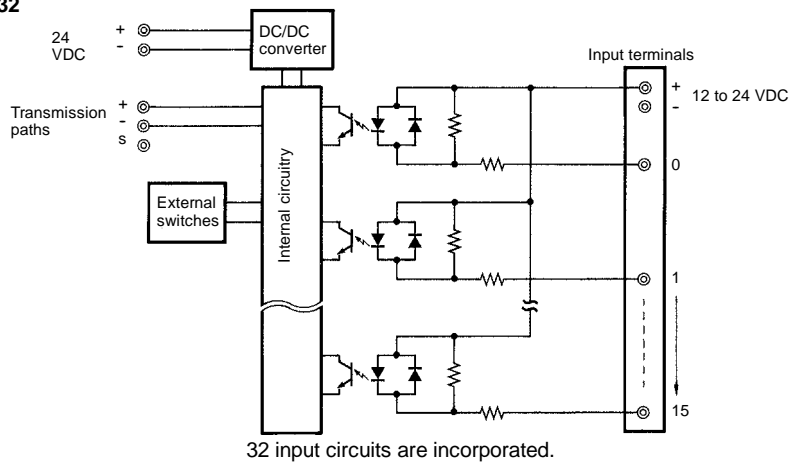
Terminal Arrangement



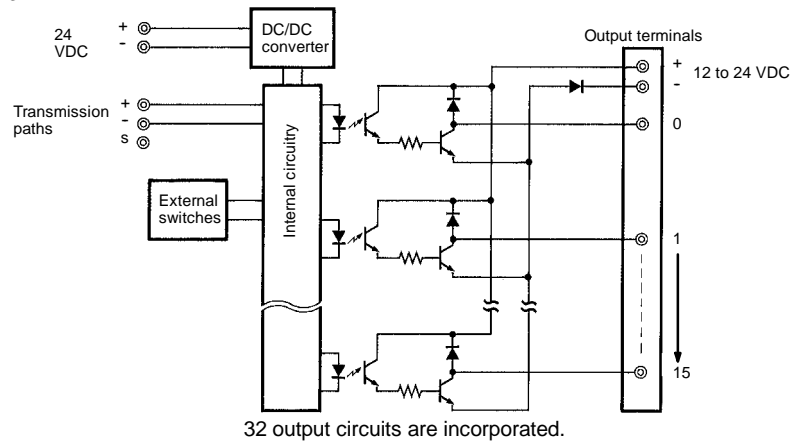
Installation

Internal Circuit Configuration

G700-EID32



G700-EOD32

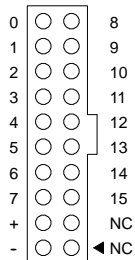


G700-EMD32

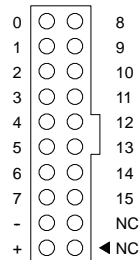
The G700-EMD32 is provided with 16 input and output points of the G700-EID32 and G700-EOD32.

Connector Pin Configuration (Top View)

Input Connector G700-EID32 G700-EMD32



Output Connector G700-EOD32 G700-EMD32



The connector pin numbers are the output point numbers of the G700-E.
Pay attention to the connector pin numbers if you use custom-made connectors.

Provides Four I/O Points for Flexible System Expansion

- Connects to the G700-U I/O Terminal to expand I/O capacity.
- Ideal for handling production line additions or changes.
- Connects easily via one-piece connector.
- Fuse replaceable on the back panel.
- Mount to DIN track or via screws.

Ordering Information

Classification	Internal I/O circuits	Rated voltage (see note)	Model
Input	Independent	24 to 48 V AC/DC	G700-SIM04
		100 to 200 V AC/DC	
	Common	24 to 48 V AC/DC	G700-SIM04-C
		100 to 200 V AC/DC	
Output	Independent	24 VDC	G700-SOC04
	Common	24 VDC	G700-SOC04-C

Note: The rated voltage for input models is the rated input voltage (the supply voltage is 24 VDC).
The rated voltage for the output models is the supply voltage.

Specifications

■ Characteristics

Item	G700-SIM04	G700-SIM04-C	G700-SOC04	G700-SOC04-C
Power supply voltage	24 VDC			
Operating voltage range	21.6 to 26.4 VDC			
Current consumption	2.5 W max.		3 W max.	
Insulation resistance	20 MW min. (at 250 VDC)			
Noise immunity	Noise level: 1.5 kV min.; pulse width: 100 ns, 1 ms			
Vibration resistance	Malfunction: 10 to 55 Hz, 0.25-mm double amplitude			
Shock resistance	Malfunction: 200 m/s ² (approx. 20G)			
Ambient temperature	Operating: 0% to 55°C Storage: -20% to 65°C			
Ambient humidity	35% to 85%			
Ambient atmosphere	No corrosive gas			
Mounting strength	No damage when 5 kgf (49 N) pull load was applied for 1 s in all directions (except for 1 kgf (9.8 N) in direction of track).			
Terminal strength	No damage when 5 kgf (49 N) pull load was applied for 1 s in all directions.			
Weight	Approx. 250 g			

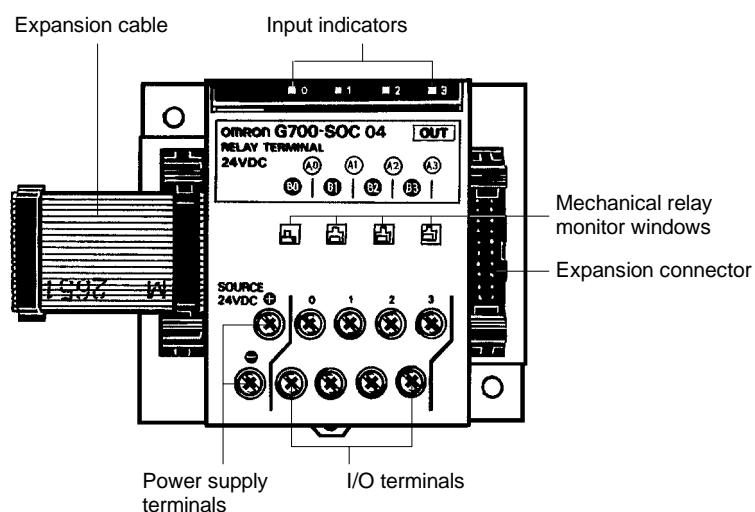
Inputs

Item	G700-SIM04	G700-SIM04-C
Rated input voltage	24 to 48 VAC/VDC	100 to 200 VAC/VDC
Mounting relay	G7T-1122S 24 VDC	
Operating input current range	24 V: -10%; 48 V: +10%	100 V: -10%; 200 V: +10%
ON delay	1.5 ms max.	
OFF delay	1.5 ms max.	
Number of circuits	4 points/independent; commons	
Insulation method	Photocoupler + relay	
Input indicators	LED (orange)	

Outputs

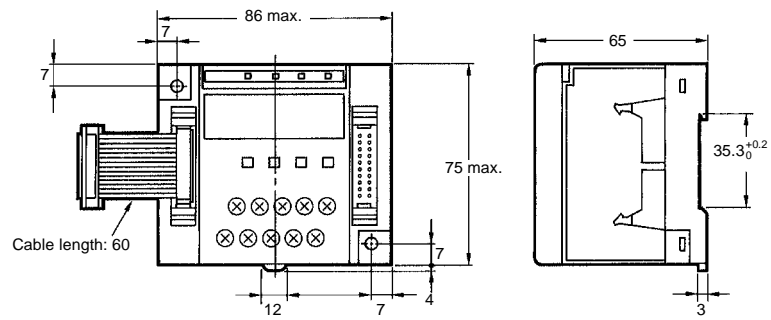
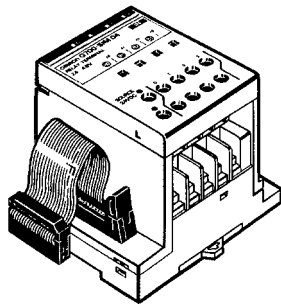
Item	G700-SOC04	G700-SOC04-C
Mounting relay	G7T-1112S 24 VDC	
Max. contact voltage value	250 VAC/125 VDC	
Max. contact current value	2 A/point	6 A (for 4 points, common)
Number of circuits	4 points	
Output indicators	LED (orange)	

Nomenclature

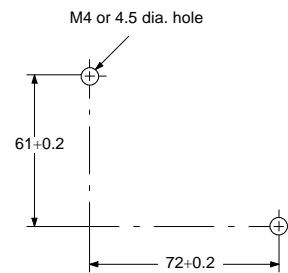


Dimensions

Note: All units are in millimeters unless otherwise indicated.



Mounting Holes

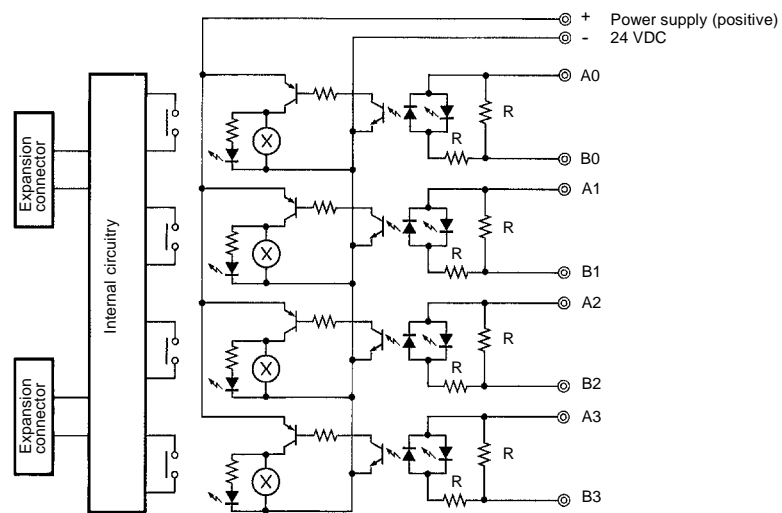


Installation

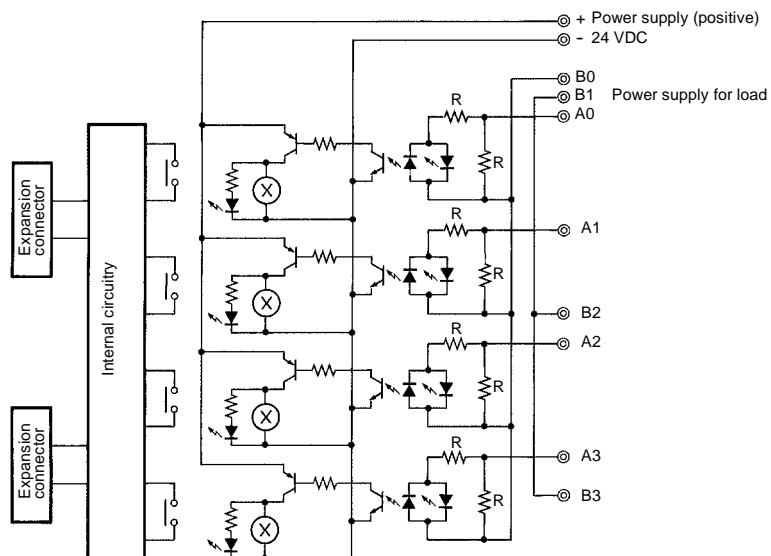
■ Internal Circuit Configuration

Input Circuits

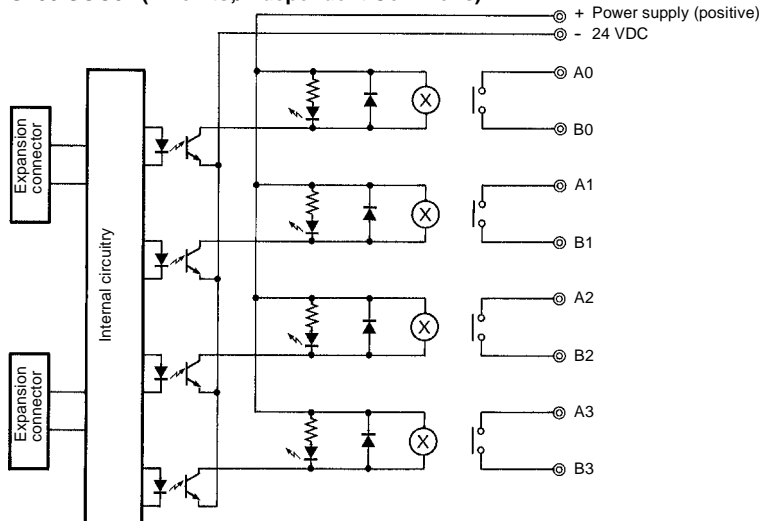
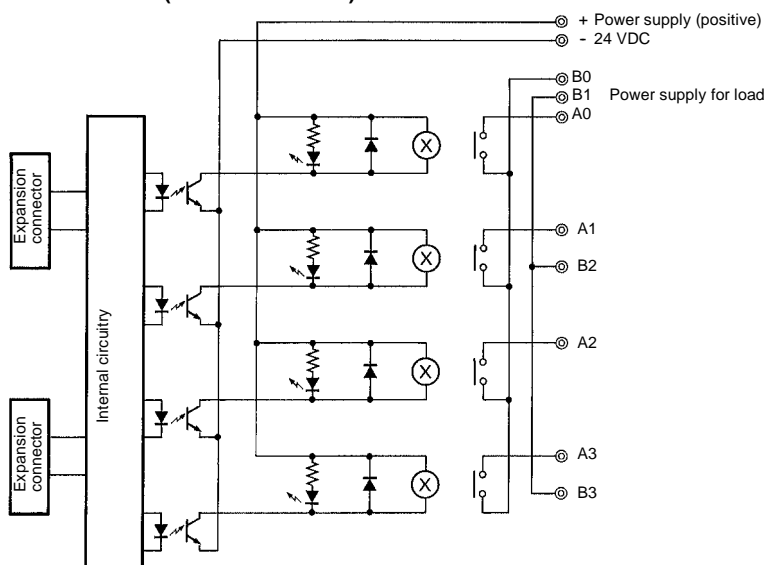
G700-SIM04 (4 Points;/Independent Commons)



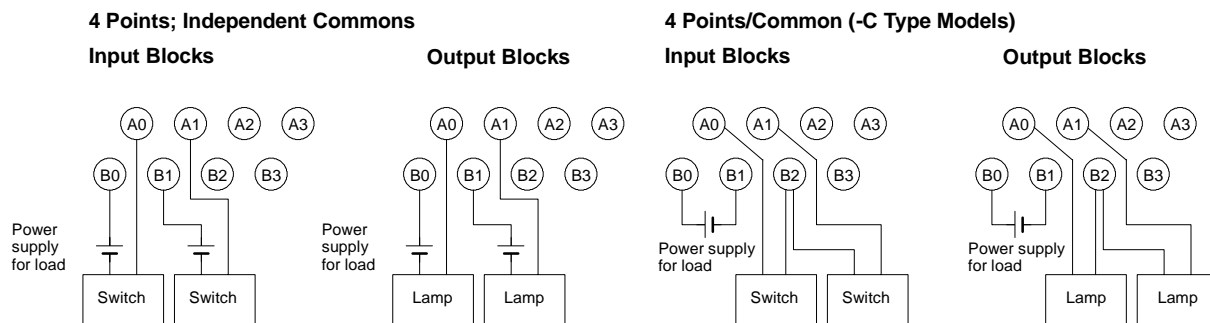
R: 56 kW for 24 to 48 VDC/VAC power supply
R: 330 kW for 100 to 200 VAC/VDC power supply

G700-SIM04-C (4 Points/Common)

R: 56 kW for 24 to 48 VDC/VAC power supply
 R: 330 kW for 100 to 200 VAC/VDC power supply

Output Circuits**G700-SOC04 (4 Points;/Independent Commons)****G700-SOC04-C (4 Points/Common)**

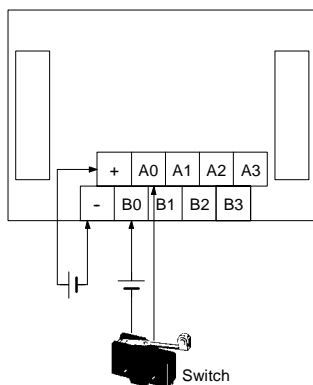
■ External Connections



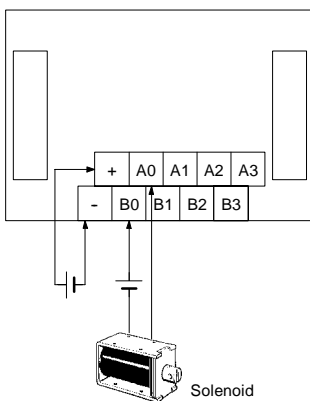
■ Terminal Arrangement/I/O Device Connection Examples

4 Points; Independent Commons

Input Blocks

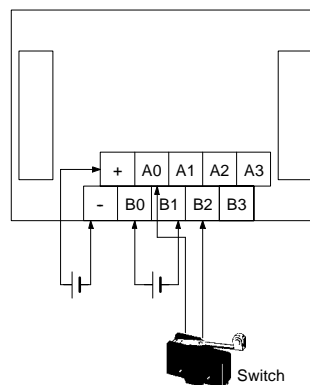


Output Blocks

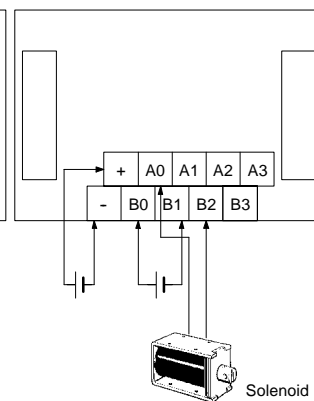


4 Points/Common (-C Type Models)

Input Blocks



Output Blocks



Provides Four I/O Points for Flexible System Expansion

- Connects to the G700-U I/O Terminal to expand I/O capacity.
- Ideal for handling production line additions or changes.
- Connects easily via one-piece connector.
- Fuse replaceable on the back panel.
- Mount to DIN track or via screws.

Ordering Information

Classification	Internal I/O circuit common	Rated voltage	Model
Input	NPN (+ common)	24 VDC	G700-TID04
Output	NPN (- common)	24 VDC	G700-TOD04

Specifications

■ Characteristics

Power supply voltage	24 VDC
Operating voltage range	21.6 to 26.4 VDC
Current consumption	1 W max. (excluding I/O current consumption)
Insulation resistance	20 MW min. (at 250 VDC)
Noise immunity	Noise level: 1.5 kV min.; pulse width: 100 ns, 1 ms
Vibration resistance	Malfunction: 10 to 55 Hz, 0.25-mm double amplitude
Shock resistance	Malfunction: 200 m/s ² (approx. 20G)
Ambient temperature	Operating: 0% to 55°C Storage: -20% to 65°C
Ambient humidity	35% to 85%
Ambient atmosphere	No corrosive gas
Mounting strength	No damage when 5 kgf (49 N) pull load was applied for 1 s in all directions (except for 1 kgf (9.8 N) in direction of track).
Terminal strength	No damage when 5 kgf (49 N) pull load was applied for 1 s in all directions.
Weight	Approx. 150 g

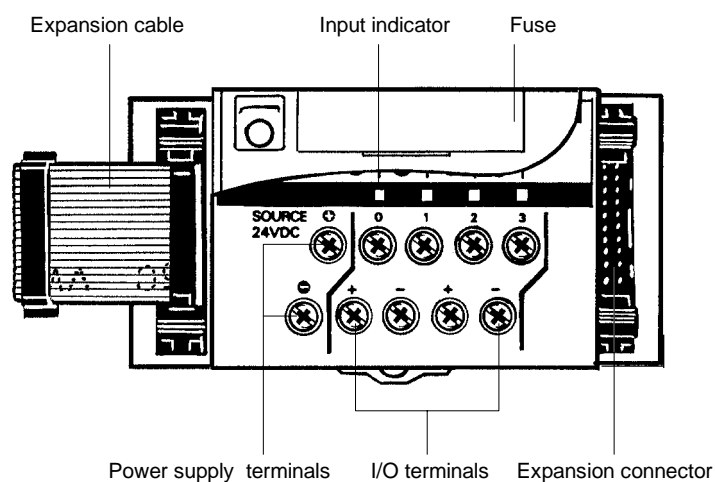
Inputs

Item	G700-TID04
Input current	10 mA max.
ON delay	1.5 ms max.
OFF delay	1.5 ms max.
Number of circuits	4 points/common; 1 common
ON voltage	15 VDC max. (The voltage between the 24-VDC power supply terminal (+) and input terminals A0 to A3.)
OFF voltage	7 VDC min. (The voltage between the 24-VDC power supply terminal (+) and input terminals A0 to A3.)
Insulation method	Photocoupler
Input indicators	LED (orange)

Outputs

Item	G700-TOD04
Rated output current	0.3 A max./point
Residual voltage	1.2 V max.
Leakage current	200 mA max.
Number of circuits	4 points/common; 1 common
Insulation method	Photocoupler
Output indicators	LED (orange)

Nomenclature



Operation

■ Protection

Short-circuit

The fuse will melt when the positive and negative I/O terminals are short circuited, in which case just replace the fuse with a new one. No maintenance service to the internal circuitry of the G700-T is required.

The fuse could melt when the I/O terminals have not been short-circuited, in which case there is a possibility that the internal circuitry of the G700-T is malfunctioning and repairs may be required. The following table lists the fuse ratings for G700-T models.

Model	Fuse ratings
G700-TID04	1 A, 125 V
G700-TOD04	3 A, 125 V

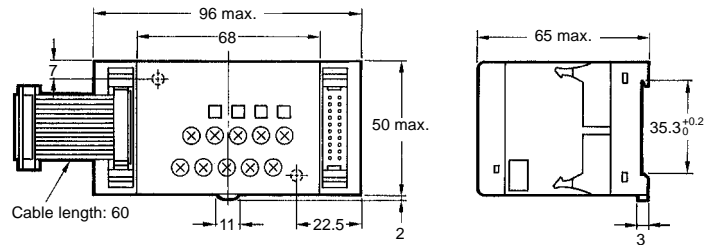
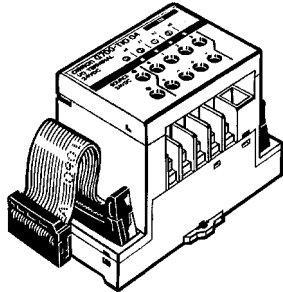
The power supply terminals have polarity. Do not reverse the power supply lines when connecting the power supply terminals of the G700-T will be damaged.

■ Replacement of Fuse

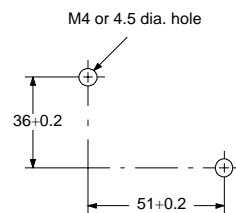
1. Remove the main cover.
2. Remove the fuse cover.
3. Replace the fuse with a new fuse of the same type.
4. Align the fuse cover so that the edges of the fuse cover match the grooves in the case, and then press on the fuse cover.
5. Replace the main cover.

Dimensions

Note: All units are in millimeters unless otherwise indicated.



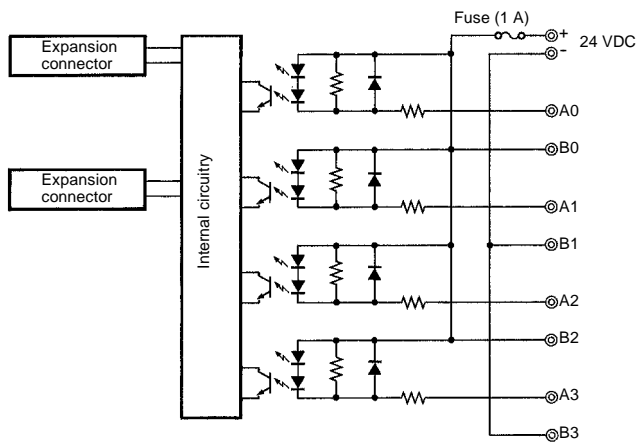
Mounting Holes



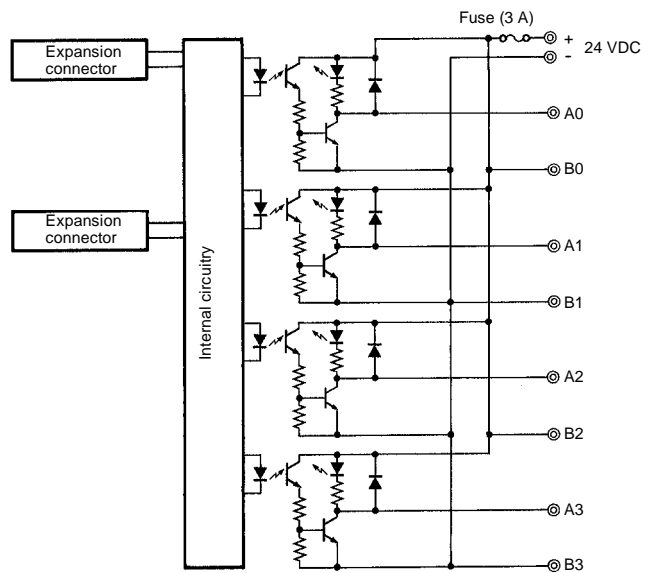
Installation

■ Internal Circuit Configuration

G700-TID04



G700-TOD04

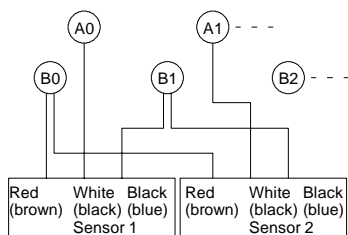


■ External Connections

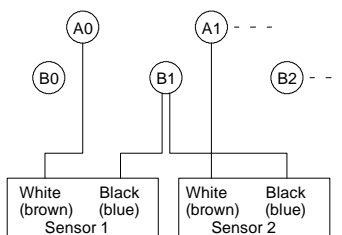
No relay terminal boards for the sensor loads are required.

Input Blocks

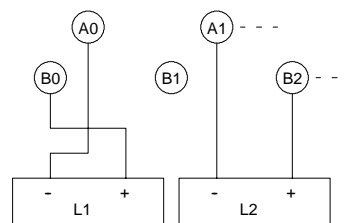
Three-wire System (NPN)



Two-wire System

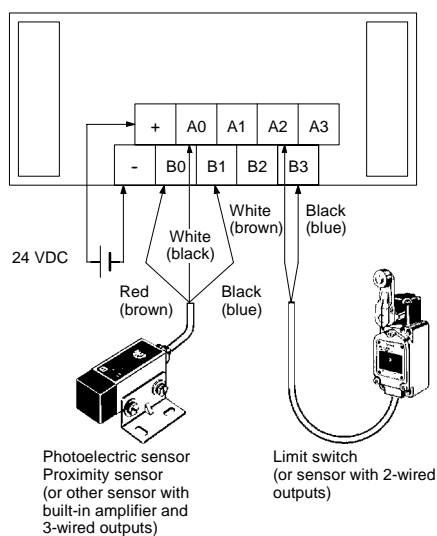


Output Blocks

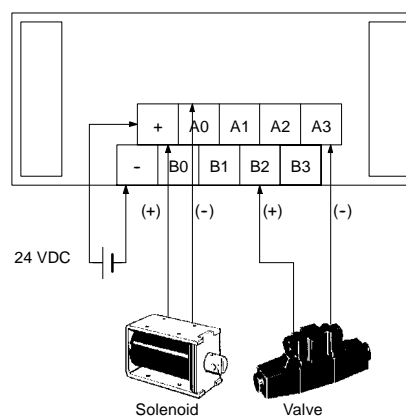


■ Terminal Arrangement/I/O Device Connection Examples

Input Blocks



Output Blocks



Note: The colors in the parentheses apply to present models in accordance with a recent revision of the Japanese Industrial Standards.

Combines the Features of a Communications Terminal with a Wiring Block; I/O Quantity and Blend Flexibility

- Reduced mounting space requirements.
- Accepts signals from Remote I/O Master Unit (CV500-RM221) via shielded twisted-pair cable (B200-TW) up to 500 m away.
- Expandable in increments of four I/O points by adding the G700-T or G700-S I/O Blocks.
- Expandable to up to 32 I/O points.
- Inputs and outputs can be mixed.
- ON/OFF indicator (LED) for each I/O point and communications status indicators (LED).
- Fuse replaceable on the back panel.
- Mount to DIN track or via screws.
- Provides power terminals for I/O devices.

Ordering Information

Classification	Internal I/O circuit common	Rated voltage	Model
Input	NPN (+ common)	24 VDC	G700-UID16
Output	NPN (- common)	24 VDC	G700-UOD16
Input/output (mixed)	Input (+ common); output (- common)	24 VDC	G700-UMD16

Specifications

■ Transmission

Communication method	1: N polling
Coding method	Manchester coding
Topology	Wired multi-drop
Baud rate	1.5 M bps
Transmission delay	5.2 ms max.*
Transmission distance	500 m max.
No. of connecting nodes	32 max. per Remote I/O Master Unit (do not exceed the I/O capacity of the PC)
Communications cable	Shielded Twisted-pair Shielded Cable B200-TW
Error control method	CRC-CCITT inverted double transmission collation
Interface	Dedicated interface

*Set the transmission delay of the PC to 0 when the G700-U or G700-E is connected.

■ Characteristics

Power supply voltage	24 VDC
Operating voltage range	21.6 to 26.4 VDC
Current consumption	2.5 W max. (excluding I/O current consumption)
Insulation resistance	20 MW min. (at 250 VDC)
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between the transmission paths and power supply terminals
Noise immunity	Noise level: 1.5 kV min.; pulse width: 100 ns, 1 ms
Vibration resistance	Malfunction: 10 to 55 Hz, 0.25-mm single amplitude
Shock resistance	Malfunction: 200 m/s ² (approx. 20G)
Ambient temperature	Operating: 0% to 55°C Storage: -20% to 65°C
Ambient humidity	35% to 85%
Ambient atmosphere	No corrosive gas
Mounting strength	No abnormality when 5 kgf (49 N) pull load was applied for 1 s in all directions (except for 1 kgf (9.8 N) in direction of track).
Terminal strength	No abnormality when 5 kgf (49 N) pull load was applied for 1 s in all directions.
Weight	Approx. 360 g

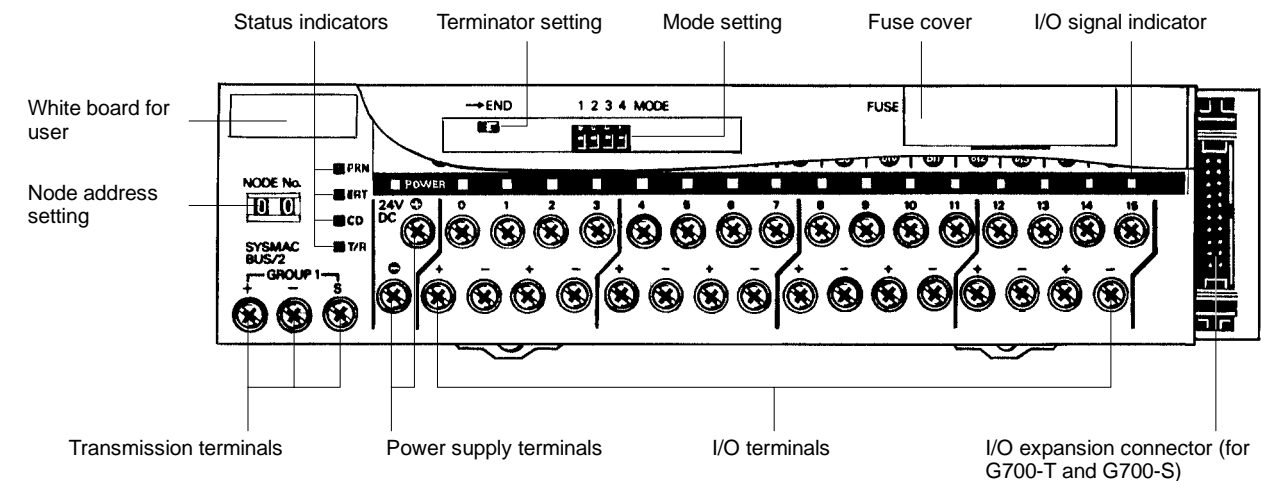
Inputs

Item	G700-UID16	G700-UMD16
Input current	10 mA max./point	
ON delay	1.5 ms max.	
OFF delay	1.5 ms max.	
Number of circuits	16 points/common; 1 common	8 points/common; 1 common
ON voltage	15 VDC max. (The voltage between the 24-VDC power supply terminal (+) and input terminals A0 to A15.)	
OFF voltage	7 VDC min. (The voltage between the 24-VDC power supply terminal (+) and input terminals A0 to A15.)	
Insulation method	Photocoupler	
Input indicators	LED (orange)	

Outputs

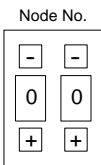
Item	G700-UID16	G700-UMD16
Rated output current	0.3 A max./point	
Residual voltage	1.2 V max.	
Leakage current	200 mA max.	
Number of circuits	16 points/common; 1 common	8 points/common; 1 common
Insulation method	Photocoupler	
Output indicators	LED (orange)	

Nomenclature



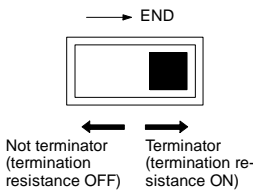
Operation

■ Surface Switch Setting
Node Address Setting (Node No. Switch)



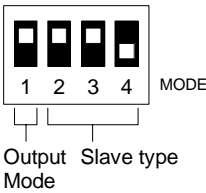
Each Remote I/O Subsystem connected to a Remote I/O Master Unit can contain up to 32 nodes (slaves). Use the thumbwheel rotary switch (2-digit, decimal) of the G700-U to set the node address (a 2-digit value) in numerical order from 00 to 31. The PC recognizes the node addresses when the G700-U Units are turned on or when the I/O table is made. Address changes after that will not be recognized. The node address is set to 00 before shipping.

