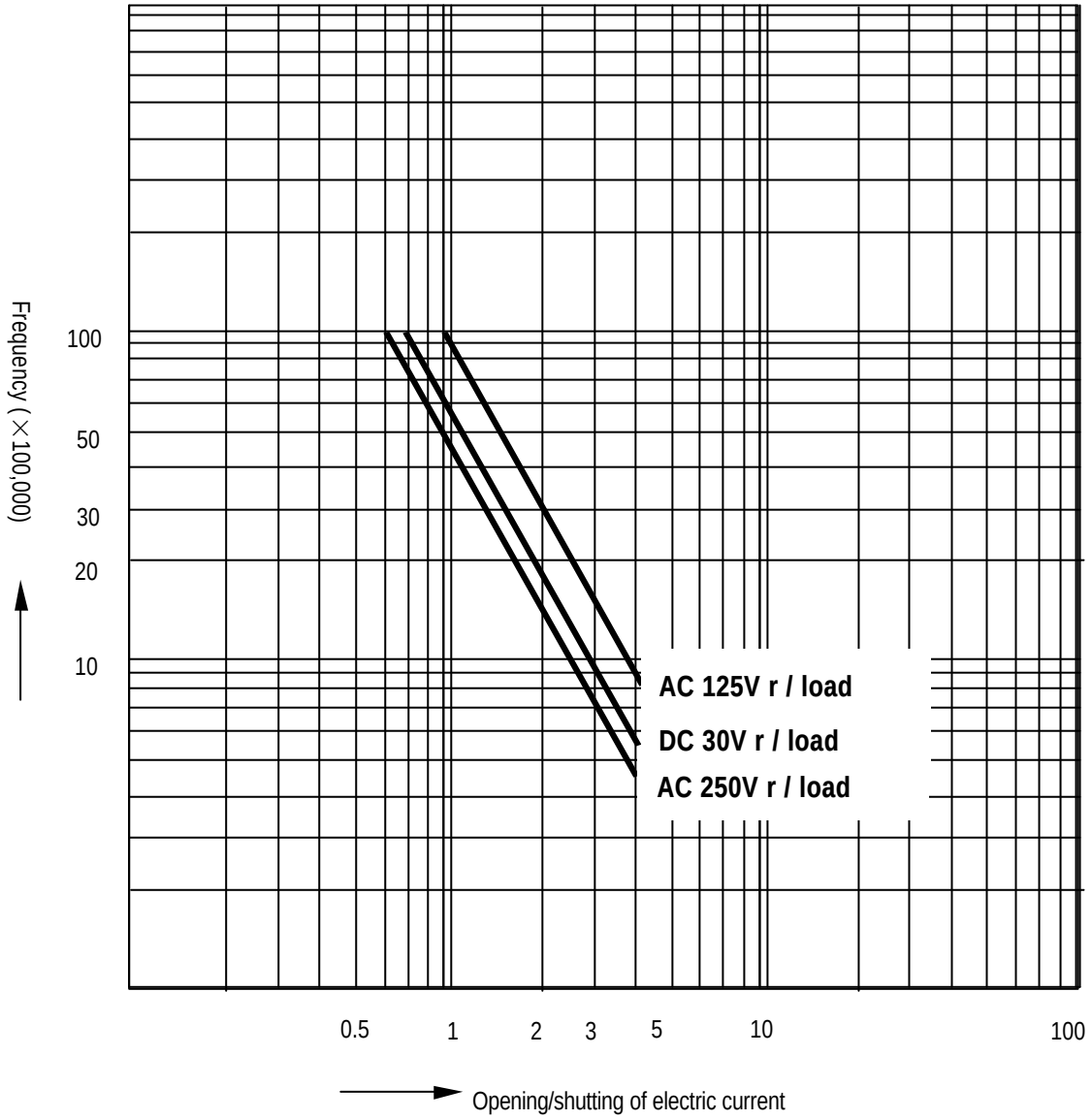
Chapter 6 Input and Output Modules

6.1 Input / Output Specifications

Digital input that offers to GLOFA–GM7 series are made to use both of electric current sink and electric current source.
To keep use coil load as an output module, maximum opening and shutting frequency is 1 second on and 1 second off.

The following diagram shows maximum life relay for relay output.



