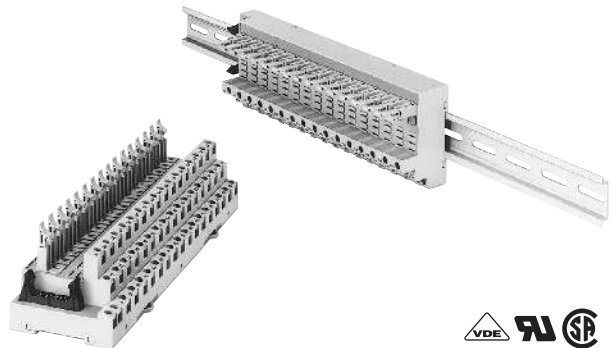


# I/O Block Base G70A

## 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 0160.
- Connects to the PC and SBC easily via a connector.
- DIN track mounted.
- I/O Block conforming to VDE 0160.



## Ordering Information

### List of Models

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-OA202SZN G3R-OA202SLN G3R-ODX02SN G3R-OD201SN G3RZ-201SLN H3RN-1 H3RN-11
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)

### Accessories (Order Separately)

#### G78-16-E Short Bar

Applicable model	Model
G70A-ZOC16-3 G70A-ZOC16-4 G70A-ZIM16-5	G78-16-E

# Specifications

## ■ Ratings/Characteristics

Item	G70A-ZOC16-3	G70A-ZOC16-4	G70A-ZIM16-5
Contact resistance	10 mΩ (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	Between connector and I/O terminals: 1,000 MΩ (at 500 V) Other: 100 MΩ (at 500 V)		
Vibration resistance	Malfunction: 10 to 61.2 to 10 Hz, 0.1-mm single amplitude (0.2-mm double amplitude); 61.2 to 150 to 61.2 Hz, 14.7 m/s <sup>2</sup>		
Shock resistance	Malfunction: 200 m/s <sup>2</sup>		
Noise immunity	Noise level: 2.0 kV; pulse width: 100 ns to 1 μs		
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	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	21.8 mA
Coil resistance	1,100 Ω
Coil inductance	Armature OFF 4.27
(H) (ref. value)	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 Ω	275 Ω	1,100 Ω
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  $\pm 10\%$  (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

#### 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 $\mu$ A max.		
Insulation resistance	100 M $\Omega$ min. between input and output		
Dielectric strength	4,000 VAC, 50/60 Hz for 1 min between input and output		
Vibration resistance	10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)		
Shock resistance	1,000 m/s <sup>2</sup>		
Ambient temperature	Operating: -30°C to 80°C (with no icing) Storage: -30°C to 100°C (with no icing)		
Approved standards	UL508 File No. E64562 CSA C22.2 (No. 14, No. 950) File No. LR35535 TÜV File No. R9650094 (EN60950)		
Ambient humidity	Operating: 45% to 85%		
Weight	Approx. 18 g		

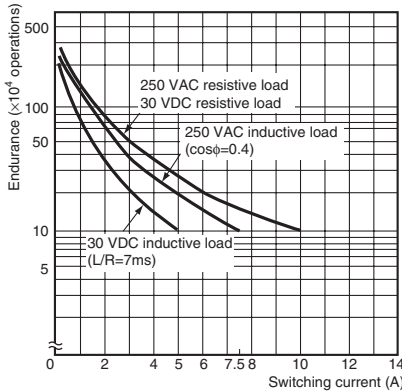
### Output Module

Item	G3R-OA202SZN	G3R-OA202SLN	G3R-ODX02SN	G3R-OD201SN
Operate time	1/2 of load power 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 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 MΩ min. between input and output			
Dielectric strength	4,000 VAC, 50/60 Hz for 1 min between input and output			
Vibration resistance	10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)			
Shock resistance	1,000 m/s <sup>2</sup>			
Ambient temperature	Operating: −30°C to 80°C (with no icing) Storage: −30°C to 100°C (with no icing)			
Approved standards	UL508 File No. E64562 CSA C22.2 (No. 14, No. 950) File No. LR35535 TÜV File No. R9650094 (EN60950)			
Ambient humidity	Operating: 45% to 85%			
Weight	Approx. 18 g			