Terminator Setting



The terminator setting sets the termination resistance. Set only one terminator per Remote I/O Master Unit and be sure that the Unit farthest from the Master is set as terminator. The PC recognizes the terminator when the G700-U Unit is turned on. Address changes after that will not be recognized. No terminator setting is made before shipping.

Mode Setting

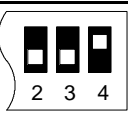
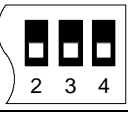
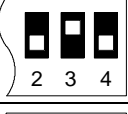



Output Mode: HOLD/OFF

Switch setting	Mode	Description
	Hold mode	When a transmission error has occurred, the G700-U maintains the previous output status. To clear the output, select the OFF mode.
	OFF mode	When a transmission error has occurred, the G700-U turns OFF all outputs.

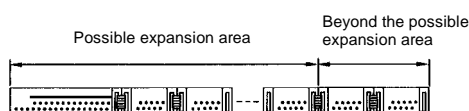
Slave Type

The slave type must be set to 2M, 2I, 2Q or 4M so that the PC can allocate the proper number of I/O bits.

Switch setting	Slave type	Connecting model	Description
	2M: G700-UID16 G700-UOD16 G700-UMD16	G700-TID04 G700-TOD04 G700-SIM04(-C) G700-SOC04(-C)	Up to 16 input and 16 output points are available.
	2I: G700-UID16	G700-TID04 G700-SIM04(-C)	Up to 32 input points are available.
	2Q: G700-UOD16	G700-TOD04 G700-SOC04(-C)	Up to 32 output points are available.
	4M: G700-UID16 G700-UOD16 G700-UMD16	G700-TID04 G700-TOD04 G700-SIM04(-C) G700-SOC04(-C)	Up to 32 input and 32 output points are available.

- Note:**
1. 2M mode is set before shipping.
 2. The G700-U does not operate if the slave type switch is set to any setting not shown above.
 3. The G700-U's expansion signal is a dynamic time-division signal. Connections other than those shown above will damage the G700-U. Use the expansion cables that are sold together with the I/O Blocks.

If the number of I/O points you expanded is beyond the permissible range, the PC will support only the I/O points within the permissible range and the I/O points exceeding the permissible range will be ignored.

**PC and No. of Connecting G700-U Units**

PC	G700-U			
	2M	2I	2Q	4M
SYSMAC CV500	32 units	32 units	32 units	16 units
SYSMAC CV1000	64 units*	64 units*	64 units*	32 units

*With two Remote I/O Master Units

Function of Indicators

Signal	Color	Name	ON	OFF
POWER	Green	Power supply	Power is supplied and the unit is operating.	Power is turned off.
PRN	Green	Host program indicator	The host user's program is running.	The host user's program is not running or a transmission error has occurred.
ERT	Red	Transmission error indicator	An cyclic error has occurred.	The cyclic error of the Remote Terminal has been solved.
CD	Orange	Reception indicator	The I/O Terminal has received some data addressed to itself or other Unit.	The transmission paths have been short-circuited.
T/R	Orange	Transmission indicator	Cyclic data is being transmitted.	Cyclic data transmission has been interrupted or has not been executed.

Operation of Indicators**Normal Operation**

Status	POWER	PRN	ERT	CD	T/R	Remarks
Initialization	ON	OFF	OFF	ON	OFF	This status will last for a very short time. If this status continues an extended time, the I/O Terminal must be in an abnormal status.
During cyclic transmission or interruption of user's program	ON	OFF	OFF	ON	ON	---
During cyclic transmission or execution of user's program	ON	ON	OFF	ON	ON	---

Operation for Errors

Error	POWER	PRN	ERT	CD	T/R	Countermeasure
Power failure of the Unit	OFF	OFF	OFF	OFF	OFF	Turn power on.
I/O Terminals in the main system not ready	ON	OFF	OFF	OFF	OFF	Turn on the host system.
Cable disconnection	ON	OFF	OFF	OFF	OFF	Connect the cable.
Wrong address setting	ON	OFF	OFF	ON	OFF	Reset the address and restart.
Duplicate address setting	ON	OFF	OFF	ON	OFF	Reset the address and restart.
Interface error with the host user of the subsystem	ON	---	---	---	---	Check the I/F of the subsystem and host controller.
Interruption of data transmission during cyclic transmission	ON	OFF	OFF	OFF	OFF	Restart cyclic transmission.
Power failure in the host system during cyclic transmission	ON	OFF	OFF	OFF	OFF	Check the host system.
Deterioration of the transmission paths	ON	OFF	OFF	OFF	OFF	Check the transmission paths.

■ Protection

Short-circuit

The fuse will melt when the positive and negative I/O terminals are short circuited, in which case just replace the fuse with a new one. No maintenance service to the internal circuitry of the G700-U is required.

The fuse could melt when the I/O terminals have not been short-circuited, in which case there is a possibility that the internal circuitry of the G700-U is malfunctioning and repairs may be required. The following table lists the fuse ratings for G700-U models.

Model	Fuse ratings
G700-UID16	2 A, 125 V
G700-UOD16	5 A, 125 V
G700-UMD16	3 A, 125 V

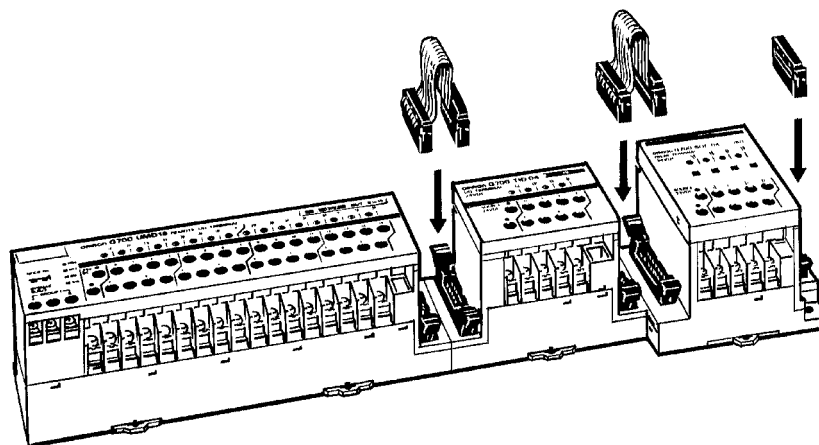
The power supply terminals have polarity. Do not reverse the power supply lines when connecting the power supply terminals or the G700-U will be damaged.

■ Replacement of Fuse

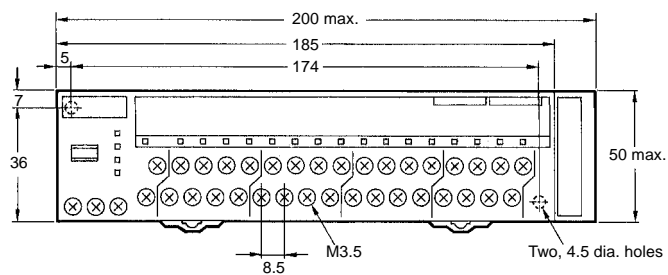
1. Remove the main cover.
2. Remove the fuse cover.
3. Replace the fuse with a new fuse of the same type.
4. Align the fuse cover so that the edges of the fuse cover match the grooves in the case, and then press on the fuse cover.
5. Replace the main cover.

■ Connection of G700-T or G700-S Unit

The G700-U should be connected to the G700-T or G700-S with the cable provided with the G700-T or G700-S. Lock the cable connectors with the levers after the cable is connected. Connect the XG4M-2030 (MIL-type socket, sold separately) and XG4T-2004 (strain-relief type, sold together) to the end terminals that are not connected to an I/O Block.



Note: All units are in millimeters unless otherwise indicated.

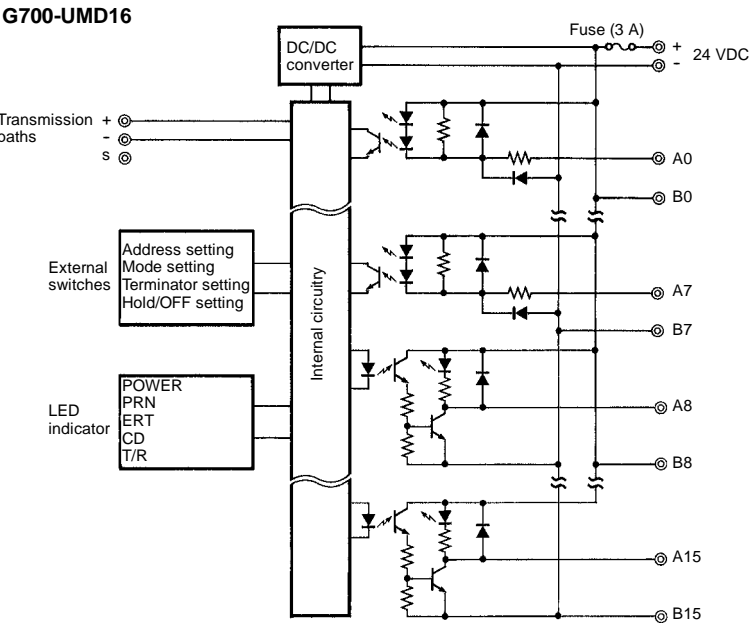


M4 or 4.5 dia. hole

36+0.2

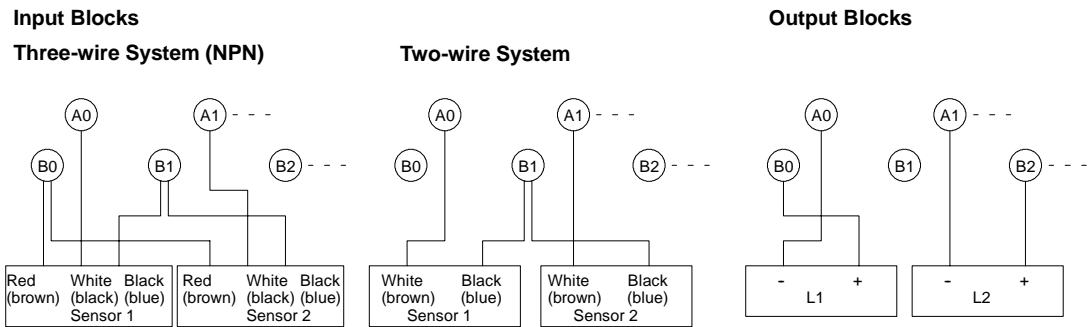
174+0.2

■ Internal Circuit Configuration

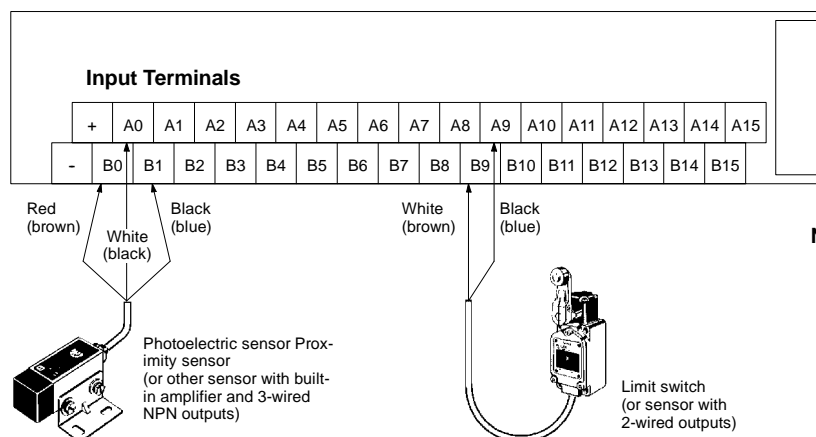


■ External Connections

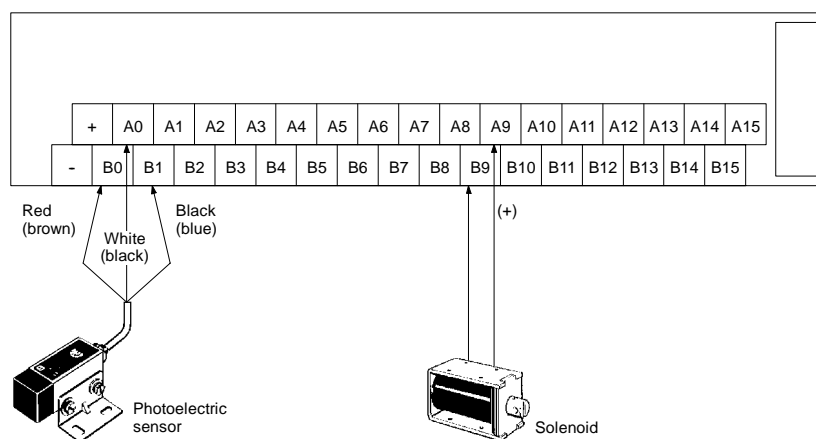
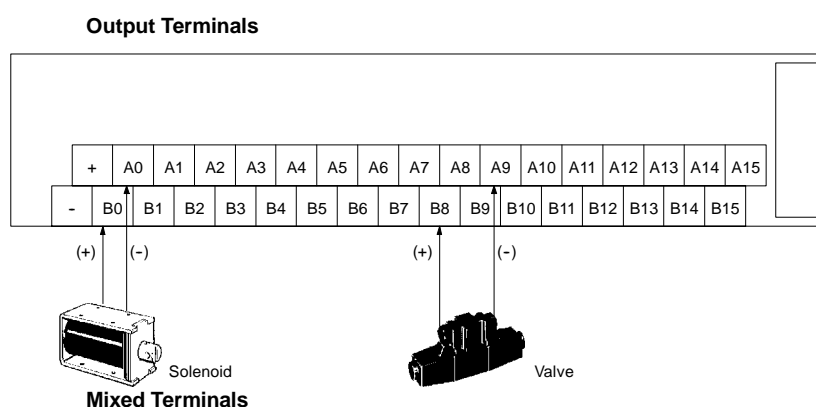
No relay terminal boards for the sensor loads are required.



■ Terminal Arrangement/I/O Device Connection Examples



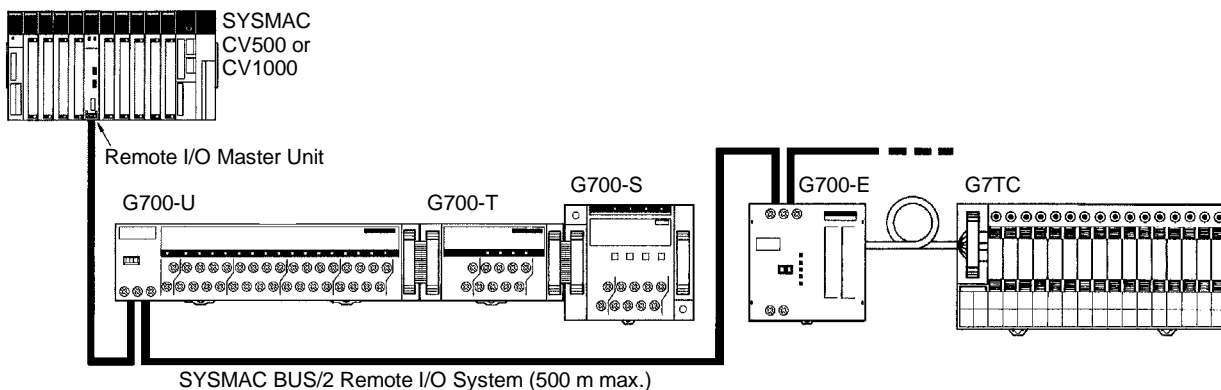
- Note:**
1. Positive power terminal No. 2 on the top row is internally connected to the I/O terminals (B0, B2, B4, B6, B8, B10, B12, B14) on the bottom row, whereas negative power terminal No. 3 on the top row is internally connected to the I/O terminals (B1, B3, B5, B7, B9, B11, B13, B15) on the bottom row. Be careful enough not to short-circuit any terminals next to each other.
 2. The capacity of the DC power supply should be large enough to cover the total power consumption of the G700's indicators and I/O devices.
 3. The colors in the parentheses apply to present models in accordance with a recent revision of the Japanese Industrial Standards.



Operation

■ System Configuration

SYSMAC BUS/2 System Configuration Example



■ Trouble-shooting

Refer to the following lists to trouble-shoot slave errors. The following countermeasures assume the PC and Remote I/O Master Unit normal.

Input Interface

Error	Cause	Countermeasure
No input is ON (operation indicator is OFF)	1. Power not supplied	Supply power.
	2. Low supply voltage	Adjust the supply voltage within the rated range.
	3. Loosened terminal screws	Tighten the screws.
	4. Poor conductance of terminal board connector	Replace the terminal board connector.
No input is ON (operation indicator is ON)	Malfunctioning of input circuitry	Replace the I/O Remote Interface.
No input is OFF	Malfunctioning of input circuitry	Replace the I/O Remote Interface.
Specified inputs are not ON	1. Malfunctioning of input device	Replace the input device.
	2. Disconnection of input wires	Check the input wiring.
	3. Loosened terminal screws	Tighten the screws.
	4. Poor conductance of terminal board connector	Replace the terminal board connector.
	5. Short input ON time	Adjust the input device.
	6. Malfunctioning of input circuitry	Replace the I/O Remote Interface.
Specified inputs are not OFF	1. Malfunctioning of input circuitry	Replace the I/O Remote Interface.
	2. Malfunctioning of input device	Replace the input device.
Inputs are ON and OFF irregularly.	1. Low external input voltage	Adjust the external input voltage within the rated range.
	2. Malfunctioning by noise	Insert a surge absorber. Insert an insulating transformer. Wire with shield cables.
	3. Loosened terminal screws	Tighten the screws.
	4. Poor conductance of terminal board connector	Replace the terminal board connector.
Operation indicator is not lit (operation is normal)	LED malfunction	Replace the I/O Remote Interface.

Note: The ON and OFF conditions are monitored by the PC.

Output Interface

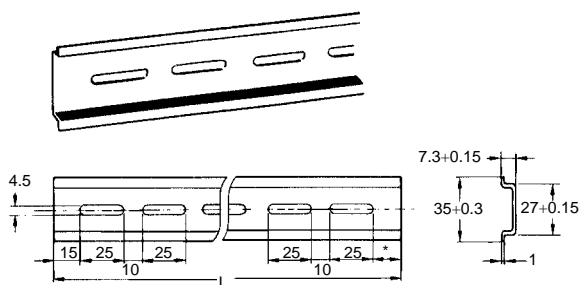
Error	Cause	Countermeasure
No output is ON	1. Load power not supplied	Supply power.
	2. Low load supply voltage	Adjust the supply voltage within the rated range.
	3. Loosened terminal screws	Tighten the screws.
	4. Fuse burnout	Replace the fuse.
	5. Malfunctioning of output circuitry	Replace the I/O Remote Interface.
No output is ON	Malfunctioning of output circuitry	Replace the I/O Remote Interface.
Specified outputs are not ON (operation indicator is OFF)	1. Short output ON time	Correct the program.
	2. Malfunctioning of output circuitry	Replace the I/O Remote Interface.
Specified outputs are not ON (operation indicator is ON)	1. Malfunctioning of output device	Replace the output device.
	2. Disconnection of output wires	Check the output wiring.
	3. Loosened terminal screws	Tighten the screws.
	4. Malfunctioning of output relay	Replace the relay.
	5. Malfunctioning of output circuitry	Replace the I/O Remote Interface.
Specified inputs are not OFF (operation indicator is OFF)	1. Malfunctioning of output relay	Replace the I/O Remote Interface.
	2. Improper reset due to a current leakage or residual voltage.	Add an external load or dummy load.
Specified inputs are not OFF (operation indicator is OFF)	Malfunctioning of output circuitry	Replace the I/O Remote Interface.
Inputs are ON and OFF irregularly.	1. Low load supply voltage	Adjust the load supply voltage within the rated range.
	2. Malfunctioning by noise	Insert a surge absorber. Insert an insulating transformer. Wire with shield cables.
	3. Loosened terminal screws	Tighten the screws.
Operation indicator is not lit (operation is normal)	LED malfunction	Replace the I/O Remote Interface.

Dimensions

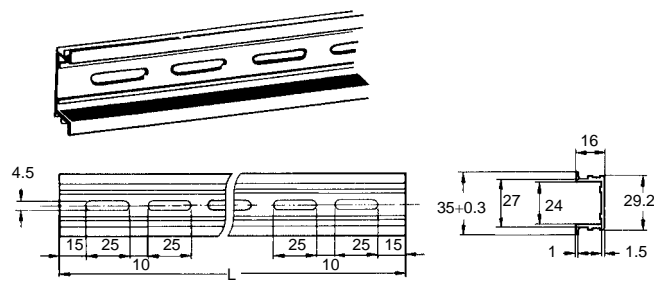
Note: All units are in millimeters unless otherwise indicated.

Mounting Track

PFP-100N, PFP-50N



PFP-100N2

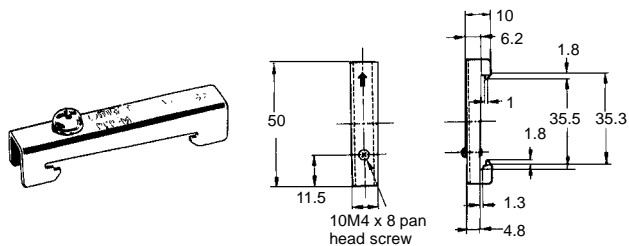


L: Length

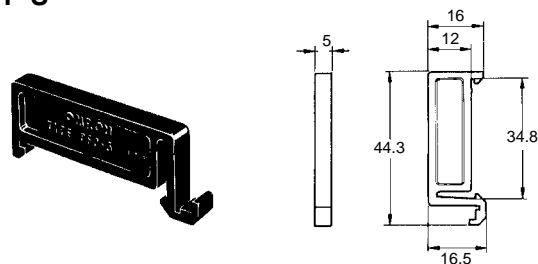
1 m	PFP-100N
50 cm	PFP-50N
1 m	PFP-100N2

It is recommended to use a panel 1.6- to 2.0-mm thick.

End Plates PFP-M



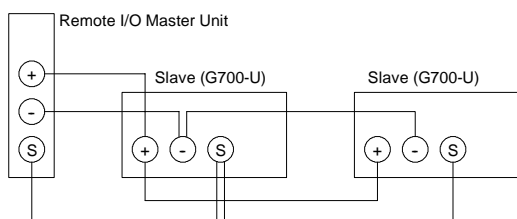
Spacers PFP-S



Precautions

Connection of Transmission Cable (G700-U, G700-E)

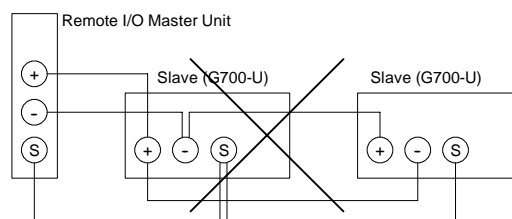
Correct Example



OK

Incorrect Example 1

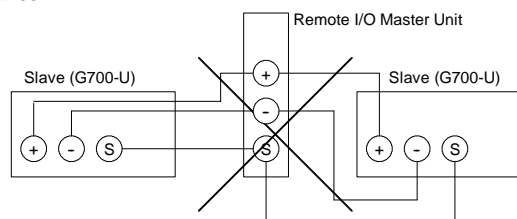
The positive and negative terminals are reversed.



No

Incorrect Example 2

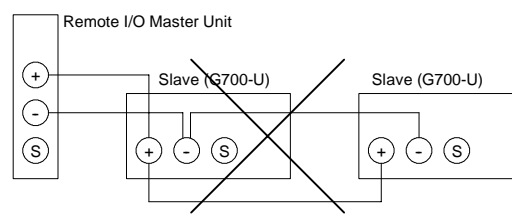
A single Remote I/O Master Unit is directly connected to two slaves.



No

Incorrect Example 3

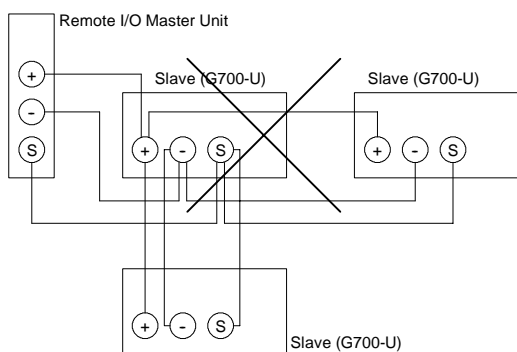
The ground (shield) terminals are not connected.



No

Incorrect Example 4

The transmission paths are branched at a slave.



No

B200-TW Transmission Cable (Order Separately)

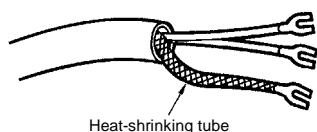
Use the following shielded twisted-pair cable for signal transmission:

Cable	Length
B200-TW101	10 m
B200-TW201	20 m
B200-TW501	50 m
B200-TW102	100 m
B200-TW202	200 m
B200-TW502	500 m

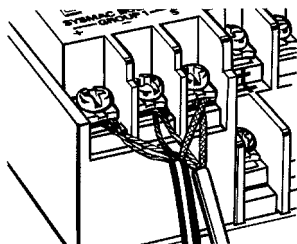
The above cables are for signal transmission. Standard commercial available cables cannot be used for this purpose.

Wiring (G700-U/G700-E)

1. Twist the tips of the shielded wires and solder it to a fork terminal (M3.5). Then cover the bare wires with heat-shrinking tube or vinyl tape for insulation. Also solder a fork terminal (M3.5) to each of the positive and negative wires as shown by the following illustration.



2. Connect the positive, negative, and shielded wires to the transmission terminals and ground (shield) terminal correctly and tighten the screws to secure the fork terminals. In the case of intermediate terminals, two wires (one from the previous Terminal and the other to the next Terminal) must be connected via the fork terminals, which are soldered to the wires, and secured by the terminal screws.



Do not wire the cable near or in parallel with power lines.
Connect a ground (shield) line to each Remote I/O Interface.
Use the following for wiring.

Cable	Shielded Twisted-pair cable
Fork terminal	M3.5

Installation Site

The following conditions are required to install the G700.

There is no direct sunlight.

The ambient temperature is within a range of 0% to 55°C.

The relative humidity is within a range of 10% to 90%.

There is no drastic temperature changes that can cause condensation.

There is no corrosive or inflammable gas.

There is no excessive dust, salinity, or powdered metal.

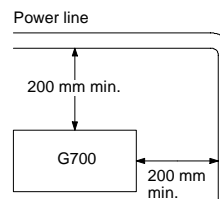
There is no vibration or shock that is directly imposed on the G700.

No water, oil, or chemical is sprayed to the G700.

Protection from Noise

Do not install the G700 on a panel where high-power equipment is installed.

Provide a distance of 200 mm at least between power lines and the G700.

**Mounting Screw**

Mounting screws must be tightened securely in order to prevent the G700 from malfunctioning.

Connection Cable Lock

Before turning on the G700, check that the connectors of each connection cable are locked properly.

Static Electricity

Excessive static electricity can be generated where the humidity is low. Before you operate the G700, touch grounded metal so that your body will be free from static electricity.

Cleaning

Use alcohol to clean the G700. Do not use paint thinner because it will dissolve or discolor the paint on the panel of the G700.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Master Unit (Master/Expansion Unit)

G730-M/N

Connected to a Variety of Controllers for I/O Transmission

- Connecting to a variety of controllers and PCs for two-wire I/O transmission using harness connection.
- A single Master connects to a maximum of three Expansion Units to control a maximum of 128 points.
- Monitor outputs allows maintenance with ease.
- G730-Mj D32-A is available for G730 Slaves with 4, 8, and 16 words. (However, G730-Mj D32 w/o -A is not available for Slave with 16 words).

Ordering Information

Unit	I/O points	I/O classification	I/O card of corresponding PC	Rated voltage	Model
Master	32 points	Input	Input	24 VDC	G730-MID32-A
		Output	Output		G730-MOD32-A
Expansion Unit		Input	Input		G730-NID32
		Output	Output		G730-NOD32

Unit	I/O classification	No. of I/O connector pins	Model
Harness adapter	Both input and output	20-pin connector x 2	G730-Y10-1
			G730-Y10

- Note:**
1. The Master Unit is used in combination with a G730-Y10/G730-Y10-1 Harness Adapter.
 2. Refer to the following table when connecting the Master Unit to an OMRON PC's I/O Card (connector type) using a G79-j C Cable.

PC's I/O Card	Harness adapter
For input (C200H-ID215)	G730-Y10-1
For output (C200H-OD215)	G730-Y10

Specifications

■ Ratings

Inputs

For Controller Input Cards

G730-MID32-A, G730-NID32

Rated output voltage	24 VDC
Rated output current	20 mA/point
Residual voltage	0.6 V max.
Leakage current	0.1 mA max.

- Note:** The G730-MID32-A and G730-NID32 incorporate output circuitry to be connected to the I/O cards of controllers. The above specifications are for the output circuitry of the G730-MID32-A and G730-NID32.

Outputs

For Controller Output Cards

G730-MOD32-A, G730-NOD32

Input current	10 mA max./point
On delay (see note)	1 ms max.
OFF delay (see note)	1.5 ms max.
On voltage	10 VDC max.
OFF voltage	1 mA min.

Note: The G730-MOD32-A and G730-NOD32 may malfunction if they are connected to relays or switches with long chattering times. Contact your OMRON representative if the delay time of your model needs to be changed.

Error Detecting Circuit Output Specification

G730-MID32-A, G730-MOD32-A

Rated output voltage	24 VDC
Rated output current	20 mA
Residual voltage	1.2 V max.