6.2 Digital Input Specification

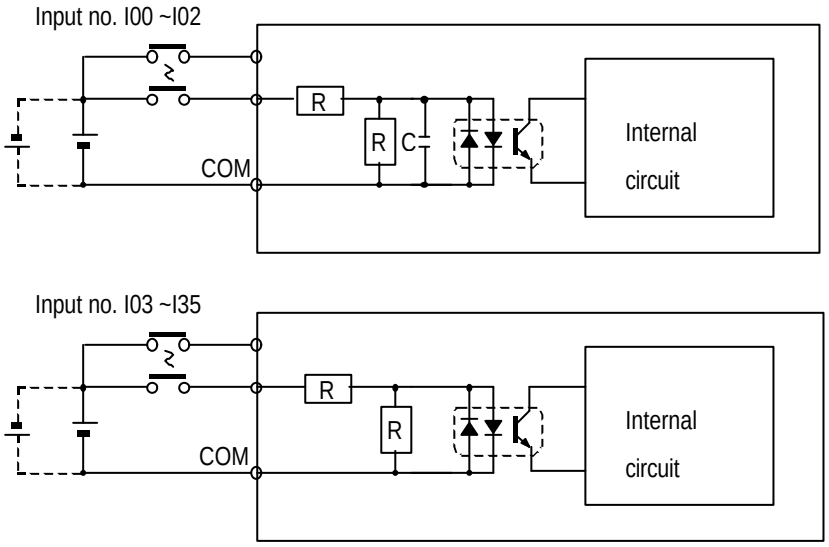
6.2.1 Base unit

1) Specification

Specification \ Model		Base unit				
		G7M-DR10A G7M-DR10A/DC G7M-DT10A	G7M-DR20A G7M-DR20A/DC G7M-DT20A	G7M-DR30A G7M-DR30A/DC G7M-DT30A	G7M-DR40A G7M-DR40A/DC G7M-DT40A	G7M-DR60A G7M-DR60A/DC G7M-DT60A
Number of input points		6 points	12 points	18 points	24 points	36 points
Insulation method		Photo coupler				
Rated input voltage		DC 12 / 24V				
Rated input current		4.5 / 9 mA (I00 ~ I02 : 8 / 16mA)				
Operating voltage range		DC10.2 ~ 28.8V (ripple: less than 5%)				
Max. simultaneous input points		100% simultaneously On				
On voltage / On current		DC9.5V or higher/ 4.3 mA or higher (I00 ~ I02 : 6.3mA or higher)				
Off voltage / Off current		DC5V or lower / 1.8 mA or lower (I00 ~ I02 : 3.3mA or lower)				
Input impedance		Approx. 2.7 kΩ (I00~I02: approx. 1.5 kΩ)				
Response time	Off → On	15ms or less * 1				
	On → Off	15ms or less * 1				
Common terminal		12 points / COM	18 points / COM	12 points / COM	18 points / COM	
Operating indicator		LED turns on at ON state of input				

* 1 : It is possible to select from 1ms to 15ms by 1ms at GMWIN.

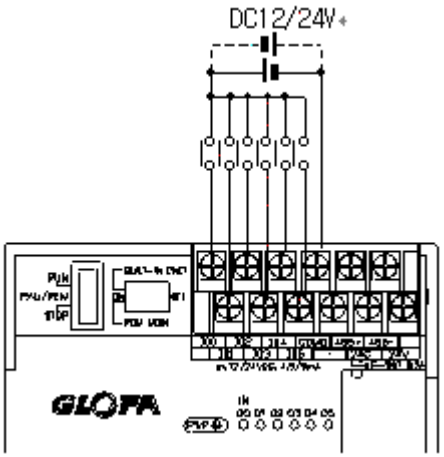
2) Circuit diagram



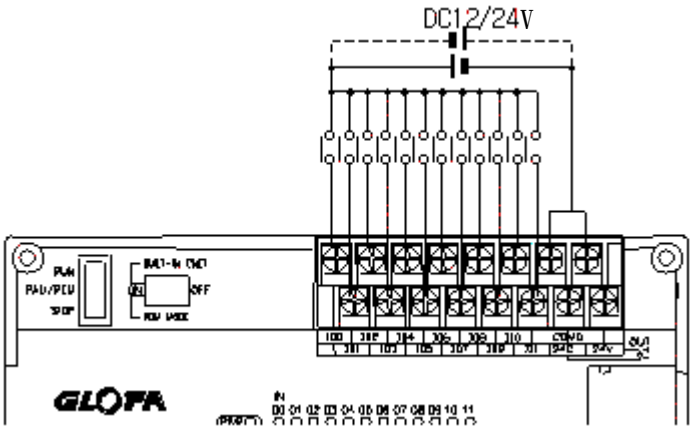
3) Input wiring

Base unit's wiring method is as follows. DC input specifications offered by GM7 is to be used for both electric current sink and electric current source.

