

SIEMENS

Data Sheet

SIMATIC S7-200 EM 221 Digital Input 16 x 24 VDC, EM 222 Digital Output 4 x 24 VDC-5A, EM 222 Digital Output 4 x Relays-10A

Table 1 Specifications for the EM 221 Digital Input 16 x 24VDC

Description Order Number	EM 221 Digital Input 16 x 24 VDC 6ES7 221-1BH22-0XA0
Physical Size	
Dimensions (mm) (W x H x D)	71.2 x 80 x 62
Weight	160 g
Dissipation	3 W
VDC requirements +5 VDC	70 mA
Input Features	
Number of inputs	16 x 24 VDC
Type	Sink/Source (IEC Type I sink)
Rated voltage	24 VDC at 4 mA
Maximum continuous permissible voltage	30 VDC
Surge voltage	35 VDC for 0.5 s
Logic 1 (min.)	15 VDC at 2.5 mA
Logic 0 (max.)	5 VDC or 1 mA
Input delay (max.)	4.5 ms
Connection of 2 wire proximity sensor (Bero)	
Permissible leakage current (max.)	1 mA
Isolation	
Optical (galvanic, field to logic)	500 VAC for 1 minute
Isolation groups	4
Inputs on simultaneously	All at 55° C
Cable length	
Shielded	500 m
Unshielded	300 m

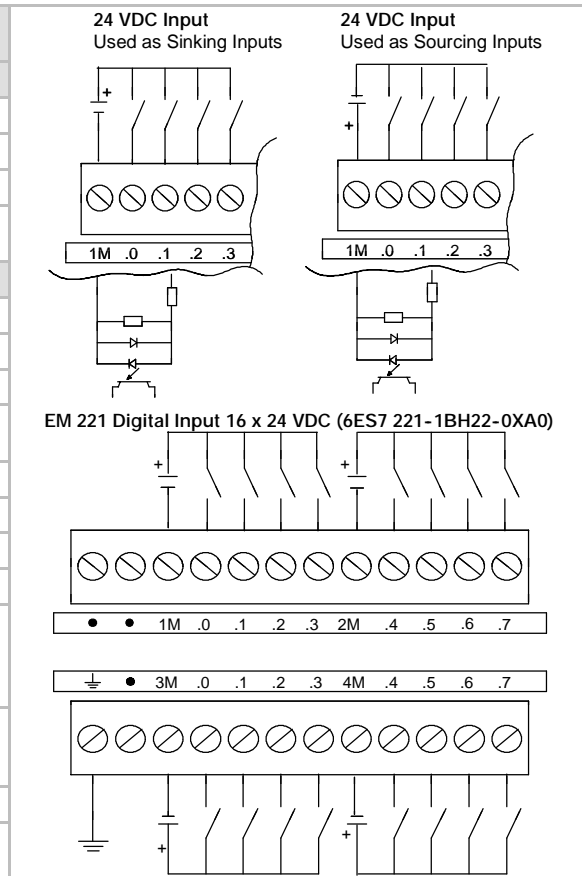


Table 2 Specifications for the EM 222 Digital Output 4 x 24 VDC-5A and EM 222 Digital Output 4 x Relays-10A

Description Order Number	EM 222 Digital Output 4 x 24 VDC-5 A 6ES7 222-1BD22-0XA0	EM 222 Digital Output 4 x Relays-10 A 6ES7 222-1HD22-0XA0
Physical Size		
Dimensions (mm) (W x H x D)	46 x 80 x 62	46 x 80 x 62
Weight	120 g	150 g
Dissipation	3 W	4 W
VDC requirements +5 VDC +24 VDC	40 mA -	30 mA ON: 20 mA/output, 20.4 to 28.8 VDC
Output Features		
Number of outputs	4	4
Type	Solid state-MOSFET ¹	Dry contact
Rated voltage	24 VDC	24 VDC or 250 VAC
Voltage range	20.4 to 28.8 VDC	12 to 30 VDC or 12 to 250 VAC
Surge current (max.)	30 A	15 A for 4s @ 10% duty cycle
Logic 1 (min.)	20 VDC	-
Logic 0 (max.)	0.2 VDC	-
Rated current per point (max.)	5 A	10 A resistive; 2 A DC inductive; 3 A AC inductive

Table 2 Specifications for the EM 222 Digital Output 4 x 24 VDC-5A and EM 222 Digital Output 4 x Relays-10A

Description Order Number	EM 222 Digital Output 4 x 24 VDC-5A 6ES7 222-1BD22-0XA0	EM 222 Digital Output 4 x Relays-10 A 6ES7 222-1HD22-0XA0
Rated current per common (max.)	5 A	10 A
Leakage current	30 μ A	-
Lamp load	50 W	100 W DC/1000W AC
Inductive clamp voltage	L + minus 47 V ²	-
On State resistance (contact)	0.05 Ω maximum	0.1 Ω maximum when new
Isolation		
Optical (galvanic, field to logic)	500 VAC for 1 minute	-
Coil to logic	-	none
Coil to contact	-	1500 V AC for 1 minute
Resistance (coil to contact)	-	100 M Ω minimum when new
Isolation groups	1 point	1 point
Delay Off to On/On to Off Switching	500 μ S	-
	-	15 ms
Switching frequency (max.)	-	1 Hz
Lifetime mechanical cycles	-	30,000,000 (no load)
Lifetime contacts	-	30,000 (rated load)
Output On simultaneously	All at 55 °C	All at 55°C with 20 A maximum module current ³ All at 40°C with 10 A per point
Connecting two outputs in parallel	yes	no
Cable Length		
Shielded	500 m	500 m
Unshielded	150 m	150 m