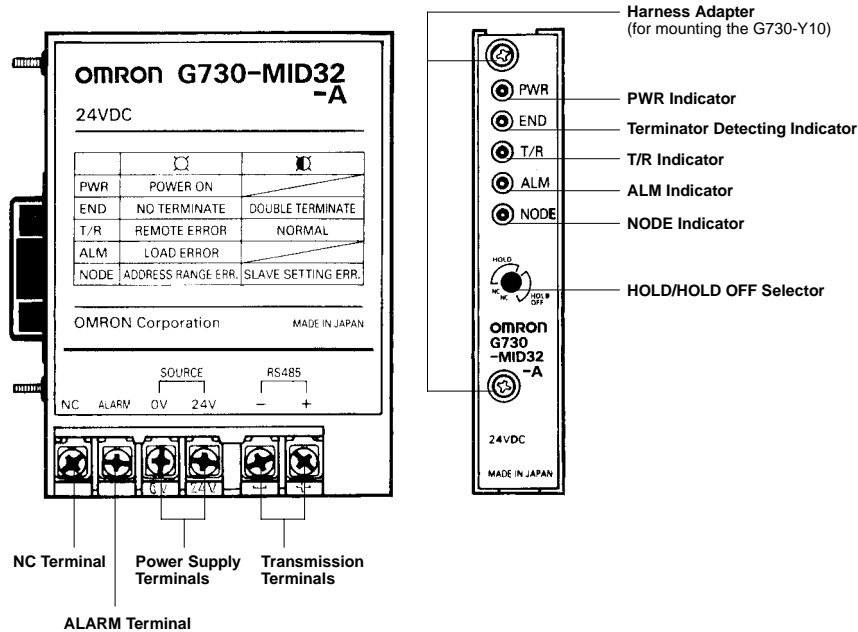
■ Characteristics

Communication method	Two-conductor, half duplex
Synchronization method	Asynchronous
Transmission distance	200 m (total length)
Transmission speed	187.5 kbps
Transmission path	Two-conductor cable (VCTF 0.75 x 2 C is recommended)
Interface	RS-485
Maximum I/O cable length between the Master Unit and a controller	5 m
No. of connecting I/O points	32 points per Unit (128 points max. with three Expansion Units)
Operating voltage range	24 VDC $+10\%/-15\%$
Current consumption (see note)	Input: 60 mA max. at 24 VDC Output: 100 mA max. at 24 VDC
Insulation resistance	20 M Ω min. (at 250 VDC)
Dielectric strength	500 VAC for 1 min between the power supply terminals and transmission terminals
Noise immunity	Power supply normal: 600 V for 10 min with a pulse width of 100 ns to 1 μ s Power supply common: 1.5 kV for 10 min with a pulse width of 100 ns to 1 μ s Coiling around transmission path: 1.5 kV for 10 min with a pulse width of 100 ns to 1 μ s Coiling around Unit: 600 V for 10 min with a pulse width of 100 ns to 1 μ s
Vibration resistance	10 to 55 Hz, 0.75-mm double amplitude for 2 hrs each in X, Y, and Z directions
Shock resistance	Destruction: 300 m/s ² (approx. 30G) Malfunction: 200 m/s ² (approx. 20G)
Ambient temperature	Operating: 0 to 55 °C Storage: -20 to 65 °C
Ambient humidity	Operating: 35% to 85%
Mounting strength	No damage when 5 kgf (49N) pull load was applied for 10 s in all directions (except for 1 kgf (9.8 N) in direction of rail)
Terminal strength	Tightening strength: 10 kgf S cm (0.98 N S m) for 10 s Pulling strength: 5 kgf (50 N) for 10 s
Weight	G730-Mj D, -Nj D: approx. 95 g Harness adapter: approx. 45 g

Note: The above current consumption is a value with all the 32 points turned ON.

Nomenclature

G730-MID32
G730-MOD32



ALARM Terminal
NPN open collector output is ON when the G730-ROC04-A has error output.

PWR Indicator
Lit when power is supplied.

Terminator Detecting Indicator

Display	Function
Not lit	Turns OFF when the terminator of the system is found.
Lit	Lit while the Master Unit is looking for the terminator.
Flashing	Flashes when the Master Unit finds more than one terminator in the system.

T/R Indicator

Display	Function
Flashing	Flashes during normal transmission.
Lit	Lit while the Master Unit is waiting for transmission or when a transmission error results.
Not lit	Turns OFF when the CPU is running abnormally.

ALM Indicator
Lit if the G730-ROC04-A Slave Output Unit has an output error.

NODE Indicator

Display	Function
Lit	Lit when the Slave Units are set to word 28 to 30.
Flashing	Flashes if the I/O configuration of the Slave Units and that of the Master Unit in the system do not coincide, 4-point Slave Units exist at word 24 to 27, or there is I/O duplication.

Note:

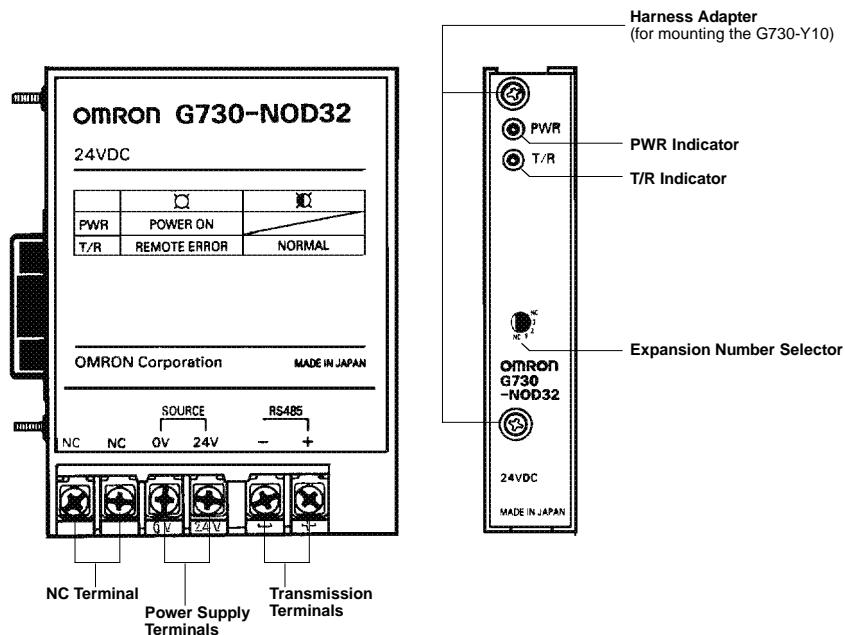
- The Slave Units used are G730-VID08(-1), G730-VOD08(-1), G730-VID16, G730-VOD16, G730-RIA(D)04, G730-ROC04, or G730-ROC04-A models.
- The Master Unit used is a G730-MID32-A, G730-NID32, G730-MOD32-A, or G730-NOD32 model.
- The 4-point Slave Units used are G730-VID04, G730-VOD04, G730-RIA(D)04, G730-ROC04, or G730-ROC04-A models.

HOLD/HOLD OFF Selector

Setting	Function
HOLD	If there is a transmission error during signal transmission, the signal being transmitted is put on hold.
HOLD OFF	If there is a transmission error during signal transmission, the signal being transmitted is turned OFF.

Note: The HOLD/HOLD OFF selector is factory-set to HOLD OFF. Be sure to turn off the Master Unit before setting the HOLD/HOLD OFF selector.

G730-NID32 G730-NOD32



PWR Indicator

Lit when power is supplied.

T/R Indicator

Display	Function
Flashing	Flashes during normal transmission.
Lit	Lit while the Master Unit is waiting for transmission or when a transmission error results.
Not lit	Turns OFF when the CPU is running abnormally.

Expansion Number Selector

Expansion numbers correspond to the following Slave words.

Expansion number setting	Slave word
1	Corresponds to words 8 to 15
2	Corresponds to words 16 to 23
3	Corresponds to words 24 to 27

Note: The expansion number selector is factory-set to 1. Be sure to turn off the Master Unit before setting the expansion number selector.

Operation

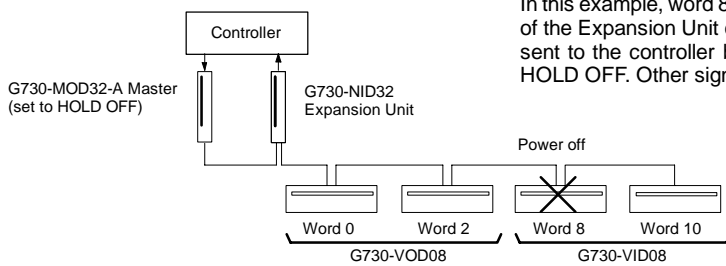
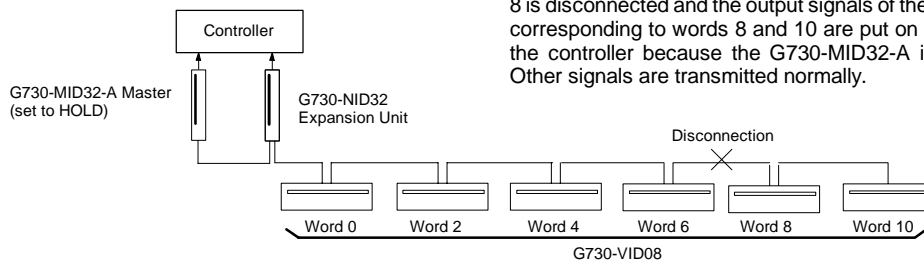
■ HOLD/HOLD OFF Function

If there is a transmission error during signal transmission, the signal being transmitted can be put on hold or turned OFF by setting the HOLD/HOLD OFF selector. HOLD/HOLD OFF setting is possible on the G730-MOD32-A and G730-MID32-A Master Units. HOLD/HOLD OFF setting has nothing to do with HOLD/LOAD OFF setting on Slave Units for output. HOLD/LOAD OFF setting on the Slave Units in the system must be done separately from the HOLD/HOLD OFF setting.

Limitations on HOLD Function

In the following cases, the HOLD function does not work properly.

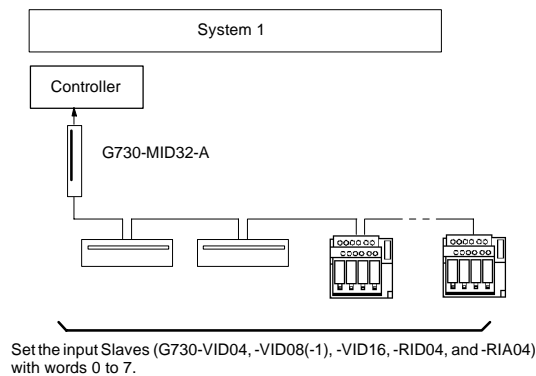
1. If the Master has an error (such as power failure or CPU abnormality), the signal being transmitted cannot be put on hold by the Master or any Expansion Unit.
2. If an Expansion Unit has an error (such as power failure or CPU abnormality), the signal being transmitted can be put on hold by the Master but not by the Expansion Unit.
3. If the connection cable between the Master and an Expansion Unit is disconnected, the signal being transmitted can be put on hold by the Master but not by the Expansion Unit.
4. If the transmission path is short circuited, the signal being transmitted can be put on hold by the Master but not by any Expansion Unit.

Example 1**Example 2****■ System Configuration****Basic Configuration of Multiple Link Terminal**

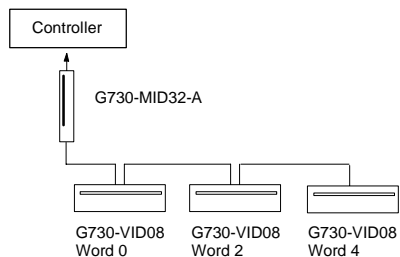
Note: Refer to page 121 for word settings.

G730-MID32-A Master Unit for Input

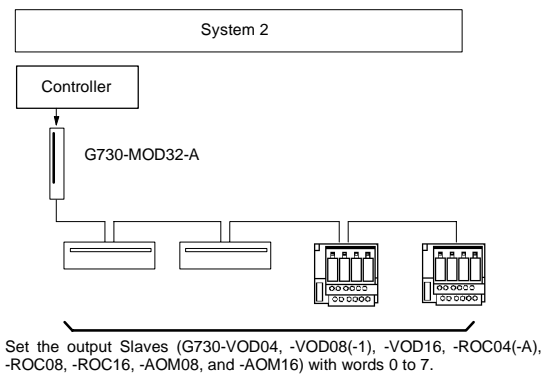
(Controlling up to 32 input signal points)



Example 1: There are 20 transistor input points.

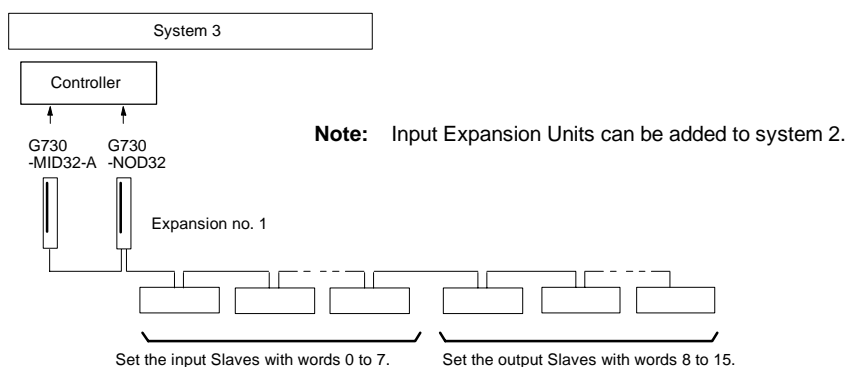
**G730-MOD32-A Master Unit for Output**

(Controlling up to 32 output signal points)

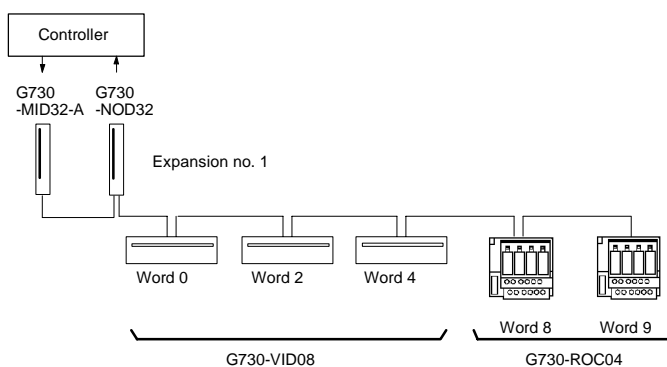


Combination of Input and Output Slaves

Add a G730-NOD32 Expansion Unit for output as expansion number 1 for system 1, in which case a maximum of 32 input points and 32 output points can be controlled.

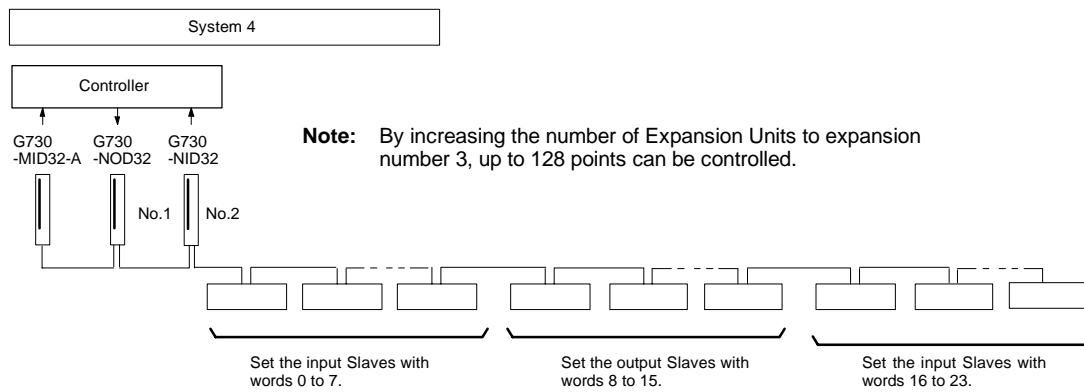


Example 2: There are 20 transistor input points and five relay output points.

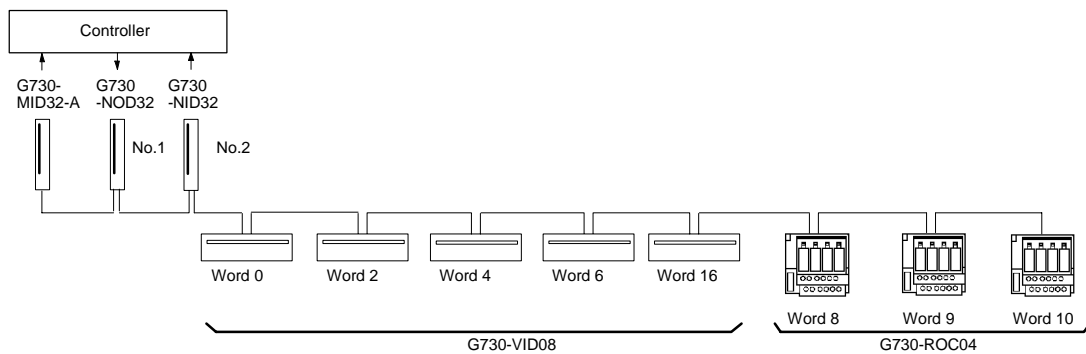


For Increment of the Number of Control Points

Add a G730-NID32 Expansion Unit for input as expansion number 2 for system 3, in which case a maximum of 64 input points and 32 output points can be controlled.

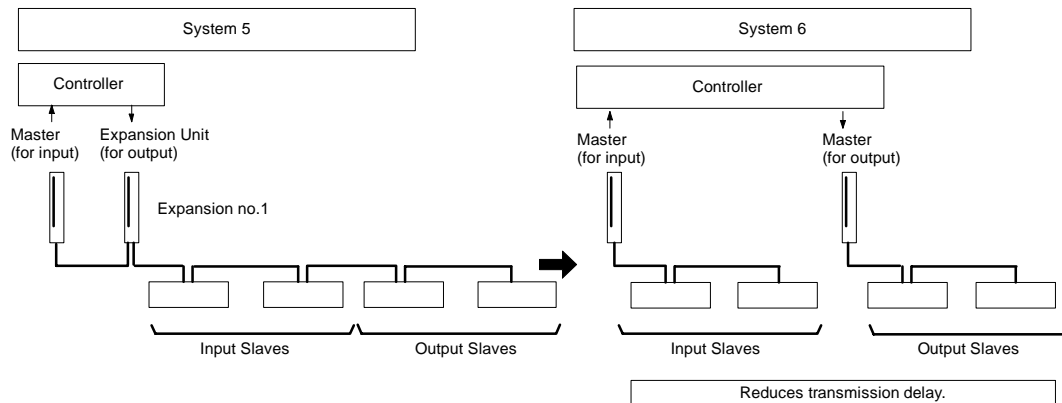


Example 3: There are 40 transistor input points and 10 relay output points.



Reducing Transmission Delay

It is possible to reduce the transmission delay in a system by rearranging the configuration of the system.



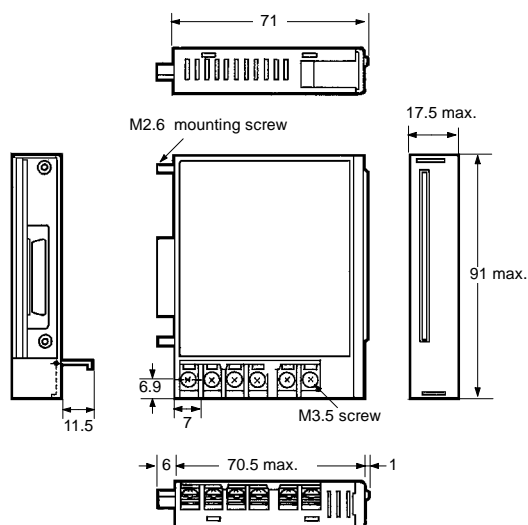
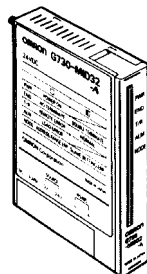
System 6 incorporating two Masters has less transmission delay than system 5 incorporating a single Master and an Expansion Unit. Refer to page 127 "Transmission Delay" for details on the calculation formula for transmission delay. There is less delay time if one G730-Vj D16 Slave is used instead of two G730-Vj D08 Slaves.

Dimensions

Note: All units are in millimeters unless otherwise indicated.

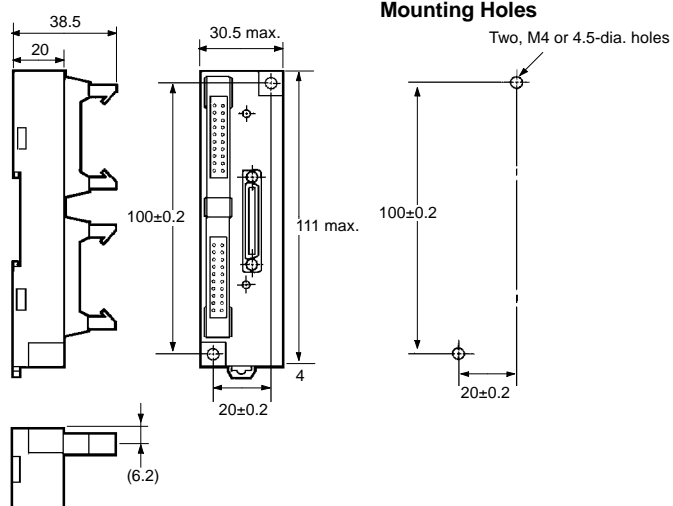
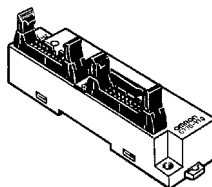
Master Unit

G730-MID32-A
G730-MOD32-A
G730-NID32
G730-NOD32

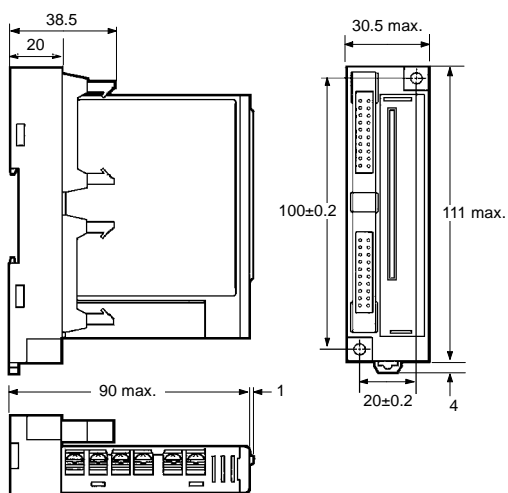
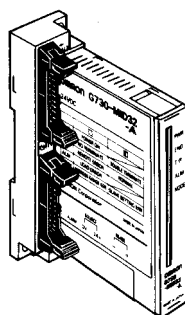


Harness Adapter

G730-Y10
G730-Y10-1



Mounting Dimensions

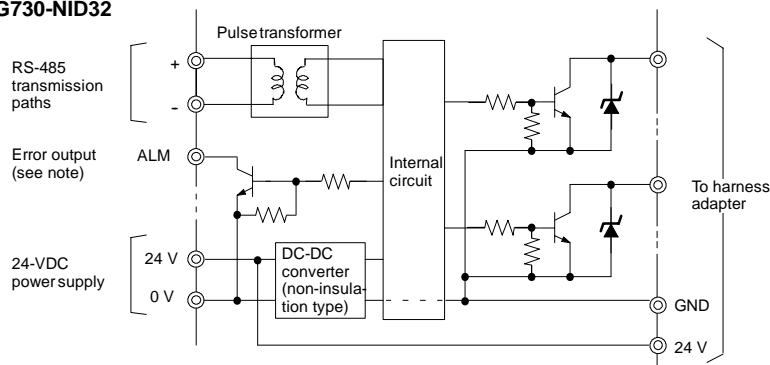


Installation

■ Internal Circuit Configuration

Input

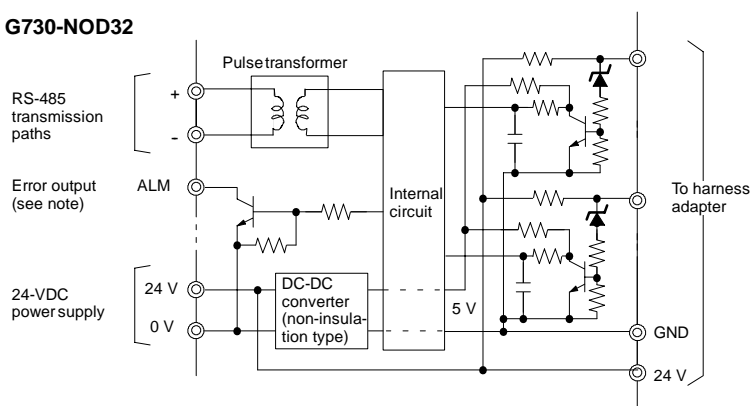
G730-MID32-A, G730-NID32



Note: Only the G730-MID32-A Master incorporates an error output function.

Output

G730-MOD32-A, G730-NOD32



Note: Only the G730-MOD32-A Master incorporates an error output function.

Ultra-miniature 4-point, 8-point, and 16-point Transistorized Terminals at Affordable Prices

- Ultra-compact (4-point models: 82 x 32 x 64.5 mm (WxDxH); 8-point/16-point models: 115 x 32 x 63 mm (WxDxH))
- Connecting to both G730-M/N and Remote I/O (wired SYSMAC BUS) Master Units.
- A series of NPN and PNP input and output models is available (8-point models only).
- Two independent power supplies can be used because the I/O terminals are insulated from the internal circuits.
- Allows DIN-track mounting with a G730-Y30 DIN-track Adapter.

Ordering Information

I/O classification	Internal I/O circuit common	I/O points	Rated voltage	I/O rated voltage	Model
Input	NPN (+ common)	4	24 VDC	24 VDC	G730-VID04
Output	NPN (- common)				G730-VOD04
Input	NPN (+ common)	8			G730-VID08
	PNP (- common)				G730-VID08-1
Output	NPN (+ common)				G730-VOD08
	PNP (- common)				G730-VOD08-1
Input	NPN (+ common)	16			G730-VID16
Output	NPN (- common)				G730-VOD16

Note: G730-V 16-point models cannot be used with the G720-MID32 or G730-MOD32. Always use the G730-MID32-A or G730-MOD-32-A Master when using G730-V 16-point models (G730-VID-16 or G730-VOD-16).

Unit	Remote Terminal	Model
DIN track adapter	G730-Vj D04	G730-Y31
	G730-Vj D08	G730-Y30
	G730-Vj D16	

Specifications

■ Ratings

Inputs

G730-VID04, G730-VID08, G730-VID08-1, G730-VID16

Input current	10 mA max./point
ON delay	1.5 ms max.
OFF delay	1.5 ms max.
ON voltage	5 VDC max. (at 24 VDC)
OFF current	0.2 mA min.
Insulation method	Photocoupler
Input indicators	LED (orange)

Note: Connection conditions to input devices are indicated.

Outputs

G730-VOD04, G730-VOD08, G730-VOD08-1, G730-VOD16

Rated output current	0.3 A/point (see note)
Residual voltage	0.6 V max.
Leakage current	0.1 mA max.
Insulation method	Photocoupler
Output indicators	LED (orange)

Note: Use at 2.4 A or less per common.

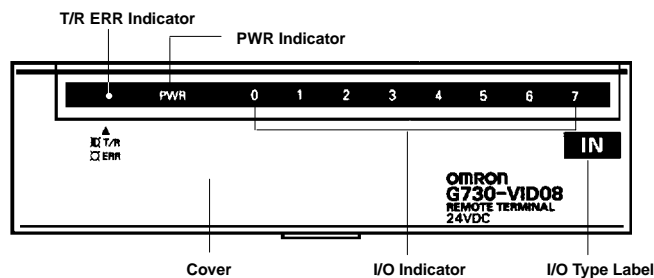
■ Characteristics

Master Unit	For controllers or personal computers: G730-M/N For SYSMAC BUS Wired Remote I/O Systems: C200H-RM201, 3G2A5-RM201
Communication method	Two-conductor, half duplex
Synchronization method	Asynchronous
Transmission distance	200 m (total length)
Transmission speed	187.5 kbps
Transmission path	Two-conductor cable (VCTF 0.75 x 2 C is recommended)
Interface	RS-485
Operating voltage range	24 VDC +10%/-15%
Current consumption (see note)	Output: 80 mA max. at 24 VDC Input: 70 mA max. at 24 VDC
Insulation resistance	20 MΩ min. (at 250 VDC)
Dielectric strength	500 VAC for 1 min between the input terminals and power supply and transmission paths, and between the power supply terminals and transmission terminals
Noise immunity	Power supply normal: 600 V for 10 min with a pulse width of 100 ns to 1 μs Power supply common: 1.5 kV for 10 min with a pulse width of 100 ns to 1 μs Coiling around transmission path: 1.5 kV for 10 min with a pulse width of 100 ns to 1 μs Coiling around Unit: 600 V for 10 min with a pulse width of 100 ns to 1 μs
Vibration resistance	10 to 55 Hz, 0.75-mm double amplitude for 2 hrs each in X, Y, and Z directions
Shock resistance	Destruction: 300 m/s ² (approx. 30G) Malfunction: 200 m/s ² (approx. 20G)
Ambient temperature	Operating: 0 to 55 °C Storage: -20 to 65 °C
Ambient humidity	Operating: 35% to 85%
Mounting strength	No damage when 5 kgf (49N) pull load was applied for 10 s in all directions
Terminal strength	Tightening strength: 10 kgf 5 cm (0.98 N 5 m) for 10 s Pulling strength: 5 kgf (50 N) for 10 s
Weight	4-point model: Approx. 97 g (G730-Y31: approx. 19 g) 8-point/16-point models: Approx. 150 g (G730-Y30: approx. 27 g)

Note: The above current consumption is a value with all 4, 8, and 16 points turned ON excluding the current consumption of the external sensor connected to the input Remote Terminal and the current consumption of the load connected to the output Remote Terminal.

Nomenclature

8-point Model



T/R ERR

Display	Function
Flashing	Flashes during normal transmission.
Lit	Lit while the Master Unit is waiting for transmission or when a transmission error results.
Not lit	Turns OFF if a CPU error is detected during watchdog timer monitoring.

PWR Indicator

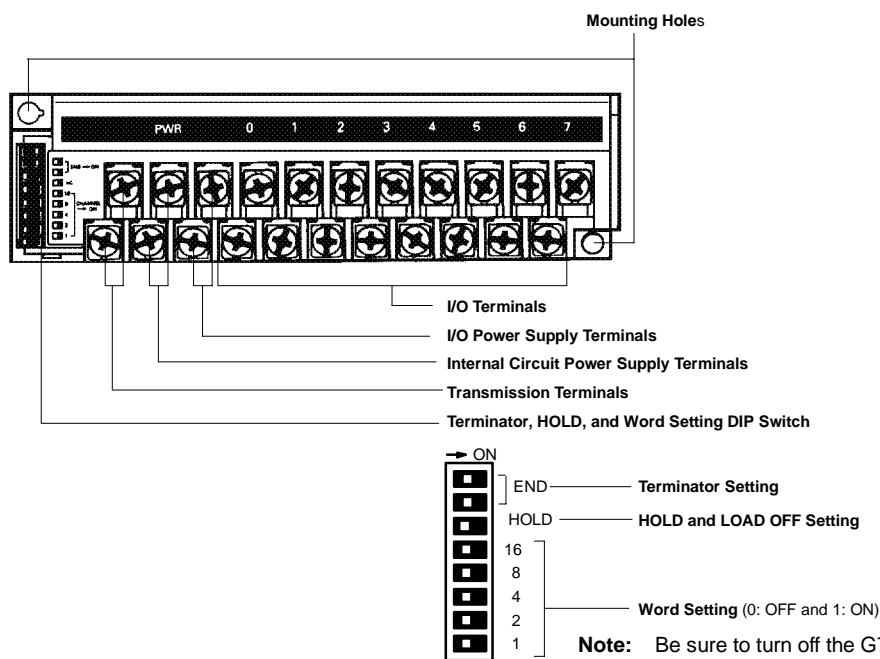
Lit when power is supplied.

I/O Indicator

Indicates the ON and OFF conditions of the I/O of the G730.

Cover

There are DIP switch terminals under the cover as shown in the illustration below.



Mounting Hole

Use an M4 screw to mount the DIP switch terminals.

I/O Power Supply Terminals

Connect to a 24 VDC power supply.

Internal Circuit Power Supply Terminals

Connect to a 24 VDC power supply.

Transmission Terminals

Connect a transmission cable.

Terminator Setting

These pins of the terminator must be set to ON.

If these pins of the terminator are set to ON, the terminator resistance of the terminator is turned ON. There must be only one terminator in a system. The G730-V located farthest from the G730-M on the transmission path must be the terminator. These pins are factory-set to OFF.