# Engineering Data

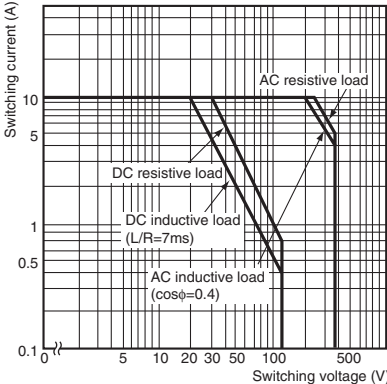
## ■ When Mounted to a G2R

### Endurance



### Maximum Switching Power

#### G2R-1A-S (24 VDC)

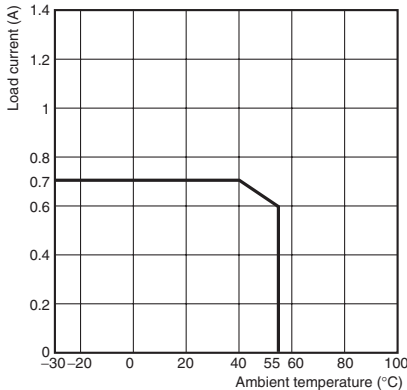


**Note:** The characteristics shown here are for 16-point mounting. This data was produced from actual values sampled on production lines, and should be used for reference purposes only. Since relays are mass-produced, a certain amount of tolerance is generally allowed in their application.