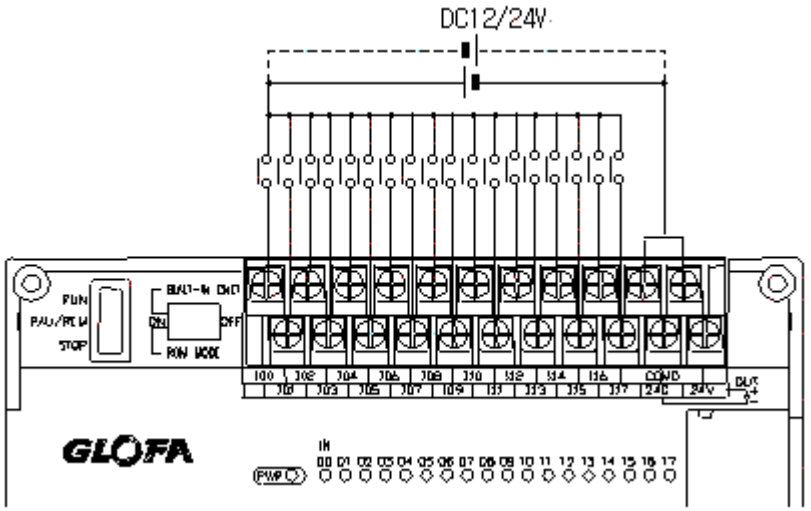
(1) 10-points base unit



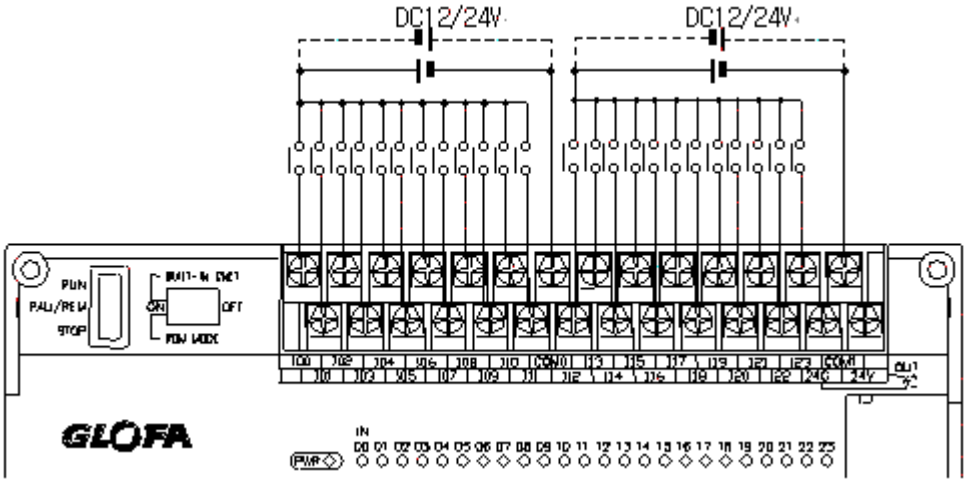
(2) 20-points base unit



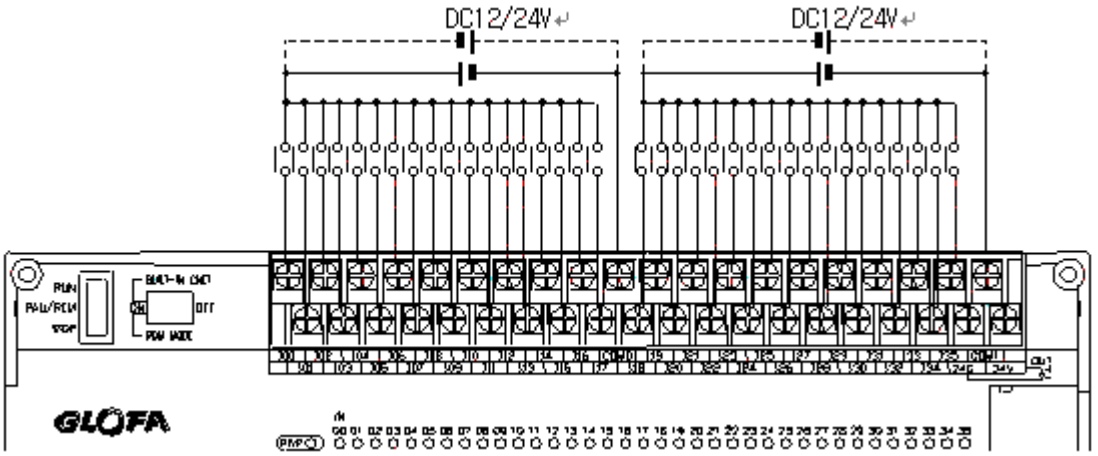
(3) 30-point base unit



(4) 40-point base unit

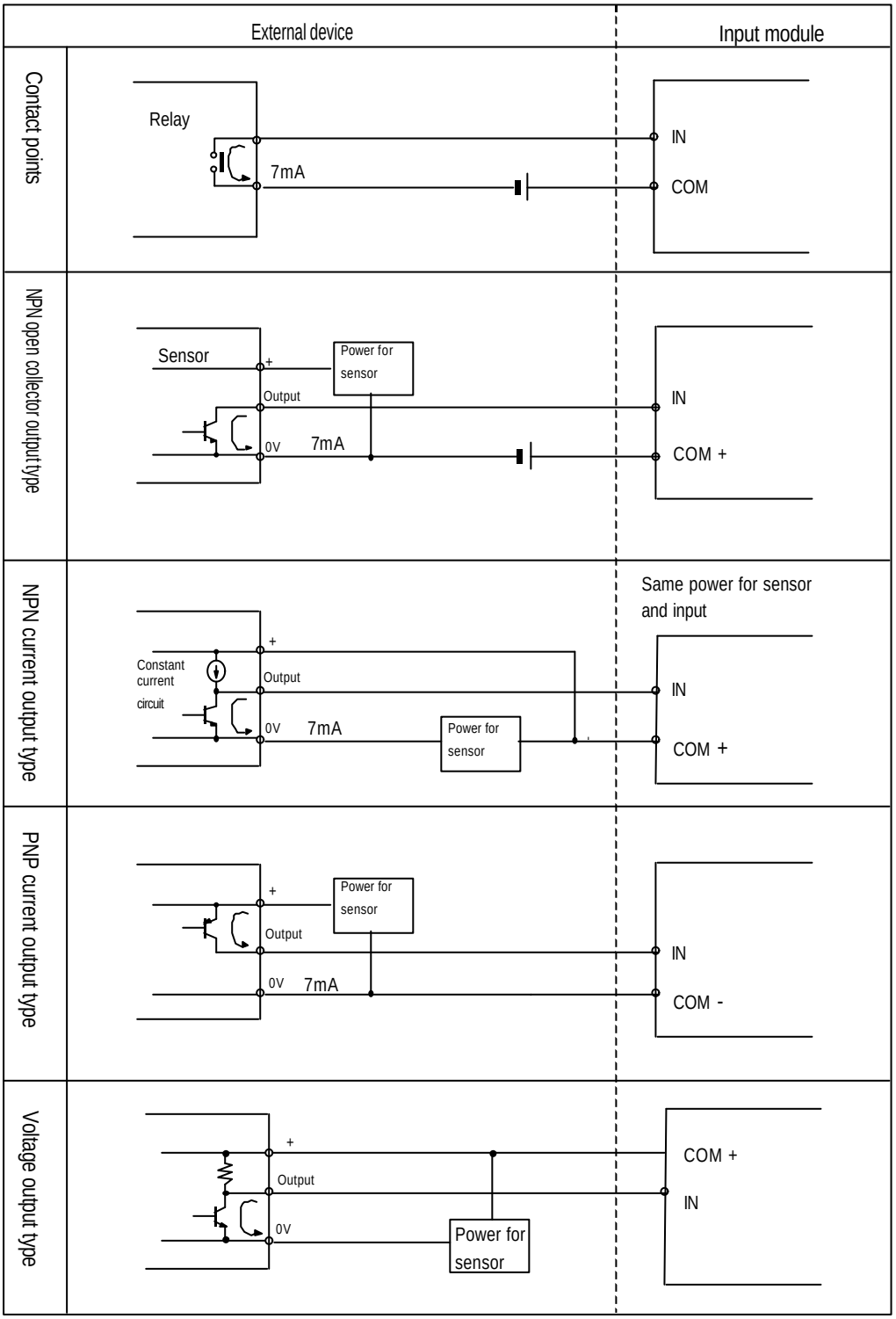


(5) 60-point base unit



4) Example of external devices.

To connect with external device of DC output type into DC input module, wire depending on the type of the external device as shown.



6.2.2 Expansion Module

1) Specifications

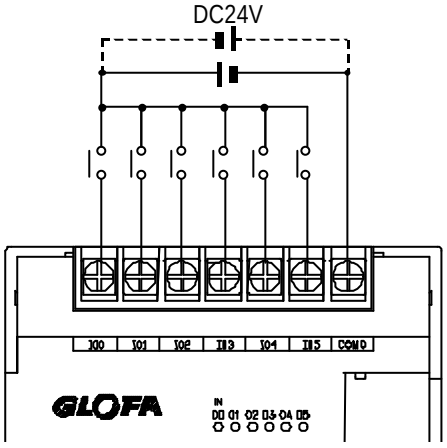
Model / Specification		Expansion Module
		G7E-DR10A
Number of input points		6 points
Insulation method		Photo coupler
Rated input voltage		DC 12 / 24V
Rated input current		4.5 / 9 mA
Operating voltage range		DC10.2 ~ 28.8V (ripple: less than 5%)
Max. Simultaneous input points		100% simultaneously On
On voltage / On current		DC9.5V or higher/ 4.3 mA or higher
Off voltage / Off current		DC5V or lower / 1.8 mA or lower
Input impedance		Approx. 2.7 kΩ
Response time	Off → On	15ms or less * 1
	On → Off	15ms or less * 1
Common terminal		6 points / com
Operating indicator		LED turns on at ON state of input

* 1 : It's possible to select from 1ms to 15ms by 1ms at GMWIN.

2) Circuit diagram

It's the same with the one for the base unit.