HOLD and LOAD OFF Setting

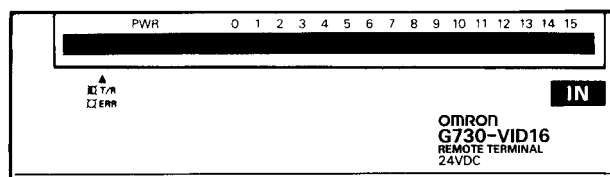
HOLD	LOAD OFF
If there is a Slave transmission error during signal transmission, the signal being transmitted is put on hold.	If there is a Slave transmission error during signal transmission, the output of the G730-V is turned OFF.

Note: If the Master has a data error or if there is no data from the Master, a Slave transmission error will result. The HOLD/LOAD OFF selector is factory-set to LOAD OFF.

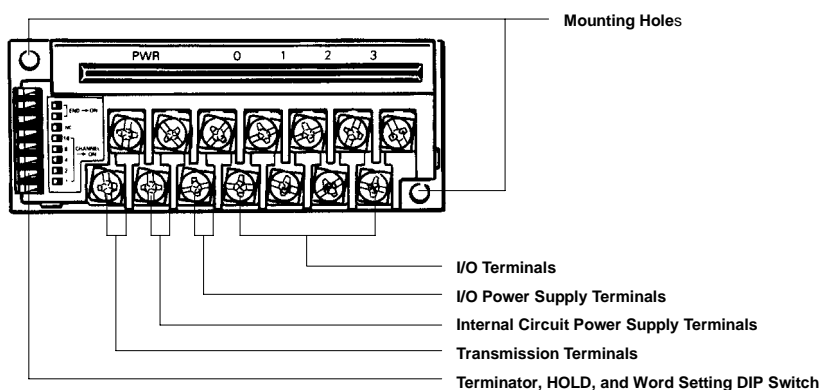
Word Settings

Word	Switch					Word	Switch				
	1	2	4	8	16		1	2	4	8	16
0	OFF	OFF	OFF	OFF	OFF	16	OFF	OFF	OFF	OFF	ON
1	ON	OFF	OFF	OFF	OFF	17	ON	OFF	OFF	OFF	ON
2	OFF	ON	OFF	OFF	OFF	18	OFF	ON	OFF	OFF	ON
3	ON	ON	OFF	OFF	OFF	19	ON	ON	OFF	OFF	ON
4	OFF	OFF	ON	OFF	OFF	20	OFF	OFF	ON	OFF	ON
5	ON	OFF	ON	OFF	OFF	21	ON	OFF	ON	OFF	ON
6	OFF	ON	ON	OFF	OFF	22	OFF	ON	ON	OFF	ON
7	ON	ON	ON	OFF	OFF	23	ON	ON	ON	OFF	ON
8	OFF	OFF	OFF	ON	OFF	24	OFF	OFF	OFF	ON	ON
9	ON	OFF	OFF	ON	OFF	25	ON	OFF	OFF	ON	ON
10	OFF	ON	OFF	ON	OFF	26	OFF	ON	OFF	ON	ON
11	ON	ON	OFF	ON	OFF	27	ON	ON	OFF	ON	ON
12	OFF	OFF	ON	ON	OFF	28	OFF	OFF	ON	ON	ON
13	ON	OFF	ON	ON	OFF	29	ON	OFF	ON	ON	ON
14	OFF	ON	ON	ON	OFF	30	OFF	ON	ON	ON	ON
15	ON	ON	ON	ON	OFF	31	ON	ON	ON	ON	ON

Note: The word is factory-set to 0.

16-point Model

Note: I/O displays and I/O terminals are different from 8-point models. The appearance is otherwise the same as 8-point models. Refer to page 99 for terminal arrangement and I/O device connection examples.

4-point Model

Note: The LED indicators, terminator, HOLD, and word setting methods are the same as for 8-point models.

Mounting Hole

Use an M4 screw to mount the DIP switch terminals.

I/O Power Supply Terminals

Connect to a 24 VDC power supply.

Internal Circuit Power Supply Terminals

Connect to a 24 VDC power supply.

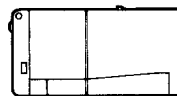
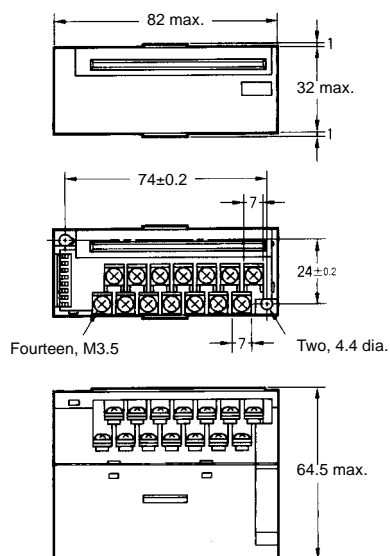
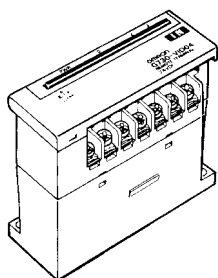
Transmission Terminals

Connect a transmission cable.

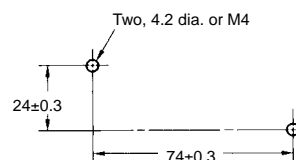
Dimensions

Note: All units are in millimeters unless otherwise indicated.

G730-VID04 G730-VOD04

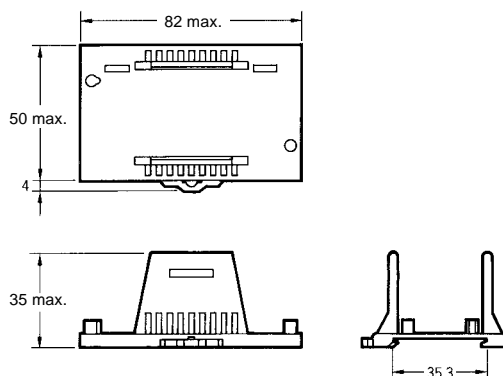
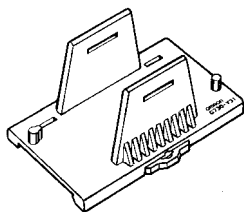


Mounting Holes

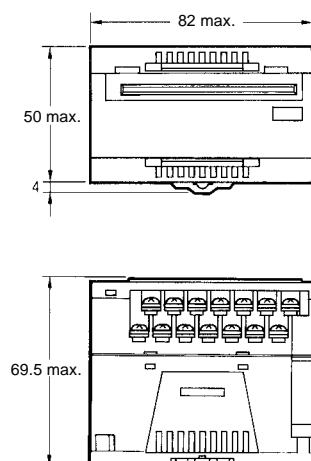
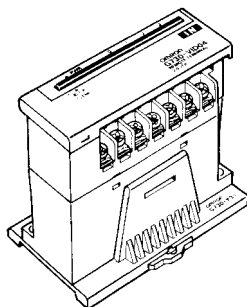


DIN Track Adapter

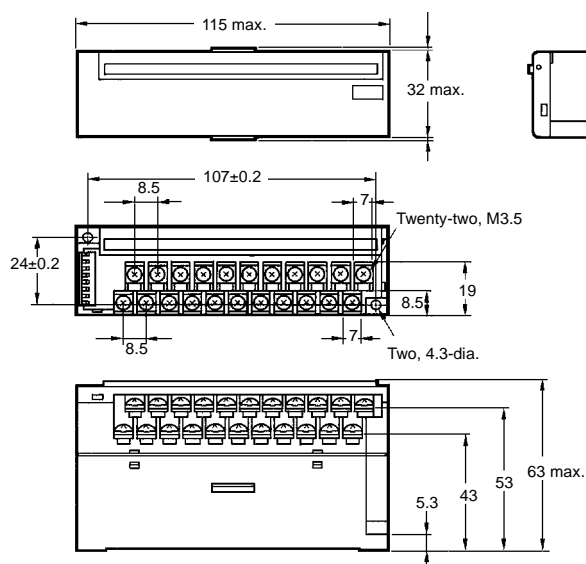
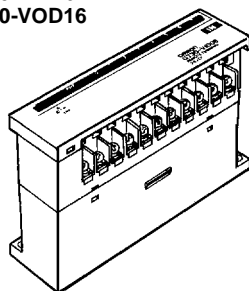
G730-Y31



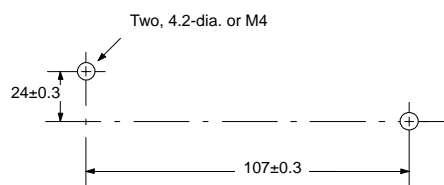
Mounting Dimensions



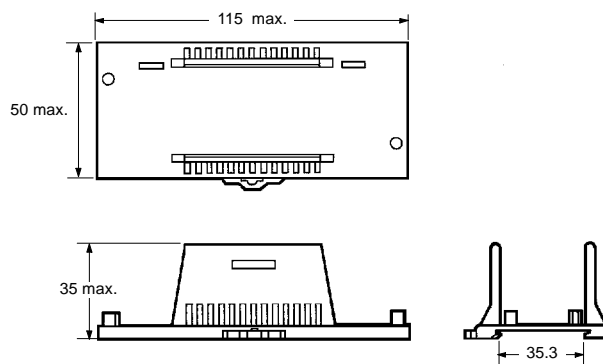
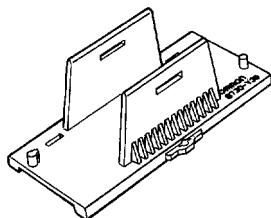
G730-VID08
G730-VID08-1
G730-VOD08
G730-VOD08-1
G730-VID16
G730-VOD16



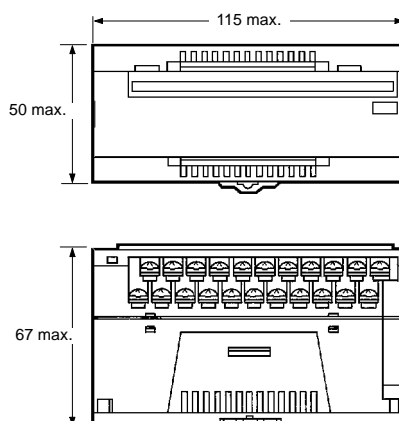
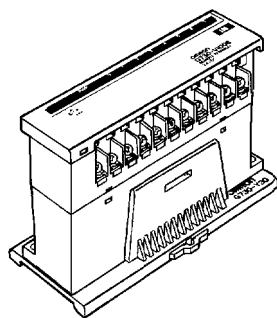
Mounting Holes



DIN Track Adapter G730-Y30



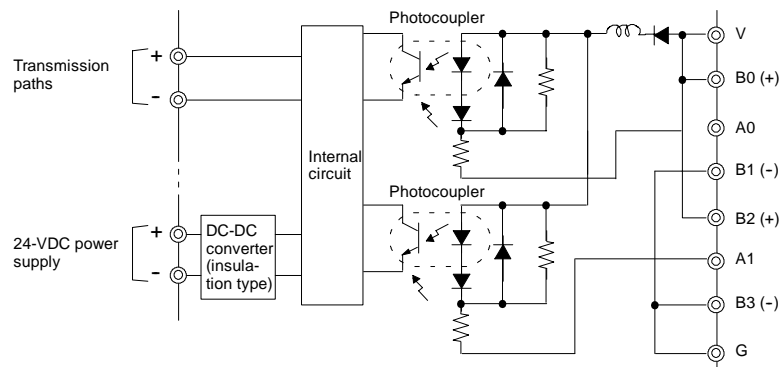
Mounting Dimensions



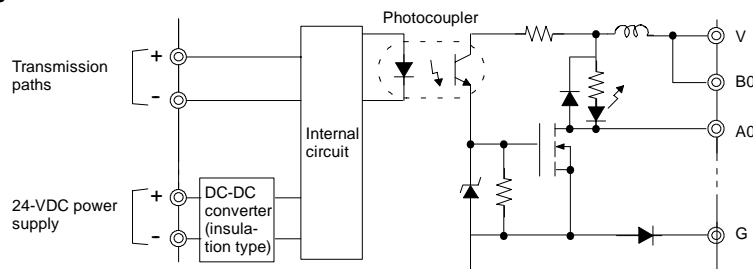
Installation

■ Internal Circuit Configuration

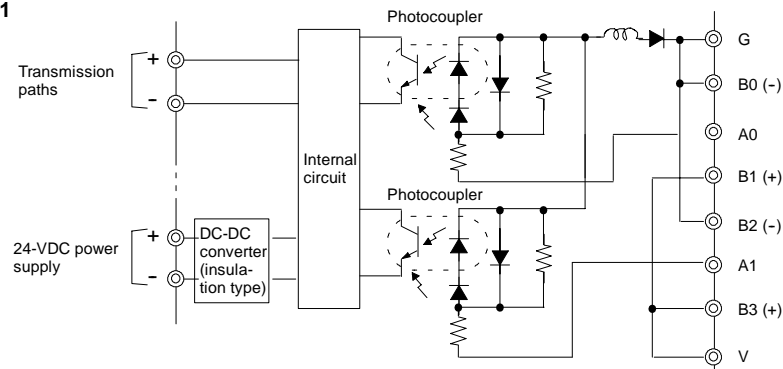
**G730-VID04
G730-VID08**



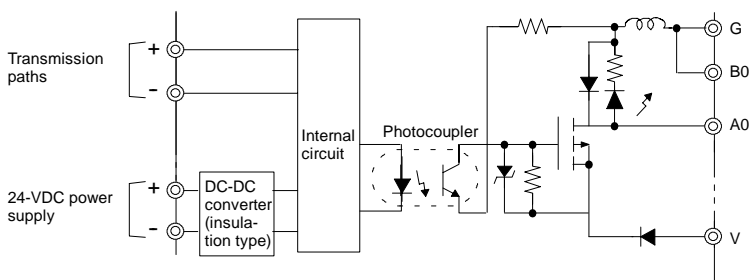
**G730-VOD04
G730-VOD08**



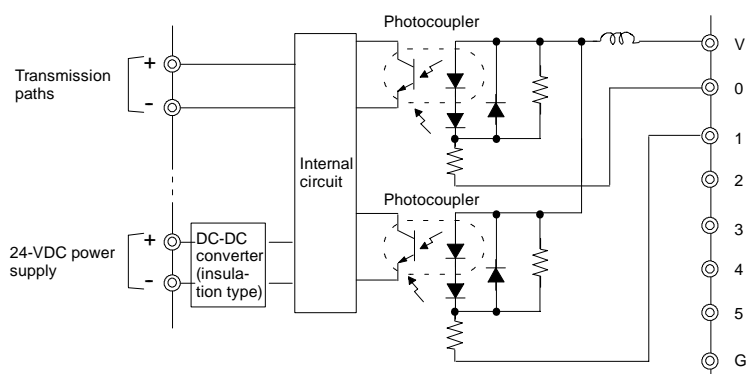
G730-VID08-1



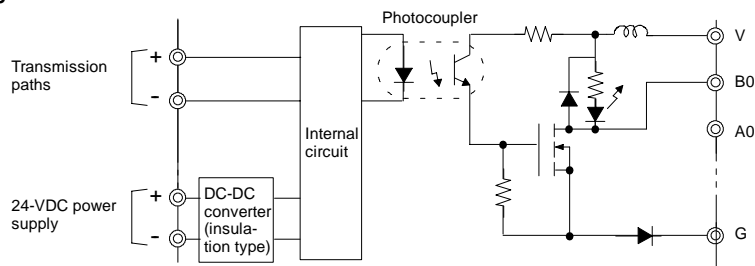
G730-VOD08-1



G730-VID16



G730-VOD16

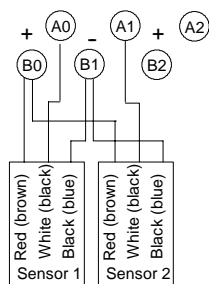


External Connections

No relay terminal boards for the sensor loads are required.

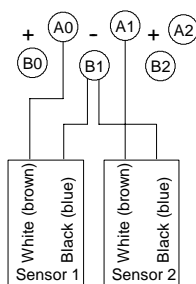
Three-wire System

G730-VID04/G730-VID08 with NPN Output
G730-VID08-1 with PNP Output

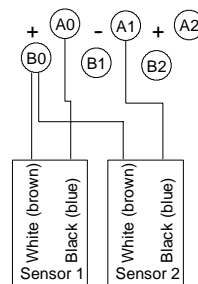


Two-wire System

G730-VID04/G730-VID08

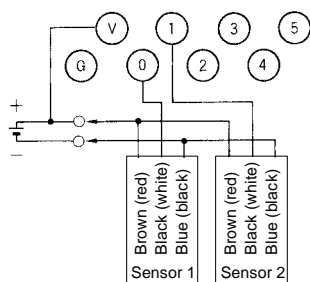


G730-VID08-1



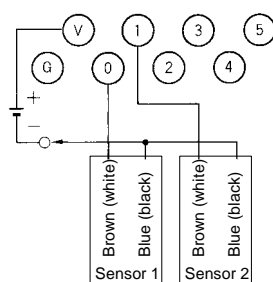
Input Blocks

G730-VID16 with NPN Output



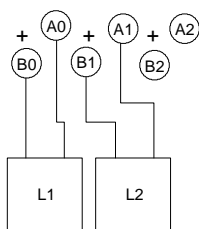
Two-wire System

G730-VID16

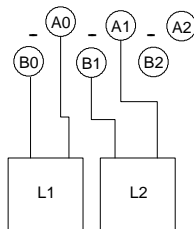


Output Blocks

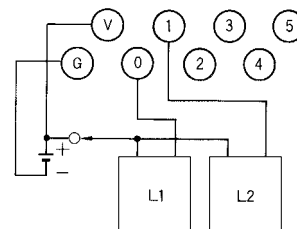
G730-VOD04/G730-VOD08



G730-VOD08-1



G730-VOD16



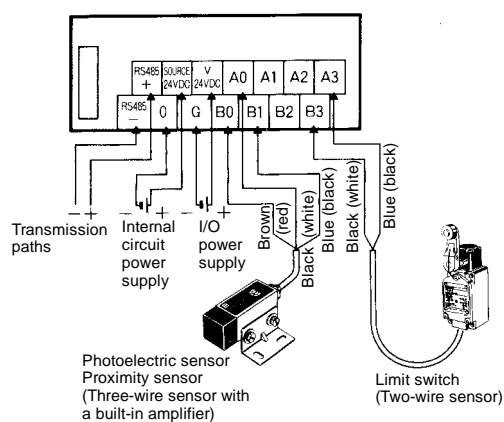
■ Terminal Arrangement/I/O Device Connection Examples

Note: 1. The connections examples shown are for NPN models.

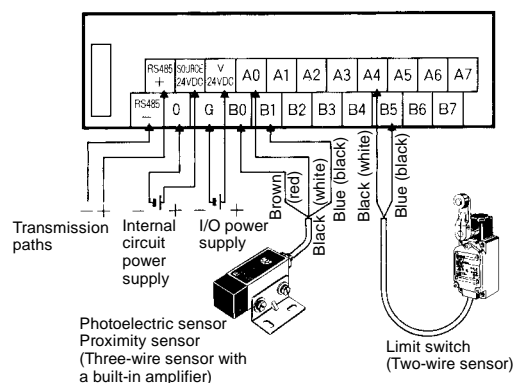
2. Wire colors have been changed as a result of changes in JIS standards for photoelectric and proximity sensors. Colors in parentheses are the old colors.

Input Terminals

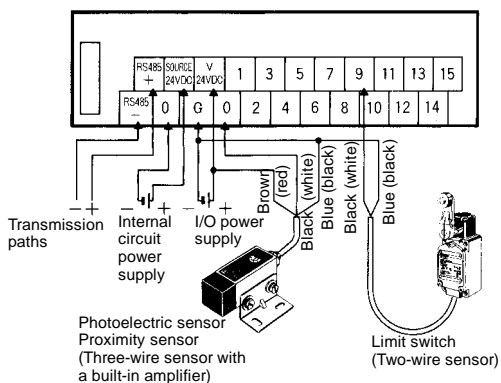
G730-VID04



G730-VID08

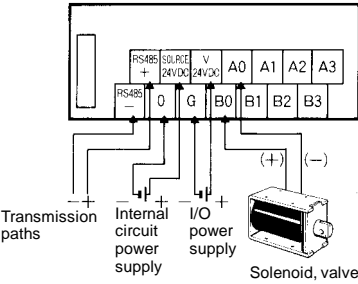


G730-VID16

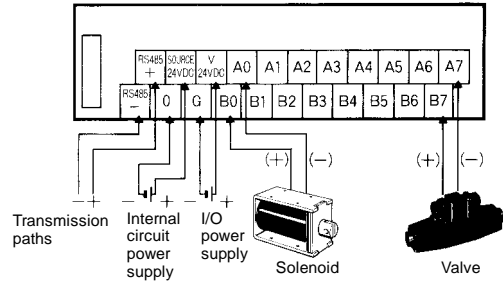


Output Terminals

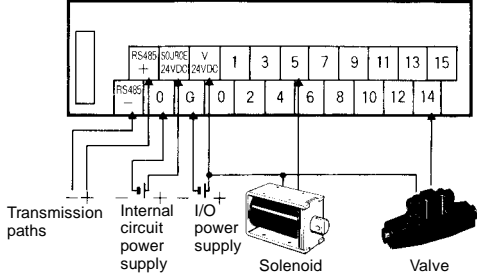
G730-VOD04



G730-VOD08



G730-VOD16



Relay-mounted Remote Terminal

G730-R

Select from 4-point, 8-point, and 16-point Models to Flexibly Meet Your Needs

- Connecting to both G730-M/N and Remote I/O (wired SYSMAC BUS) Master Units.
- G730-A Terminals with no-contact, long-life, no-leak-current Power MOS FET Relays.
- The finger-protect construction of the Remote Terminal meets the VDE0160 requirement (4-point models only).

Ordering Information

Classification	Points	Rated voltage	Relay coil rating	Model	Applicable relay
Relay input	4 points	24 VDC	12 VDC	G730-RID04	G2R-1A3-S
			24 VDC	G730-RID04	
			100/(110) VAC	G730-RIA04	
			200/(220) VAC	G730-RIA04	
Relay output			24 VDC	G730-ROC04	G2R-1A-S
	8 points			G730-ROC08	G6D-1A (see note 2)
	16 points			G730-ROC16	
Power MOS FET relay outputs	8 points			G730-AOM08	G3DZ-2R6PL (see note 2)
	16 points			G730-AOM16	

- Note:** 1. G730-R/-A 16-point models cannot be used with the G720-MID32 or G730-MOD32. Always use the G730-MID32-A or G730-MOD-32-A Master when using G730-V 16-point models (G730-VID-16 or G730-VOD-16).
2. Refer to pages 61 to 66 for details on individual relays.

Classification	Points	Rated voltage	Relay coil rating	Model	Applicable relay
Input socket	4 points	24 VDC	5 to 24 VDC	G730-ZID04	G2R-1A3-S, G3R (SSR) G3RZ (Power MOS FET relay)
			100 to 240 VAC	G730-ZIA04	
Output socket			24 VDC	G730-ZOM04	G2R-1A-S, G3R (SSR), G3RZ (Power MOS FET relay)

- Note:** 1. Other combinations are possible, such as sockets and G3R SSR and sockets, and G3RZ Power MOS FET Relays. Refer to pages 70 to 135 for model numbers.
2. All input relays must be G2R-1A3-S Relays with bifurcated crossbar contacts.

Specifications

■ Ratings

Inputs

Item	G730-RID04		G730-RIA04	
Rated input voltage	12 VDC	24 VDC	100/110 VAC	200/220 VAC
Rated input current	43.6 mA	21.8 mA	6.2 mA	3.3 mA
Coil resistance	275 Ω	1.1 kΩ	6.5 kΩ	25 kΩ
Operating voltage	70% max.		80% max.	
Release voltage	15% min.		30% min.	
Max. permissible voltage	110%			
Power consumption	Approx. 0.53 W		Approx. 0.7 VA	
ON delay	20 ms			
OFF delay	35 ms		25 ms	
Life expectancy	Electrical: 100,000 operations min. (under a rated load at 1,800 operations/hr) Mechanical: G730-RID04: 20,000,000 operations min. (at 1,800 operations/hr) G730-RIA04: 10,000,000 operations min. (at 1,800 operations/hr)			

Outputs

Item	G730-ROC04		G730-ROC08, G730-ROC16
Rated load	Resistive load: 5 A at 250 VAC; 5 A at 30 VDC	Inductive load: 2 A at 250 VAC; 3 A at 30 VDC	Resistive load: 3 A at 250 VAC; 3 A at 30 VDC
Rated carry current	5 A		3 A
Max. switching voltage	380 VAC, 125 VDC		250 VAC, 30 VDC
Max. switching current	5 A		3 A
Max. switching capacity	1,250 VA, 150 W	500 VA, 90 W	730 VA, 90 W
Min. permissible load (see note)	100 mA at 5 VDC		10 mA at 5 VDC
Life expectancy	Electrical: 100,000 operations min. (under a rated load at 1,800 operations/hr) Mechanical: 20,000,000 operations min. (at 1,800 operations/hr)		

Note: This value fulfills the P reference value of opening/closing at a rate of 120 times per min (ambient operating environment and determination criteria according to JIS C5442).

Power MOS FET Relay Specifications

Item	G730-AOM08, G730-AOM16
Load voltage	3 to 264 VAC, 3 to 125 VDC
Load current	100 μ A to 0.3 A
Inrush current	6 A (10 ms)

■ Characteristics

Item	G730-RID04, G730-ROD04	G730-ROC08	G730-ROC16	G730-AOM08	G730-AOM16
Master Unit	For controllers or personal computers: G730-M/N For SYSMAC BUS Wired Remote I/O Systems: C200H-RM201, 3G2A5-RM201				
Communication method	Two-conductor, half duplex				
Synchronization method	Asynchronous				
Transmission distance	200 m (total length)				
Transmission speed	187.5 kbps				
Transmission path	Two-conductor cable (VCTF 0.75 x 2 C is recommended)				
Interface	RS-485				
Operating voltage range	24 VDC +10%/-15%				
Current consumption (see note)	Input: 70 mA max. at 24 VDC Output: 220 mA max. at 24 VDC		Input: 70 mA max. at 24 VDC Output: 220 mA max. at 24 VDC		
Insulation resistance	20 MΩ min. (at 250 VDC)				
Dielectric strength	<u>G730-RIA04/-ROC04:</u> 2,700 VAC for 1 min between the whole I/O terminals and power supply and transmission terminals, 500 VAC for 1 min between the whole power supply terminals and transmission terminals <u>G730-RID04:</u> 500 VAC for 1 min between the whole I/O terminals and power supply and transmission terminals; between the whole power supply terminals and transmission terminals		2,000 VAC for 1 min between the whole output terminals and power supply and transmission terminals 500 VAC for 1 min between the whole power supply terminals and transmission terminals		
Noise immunity	Power supply normal: 600 V for 10 min with a pulse width of 100 ns to 1 μs Power supply common: 1.5 kV for 10 min with a pulse width of 100 ns to 1 μs Coiling around transmission path: 1.5 kV for 10 min with a pulse width of 100 ns to 1 μs Coiling around Unit: 600 V for 10 min with a pulse width of 100 ns to 1 μs				
Vibration resistance	10 to 55 Hz, 0.75-mm double amplitude for 2 hrs each in X, Y, and Z directions				
Shock resistance	Destruction: 300 m/s ² (approx. 30G) Malfunction: 100 m/s ² (approx. 10G)				
Ambient temperature	Operating: 0 to 55 °C Storage: -20 to 65 °C				
Ambient humidity	Operating: 35% to 85%				
Mounting strength	No damage when 5 kgf (49N) pull load was applied for 1 s in all directions				
Terminal strength	Tightening strength: 10 kgf S cm (0.98 N S m) Pulling strength: 5 kgf (50 N) for 1 min				
Weight	G730-RID: approx. 223 g G730-RIA: approx. 225 g; G730-ROC: approx. 224 g (with all the relays mounted.)	Approx. 140 g (with all the relays mounted.)	Approx. 230 g (with all the relays mounted.)	Approx. 140 g (with all the relays mounted.)	Approx. 230 g (with all the relays mounted.)

Note: The above current consumption is a value with all the points turned ON including the current consumption of the G2R/G6D coils for the Remote Output Terminal.

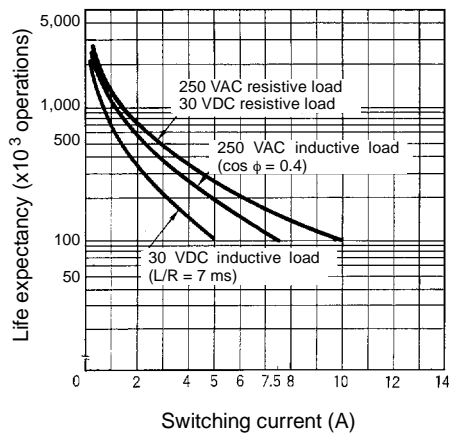
Engineering Data

■ Output

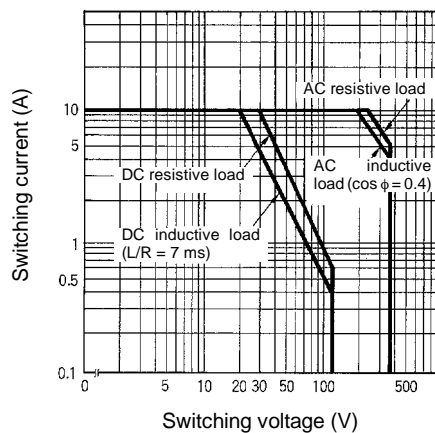
G2R-1A-S Relay (24 VDC)

For G730-ROC04 and G730-ROC04-A

Life Expectancy



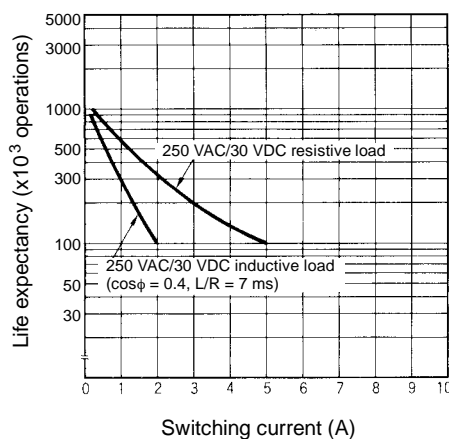
Max. Switching Capacity



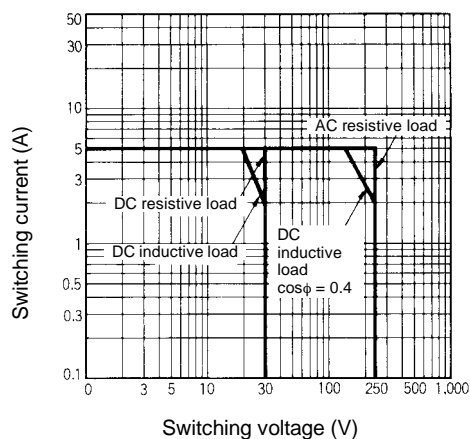
G6D-1A Relay (24 VDC)

For G730-ROC08 and G730-ROC16

Life Expectancy



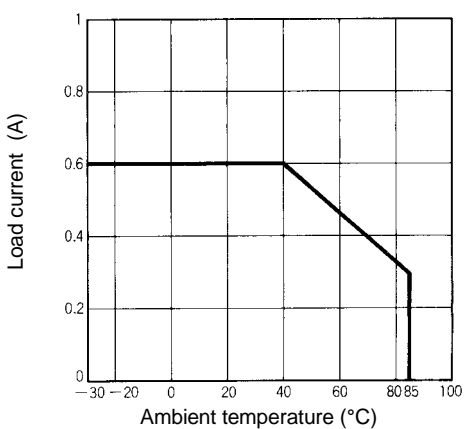
Max. Switching Capacity



G3DZ-2RGPL Relay

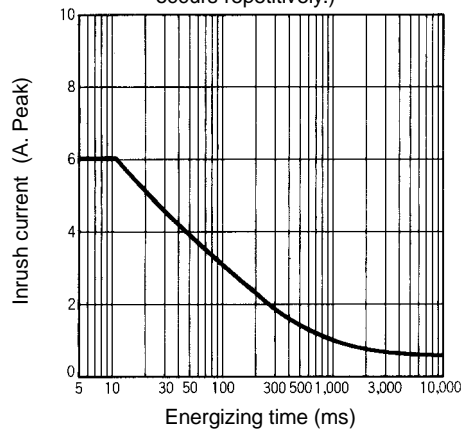
For G730-AOM08 and G730-AOM16

Load Current vs. Ambient Temperature Characteristics



Inrush Current Resistivity

Non-repetitive (Keep the inrush current to half the rated value if it occurs repetitively.)