## ■ When Mounted to a G3RZ

### Load Current vs. Ambient Temperature

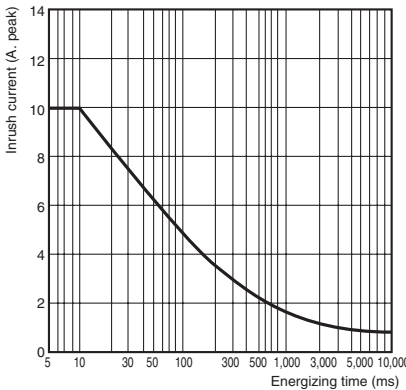
#### G3RZ-201SLN



### Inrush Current Resistivity

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

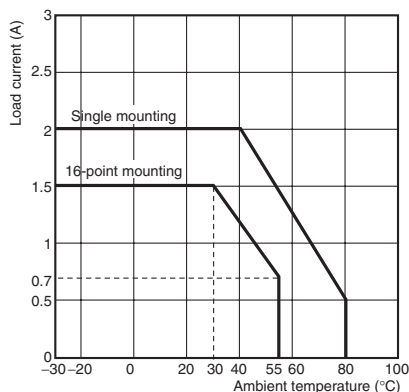
#### G3RZ-201SLN



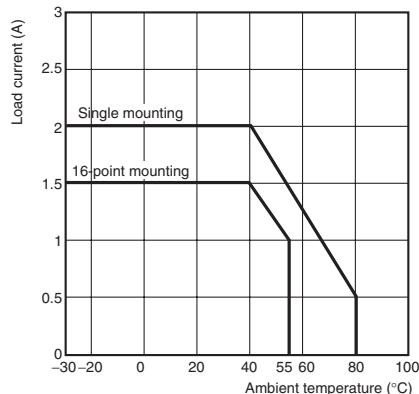
## ■ When Mounted to a G3R

### Load Current vs. Ambient Temperature

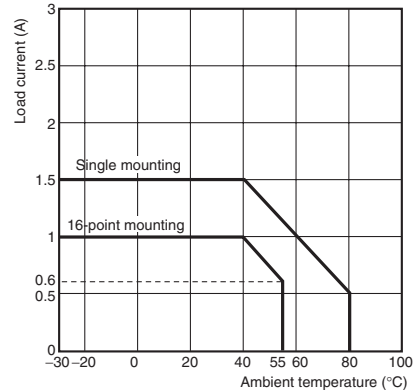
G3R-OA202SZN  