- When a mechanical contact turns on output power to the S7-200 CPU, or any digital expansion module, it sends a "1" signal to the digital outputs for approximately 50 microseconds. You must plan for this, especially if you are using devices which respond to short duration pulses.
- If the output overheats due to excessive inductive switching or abnormal conditions, the output point may turn off or be damaged. The output could overheat or be damaged if the output is subjected to more than 0.7 J of energy switching an inductive load off. To eliminate the need for this limitation, a suppression circuit as described in the *S7-200 Programmable Controller System Manual* can be added in parallel with the load. These components need to be sized properly for the given application.
- The EM 222 DO 4 x Relay has a different FM rating than the rest of the S7-200. This module has a T4 rating, instead of T4A for FM Class I, Division Groups A, B, C, and D Hazardous Locations.

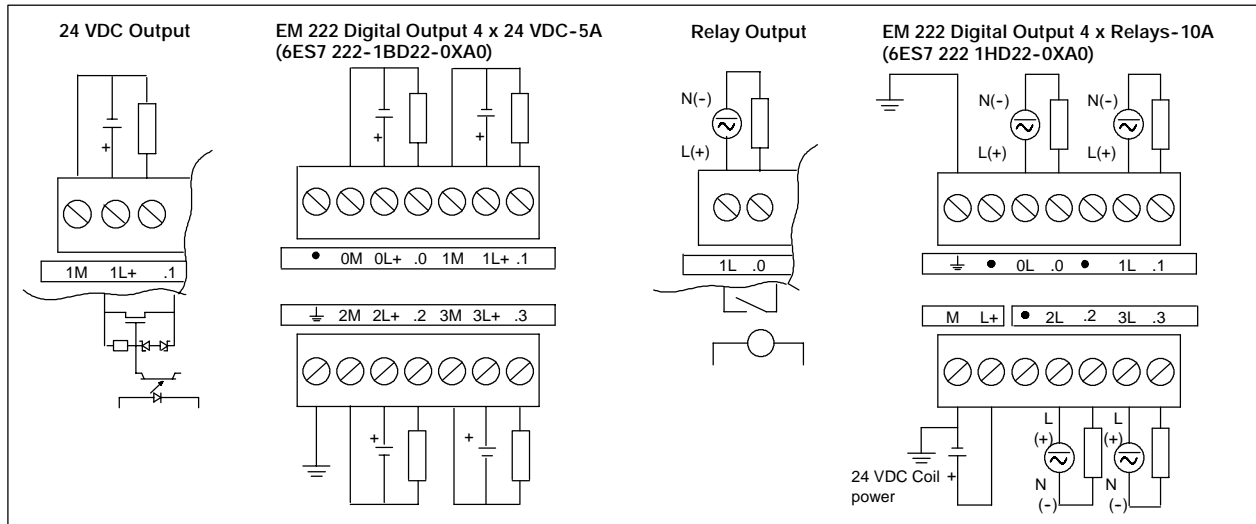


Figure 1 Connector Terminal Identification

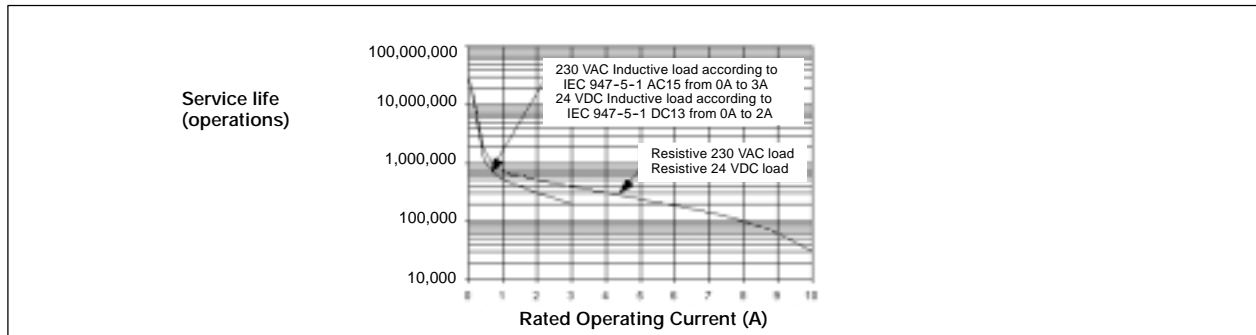


Figure 2 Relay Electrical Service Life

6ES7 221-1BH22-0XA0,
 6ES7 222-1BD22-0XA0,
 6ES7 222-1HD22-0XA0
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 EM 222 Digital Output 4 x Relays-10 A
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