Nomenclature

G730-RIA04, G730-RID04, G730-ROC04

DIP Switch Setting Guide Label

I/O Type Label

Mounting Hole

Use an M4 screw to mount the G730.

T/R ERR Indicator

PWR Indicator

I/O Indicator

Relay Removal Lever

I/O Relay

Mounting Holes

I/O Terminals

Internal Circuit Power Supply Terminals

Transmission Terminals

Switch Cover

Terminator, HOLD, and Word Setting

Terminator Setting

HOLD and LOAD OFF Setting

(select output hold or clear)

(These pins are used on only Remote Output Terminals. These pins on Remote Input Terminals are not used.)

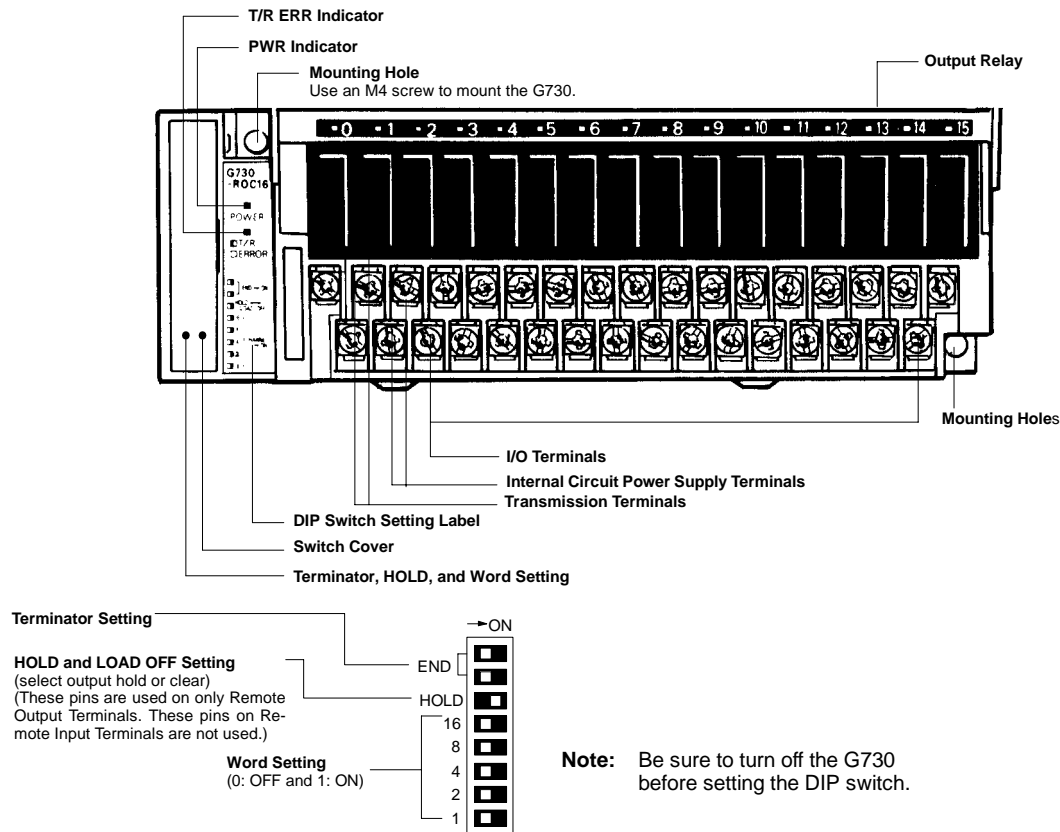
Word Setting

(0: OFF and 1: ON)



Note: Be sure to turn off the G730 before setting the DIP switch.

G730-ROC16, G730-AOM16



Mounting Holes
Use an M4 screw to mount the G730.

Terminator Setting
These pins on the terminator must be set to ON.
If these pins on the terminator are set to ON, the terminator resistance of the terminator is turned ON. There must be only one terminator in a system. The G730-V located farthest from the G730-M on the transmission path must be the terminator. These pins are factory-set to OFF.

HOLD and LOAD OFF Setting

HOLD	LOAD OFF
If there is a Slave transmission error during signal transmission, the signal being transmitted is put on hold.	If there is a Slave transmission error during signal transmission, the output of the G730-V is turned OFF.

Note: If the Master has a data error or if there is no data from the Master, a Slave transmission error will result. The HOLD/LOAD OFF selector is factory-set to LOAD OFF.

T/R ERR Indicator

Display	Function
Flashing	Flashes during normal transmission.
Lit	Lit while the Master Unit is waiting for transmission or when a transmission error results.
Not lit	Turns OFF if a CPU error is detected during watchdog timer monitoring.

PWR Indicator

Display	Function
Lit	Lit when the G730-R is in operation.
Not lit	Turns off when there is a power failure.

I/O Indicator

Indicates the ON and OFF conditions of the I/O of the G730.

Internal Circuit Power Supply Terminals

Connect to a 24-VDC power supply.

Transmission Terminals

Connect a transmission cable.

Switch Cover

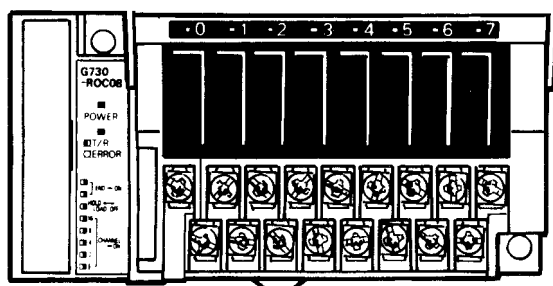
There is a DIP switch under the cover, which is used for word, terminator, and HOLD settings.

Word Settings

Word	Switch					Word	Switch				
	1	2	4	8	16		1	2	4	8	16
0	OFF	OFF	OFF	OFF	OFF	16	OFF	OFF	OFF	OFF	ON
1	ON	OFF	OFF	OFF	OFF	17	ON	OFF	OFF	OFF	ON
2	OFF	ON	OFF	OFF	OFF	18	OFF	ON	OFF	OFF	ON
3	ON	ON	OFF	OFF	OFF	19	ON	ON	OFF	OFF	ON
4	OFF	OFF	ON	OFF	OFF	20	OFF	OFF	ON	OFF	ON
5	ON	OFF	ON	OFF	OFF	21	ON	OFF	ON	OFF	ON
6	OFF	ON	ON	OFF	OFF	22	OFF	ON	ON	OFF	ON
7	ON	ON	ON	OFF	OFF	23	ON	ON	ON	OFF	ON
8	OFF	OFF	OFF	ON	OFF	24	OFF	OFF	OFF	ON	ON
9	ON	OFF	OFF	ON	OFF	25	ON	OFF	OFF	ON	ON
10	OFF	ON	OFF	ON	OFF	26	OFF	ON	OFF	ON	ON
11	ON	ON	OFF	ON	OFF	27	ON	ON	OFF	ON	ON
12	OFF	OFF	ON	ON	OFF	28	OFF	OFF	ON	ON	ON
13	ON	OFF	ON	ON	OFF	29	ON	OFF	ON	ON	ON
14	OFF	ON	ON	ON	OFF	30	OFF	ON	ON	ON	ON
15	ON	ON	ON	ON	OFF	31	ON	ON	ON	ON	ON

Note: The word is factory-set to 0.

G730-ROC08, G730-AOM08

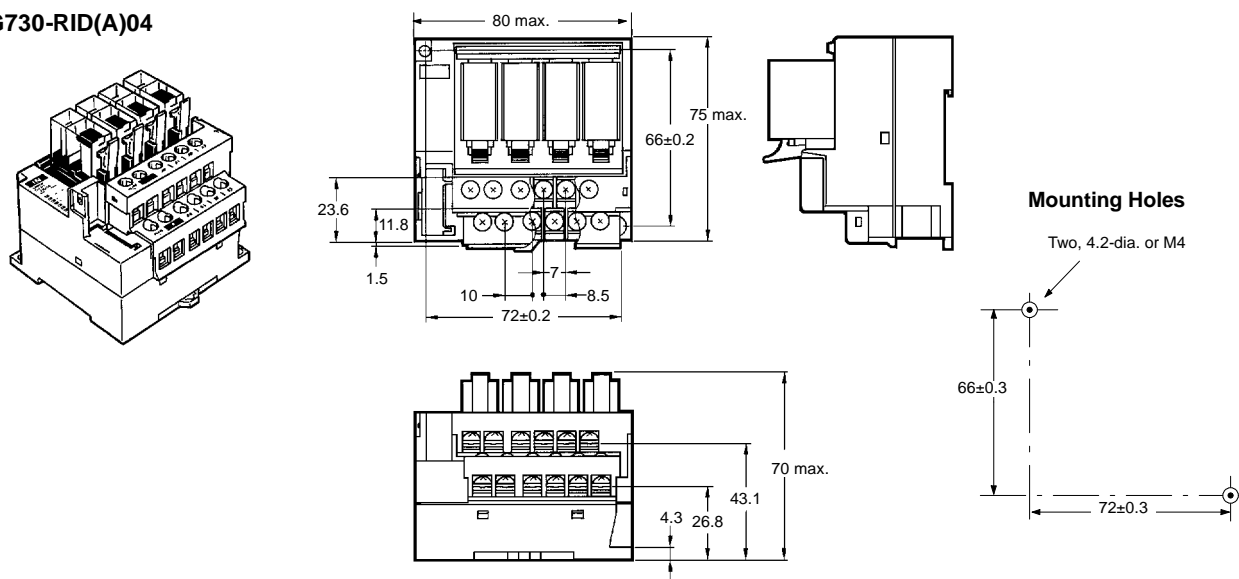


The LED indicators, terminator, HOLD, and word setting methods are the same as for 8-point models.

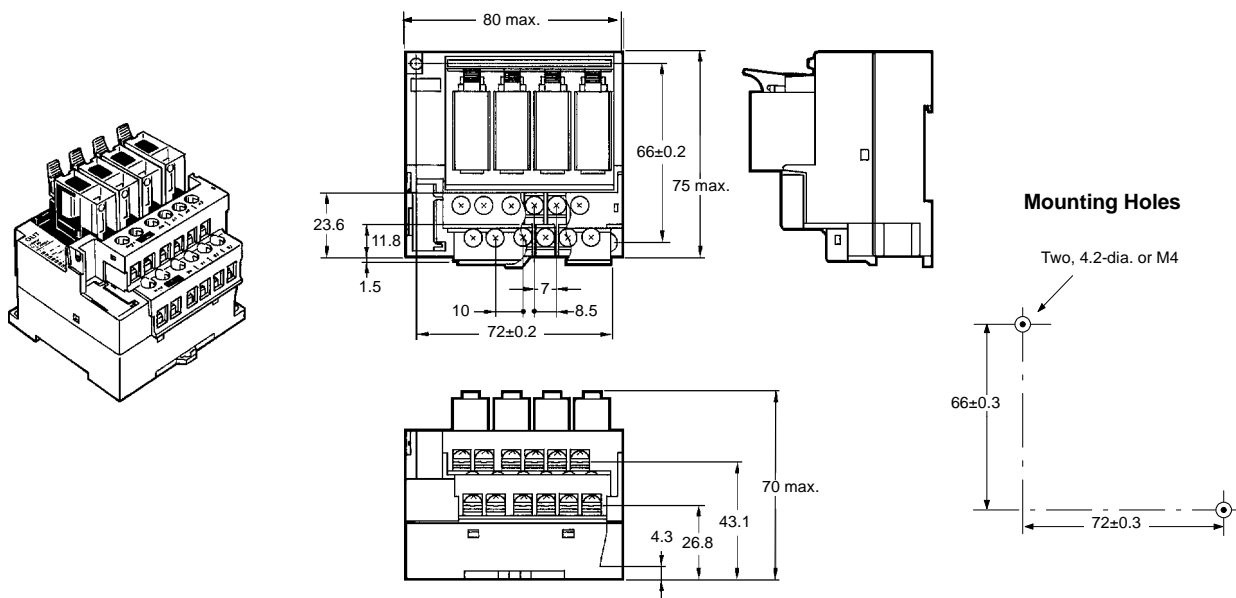
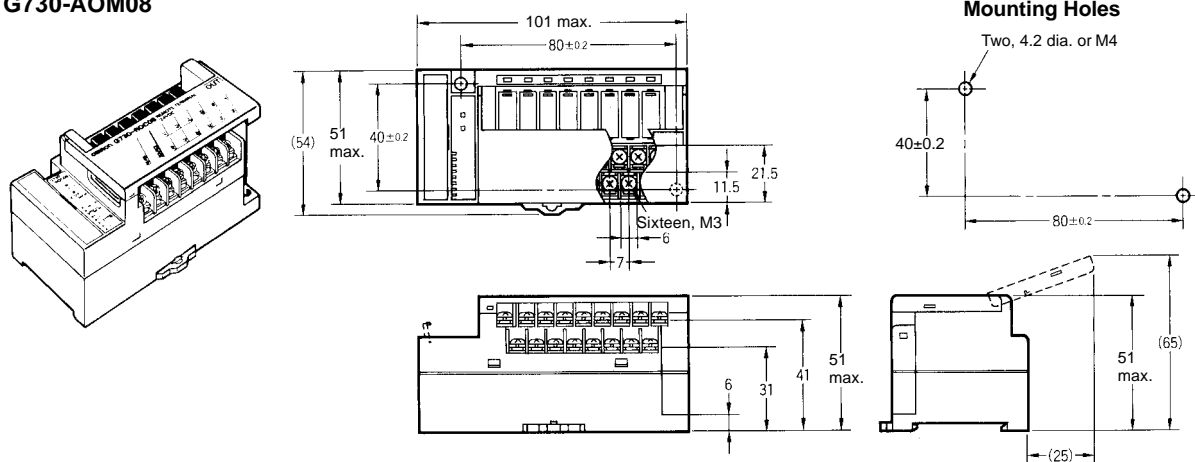
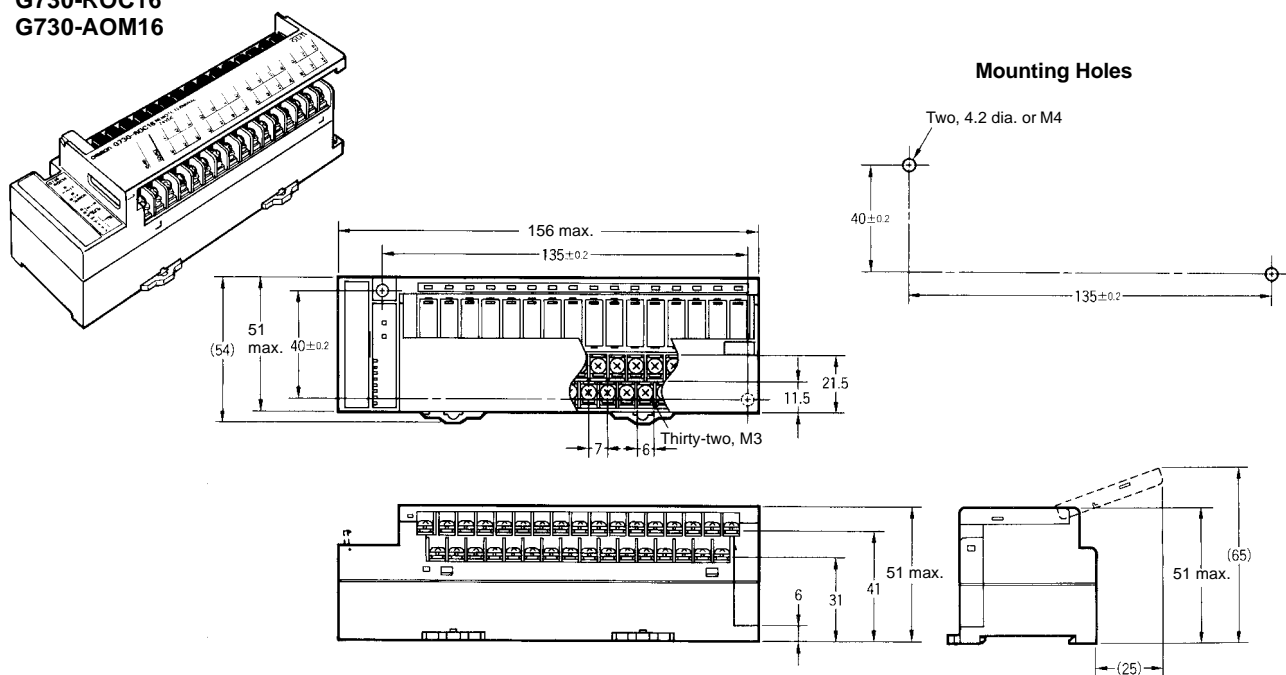
Dimensions

Note: All units are in millimeters unless otherwise indicated.

G730-RID(A)04



G730-ROC04

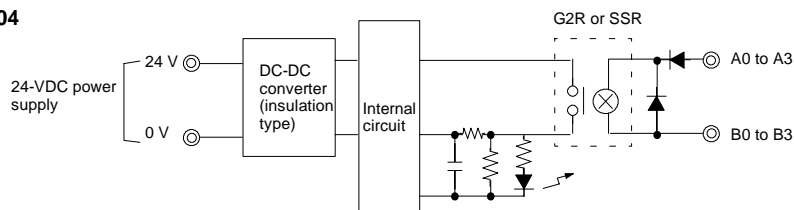
G730-ROC08
G730-AOM08G730-ROC16
G730-AOM16

Installation

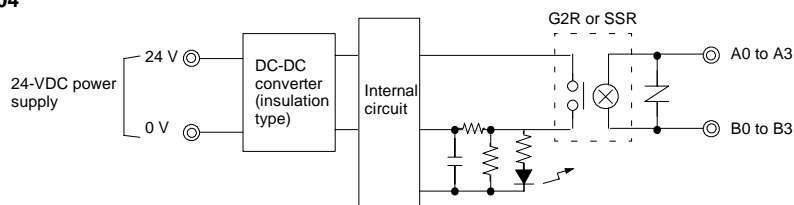
■ Internal Circuit Configuration

Input Circuits

G730-RID04

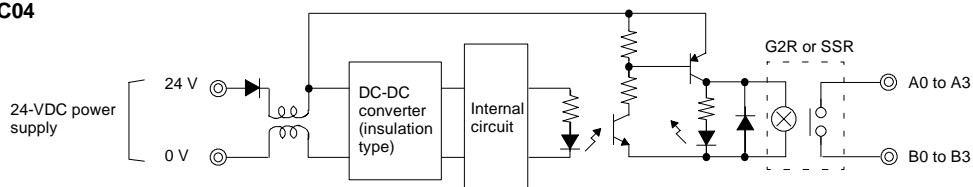


G730-RIA04

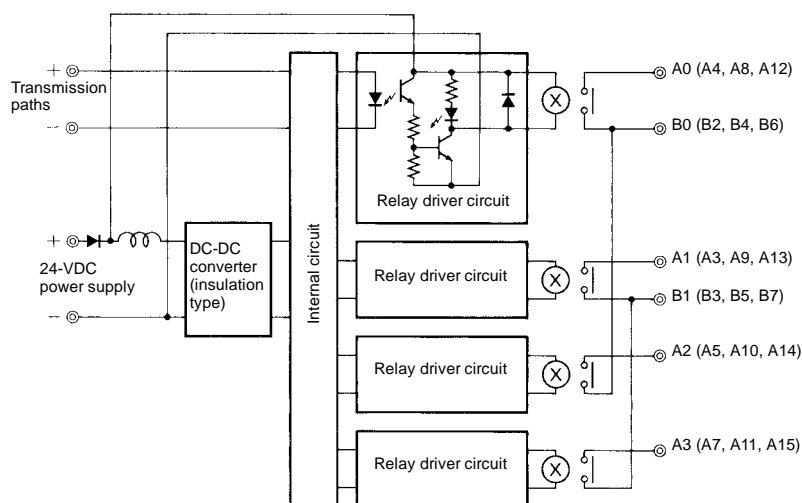


Output Circuit

G730-ROC04



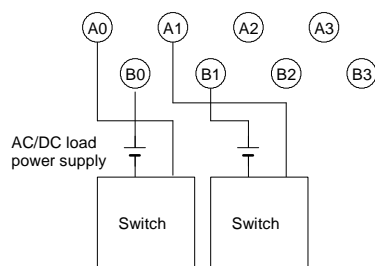
G730-ROC08, G730-ROC16, G730-AOM08, G730-AOM16



■ External Connections

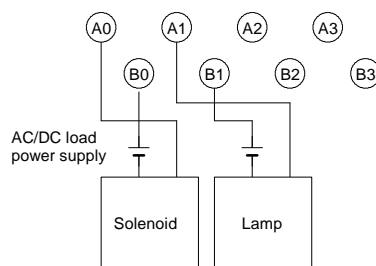
Input Blocks

G730-RIA04, G730-RID04



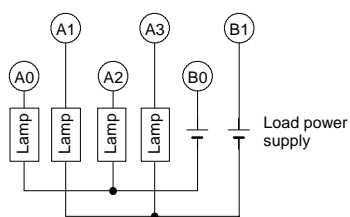
Output Blocks

G730-ROC04



Output Blocks

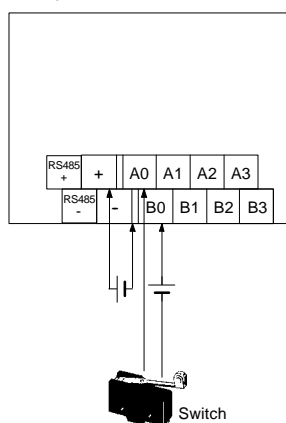
G730-ROC08, G730-ROC16, G730-AOM08, G730-AOM16



■ Terminal Arrangement/I/O Device Connection Examples

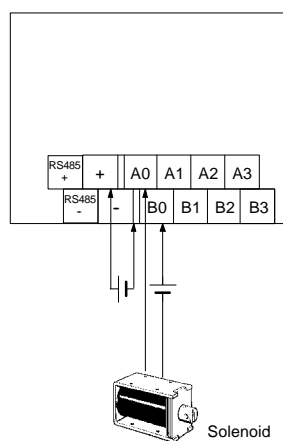
Input Terminals

G730-RIA04, G730-RID04



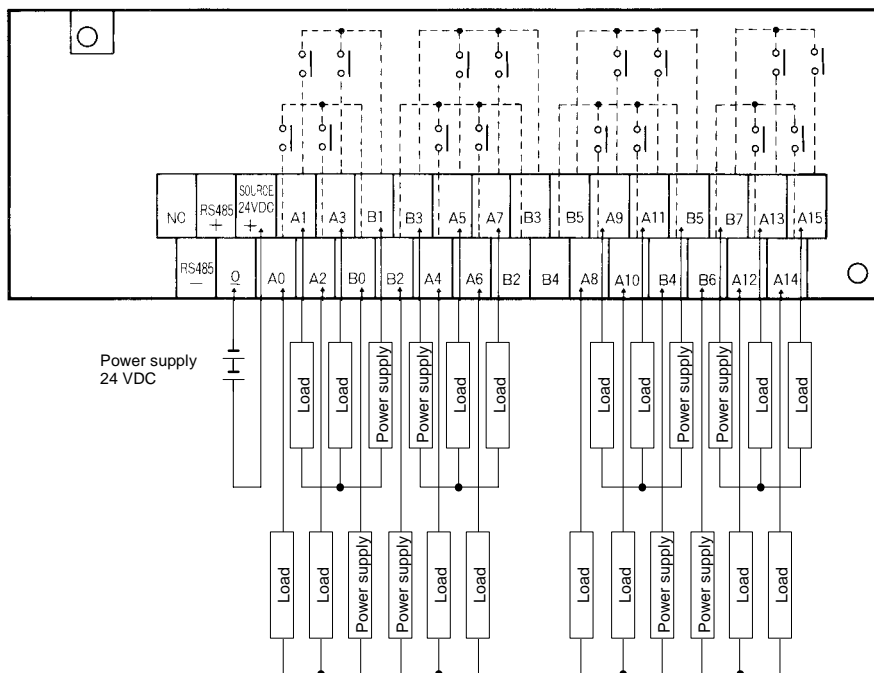
Output Terminals

G730-ROC04



Output Terminals

G730-ROC08, G730-ROC16, G730-AOM08, G730-AOM16



Note: The G730-ROC16/AOM16 is shown above. G730-ROC08 and G730-AOM08 do not have terminals A0 through A7.

The World's First Remote Terminal with Fault Detection for Safer Operation

- Built-in fault detector detects contact faults, open load lines, relay fusion shorts, and more.
- Detects the contact weld and improper contact of the relays that are mounted.
- AC and DC loads can be connected.
- Error output is indicated with LED indicators and transmission signal feedback.
- Good noise resistance with G2R Relays: the most suitable I/O relay.
- The finger-protect construction of the Remote Terminal meets the VDE0160 requirement.

Ordering Information

Classification	Points	Rated voltage	Relay coil rating	Model	Applicable relay
Relay output (with an error detecting function)	4 points	24 VDC	24 VDC	G730-ROC04-A	G2R-1A-S

Classification	Points	Rated voltage	Relay coil rating	Model	Applicable relay
Output socket (with an error detecting function)	4 points	24 VDC	24 VDC	G730-ZOM04-A	G2R-1A-S G3R (SSR) G3RZ (Power MOS FET relay)

Note: Other combinations are possible, such as sockets and G3R SSR and sockets, and G3RZ Power MOS FET Relays. Refer to pages 70 to 135 for model numbers.

Specifications

■ Ratings Outputs

Item	G730-ROC04-A	
Rated load	Resistive load: 5 A at 250 VAC; 5 A at 30 VDC	Inductive load: 2 A at 250 VAC; 3 A at 30 VDC
Rated carry current	5 A	
Max. switching voltage	380 VAC; 125 VDC	
Max. switching current	5 A	
Max. switching capacity	1,250 VA; 150 W	500 VA; 90 W
Min. permissible load	100 mA at 5 VDC	
Life expectancy	Electrical: 100,000 operations min. (under a rated load at 1,800 operations/hr) Mechanical: 20,000,000 operations min. (at 1,800 operations/hr)	

Error Detecting Performance

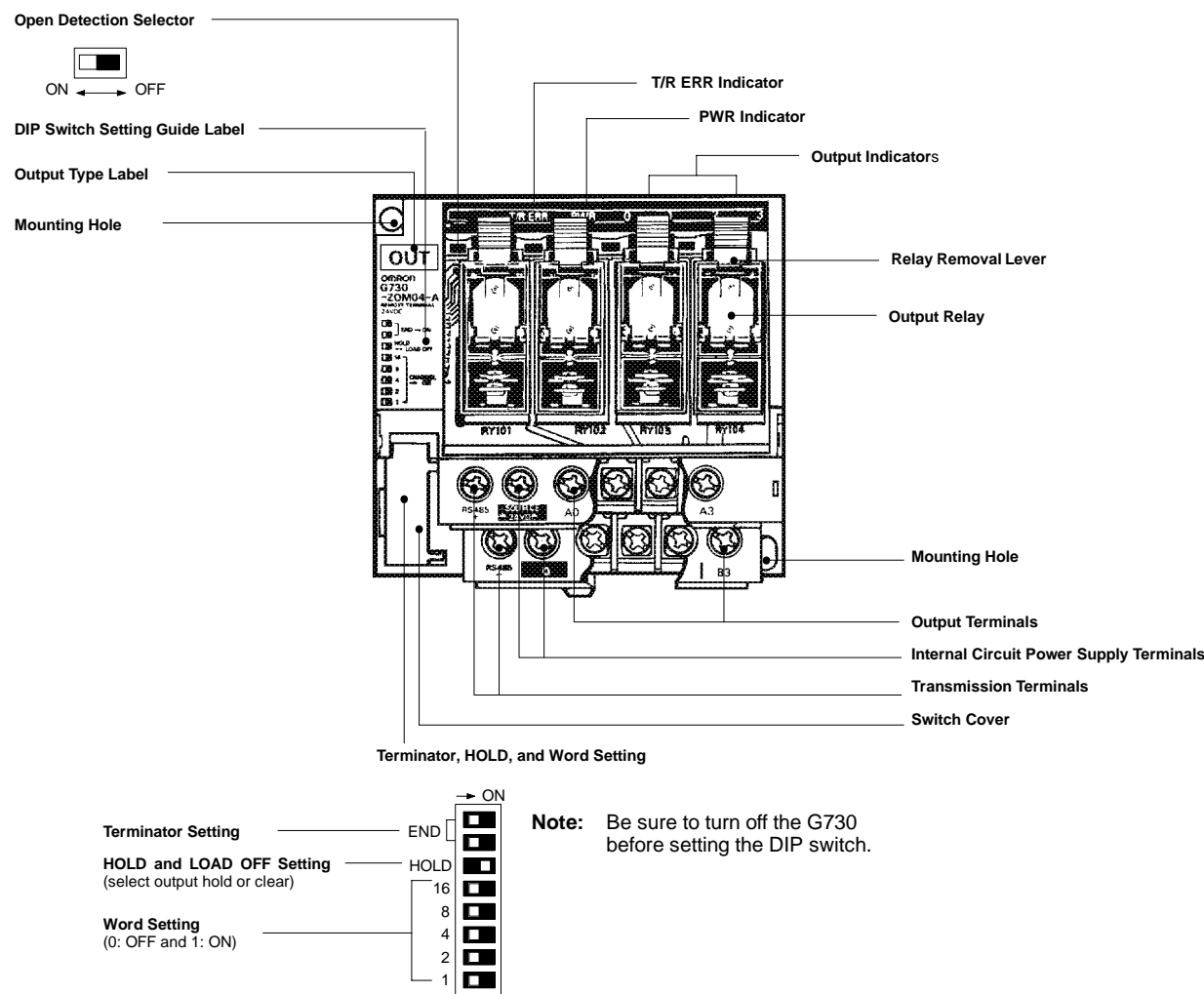
Detecting mode	1. Contact weld detection 2. Improper contact detection (including load disconnection and fuse blowout)
Detecting load current	0.5 to 5 A (AC/DC)
Open detection selector	Improper contact detecting function is canceled when the selector is set to OFF.
Error output	1. Output indicator LED for each terminal flashes 2. Transmission signal feedback (However, no distinction is made between contact weld and improper contact.)
Error detection delay	Approx. 300 ms

■ Characteristics

Master Unit	For controllers or personal computers: G730-M/N For SYSMAC BUS Wired Remote I/O Systems: C200H-RM201, 3G2A5-RM201
Communication method	Two-conductor, half duplex
Synchronization method	Asynchronous
Transmission distance	200 m (total length)
Transmission speed	187.5 kbps
Transmission path	Two-conductor cable (VCTF 0.75 x 2 C is recommended)
Interface	RS-485
Operating voltage range	24 VDC $+10\%$ / -15%
Current consumption (see note)	260 mA max. at 24 VDC
Insulation resistance	20 M Ω min. (at 250 VDC)
Dielectric strength	2,700 VAC for 1 min between the I/O terminals and power supply and transmission terminals 500 VAC for 1 min between the power supply terminals and transmission terminals
Noise immunity	Power supply normal: 600 V for 10 min with a pulse width of 100 ns to 1 μ s Power supply common: 1.5 kV for 10 min with a pulse width of 100 ns to 1 μ s Coiling around transmission path: 1.5 kV for 10 min with a pulse width of 100 ns to 1 μ s Coiling around Unit: 600 V for 10 min with a pulse width of 100 ns to 1 μ s
Vibration resistance	10 to 55 Hz, 0.75-mm double amplitude for 2 hrs each in X, Y, and Z directions
Shock resistance	Destruction: 300 m/s ² (approx. 30G) Malfunction: 100 m/s ² (approx. 10G)
Ambient temperature	Operating: 0 to 55 °C Storage: -20 to 65 °C
Ambient humidity	Operating: 35% to 85%
Mounting strength	No damage when 5 kgf (49N) pull load was applied for 10 s in all directions
Terminal strength	Tightening strength: 10 kgf S cm (0.98 N S m) for 10 s Pulling strength: 5 kgf (50 N) for 10 s
Weight	Approx. 330 g (with all the relays mounted)

Note: The above current consumption is a value with all the points turned ON including the current consumption of the G2R coils for the Remote Output Terminal.