3) Input wiring



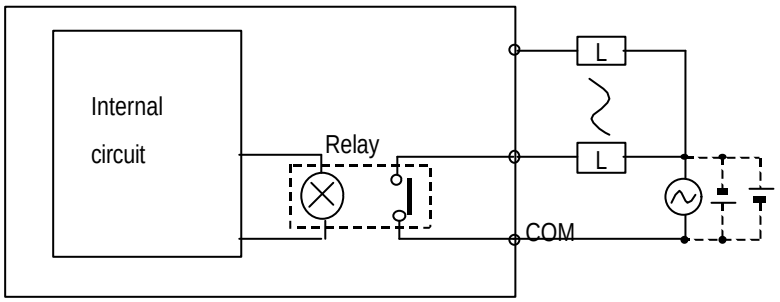
6.3 Digital Output Specification

6.3.1 Base unit (Relay output)

1) Specification

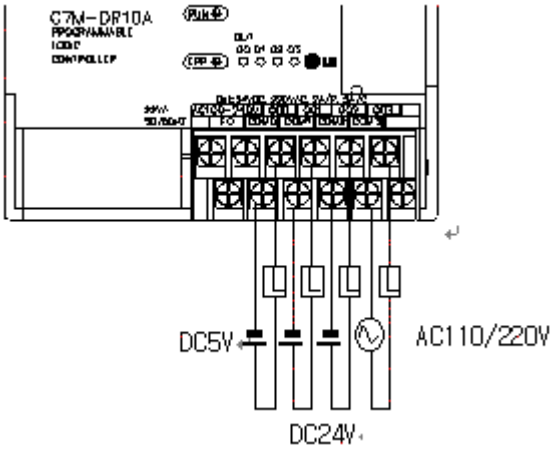
Specifications \ Model		Base Unit				
		G7M-DR10A G7M-DR10A/DC	G7M-DR20A G7M-DR20A/DC	G7M-DR30A G7M-DR30A/DC	G7M-DR40A G7M-DR40A/DC	G7M-DR60A G7M-DR60A/DC
Output point		4 points	8 points	12 points	16 points	24 points
Insulation method		Relay insulation				
Rated load voltage/current		DC24V / 2A (r/load), AC220V / 2A (COS Ψ = 1) / 1 point 5A / 1COM				
Min. load Voltage/current		DC5V / 1mA				
Max. load voltage/current		AC250V, DC110V				
Current leakage when off		0.1mA (AC220V, 60Hz)				
Max. On/off frequency		1,200/hr				
Surge Absorber		None				
Life	Mechanical	More than 20,000,000				
	Electrical	Rated on/off voltage/current load 100,000 or more				
		AC200V / 1.5A, AC240V / 1A (COSΨ = 0.7) 100,000 or more				
		AC200V / 1A, AC240V / 0.5A (COSΨ = 0.35) 100,000 or more				
		DC24V / 1A, DC100V / 0.1A (L / R = 7ms) 100,000 or more				
Response time	Off → On	10 ms or less				
	On → Off	12 ms or less				
Common method		1 point/ 1COM, 2 points/ 1COM, 4 points/1COM				
Operation indication		LED is on at on status of output				