G3R-OA202SLN



G3R-ODX02SN



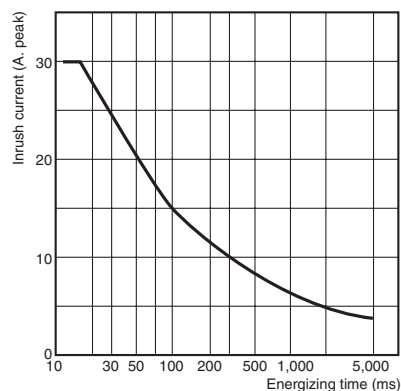
G3R-OD201SN



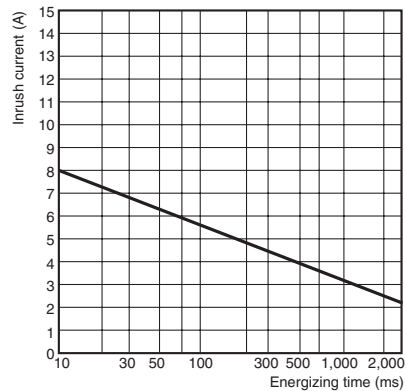
### Inrush Current Resistivity

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

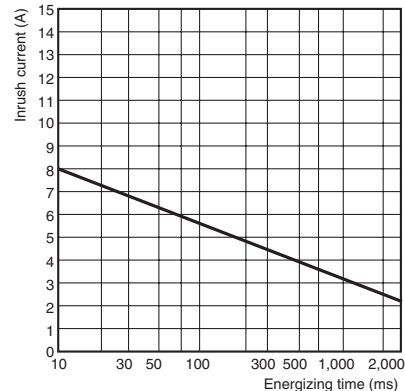
G3R-OA202SZN  
G3R-OA202SLN



G3R-ODX02SN



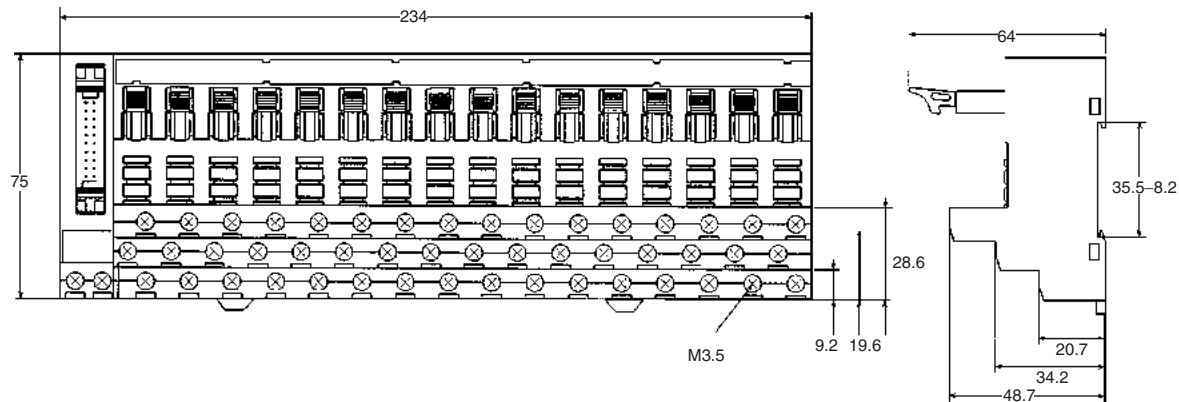
G3R-OD201SN



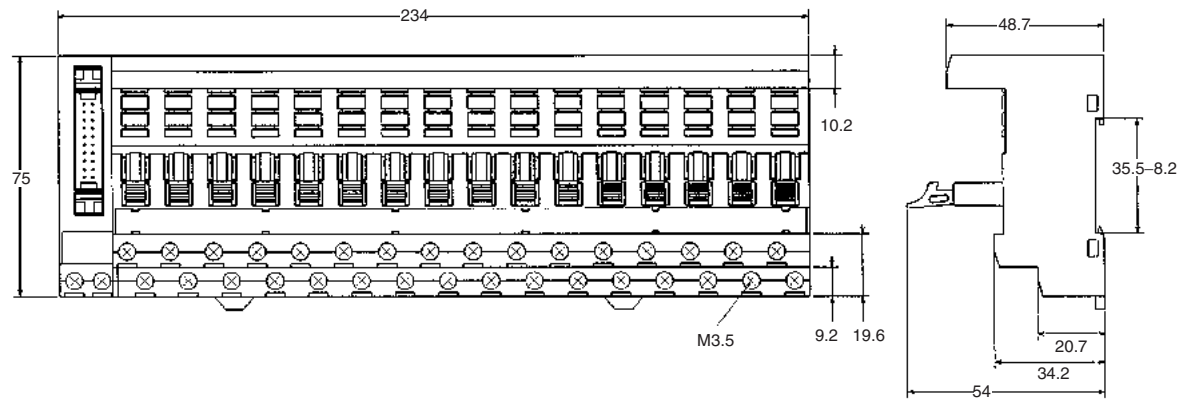
# Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