Nomenclature



Open Detection Selector

ON	OFF
Open detection and short detection are possible.	Only short detection is possible.

Note: This selector is factory-set to ON.

Mounting Hole

Use an M4 screw to mount the G730.

Terminator Setting

These pins of the terminator must be set to ON.

If these pins of the terminator are set to ON, the terminator resistance of the terminator is turned ON. There must be only one terminator in a system. The G730-V located farthest from the G730-M on the transmission path must be the terminator. These pins are factory-set to OFF.

HOLD and LOAD OFF Setting

HOLD	LOAD OFF
If there is a Slave transmission error during signal transmission, the signal being transmitted is put on hold.	If there is a Slave transmission error during signal transmission, the output of the G730-V is turned OFF.

Note: If the Master has a data error or if there is no data from the Master, a Slave transmission error will result. The HOLD/LOAD OFF selector is factory-set to LOAD OFF.

T/R ERR Indicator

Display	Function
Flashing	Flashes during normal transmission.
Lit	Lit while the Master Unit is waiting for transmission or when a transmission error results.
Not lit	Turns OFF if a CPU error is detected during watchdog timer monitoring.

PWR Indicator

Display	Function
Lit	Lit when the G730-R is in operation.
Not lit	Turns off when there is power failure.

Output Indicator

Indicates the ON and OFF conditions of the output of the G730. Flashes when the G730 detects a relay malfunction.

Internal Circuit Power Supply Terminals

Connect to a 24-VDC power supply.

Transmission Terminals

Connect a transmission cable.

Switch Cover

There is a DIP switch under the cover, which is used for word, terminator, and HOLD settings.

Word Settings

Word	Switch					Word	Switch				
	1	2	4	8	16		1	2	4	8	16
0	OFF	OFF	OFF	OFF	OFF	16	OFF	OFF	OFF	OFF	ON
1	ON	OFF	OFF	OFF	OFF	17	ON	OFF	OFF	OFF	ON
2	OFF	ON	OFF	OFF	OFF	18	OFF	ON	OFF	OFF	ON
3	ON	ON	OFF	OFF	OFF	19	ON	ON	OFF	OFF	ON
4	OFF	OFF	ON	OFF	OFF	20	OFF	OFF	ON	OFF	ON
5	ON	OFF	ON	OFF	OFF	21	ON	OFF	ON	OFF	ON
6	OFF	ON	ON	OFF	OFF	22	OFF	ON	ON	OFF	ON
7	ON	ON	ON	OFF	OFF	23	ON	ON	ON	OFF	ON
8	OFF	OFF	OFF	ON	OFF	24	OFF	OFF	OFF	ON	ON
9	ON	OFF	OFF	ON	OFF	25	ON	OFF	OFF	ON	ON
10	OFF	ON	OFF	ON	OFF	26	OFF	ON	OFF	ON	ON
11	ON	ON	OFF	ON	OFF	27	ON	ON	OFF	ON	ON
12	OFF	OFF	ON	ON	OFF	28	OFF	OFF	ON	ON	ON
13	ON	OFF	ON	ON	OFF	29	ON	OFF	ON	ON	ON
14	OFF	ON	ON	ON	OFF	30	OFF	ON	ON	ON	ON
15	ON	ON	ON	ON	OFF	31	ON	ON	ON	ON	ON

Note: The word is factory-set to 0.

Operation

■ Error Detection Function

Detection Mode

Open detection	Detection of improper relay contact Load disconnection (including fuse blowout)
Short detection	Relay contact weld

Detecting Load Current

The load current must be 0.5 to 5.0 A (AC/DC) so that the error detecting function can work normally. If the load current is less than 0.5 A, there will be an open detection error.

Open Detection Selector

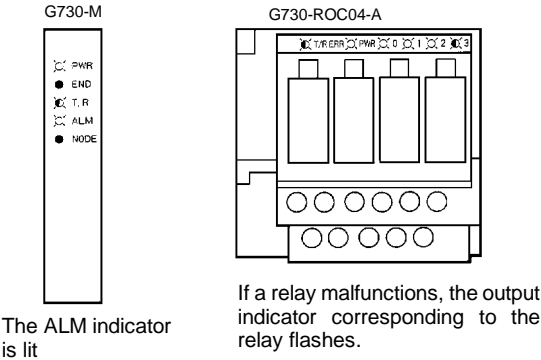
An open detection selector is prepared for each relay. If this selector is set to OFF, no open detection is possible. Short detection is, however, possible regardless of the setting of this selector if the load current is 0.5 to 5.0 A.

Processing after Error Detection

When a G730-M is used.

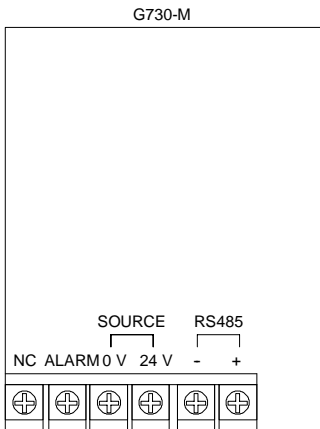
Monitor

Example: In this example, the third relay of the G730-ROC04-A has a contact weld (output data: all points turned ON).



- Note:**
1. The G730-M cannot check the node word or relay number that has the error.
 2. There is no distinction between an open and short error.

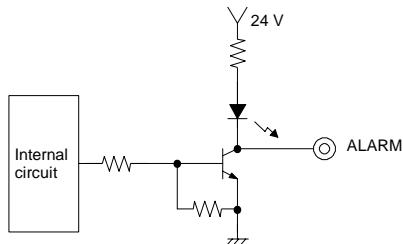
Error Signal Output



The ALARM terminal has a 24-VDC transistor output.

Note: There is no distinction between open and short error.

Internal Circuit



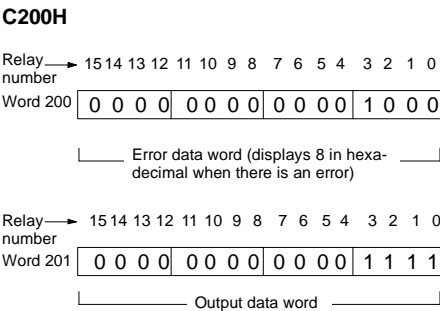
When connected to a Remote I/O Master Unit (wired SYSMAC BUS)

When an error results, the information on the error is transmitted from the G730-ROC04-A to the PC. The information includes the word and relay number that has the error.

Example 1: G730-ROC04-A cannot be set to word 31 when connected to a SYSMAC BUS Wired Remote I/O Master Unit.

Example 2: In this example, the G730-ROC04-A is set to word 0 and the third relay of the G730-ROC04-A has a contact weld (output data: all points turned ON).

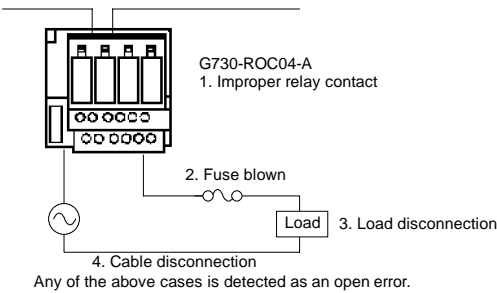
If a G730-ROC04-A incorporating an error detecting function is used in a wired SYSMAC BUS System, one unit uses two words. The right word is for the information on the error and the left word acts as an output word.



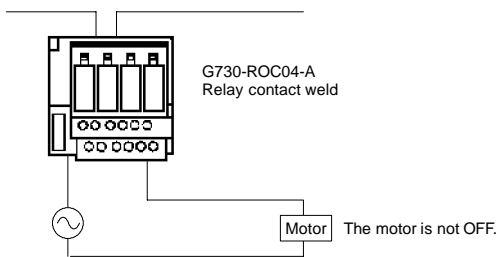
Note: For details on the Remote I/O System, refer to “SYSMAC C-series Remote I/O Unit (Wired-type) Operation Manual”.

Application Examples

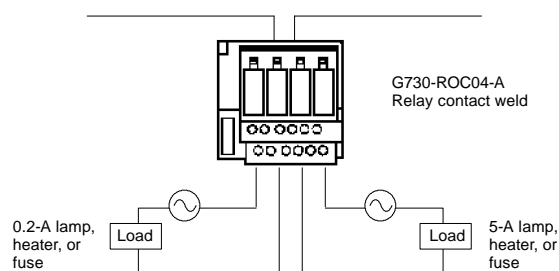
Open Detection



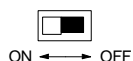
Short Detection



Open Detection Selector

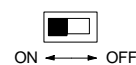


It is possible to detect the disconnection of a 5-A load.
Set the open detection selector to ON.



The G730-ROC04-A detects the disconnection of the load with a current consumption of 0.5 to 5.0 A. If the current consumption of the load is 0.2 A, for example, the G730-ROC04-A will have an open detection error. In such a case set the open detection selector to OFF.

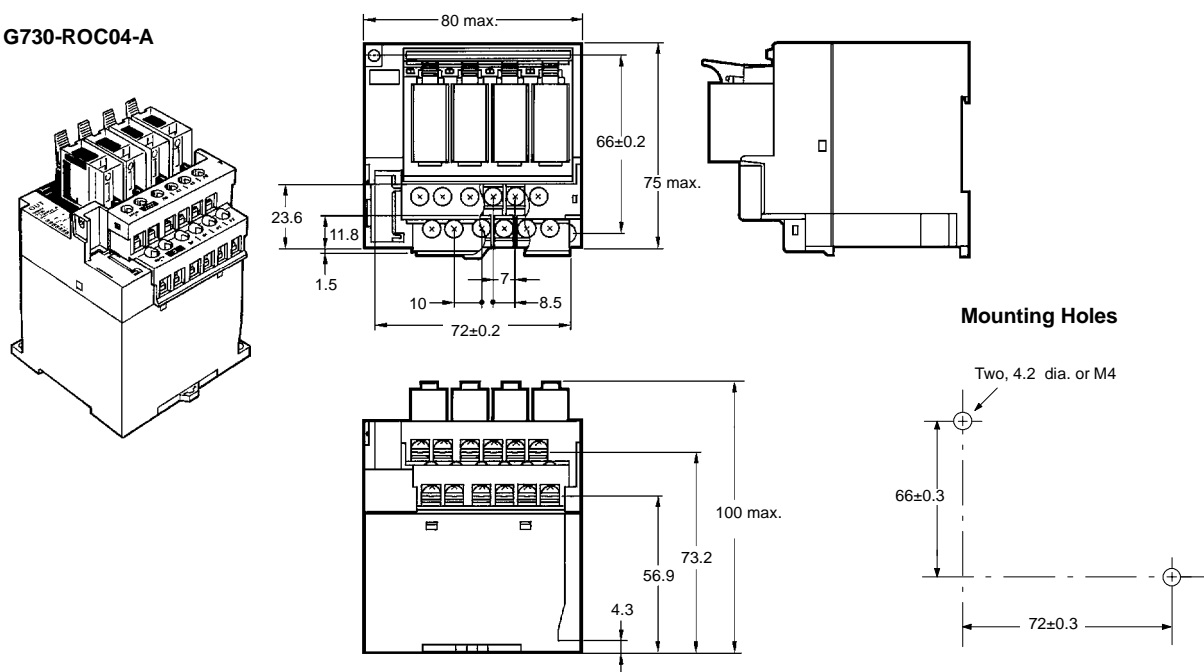
Even if the open detection selector is set to OFF, the G730-ROC04-A has the short detecting function for a 0.5- to 5-A load.



Dimensions

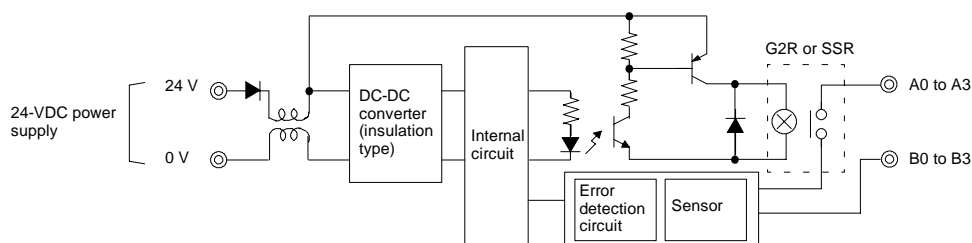
Note: All units are in millimeters unless otherwise indicated.

G730-ROC04-A



Installation

Internal Circuit Configuration



Ordering Information

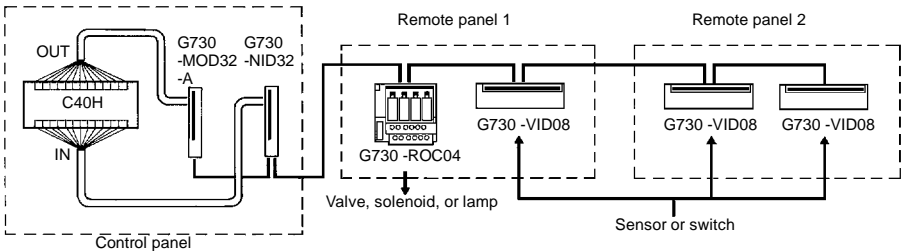
■ Accessories (Order Separately)

Item	Model
Connection cable with crimp-style terminals	G79-Yj C
Connection cable with multi-strand cable	G79-Aj C
Connection cable with connector	G79-j C
Mounting Track	PFP-100N, PFP-50N, PFP-100N2
End Plates	PFP-M
Spacers	PFP-S

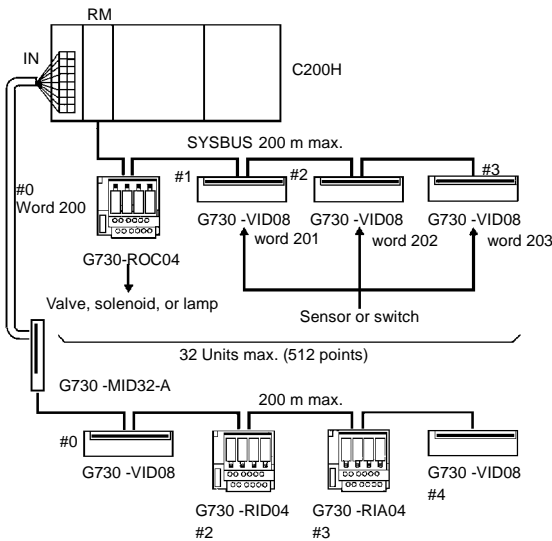
Application Examples

Note: Refer to page 121 for word settings.

■ OMRON's Package-type PC for Saving Wiring Effort

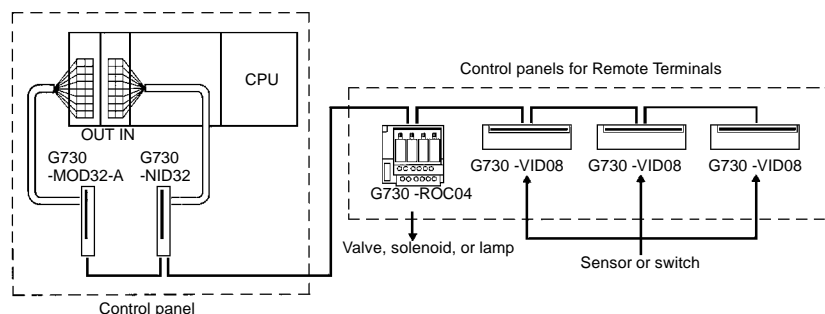


■ Used in Combination with OMRON's Remote I/O Products

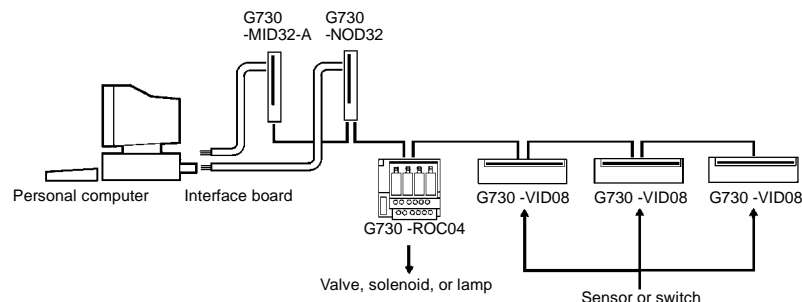


Note: Even if all the remote I/O area is occupied, it is possible to the actual I/O relay area (I/O relays) to save further wiring effort.

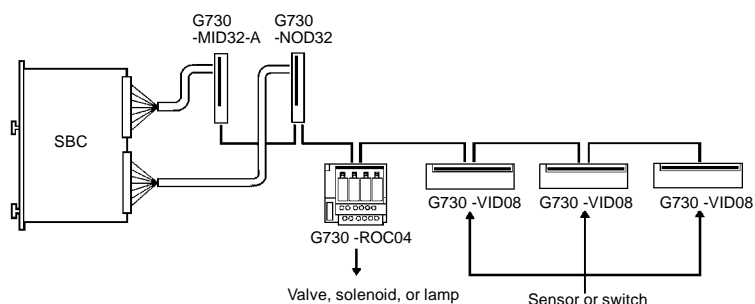
■ A Variety of Controllers for Saving Wiring Effort



■ Control with Personal Computer



■ Control with SBC



Operation

■ Connecting Master Unit

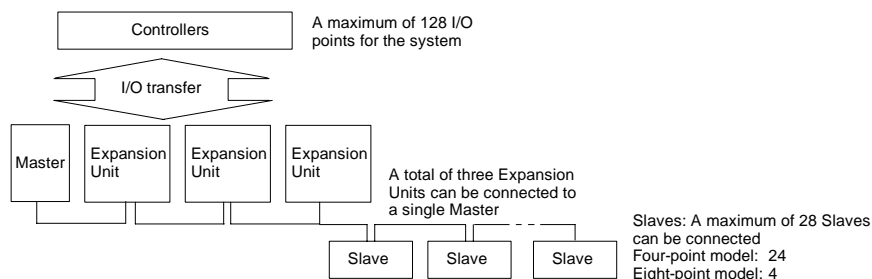
The Master and Expansion Unit are called Master Units.

A single G730-M Master can be connected to three G730-N Expansion Units.

A Master or Expansion Unit can exchange 32 I/O points. Therefore a Master with three Expansion Units can control a total of 128 points. The number of Slaves to be connected varies with the kind of Slaves; 4-point, 8-point, and 16-point. The maximum number of Slaves connected is 28 (24 4-point Slaves and four 8-point Slaves).

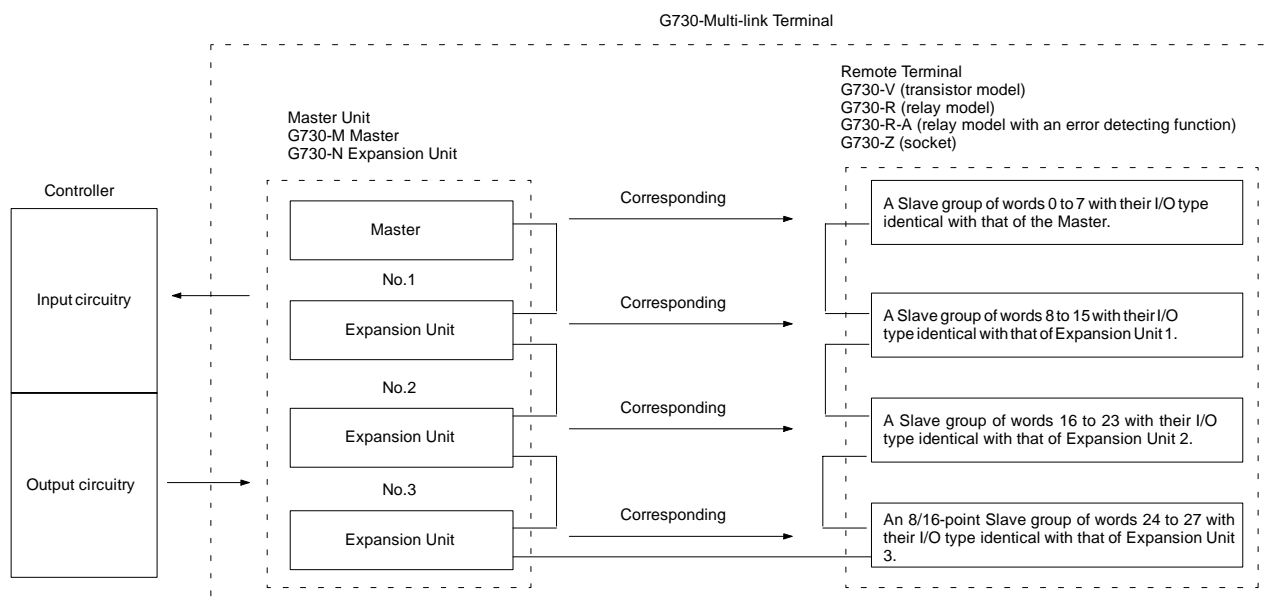
Take the following into consideration when connecting the Slaves.

1. Do not use more than one Master in a system.
2. Only G730-V-series models (transistor type) and G730-R-series models (with relays mounted), and G730-A-series models (with power MOS FET relays mounted) can be used as Slaves. G71-, G72C-, or G700-series models cannot be used.



■ Slaves Corresponding to Master and Expansion Units

The Master and Expansion Units each have a corresponding Slave type and words.



Type

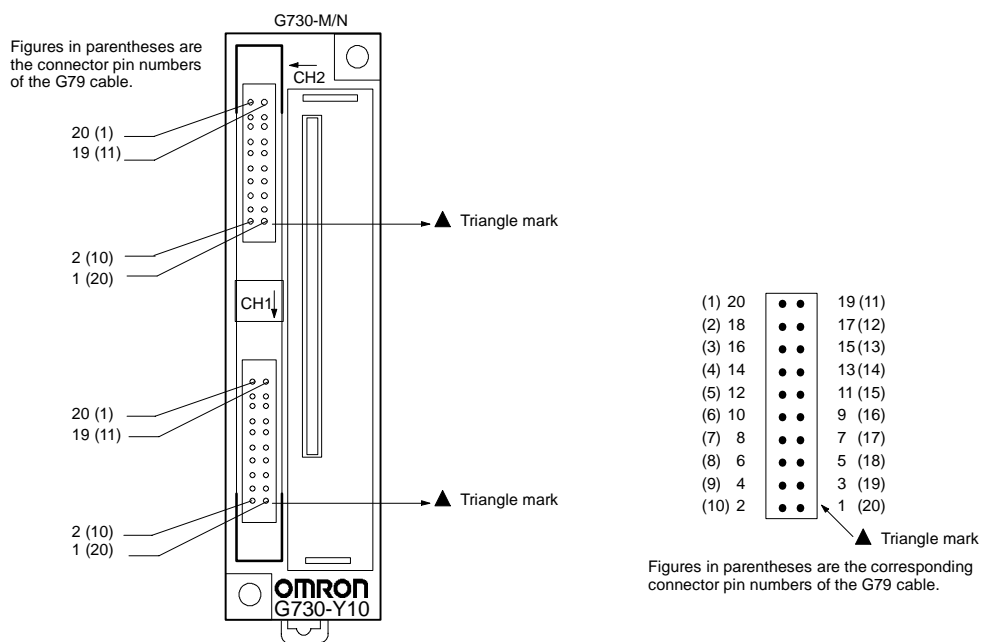
Input Master and Expansion Units G730-MID32-A, G730-NID32	Sets the input Slaves to corresponding words. G730-VID04, G730-VID08, G730-VID08-1, G730-VID16, G730-RID04, G730-RIA04
Output Master and Expansion Units G730-MOD32-A, G730-NOD32	Sets the output Slaves to corresponding words. G730-VOD04, G730-VOD08, G730-VOD08-1, G730-VOD16, G730-ROC04, G730-ROC04-A, G730-ROC08, G730-ROC16, G730-AOM08, G730-AOM16

Word

Kind of Unit	Slave controlled by Master Unit
Master	Slaves with words 0 to 7
Expansion unit no. 1	Slaves with words 8 to 15
Expansion unit no. 2	Slaves with words 16 to 23
Expansion unit no. 3	Slaves with words 24 to 27

- Note:**
1. For words 0 to 23, 8-point Units can be set to even words only. It is possible to set 4-point Units to any words in these words.
 2. Expansion Unit number 3 is for 8/16-point Units only. Do not set 4-point Units to words 24 to 27.
 3. Words 28 to 31 cannot be used.
 4. For words 0 to 23, 16-point Units can be set to word 0, 4, 8, 12, 16, or 20.

■ Connector Terminal Numbers of Harness Adapter and Corresponding Slave Words



G730-MID32-A, G730-MOD32-A

Corresponds to the Slaves (G730-V, G730-R, and G730-A Slaves) set to words 0 to 7.

Connector terminal no. (see note)			I/O signal name	4-point Unit		8-point Unit		16-point Unit			
				Word no.	Terminal no.	Word no.	Terminal no.	Word no.	Terminal no.		
CH1	20	(1)	I/O00	0	0	0	0	0	0		
	18	(2)	I/O01		1		1		1		
	16	(3)	I/O02		2		2		2		
	14	(4)	I/O03		3		3		3		
	12	(5)	I/O04	1	0		4		4		
	10	(6)	I/O05		1		5		5		
	8	(7)	I/O06		2		6		6		
	6	(8)	I/O07		3		7		7		
	4	(9)	GND (+24 V)	---							
	2	(10)	+24 V (GND)								
CH2	19	(11)	I/O08	2	0	2	0	0	8		
	17	(12)	I/O09		1		1		9		
	15	(13)	I/O10		2		2		10		
	13	(14)	I/O11		3		3		11		
	11	(15)	I/O12	3	0		4		12		
	9	(16)	I/O13		1		5		13		
	7	(17)	I/O14		2		6		14		
	5	(18)	I/O15		3		7		15		
	3	(19)	GND (+24 V)	---							
	1	(20)	+24 V (GND)								
CH2	20	(1)	I/O00	4	0	4	0	4	0		
	18	(2)	I/O01		1		1		1		
	16	(3)	I/O02		2		2		2		
	14	(4)	I/O03		3		3		3		
	12	(5)	I/O04	5	0		4		4		
	10	(6)	I/O05		1		5		5		
	8	(7)	I/O06		2		6		6		
	6	(8)	I/O07		3		7		7		
	4	(9)	GND (+24 V)	---							
	2	(10)	+24 V (GND)								
CH2	19	(11)	I/O08	6	0	6	0	4	8		
	17	(12)	I/O09		1		1		9		
	15	(13)	I/O10		2		2		10		
	13	(14)	I/O11		3		3		11		
	11	(15)	I/O12	7	0		4		12		
	9	(16)	I/O13		1		5		13		
	7	(17)	I/O14		2		6		14		
	5	(18)	I/O15		3		7		15		
	3	(19)	GND (+24 V)	---							
	1	(20)	+24 V (GND)								

Note: 1. Figures in parentheses are corresponding connector pin numbers when OMRON's G79 Cable is used.
 2. The data in the parentheses in the I/O signal name column are for G730-Y10-1 signals.

Expansion Unit (G730-N) Set to Expansion No. 1

Corresponds to the Slaves (G730-V, G730-R, and G730-A Slaves) set to words 8 to 15.

Connector terminal no. (see note)			I/O signal name	4-point Unit		8-point Unit		16-point Unit					
				Word no.	Terminal no.	Word no.	Terminal no.	Word no.	Terminal no.				
CH1	20	(1)	I/O00	8	0	8	0	8	0				
	18	(2)	I/O01		1		1		1				
	16	(3)	I/O02		2		2		2				
	14	(4)	I/O03		3		3		3				
	12	(5)	I/O04	9	0		4		4	4			
	10	(6)	I/O05		1		5		5				
	8	(7)	I/O06		2		6		6				
	6	(8)	I/O07		3		7		7				
	4	(9)	GND (+24 V)	---									
	2	(10)	+24 V (GND)										
19	(11)	I/O08	10	0	10	0	8	8					
17	(12)	I/O09		1		1		9					
15	(13)	I/O10		2		2		10					
13	(14)	I/O11		3		3		11					
11	(15)	I/O12	11	0				4		12			
9	(16)	I/O13		1				5		13			
7	(17)	I/O14		2				6		14			
5	(18)	I/O15		3				7		15			
3	(19)	GND (+24 V)	---										
1	(20)	+24 V (GND)											
CH2	20	(1)	I/O00	12	0		12	0		12	0		
	18	(2)	I/O01		1			1			1		
	16	(3)	I/O02		2			2			2		
	14	(4)	I/O03		3			3			3		
	12	(5)	I/O04	13	0			4			4		
	10	(6)	I/O05		1			5			5		
	8	(7)	I/O06		2			6			6		
	6	(8)	I/O07		3			7			7		
	4	(9)	GND (+24 V)	---									
	2	(10)	+24 V (GND)										
19	(11)	I/O08	14	0	14		0	12		8			
17	(12)	I/O09		1			1			9			
15	(13)	I/O10		2			2			10			
13	(14)	I/O11		3			3			11			
11	(15)	I/O12	15	0			4			12			
9	(16)	I/O13		1			5			13			
7	(17)	I/O14		2			6			14			
5	(18)	I/O15		3			7			15			
3	(19)	GND (+24 V)	---										
1	(20)	+24 V (GND)											

Note: 1. Figures in parentheses are corresponding connector pin numbers when OMRON's G79 Cable is used.
2. The data in the parentheses in the I/O signal name column are for G730-Y10-1 signals.

Expansion Unit (G730-N) Set to Expansion No. 2

Corresponds to the Slaves (G730-V, G730-R, and G730-A Slaves) set to words 16 to 23.

Connector terminal no. (see note)			I/O signal name	4-point Unit		8-point Unit		16-point Unit			
				Word no.	Terminal no.	Word no.	Terminal no.	Word no.	Terminal no.		
CH1	20	(1)	I/O00	16	0	16	0	16	0		
	18	(2)	I/O01		1		1		1		
	16	(3)	I/O02		2		2		2		
	14	(4)	I/O03		3		3		3		
	12	(5)	I/O04	17	0		4		4		
	10	(6)	I/O05		1		5		5		
	8	(7)	I/O06		2		6		6		
	6	(8)	I/O07		3		7		7		
	4	(9)	GND (+24 V)	---							
	2	(10)	+24 V (GND)								
19	(11)	I/O08	18	0	18	0	16	8			
17	(12)	I/O09		1		1		9			
15	(13)	I/O10		2		2		10			
13	(14)	I/O11		3		3		11			
11	(15)	I/O12	19	0		4		12			
9	(16)	I/O13		1		5		13			
7	(17)	I/O14		2		6		14			
5	(18)	I/O15		3		7		15			
3	(19)	GND (+24 V)	---								
1	(20)	+24 V (GND)									
CH2	20	(1)	I/O00	20	0	20	0	20	0		
	18	(2)	I/O01		1		1		1		
	16	(3)	I/O02		2		2		2		
	14	(4)	I/O03		3		3		3		
	12	(5)	I/O04	21	0		4		4		
	10	(6)	I/O05		1		5		5		
	8	(7)	I/O06		2		6		6		
	6	(8)	I/O07		3		7		7		
	4	(9)	GND (+24 V)	---							
	2	(10)	+24 V (GND)								
19	(11)	I/O08	22	0	22	0	20	8			
17	(12)	I/O09		1		1		9			
15	(13)	I/O10		2		2		10			
13	(14)	I/O11		3		3		11			
11	(15)	I/O12	23	0		4		12			
9	(16)	I/O13		1		5		13			
7	(17)	I/O14		2		6		14			
5	(18)	I/O15		3		7		15			
3	(19)	GND (+24 V)	---								
1	(20)	+24 V (GND)									

Note: 1. Figures in parentheses are corresponding connector pin numbers when OMRON's G79 Cable is used.
 2. The data in the parentheses in the I/O signal name column are for G730-Y10-1 signals.