2) Circuit

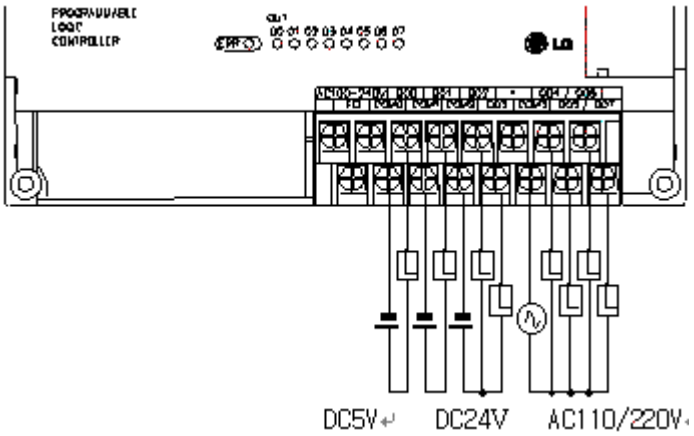


3) Output wiring

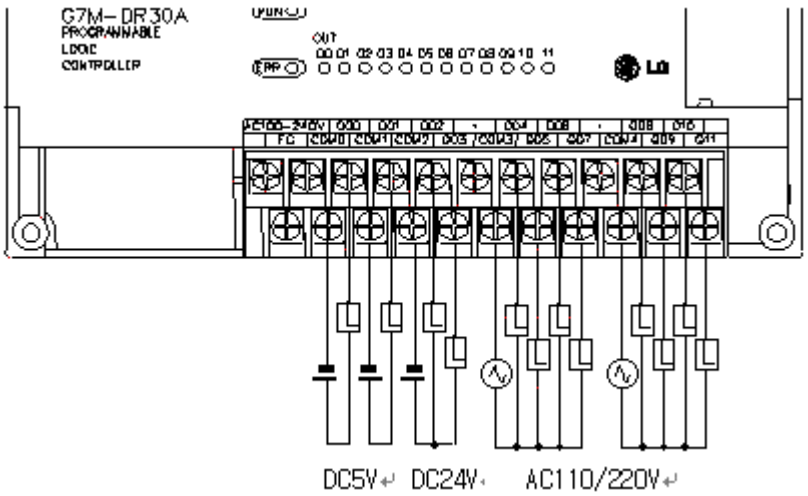
(1) 10-points base unit



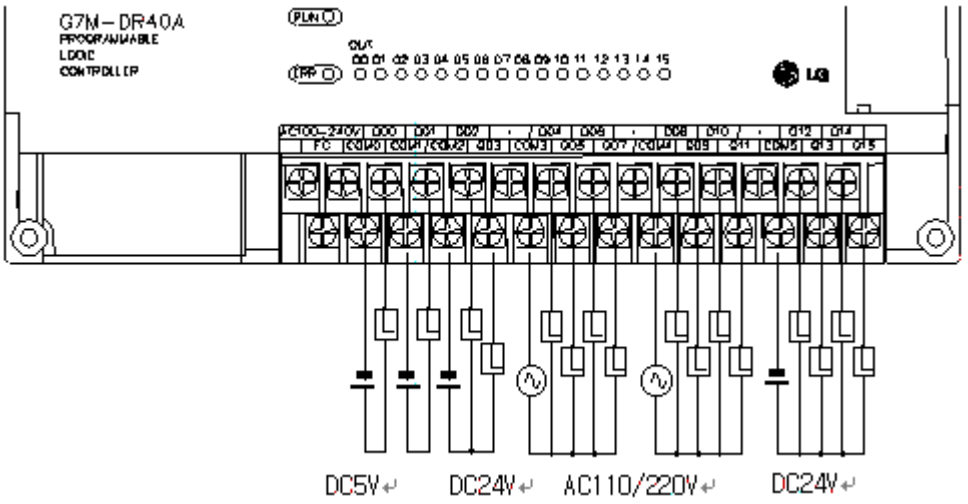
(2) 20-points base unit



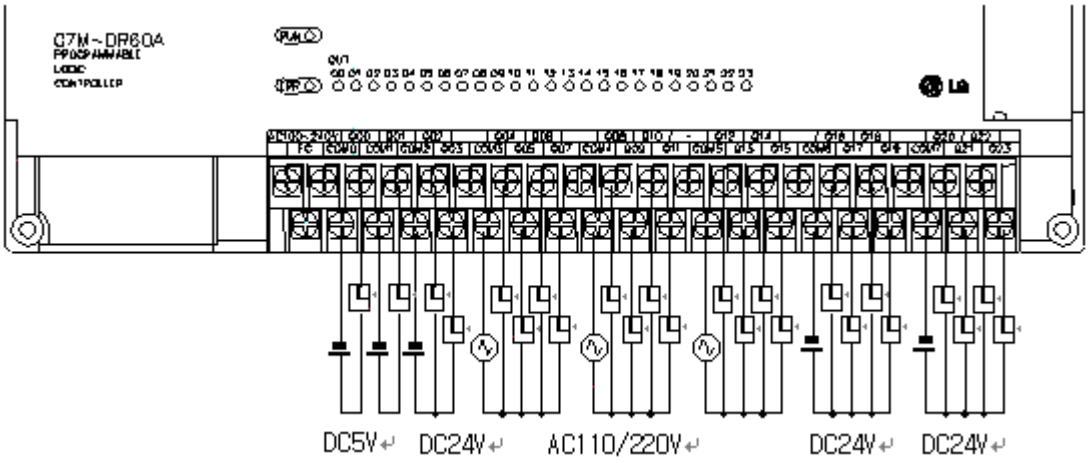
(2) 30-point base unit



(3) 40-point base unit



(4) 60-point base unit

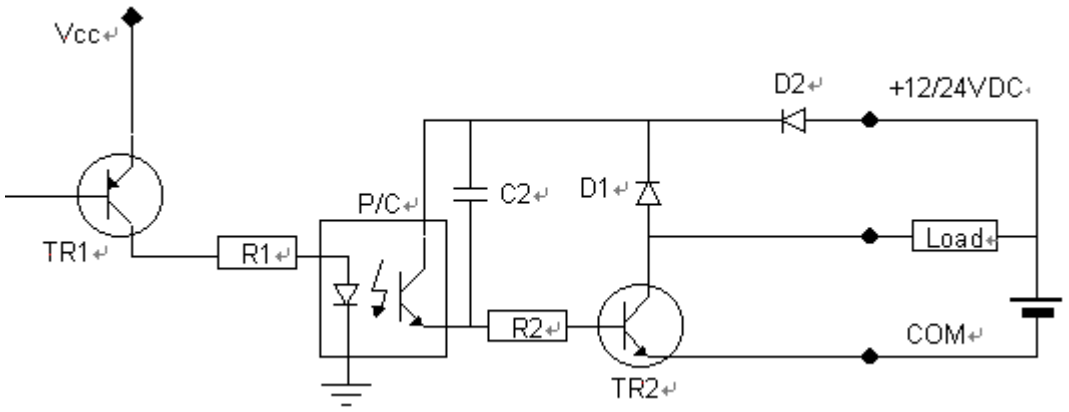


6.3.2 Base unit (Transistor output)

1) Specification

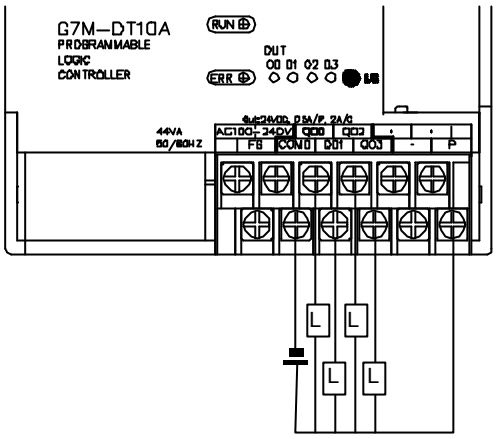
Specifications \ Model		Base Unit				
		G7M-DT10A	G7M-DT20A	G7M-DT30A	G7M-DT40A	G7M-DT60A
Output point		4 points	8 points	12 points	16 points	24 points
Insulation method		Photo coupler insulation				
Rated load voltage		DC12 / 24V, 0.5A / 1 point, 2A / 1COM				
Operating voltage		DC10.8 ~ 24.4V				
Max. load current		0.5A / 1 point, 3A / 1COM				
Current leakage when off		0.1mA or less at maximum load				
Max. voltage drop when on		DC1.5V or less				
Max. inrush current		4A / 10ms or less				
Surge Absorber		Clamp diode				
Response time	Off → On	2 ms or less				
	On → Off	2 ms or less				
External power supply	Voltage	DC24V ± 10% (Ripple voltage : 4 Vp-p or less)				
	Current	20mA or less	30mA or less	40mA or less	50mA or less	80mA or less
Common method		4 point / 1COM	8 points / 1COM	8 points / 1COM 4 points / 1COM	8 points / 1COM (x2)	8 points / 1COM (x3)
Operation indication		LED is on at on status of output				