## G70A-ZOC16 (Output)

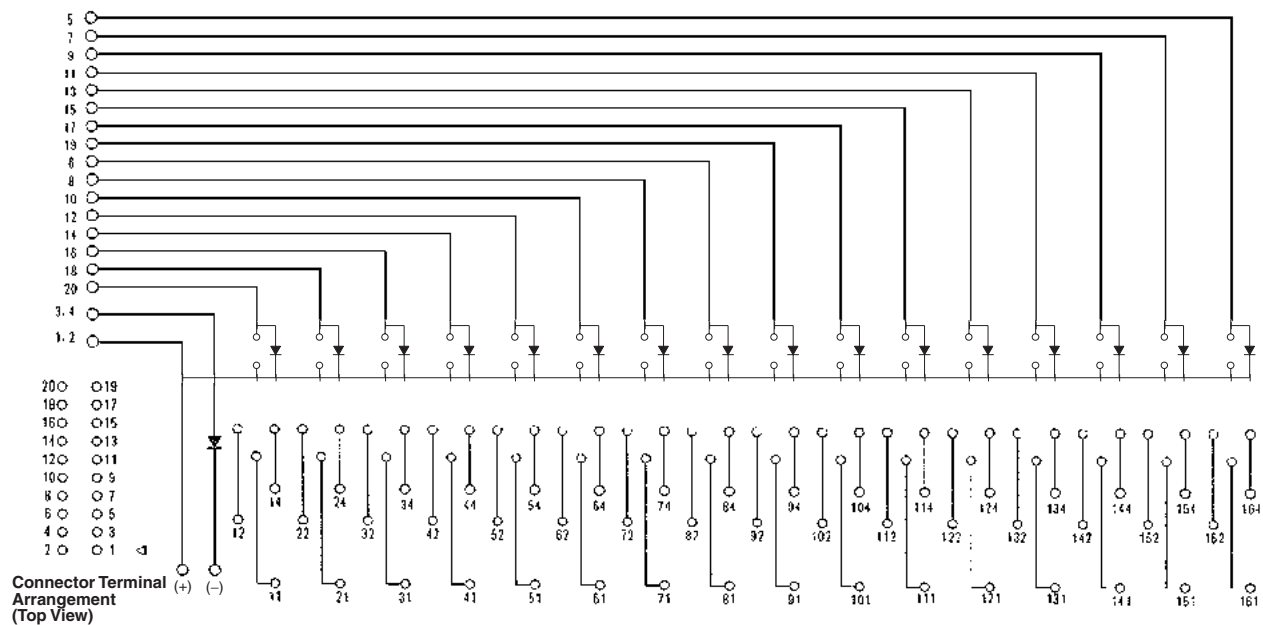


## G70A-ZIM16 (Input)

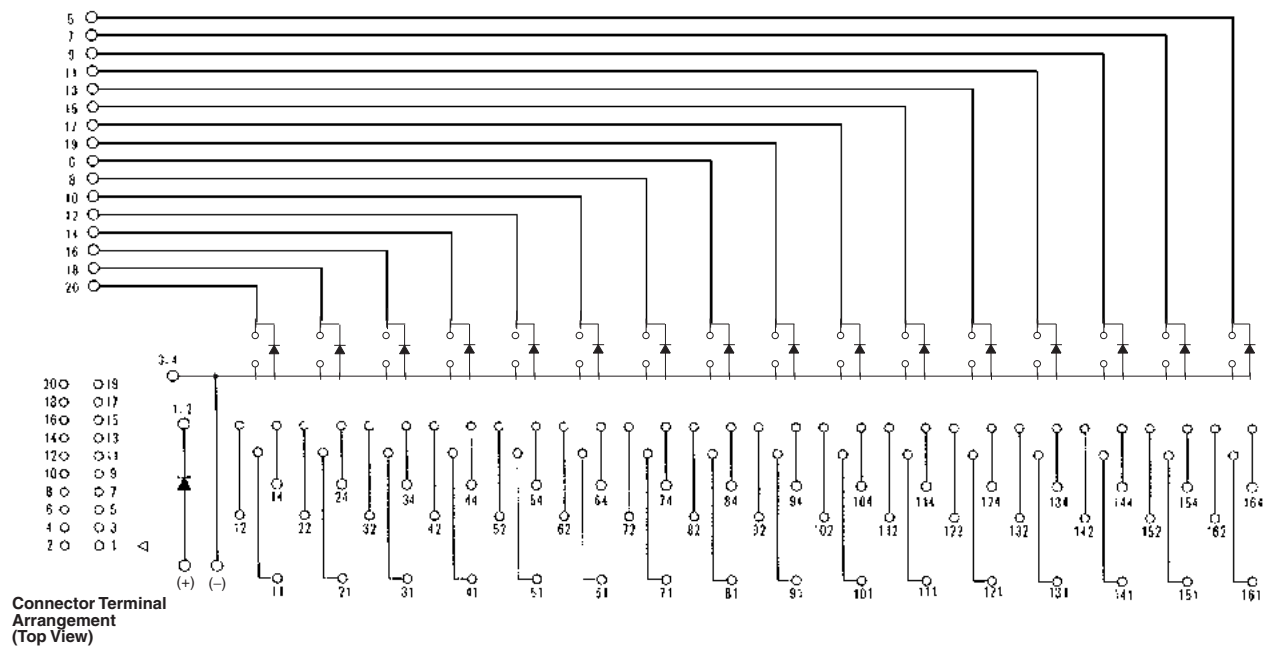


# Terminal Arrangement/Internal Connection

## G70A-ZOC16-3 (NPN)

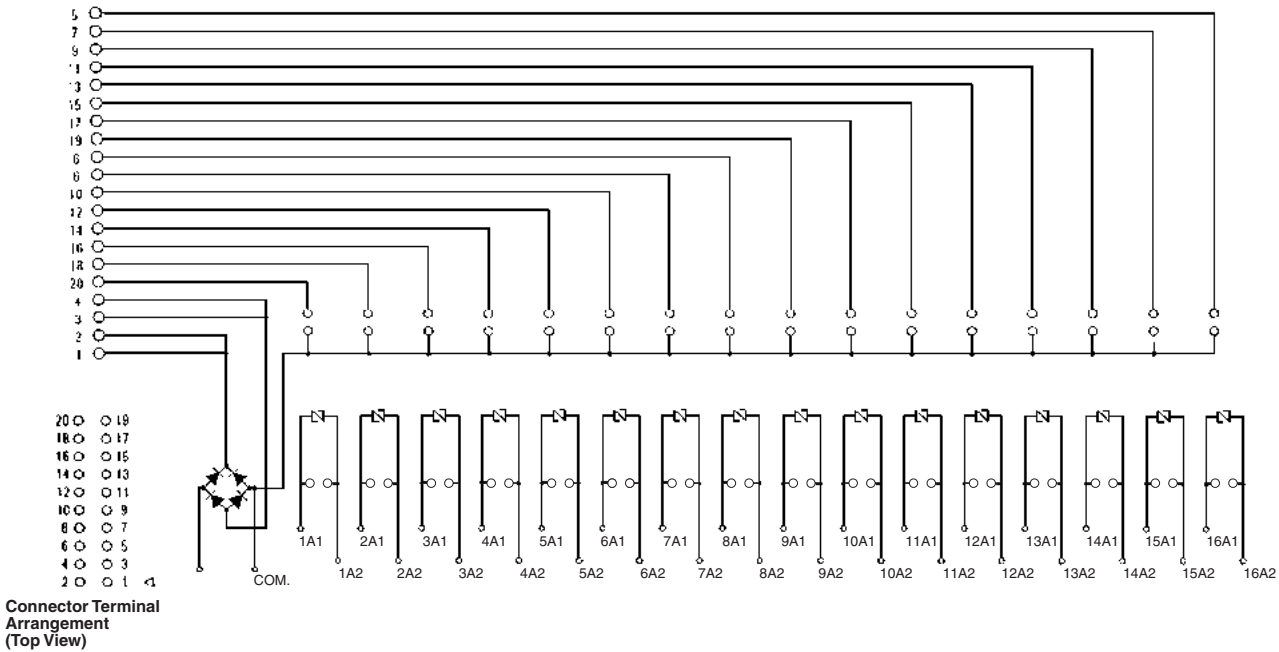


## G70A-ZOC16-4 (PNP)

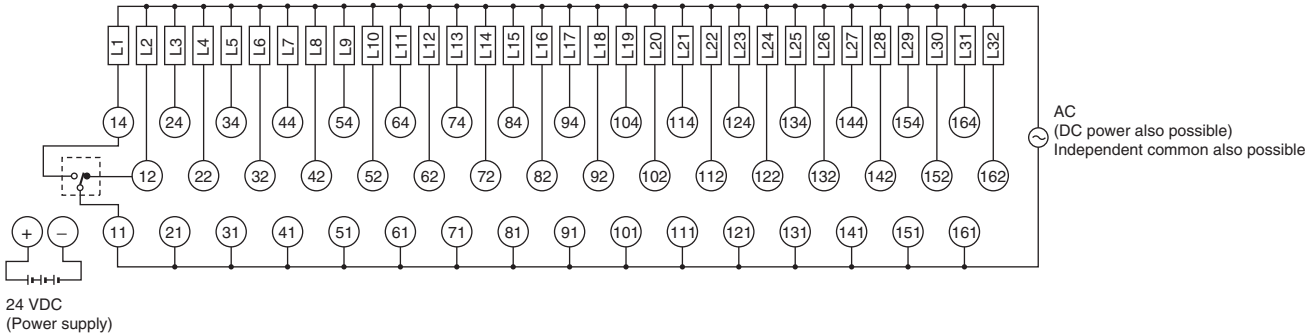




# **G70A-ZIM16-5 (NPN/PNP)**



## **When mounted to a G2R-1-S**



**Note:** The above diagram shows the Unit mounted to a G2R-1-S.  
 When mounting to a G3R-OA□ or G3RZ-201SLN, pins 11 to 14 are output terminals.  
 When mounting to a G3R-OD□, pin 14 is a plus terminal and pin 11 is a minus terminal. When mounting to G3RZ-201SLN, there is no polarity.

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

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