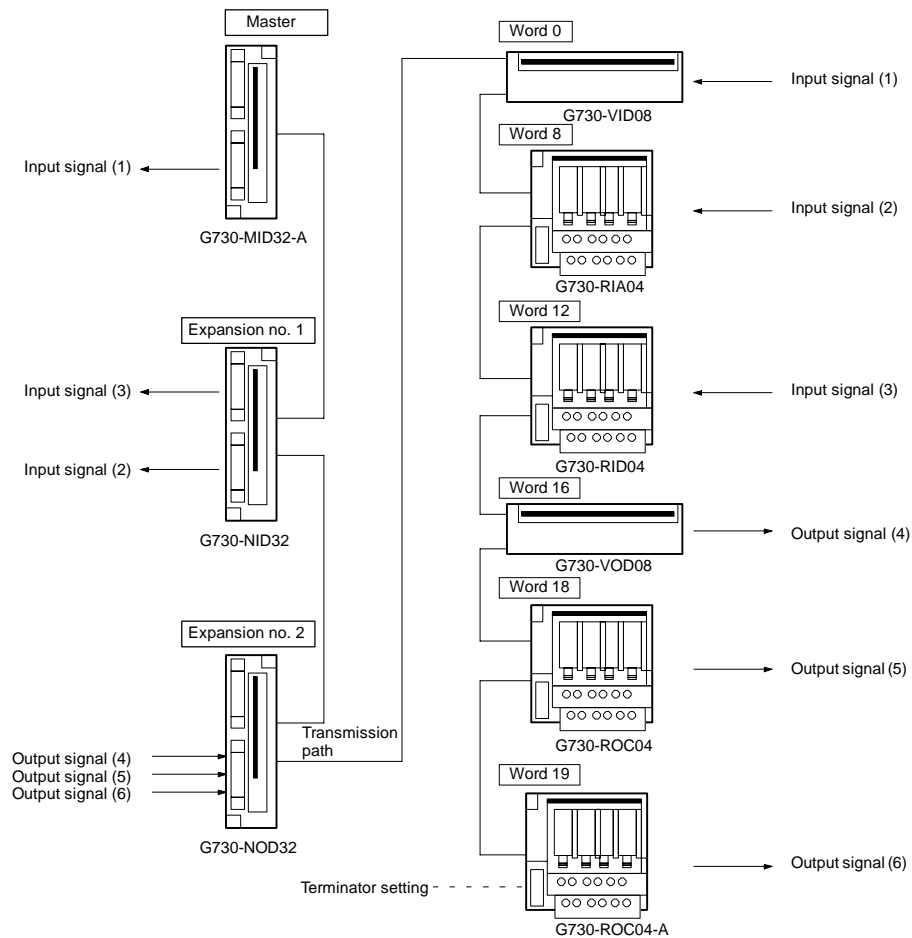
Expansion Unit (G730-N) Set to Expansion No. 3

Corresponds to the Slaves (G730-V, and G730-R/-A (8/16-point) Slaves) set to words 24 to 27.

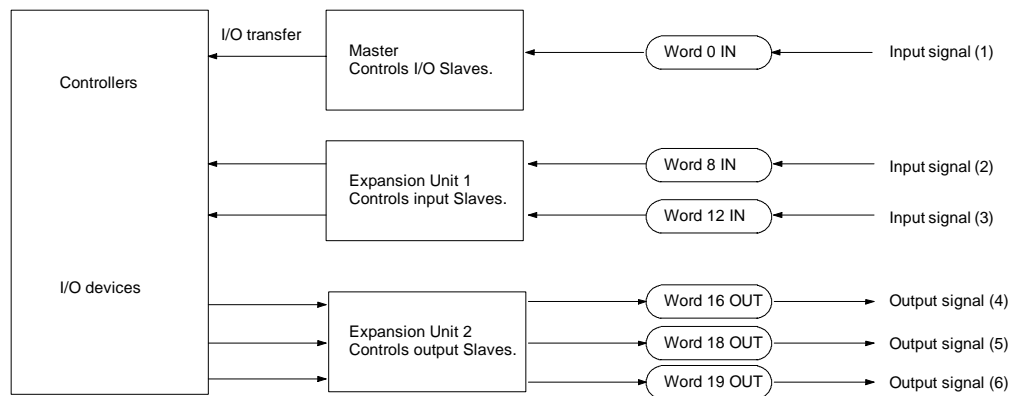
Connector terminal no. (see note 1)			I/O signal name	8-point Unit		16-point Unit	
				Word no.	Terminal no.	Word no.	Terminal no.
CH1	20	(1)	I/O00	24	0	24	0
	18	(2)	I/O01		1		1
	16	(3)	I/O02		2		2
	14	(4)	I/O03		3		3
	12	(5)	I/O04		4		4
	10	(6)	I/O05		5		5
	8	(7)	I/O06		6		6
	6	(8)	I/O07		7		7
	4	(9)	GND (+24 V)	---		---	
	2	(10)	+24 V (GND)				
CH2	19	(11)	I/O08	25	0	24	8
	17	(12)	I/O09		1		9
	15	(13)	I/O10		2		10
	13	(14)	I/O11		3		11
	11	(15)	I/O12		4		12
	9	(16)	I/O13		5		13
	7	(17)	I/O14		6		14
	5	(18)	I/O15		7		15
	3	(19)	GND (+24 V)	---		---	
	1	(20)	+24 V (GND)				
CH2	20	(1)	I/O00	26	0	26	0
	18	(2)	I/O01		1		1
	16	(3)	I/O02		2		2
	14	(4)	I/O03		3		3
	12	(5)	I/O04		4		4
	10	(6)	I/O05		5		5
	8	(7)	I/O06		6		6
	6	(8)	I/O07		7		7
	4	(9)	GND (+24 V)	---		---	
	2	(10)	+24 V (GND)				
CH2	19	(11)	I/O08	27	0	26	8
	17	(12)	I/O09		1		9
	15	(13)	I/O10		2		10
	13	(14)	I/O11		3		11
	11	(15)	I/O12		4		12
	9	(16)	I/O13		5		13
	7	(17)	I/O14		6		14
	5	(18)	I/O15		7		15
	3	(19)	GND (+24 V)	---		---	
	1	(20)	+24 V (GND)				

- Note:**
- Figures in parentheses are corresponding connector pin numbers when OMRON's G79 Cable is used.
 - Expansion Unit number 3 are for 8/16-point Units only. Therefore words 24 to 27 can be used by 8/16-point Units only.
 - I/O signal names in parentheses are for the G730-Y10-1.

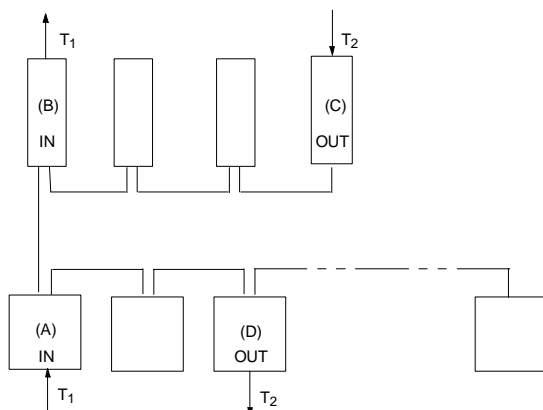
■ System Configuration



Signal Flow



■ Transmission Delay System Configuration



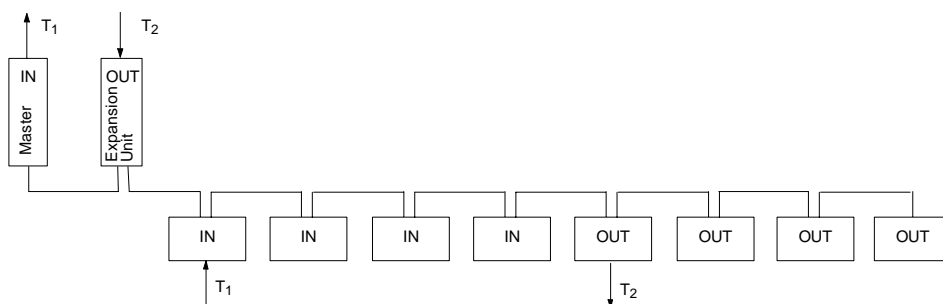
The time required between a signal being input to Slave A and the signal being output from Master Unit B is T_1 . The time required between a signal being input to Master Unit C and the signal being output from D is T_2 .

Transmission delay (T_1 or T_2) $\leq (\text{no. of Slaves} + \text{no. of Expansion Units} + 1) \times 2 \times 1.2 \text{ (ms)}$

Example: If Eight Slaves and one Expansion Unit are used, the transmission delay is 24 ms minimum.

Example

A single Expansion Unit is connected to the Master.



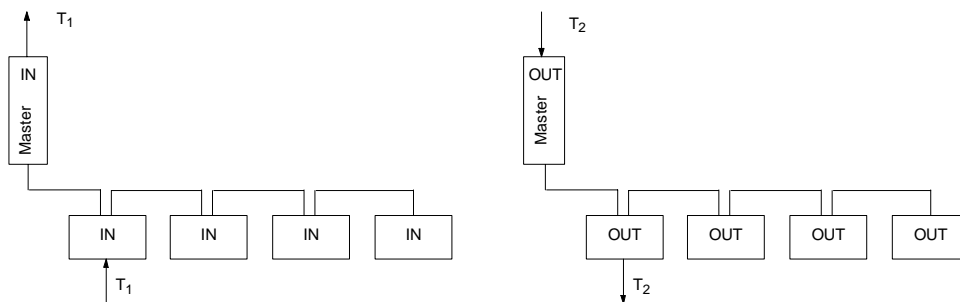
Transmission Delay

$$T_1 \leq (8+1+1) \times 2 \times 1.2 = 24 \text{ ms}$$

$$T_2 \leq (8+1+1) \times 2 \times 1.2 = 24 \text{ ms}$$

To operate a large system using more than one Expansion Unit, the transmission delay of the system can be reduced by using the following method.

Divide the system into two by using two Masters.



Transmission Delay

$$T_1 = (4+1) \times 2 \times 1.2 = 12 \text{ ms}$$

$$T_2 = (4+1) \times 2 \times 1.2 = 12 \text{ ms}$$

There is less delay time if one 16-point Unit is used instead of two 8-point Units.

■ Connecting to Remote I/O Master (Wired SYSMAC BUS)

The G730-V and G730-R can be connected to a Remote I/O Master. In this case, conventional G71 and G72C models can be used in the same system.

Although the G730-V and the G730-R are 16/8/4-point terminal, each of them occupies one word as an actual allocated word. The G730-ROC04-A (with an error detecting function), however, occupies two words because it must transmit error information to the PC.

The following tables list the actual word allocations of Remote Terminals on PCs.

Remote Terminals (other than the G730-ROC04-A)

Model	Actual word allocation
C500	Switch setting word
C1000H/C2000H	(32 words x Remote I/O Master backplane no.) + switch setting word
C200H	200 words + switch setting word

Note: For other PCs, refer to the operation manuals of those PCs.

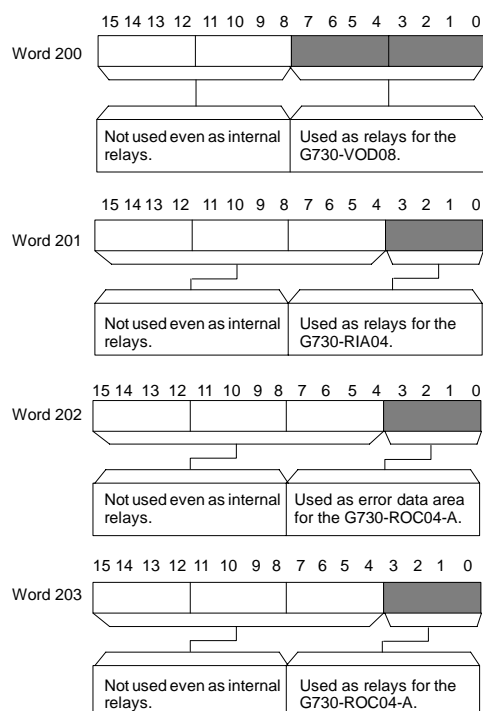
G730-ROC04-A (Two Words are Occupied)

Model	Error information word	Actual word allocation
C500	Switch setting word	Error information word + 1
C1000H/C2000H	(32 words x Remote I/O Master backplane no.) + switch setting word	Error information word + 1
C200H	200 words + switch setting word	Error information word + 1

Note: Refer to page 115 "Error Detecting Function" of the G730-ROC04-A.

Example: A C200H PC is used with the following settings.

- G730-VOD08 set to word 0.
- G730-RIA04 set to word 1.
- G730-ROC04-A (with error detecting function) set to word 2)



■ Troubleshooting and Alarm List

	Master Unit (Master)					Abnormal Expansion Unit/Slave		Cause of error	Remedy
	PWR	END	T/R	ALM	NODE	PWR	T/R		
Before and after normal operation	Not lit	Not lit	Not lit	Not lit	Not lit	---	---	The G730-M is not turned on.	Turn on the G730-M.
	Lit	Not lit	Not lit	Not lit	Not lit	---	---	CPU abnormality.	Turn off and on the G730-M Master. If the CPU has abnormality again after the G730-M Master is turned on, replace the G730-M Master.
Before normal operation	Lit	Lit	Flash-ing	---	Lit/Not lit	Lit	Lit	Slaves are set to words 28 to 30.	Slaves must be set to a word range of 0 to 27.
	Lit	Lit	Flash-ing	---	Not lit	Lit	Lit	No terminator is set.	The terminator switch of the Slave located farthest from the G730-M Master on the transmission path must be set to ON.
								There is more than one G730-M Master in the system.	There must be only one G730-M Master in a single system. If more I/O points are required, connect one to three Expansion Units according to the number of I/O points required.
								A Master Unit different in communication configuration exists.	A different Master Unit in communication configuration cannot be used together with the G730-M/N.
								The transmission path is short-circuited. The transmission path is disconnected. The positive and negative wiring of the transmission path is reversed.	Wire the transmission path correctly.
								The expansion numbers of two Expansion Units with the same I/O configuration are identical.	Assign different words to all Units.
								The words of two Slaves with the same I/O configuration are identical.	
	Lit	Lit	Flash-ing	---	Not lit	Not lit	Not lit	The terminator has power failure.	Turn on the terminator.
	Lit	Flash-ing	Flash-ing	---	Not lit	Lit	Lit	There is more than one terminator.	The terminator switch of only the Slave located farthest from the G730-M Master on the transmission path must be set to ON.
	Lit	Not lit	Flash-ing	---	Flash-ing	Lit	Lit	The I/O type of the Master Unit and that of the Slaves do not correspond.	The I/O type of the Master Unit must correspond to the I/O type of the Slaves. Refer to 121 and set them correctly.
								The words of two Slaves different to each other in I/O type are identical.	Set so that no word will be duplicated.
								The expansion numbers of two Expansion Units different to each other in I/O type are identical.	
								Four-point Units are set to words 24 to 27, which is an exclusive area for 8/16-point Units.	Set 4-point Units to words 0 to 23, and set 8/16-point Units to words 24 to 27.
								The word settings for a 8-point/16-point Unit is beyond the specified range.	Not all words between word 00 and word 32 can be used for 8-point or 16-point Units. Refer to pages 47 and 55 to correct the setting.
								The words for Units with different numbers of points are duplicated.	Assign different words to all Units.
	Lit	Not lit	Flash-ing	---	Not lit	Lit	Lit	A Slave is set to word 31. There is a Slave with no Expansion Unit.	Slaves must be set to words 0 to 27.
						Not lit	Not lit	The Slaves except the terminator or Expansion Unit in the system are not turned on.	Turn on the Slaves and Expansion Unit.

	Master Unit (Master)					Abnormal Expansion Unit/Slave		Cause of error	Remedy
	PWR	END	T/R	ALM	NODE	PWR	T/R		
After normal operation	Lit	Not lit	Lit	---	---	Lit	Lit	The transmission path is short-circuited. The transmission path is disconnected.	Wire the transmission path correctly.
						Not lit	Not lit	The Expansion Unit is turned off.	Turn on the Expansion Unit.
								The Slave has power failure.	Turn on the Slave.
	Lit	Not lit	Flash-ing	Lit	Not lit	Lit	Flash-ing	Relay contact weld, improper relay contact, or load disconnection has caused the Slave to indicate an error detecting function.	Replace the relay or connect the load.
	Lit	Not lit	Lit	---	---	Lit	Not lit	The CPU on the Expansion Unit for the Slave has abnormality.	Turn off the Slave and Expansion Unit and turn them on again and check if they operate normally. If they do not operate normally, replace them.

Note: 1. Doted lines mean that the indication of the LEDs have nothing to do with the errors.

2. Refer to "SYSMAC C-series Remote I/O Unit (wired-type) Operation Manual" for details on troubleshooting when the system is connected to a Remote I/O Master.

Dimensions

Note: All units are in millimeters unless otherwise indicated.

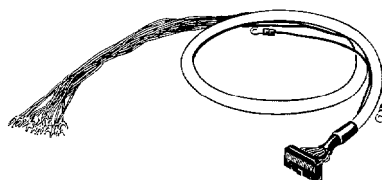
■ Harness Adapter Cable (Sold Separately)

Note: Contact your OMRON representative for cables other than the following ones.

G79 Connecting Cable

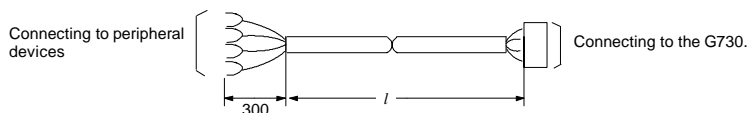
G79-Yj C with Crimp-style Terminals

The G79-Yj C Cable is convenient for connecting the screw terminals of a controller and the G730-M/N Master Unit.



L: Length

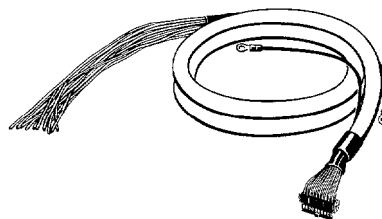
1,000 mm	G79-Y100C
1,500 mm	G79-Y150C
2,000 mm	G79-Y200C
3,000 mm	G79-Y300C
5,000 mm	G79-Y500C



- Note:**
1. The wire capacity must be 50 mA max. per I/O.
 2. Each wire has a pin number as shown in the following table *Connections*.

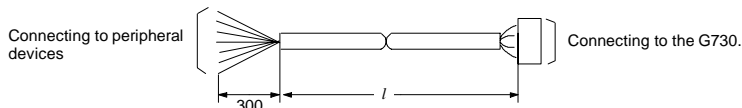
G79-Aj C with Multi-strand Cable

The G79-Aj C has a multi-strand cable on the controller side.



L: Length

2,000 mm	G79-A200C
5,000 mm	G79-A500C



- Note:**
1. The diameter of each wire is 0.6 mm (AWG24)
 2. Each wire has a pin number as shown in the following table *Connections*.

Connecting Socket

Harness Adapter	Plug for model	Applicable socket (see note)
G730-Y10	XG4A-2031 OMRON (MIL)	XG4M-2030, XG4T-2004 OMRON (MIL) (These sockets are provided with a G79 Connecting Cable but not with a G730-Y10.)

Note: When you make a cable, use one of the above sockets as well as the following sockets for crimp-style terminals.

Socket: XG5M-2035 (AWG26 to AWG28 (UL-1007)), XG5M-2032 (AWG24 (UL-1061))

Cover: XG5S-1001 (x 2), XG5S-2012 (x 1)

Connections

No.	Color of insulator	Dot mark	Dot color	No.	Color of insulator	Dot mark	Dot color
20	White	J J	Red	10	White	J J	Black
19	Gray	J J	Red	9	Gray	J J	Black
18	Light green	J J	Red	8	Light green	J J	Black
17	Yellow	J J	Red	7	Yellow	J J	Black
16	Light brown	J J	Red	6	Light brown	J J	Black
15	White	J	Red	5	White	J	Black
14	Gray	J	Red	4	Gray	J	Black
13	Light green	J	Red	3	Light green	J	Black
12	Yellow	J	Red	2	Yellow	J	Black
11	Light brown	J	Red	1	Light brown	J	Black

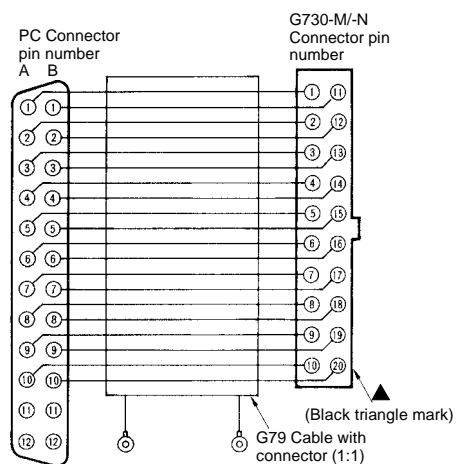
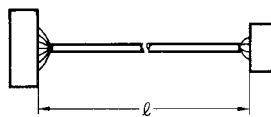
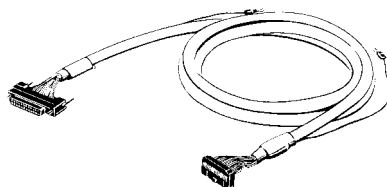
11	1
12	2
13	3
14	4
15	5
16	6
17	7
18	8
19	9
20	10

G79-j C with Connector (1:1)

Convenient for 1:1 connection of various devices to I/O Terminals.

L: Length

1,000 mm	G79-100C
1,500 mm	G79-150C
2,000 mm	G79-200C
3,000 mm	G79-300C
5,000 mm	G79-500C

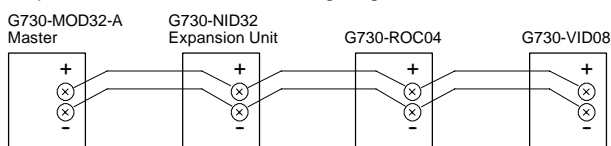


Precautions

Connection

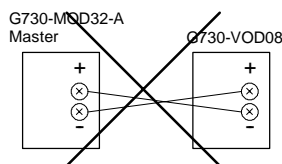
Correct Example

Connect from the G730-M Master to the succeeding Units in sequence as shown in the following diagram.



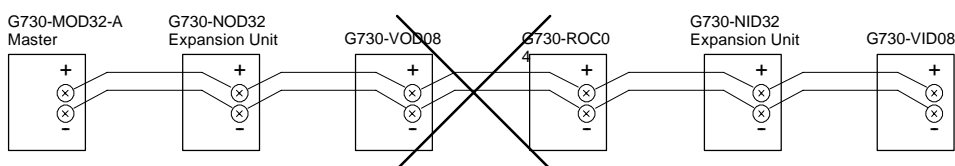
Incorrect Example 1

The positive and negative terminals are reversed.



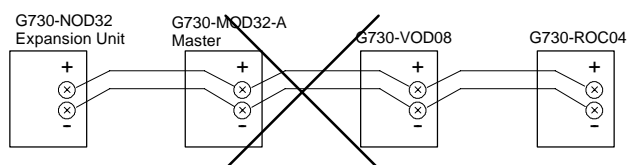
Incorrect Example 2

A G730-N cannot be connected in the middle of the line. Connect the Expansion Unit only after a Master Unit.



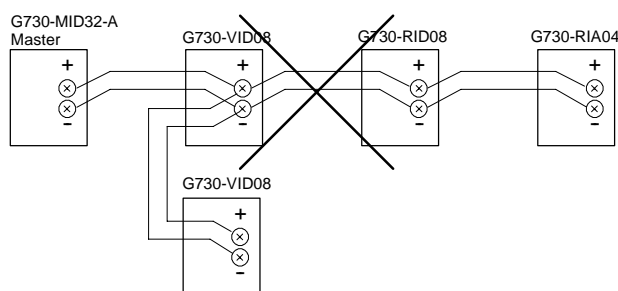
Incorrect Example 3

In the following example, the transmission path is split from the G730-M Master to the G730-NOD32 and G730-VOD08, which is wrong. Connect from the G730-M Master to the the succeeding Units in sequence.



Incorrect Example 4

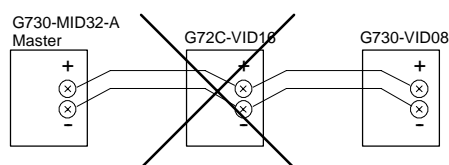
The transmission path cannot be split from the G730-V/R or G730-N.



Note: The same caution is required when connecting the G730-M Master to a wired SYSMAC BUS Remote I/O Master Unit.

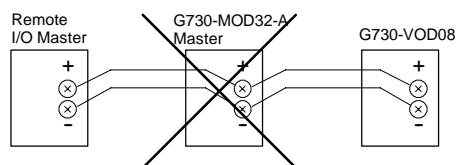
Incorrect Example 5

The Master Unit cannot be connected to the conventional G71 or G72C.



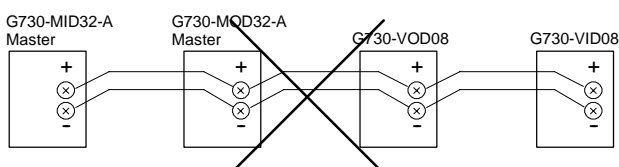
Incorrect Example 6

A wired SYSMAC BUS Remote I/O Master such as a C200H-RM201 cannot be connected to a G730-M Master.



Incorrect Example 7

More than one G730-M Master cannot exist in a system.



Wiring

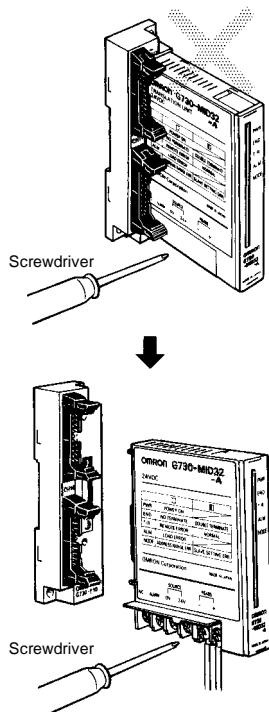
Do not wire the cable near or in parallel with power lines.

Pay attention to the polarities of the terminals.

Be sure to wire the transmission path and power lines correctly.

Design the whole system with the correct voltage specification for I/O exchange.

Disconnect the Master Unit from the harness adapter before wiring the Master Unit.



Installation Site

The following conditions are required to install the G730.

There is no direct sunlight.

The ambient temperature is within a range of 0 to 55 °C.

The relative humidity is within a range of 10% to 90%.

There is no drastic temperature changes that can cause condensation.

There is no corrosive or inflammable gas.

There is no excessive dust, salinity, or powdered metal.

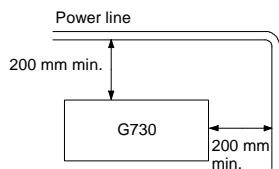
No vibration or shock is directly imposed on the G730.

No water, oil, or chemical is sprayed on the G730.

Protection from Noise

Do not install the G730 on a panel where high-power equipment is installed.

Provide a distance of 200 mm at least between power lines and the G730.



Mounting Screws

Mounting screws must be tightened securely to prevent the G730 from malfunctioning.

Connection Cable Lock

Before turning on the G730, check that the connectors of each connection cable are locked properly.

Static Electricity

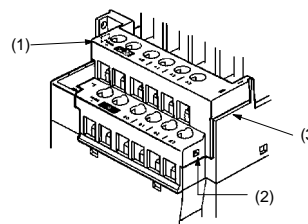
Excessive static electricity can be generated where the humidity is low. Before you operate the G730, touch grounded metal so that your body will be free from static electricity.

Cleaning

Use alcohol to clean the G730. Do not use paint thinner; it will dissolve or discolor the paint on the panel of the G730.

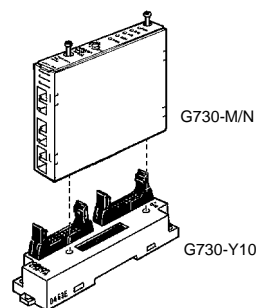
Dismounting Finger Protect Cover

Use a screwdriver to unlock parts (1), (2), and (3).



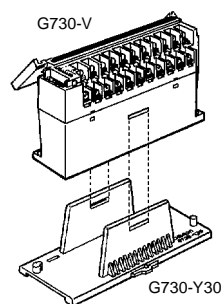
Mounting Adapter

Harness Adapter



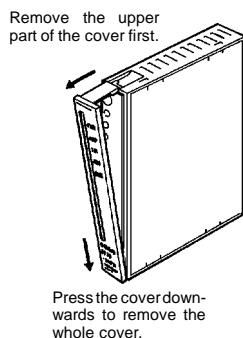
Note: Tighten the screws securely.

DIN Track Adapter



Note: Mount the G730-V to the G730-Y30 so that the G730-V and G739-Y30 mate securely with each other.

Dismounting G730-M/N Cover



G3RZ Power MOS FET Relay

■ Ordering Information

Input/Output Module

Insulation method	Indicator	Zero cross function	Applicable output load	Rated input voltage	Model
Photodiode array	Yes	No	1.0 A at 3 to 264 VAC/ 3 to 125 VDC	5 V 12 V 24 V	G3RZ-201SLN

■ Ratings

Input/Output Module

Input

Model	Rated voltage	Operating voltage	Input impedance	Must operate voltage	Must release voltage
G3RZ-201SLN	5 VDC	4 to 6 VDC	400 Ω \pm 20%	4 VDC max.	1 VDC min.
	12 VDC	9.6 to 14.4 VDC	1.1 k Ω \pm 20%	9.6 VDC max.	
	24 VDC	19.2 to 28.8 VDC	2.2 k Ω \pm 20%	19.2 VDC max.	

Output

Load voltage	Load current	Inrush current
3 to 264 VAC, 3 to 125 VDC	100 μ A to 1.0 A	10 A (10 ms)

■ Characteristics

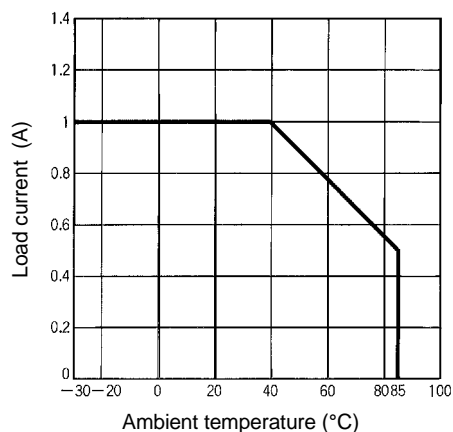
Input/Output Module

Item	G3R-IAZR1SN
Operate time	6 ms max.
Release time	10 ms max.
Output ON-resistance	2.4 Ω max.
Leakage current	10 μ A max. (at 125 VDC)
Insulation resistance	100 M Ω min. (at 500 VDC)
Dielectric strength	2,500 VAC, 50/60 Hz for 1 min between input and output
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude
Shock resistance	1,000 m/s ² (approx. 100G)
Ambient temperature	Operating: -30 to 100 °C (with no icing) Storage: -30 to 85 °C (with no icing)
Ambient humidity	Operating: 45% to 85%
Weight	Approx. 20 g

■ Reference Data

Load Current vs. Ambient Temperature Characteristics

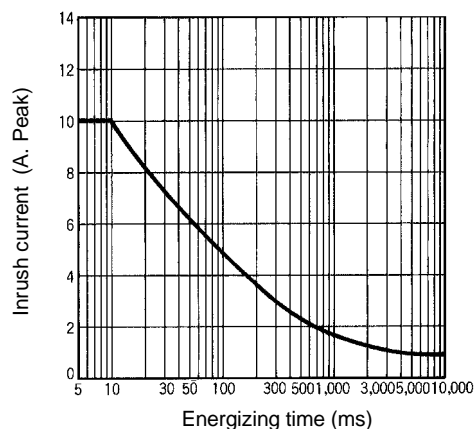
G3RZ-201SLN



Inrush Current Resistivity

Non-repetitive (Keep the inrush current to half the rated value if it occurs repetitively.)