2) Circuit

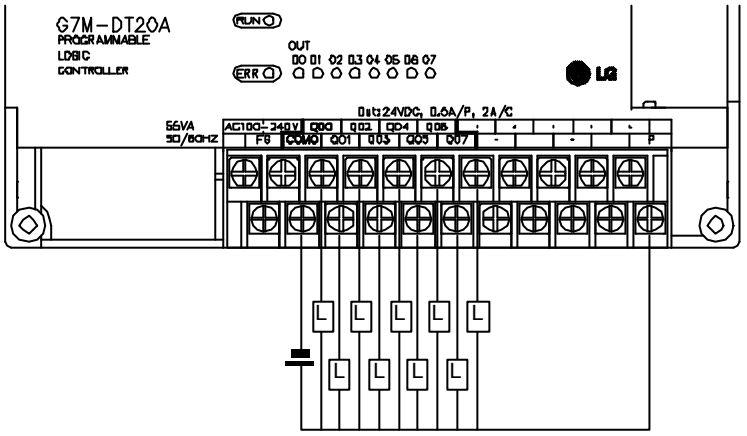


3) Output wiring

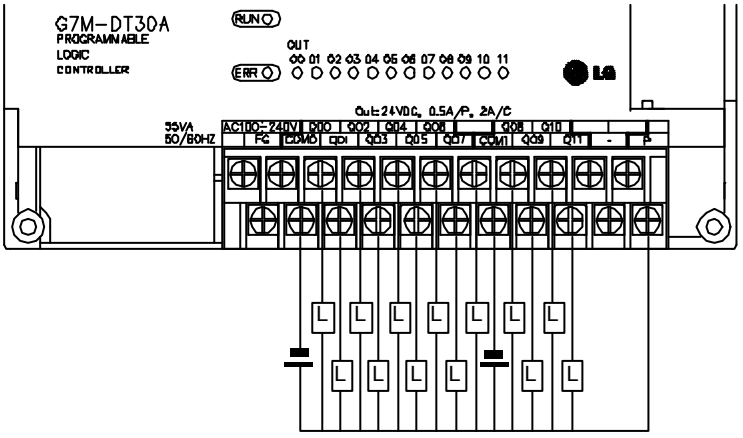
(1) 10-points base unit



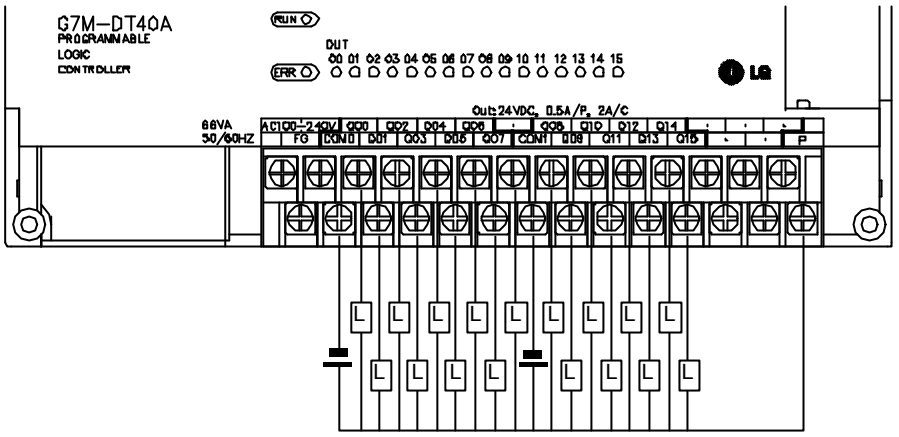
(2) 20-points base unit



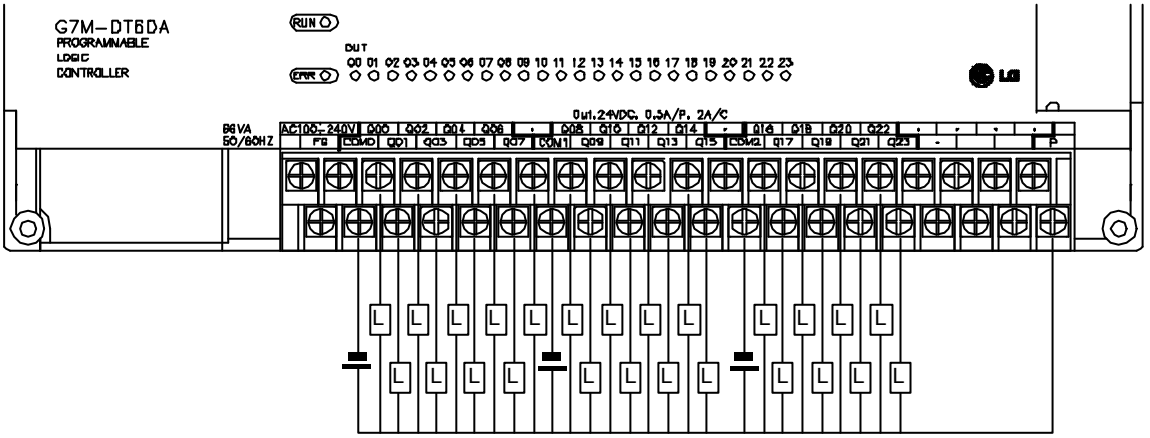
(2) 30-point base unit



(3) 40-point base unit



(4) 60-point base unit



6.3.2 Expansion Module

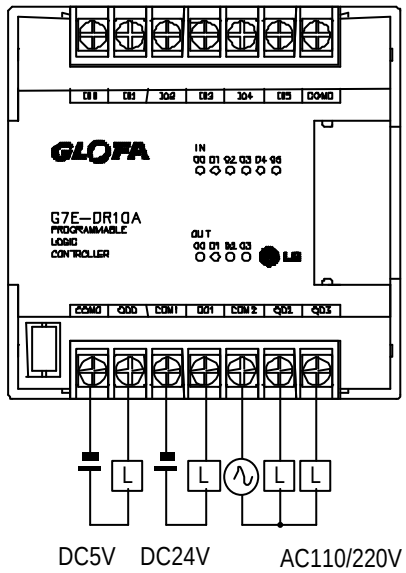
1) Specifications

Specifications \ Model		Expansion Module
		G7E-DR10A
Output point		4 points
Insulation method		Relay insulation
Rated load Voltage/current		DC24V / 2A (r/load), AC220V / 2A (COS Ψ = 1) / 1 point 5A / 1COM
Min. load Voltage/current		DC5V / 1mA
Max. load voltage/current		AC250V, DC110V
Current leakage when off		0.1mA (AC220V, 60Hz)
Max. On/off frequency		1,200/hr
Surge Absorber		None
Life	Mechanical	More than 20,000,000
	Electrical	Rated on/off voltage/current load 100,000 or more
		AC200V / 1.5A, AC240V / 1A (COSΨ = 0.7) 100,000 or more
		AC200V / 1A, AC240V / 0.5A (COSΨ = 0.35) 100,000 or more
		DC24V / 1A, DC100V / 0.1A (L / R = 7ms) 100,000 or more
Response time	Off → On	10 ms or less
	On → Off	12 ms or less
Common method		1 point/ 1COM, 2 points/ 1COM
Operation indication		LED is on at on status of output

2) Circuit

It's the same with the output circuit of the base unit.

3) Output wiring



REMARK

1) Refer to 7. 2 'Special Functions' for the special function units