G3RZ-201SLN



Note: The above data are for a G730 mounted with four G3RZs.



G3R Solid-state Relay

■ Ordering Information

Input Module

Isolation	Indicator	Response speed	Logic level		Rated input voltage	Model
			Supply voltage	Supply current		
Photocoupler	Yes	---	4 to 32 VDC	0.1 to 100 mA	100 to 240 VAC	G3R-IAZR1SN
		High-speed			5 VDC	G3R-IDZR1SN
					Low-speed	12 to 24 VDC
		5 VDC				
		12 to 24 VDC				

Output Module

Isolation	Indicator	Zero cross function	Applicable output load	Rated input	Model
Phototriac	Yes	Yes	2 A at 75 to 264 VAC	5 to 24 VDC	G3R-OA202SZN
		No			G3R-OA202SLN
Photocoupler		---	2 A at 4 to 60 VDC		G3R-ODX02SN
			1 A at 40 to 200 VDC		G3R-OD201SN

■ Ratings

Input Module

Input

Model	Rated voltage	Operating voltage	Input current	Must operate voltage	Must release voltage
G3R-IAZR1SN	100 to 240 VAC	60 to 264 VAC	15 mA max.	60 VAC max.	20 VAC min.
G3R-IDZR1SN	5 VDC	4 to 6 VDC	8 mA max.	4 VDC max.	1 VDC min.
	12 to 24 VDC	6.6 to 32 VDC		6.6 VDC max.	3.6 VDC min.
G3R-IDZR1SN-1	5 VDC	4 to 6 VDC		4 VDC max.	1 VDC min.
	12 to 24 VDC	6.6 to 32 VDC		6.6 VDC max.	3.6 VDC min.

Output

Model	Logic level supply voltage	Logic level supply current
G3R-IAZR1SN	4 to 32 VDC	0.1 to 100 mA
G3R-IDZR1SN		
G3R-IDZR1SN-1		

Output Module

Input

Model	Rated voltage	Operating voltage	Input current	Must operate voltage	Must release voltage
G3R-OA202SZN	5 to 24 VDC	4 to 32 VDC	15 mA max. (at 25°C)	4 VDC max.	1 VDC min.
G3R-OA202SLN			8 mA max.		
G3R-ODX02SN					
G3R-OD201SN					

Output

Model	Load voltage	Load current (see note)	Inrush current
G3R-OA202SZN	75 to 264 VAC	0.05 to 2 A	30 A (60 Hz, 1 cycle)
G3R-OA202SLN			
G3R-ODX02SN	4 to 60 VDC	0.01 to 2 A	8 A (10 ms)
G3R-OD201SN	40 to 200 VDC	0.01 to 1.5 A	8 A (10 ms)

Note: The minimum current value is measured at 10°C min..

■ Characteristics

Input Module

Item	G3R-IAZR1SN	G3R-IDZR1SN	G3R-IDZR1SN-1
Operate time	20 ms max.	0.1 ms max.	15 ms max.
Release time	20 ms max.	0.1 ms max.	15 ms max.
Response frequency	10 Hz	1 kHz	10 Hz
Output ON voltage drop	1.6 V max.		
Leakage current	5 µA max.		
Insulation resistance	100 MΩ min. between input and output		
Dielectric strength	4,000 VAC for 1 min between input and output		
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude		
Shock resistance	1,000 m/s ² (approx. 100G)		
Ambient temperature	Operating: -30 to 80 °C (with no icing) Storage: -30 to 100 °C (with no icing)		
Ambient humidity	Operating: 45% to 85%		
Weight	Approx. 18 g		

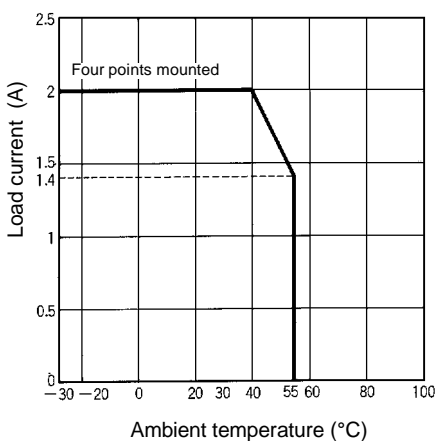
Output Module

Item	G3R-OA202SN	G3R-OA202SLN	G3R-ODX02SN	G3R-OA201SN
Operate time	1/2 of load power source cycle + 1 ms max.		1 ms max.	
Release time	1/2 of load power source cycle + 1 ms max.		2 ms max.	
Response frequency	20 Hz		100 kHz	
Output ON voltage drop	1.6 V max.			2.5 V max.
Leakage current	1.5 mA max.		1 mA max.	
Insulation resistance	100 MΩ min. between input and output			
Dielectric strength	4,000 VAC for 1 min between input and output			
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude			
Shock resistance	1,000 m/s ² (approx. 100G)			
Ambient temperature	Operating: -30 to 80 °C (with no icing) Storage: -30 to 100 °C (with no icing)			
Ambient humidity	Operating: 45% to 85%			
Weight	Approx. 18 g			

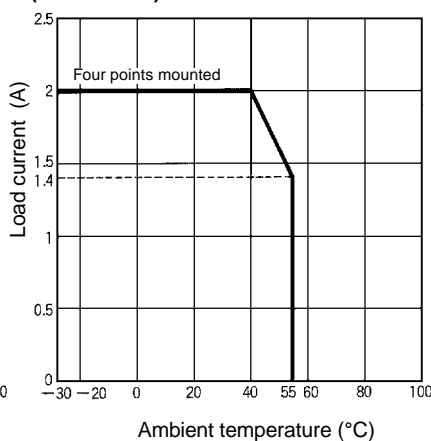
■ Engineering Data

Load Current vs. Ambient Temperature Characteristics

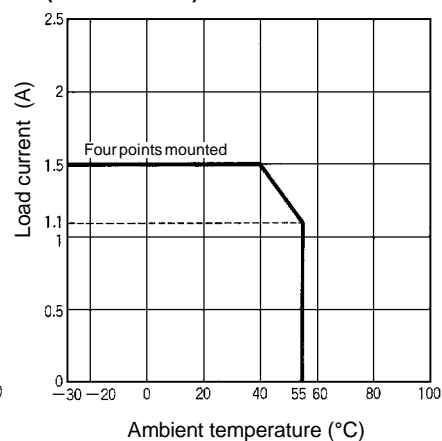
G730-ZOM04 + G3R-OA202Sj N



G730-ZOM04 + G3R-ODX02SN (4 to 60 VDC)



G730-ZOM04 + G3R-OD201SN (40 to 200 VDC)



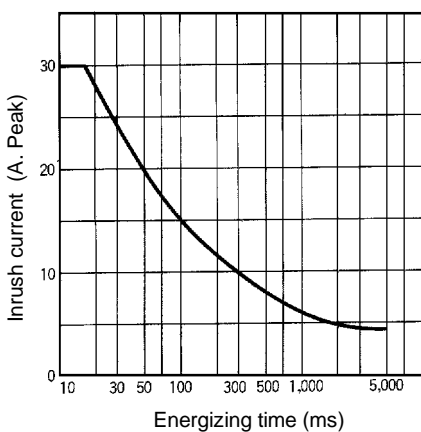
Note: The above data are for a G730 mounted with four G3Rs.



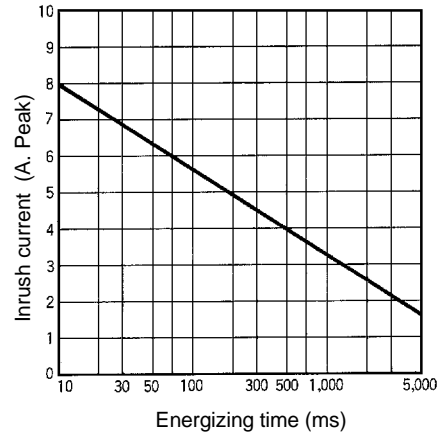
Inrush Current Resistivity

Non-repetitive (Keep the inrush current to half the rated value if it occurs repetitively.)

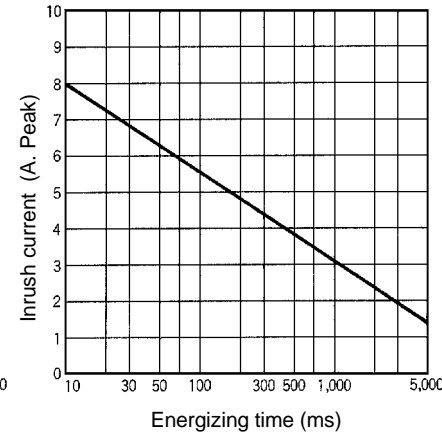
G3R-OA202Sj N



G3R-ODX02SN



G3R-OD201SN



G6D Power Relay

■ Ordering Information

Contact form	Rated coil voltage	Model
SPST-NO	5 VDC	G6D-1A
	12 VDC	
	24 VDC	

■ Coil Ratings

Output Module

Rated voltage	5 VDC	12 VDC	24 VDC
Rated current	40 mA	16.7 mA	8.3 mA
Coil resistance	125 Ω	720 Ω	2,880 Ω
Must operate voltage (see note 1)	70% max. of rated voltage		
Must release voltage	10% min. of rated voltage		
Max. voltage	130% of rated voltage		
Power consumption	Approx. 200 mW		

- Note:**
1. The must operate voltage is 75% or less of the rated voltage if the relay is mounted upside down.
 2. Rated current and coil resistance were measured at a coil temperature of 23_°C with a tolerance of $\pm 10\%$.
 3. Operating characteristics were measured at a coil temperature of 23_°C.
 4. The maximum allowable voltage is the maximum value of the allowable voltage range for the relay coil operating power supply. There is no continuous allowance.

■ Characteristics

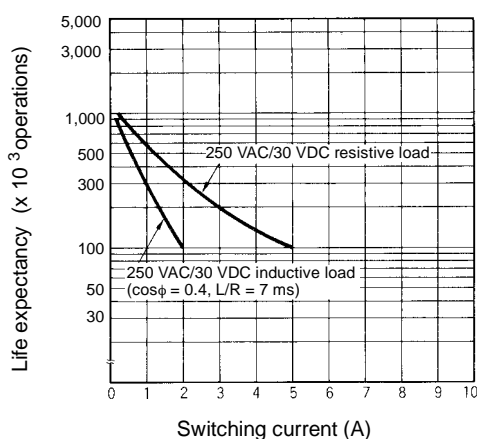
Output Module

Contact resistance (see note 2)	100 m Ω max.
Operate time	10 ms max.
Release time	5 ms max.
Insulation resistance	1,000 M Ω min. (at 500 VDC)
Dielectric strength	3,000 VAC, 50/60 Hz for 1 min between coil and contacts 750 VAC, 50/60 Hz for 1 min between contacts of same polarity
Surge withstand voltage	6,000 V, 1.2 x 50 μ s between coil and contacts
Vibration resistance	Destruction: 10 to 55 Hz, 1.5-mm double amplitude Malfunction: 10 to 55 Hz, 1.5-mm double amplitude
Shock resistance	Destruction: 1,000 m/s ² Malfunction: 100 m/s ²
Life expectancy	Mechanical: 20,000,000 operations min. (at 18,000 operations/hr) Electrical: 100,000 operations min. (5 A at 250 VAC, resistive load) 100,000 operations min. (5 A at 30 VDC, resistive load) 300,000 operations min. (2 A at 250 VAC, resistive load) 300,000 operations min. (2 A at 30 VDC, resistive load) (at 1,800 operations/hr)
Ambient temperature	Operating: -25°C to 70°C
Ambient humidity	Operating: 45% to 85%
Weight	Approx. 3 g

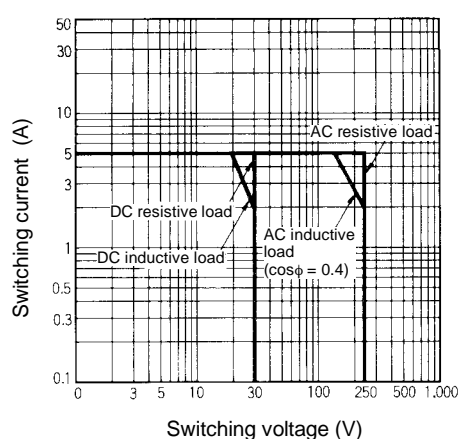
- Note:**
1. The above values are initial values.
 2. Measurement condition: 1 A at 5 VDC

■ Reference Data

Life Expectancy



Max. Switching Capacity



G3DZ Power MOS FET Relay

■ Ordering Information

Insulation method	Indicator	Zero cross function	Applicable output load	Rated input voltage	Model
Photodiode array	No	No	0.6 A at 5 to 240 VAC/ 5 to 100 VDC	5 VDC 12 VDC 24 VDC	G3DZ-2R6PL

■ Ratings

Output Module

Input

Rated voltage	Operating voltage	Input impedance	Voltage level	
			Must operate	Must release
5 VDC	4 to 6 VDC	830 $\Omega \pm 20\%$	4 VDC max.	1 VDC min.
12 VDC	9.6 to 14.4 VDC	2 k $\Omega \pm 20\%$	9.6 VDC max.	
24 VDC	19.2 to 28.8 VDC	4 k $\Omega \pm 20\%$	19.2 VDC max.	

Output

Load voltage	Load current	Inrush current
3 to 264 VAC, 3 to 125 VDC	100 μ A to 0.6 A	6 A (10 ms)

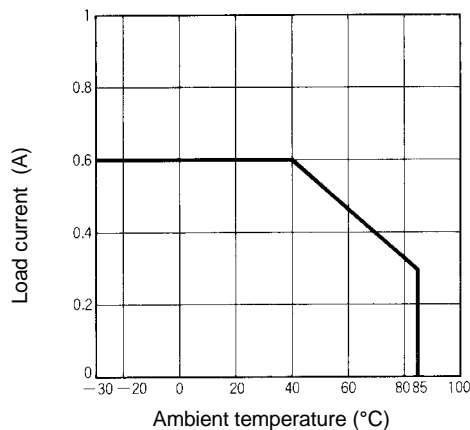
■ Characteristics

Operate time	6 ms max.
Release time	10 ms max.
Output ON-resistance	2.4 Ω max.
Leakage current	10 μ A max. (at 125 VDC)
Insulation resistance	100 m Ω max. (at 500 VDC)
Dielectric strength	2,500 VDC, 50/60 Hz for 1 min
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude
Shock resistance	1,000 m/s ² (approx. 100G)
Ambient temperature	Operating: -30°C to 85°C (with no icing) Storage: -30°C to 100°C (with no icing)
Ambient humidity	Operating: 45% to 85%
Weight	Approx. 3.1 g

■ Reference Data

Load Current vs. Ambient Temperature Characteristics

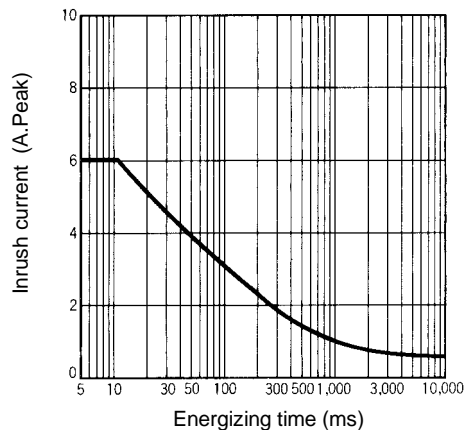
G3DZ-2R6PL



Inrush Current Resistivity

Non-repetitive (Keep the inrush current to half the rated value if it occurs repetitively.)

G3DZ-2R6PL



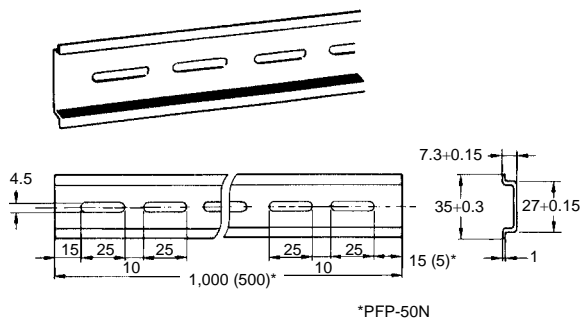
Note: The above data are for a G730 mounted with 8 or 16 G3DZs.

DIN Track Mounting Accessories

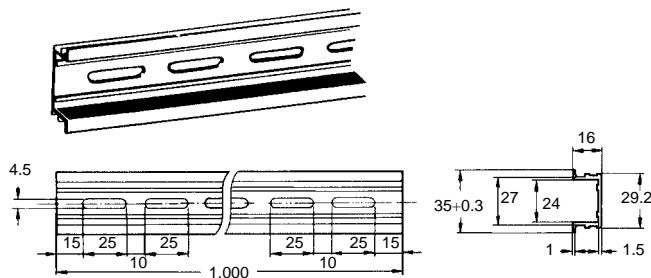
Mounting Track

PFP-100N

PFP-50N

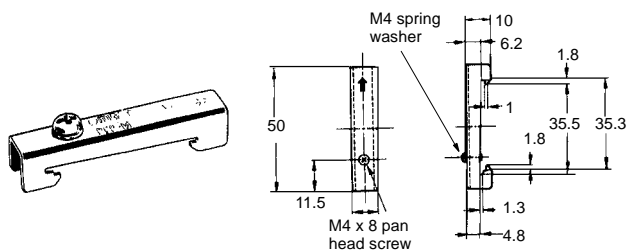


PFP-100N2



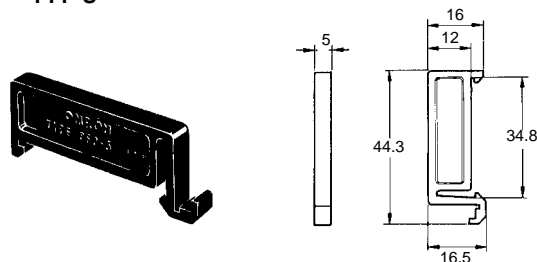
End Plates

PFP-M



Spacers

PFP-S



Note: Order the above parts in units of 10.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. J94-E1-2A

Remote Interface

G71P

Connects to Standard DIN Bus

- Can be combined with a G70A I/O Block to provide 16 input/output points of distributed control through a two-conductor cable.
- Conforms to DIN-19245.
- One G71P can be connected to a maximum of 10 Master Units.
- Data transmission speed (baud rate) is changeable.
- Easily connects to I/O devices via connector.
- Either DIN-rail or screw mounting possible.
- Built-in diagnostic functions provide easy troubleshooting.
- Terminator function incorporated.

Ordering Information

I/O classification	I/O points	Internal I/O circuit common	Rated voltage	Model
Contact input	16 points	PNP (- common)	24 VDC	G71P-IC16-4
Transistor input				G71P-ID16-4
Transistor output		PNP (+ common)		G71P-OD16-4

Do not connect the G7TC I/O Block to the G71P. Use the G70A (PNP output, 16 I/O points, mounting G2R relays) instead, to connect to the G71P.

Remote Interface and I/O Block Combinations

PROFIBUS Models

Application I/O block			Remote Interface
AC input block	230 VAC	G70A-ZIM16-5	G71P-IC16-4 24 VDC
DC input block	24 VDC	G70A-ZIM16-5	
Output block	24 VDC	G70A-ZOC16-4	G71P-OD16-4 24 VDC

Specifications

■ Ratings

G71P-ID16-4/IC16-4 Input

Item	G71P-ID16-4	G71P-IC16-4
Rated input voltage	24 VDC	
Input current	6.7 mA/points	
ON delay time	1.5 ms max.	9 ms max.
OFF delay time	1.5 ms max.	14.5 ms max.
Number of circuits	16 points (8 points/common)	
ON voltage	15 VDC max.	
OFF voltage	5.6 VDC min.	

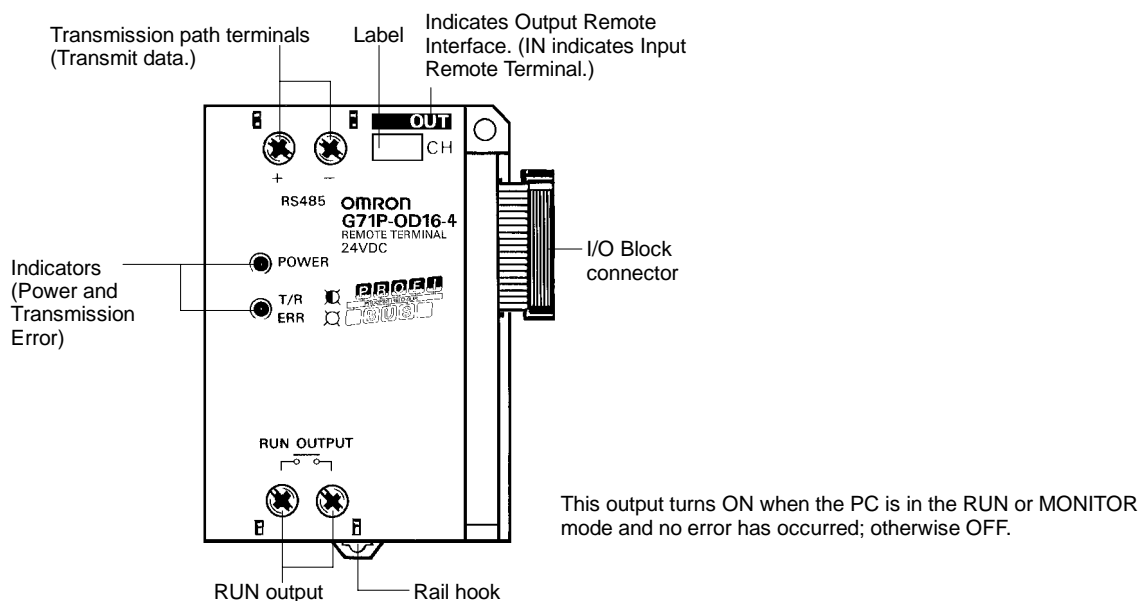
G71P-OD16-4 Output

Item	G71P-OD16-4
Rated output voltage	24 VDC
Rated output current	30 mA/points
Residual voltage	1.2 V max.
OFF delay time	100 ms max.
Number of circuits	16 points (8 points/common)

■ Characteristics

Communication system	Two-conductor, half duplex
Synchronization method	Asynchronous
Transmission speed (baud rate)	500 kbps, 19.2 kbps, 9.6 kbps (Automatic detection)
Transmission distance	500 kbps: 200 m; 19.2/9.6 kbps: 1.2 km (Transmission distance depends on the baud rate.)
Transmission path	Two-conductor cable
Interface	RS-485
Operating voltage range	24 VDC +10%/-15%
Current consumption	24 VDC: 40 mA max. (when all relays are OFF)
RUN output	SPST-NO contact output (closed during operation) Contact capacity: 100,000 operations at 2 A, 200 VAC (cosφ = 1)
Diagnosis	Transmission error check (DIN-19245), CPU error monitor
Insulation resistance	20 MW min. (at 250 VDC) between transmission circuits and RUN output circuit 20 MW min. (at 250 VDC) between RUN output circuit and power circuits 20 MW min. (at 250 VDC) between transmission circuits and power circuits
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min between transmission circuits and RUN output circuit 2,000 VAC, 50/60 Hz for 1 min between RUN output circuit and power circuits 500 VAC, 50/60 Hz for 1 min between transmission circuits and power circuits
Noise immunity	Noise level: 1.5 kV; pulse width: 100 ns to 1 ms
Vibration resistance	10 to 55 Hz, 0.75-mm single amplitude for 2 hrs each in X, Y, and Z directions (both mounted and not mounted to DIN rail)
Shock resistance	300 m/s ² (approx. 30G)
Ambient temperature	Operating: 0°C to 55°C Storage: -20°C to 65°C
Ambient humidity	Operating: 35% to 85%
Mounting strength	No damage when 5 kgf (4.9 N) pull load was applied for 1 s in all directions (1 kgf (0.9 N) in direction of rail)
Terminal strength	No abnormality when 5 kgf (4.9 N) pull load was applied for 1 s in all directions
Weight	Approx. 200 g

Nomenclature

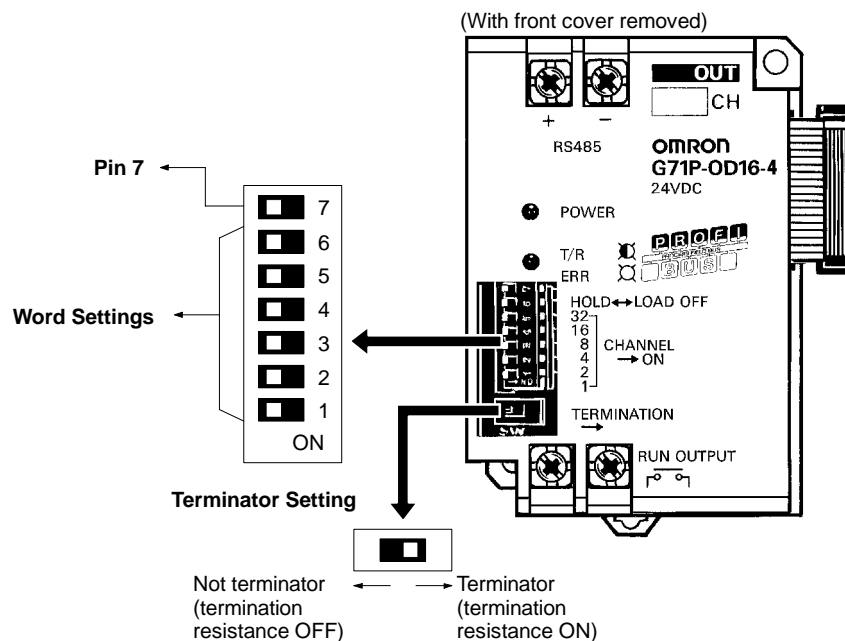


LED Operation

Display		Meaning
POWER	Lit	Lit when power is supplied and the unit is operating.
	Not lit	Not lit when power supply is abnormal.
T/R ERR	Flashing	Flashes during normal data transmission.
	Lit	Lit during standby and transmission error.
	Not lit	Not lit during CPU (watchdog timer) error.

Operation

■ Setting the Front-panel DIP Switch



Note: The termination resistance is set to OFF before shipping.

Output HOLD/LOAD OFF Mode
(for Remote Output Interface only)

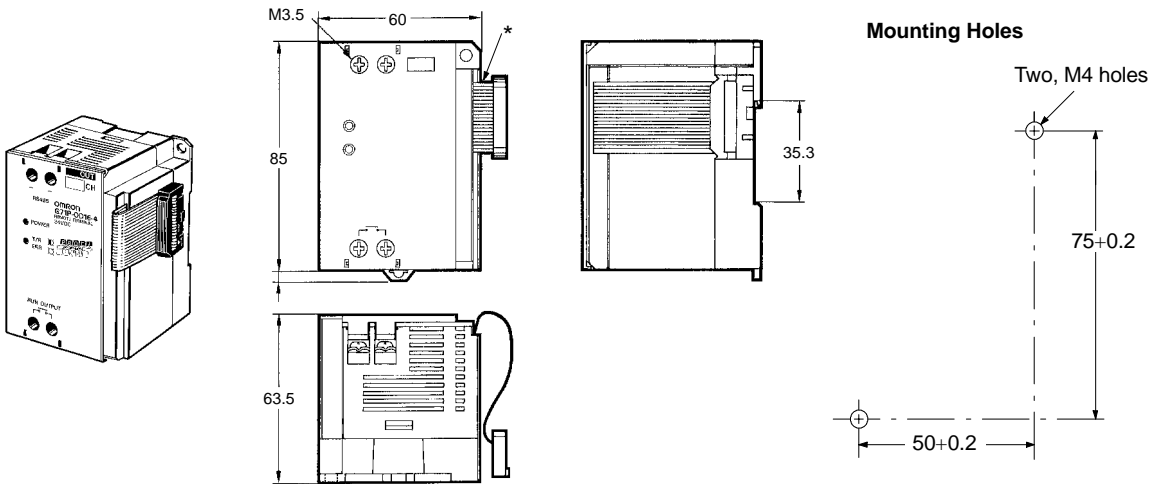
Pin 7	
HOLD	LOAD OFF
OUT channel status is held during a slave transmission error.	All OUT channel bits go OFF for a slave transmission error.

Word Settings

Word		Pin					
Address Range Bit OFF	Address Range Bit ON	1	2	3	4	5	6
0	(64)	OFF	OFF	OFF	OFF	OFF	OFF
1	(65)	ON	OFF	OFF	OFF	OFF	OFF
2	(66)	OFF	ON	OFF	OFF	OFF	OFF
3	(67)	ON	ON	OFF	OFF	OFF	OFF
.
.
.
60	(124)	OFF	OFF	ON	ON	ON	ON
61	(125)	ON	OFF	ON	ON	ON	ON
62	(126)	OFF	ON	ON	ON	ON	ON
63		ON	ON	ON	ON	ON	ON

Dimensions

Note: All units are in millimeters unless otherwise indicated.



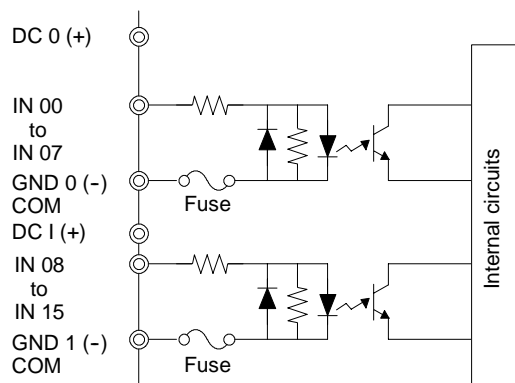
*A flat cable with a length of 85 mm can be used.

Installation

Internal Circuit

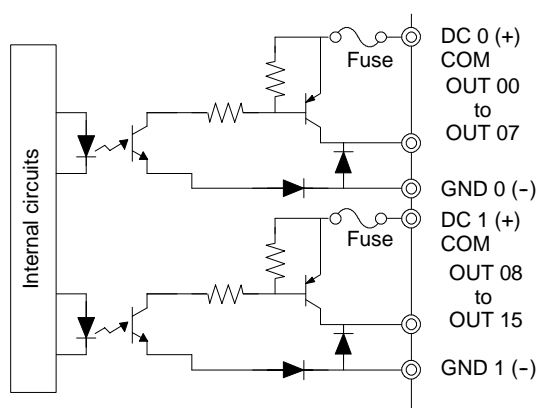
Input (PNP: - Common)

G71P-IC16-4

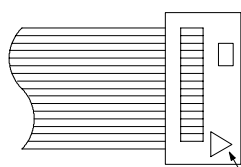


Output (PNP: + Common)

G71P-OD16-4



Terminal Arrangement



Cable Color
Output: Yellow
Input: Red

Orientation mark

(20)	IN, OUT 00	IN, OUT 08	(19)
(18)	IN, OUT 01	IN, OUT 09	(17)
(16)	IN, OUT 02	IN, OUT 10	(15)
(14)	IN, OUT 03	IN, OUT 11	(13)
(12)	IN, OUT 04	IN, OUT 12	(11)
(10)	IN, OUT 05	IN, OUT 13	(9)
(8)	IN, OUT 06	IN, OUT 14	(7)
(6)	IN, OUT 07	IN, OUT 15	(5)
(4)	GND 0 (-)	GND 1 (-)	(3)
(2)	DC 0 (+)	DC 1 (+)	(1) ◀

Note: Figures in parentheses are connector pin numbers.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.