

SIEMENS

Data Sheet SIMATIC S7-200 EM223 Digital Combination Modules

EM223 24 VDC 4 In/4 Out and EM223 24 VDC 4 In/4 Relay Out

Table 1 Specifications for EM223 24 VDC 4 In/4 Out and EM223 24 VDC 4 In/4 Relay Out

Description Order Number	EM223 24VDC In/Out 6ES7 223-1BF20-0XA0	EM223 24VDC In/Relay Out 6ES7 223-1HF20-0XA0
Physical Size		
Dimensions (W x H x D)	46 mm x 80 mm x 62 mm	46 mm x 80 mm x 62 mm
Weight	160 g	170 g
Power loss (dissipation)	2 W	2 W
Input Features		
Number of inputs	4 inputs	4 inputs
Input type	Sink/Source (IEC Type 1 sink)	Sink/Source (IEC Type 1 sink)
Input Voltage		
Maximum continuous permissible	30 VDC	30 VDC
Surge	35 VDC for 0.5 s	35 VDC for 0.5 s
Rated value	24 VDC at 4 mA, nominal	24 VDC at 4 mA, nominal
Logic 1 signal (minimum)	15 VDC at 2.5 mA, minimum	15 VDC at 2.5 mA, minimum
Logic 0 signal (maximum)	5 VDC at 1 mA, maximum	5 VDC at 1 mA, maximum
Isolation		
Optical isolation (galvanic)	500 VAC for 1 minute	500 VAC for 1 minute
Isolation groups of	4 points	4 points
Input Delay Times		
Maximum	4.5 ms	4.5 ms
Connection of 2-Wire Proximity Sensor (Bero)		
Maximum	1 mA	1 mA
Cable Length		
Unshielded	300 m	300 m
Shielded	500 m	500 m
Number of Inputs On Simultaneously		
40 ° C	4	4
55 ° C	4	4

Table 1 Specifications for EM223 24 VDC 4 In/4 Out and EM223 24 VDC 4 In/4 Relay Out

Description Order Number	EM223 24VDC In/Out 6ES7 223-1BF20-0XA0	EM223 24VDC In/Relay Out 6ES7 223-1HF20-0XA0
Output Features		
Number of integrated outputs	4 points	4 points
Output type	Solid State-MOSFET	Relay, dry contact
Output Voltage		
Permissible range	20.4 to 28.8 VDC	5 to 30 VDC or 5 to 250 VAC
Rated value	24 VDC	–
Logic 1 signal at maximum current	20 VDC, minimum	–
Logic 0 signal with 10K Ω load	0.1 VDC, maximum	–
Output Current		
Logic 1 signal	0.75 A	2.00 A
Number of output groups	1	1
Number of outputs on (maximum)	4	4
Per group – horizontal mounting (maximum)	4	4
Per group – vertical mounting (maximum)	4	4
Maximum current per common/group	3 A	8 A
Lamp load	5 W	30 W DC/200 W AC
ON state resistance (contact resistance)	0.3 Ω	0.2 Ω , maximum when new
Leakage current per point	10 μ A, maximum	–
Surge current	8 A for 100 ms, maximum	7 A with contacts closed
Overload protection	No	No
Isolation		
Optical isolation (galvanic)	500 VAC for 1 minute	–
Isolation resistance	–	100 M Ω , minimum when new
Isolation coil to contact	–	1500 VAC for 1 minute
Isolation between open contacts	–	750 VAC for 1 minute
In groups of	4 points	4 points
Inductive Load Clamping		
Repetitive Energy dissipation < 0.5 LI ² x switching rate	1 W, all channels	–
Clamp voltage limits	L+ minus 48V	–
Output Delay		
Off to On	50 μ s, maximum	–
On to Off	200 μ s, maximum	–
Relay		
Switching delay	–	10 ms, maximum
Lifetime mechanical (no load)	–	10,000,000 open/close cycles
Lifetime contacts at rated load	–	100,000 open/close cycles
Cable Length		
Unshielded	150 m	150 m
Shielded	500 m	500 m
Power Consumption		
From +5 VDC (from I/O bus)	40 mA	40 mA
From L+	–	9 mA per output when On
L+ coil power voltage range	–	20.4 to 28.8 VDC

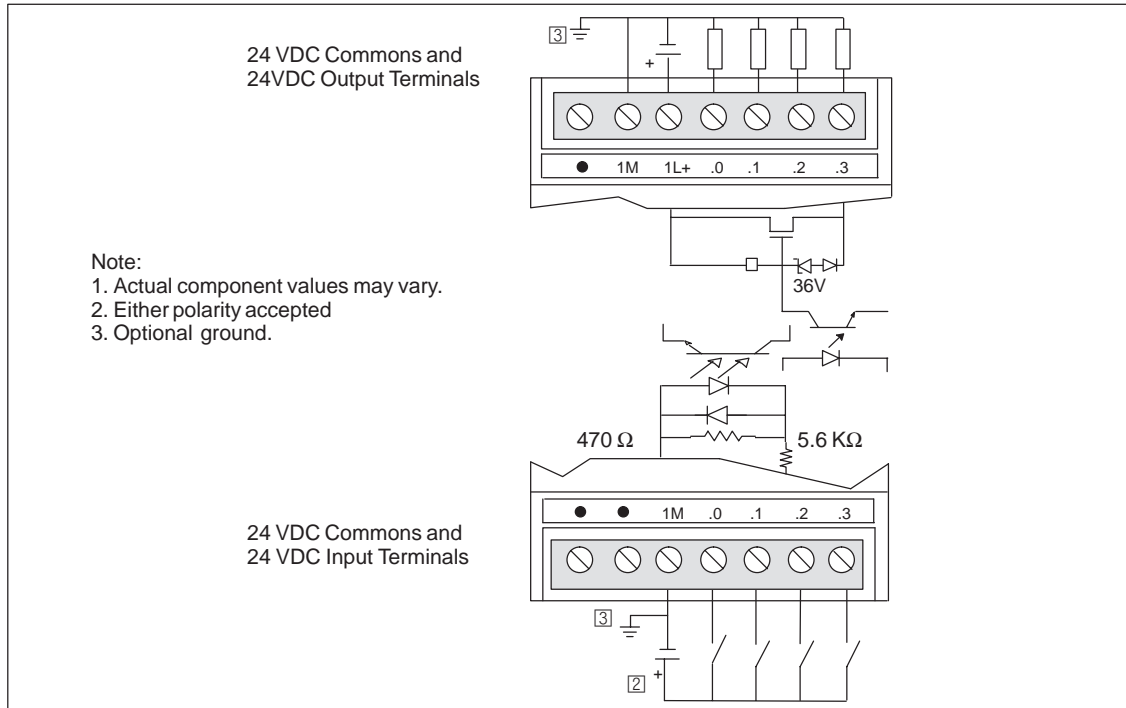


Figure 1 Connector Terminal Identification for EM223 4 x 24 VDC In/4 x 24 VDC Out

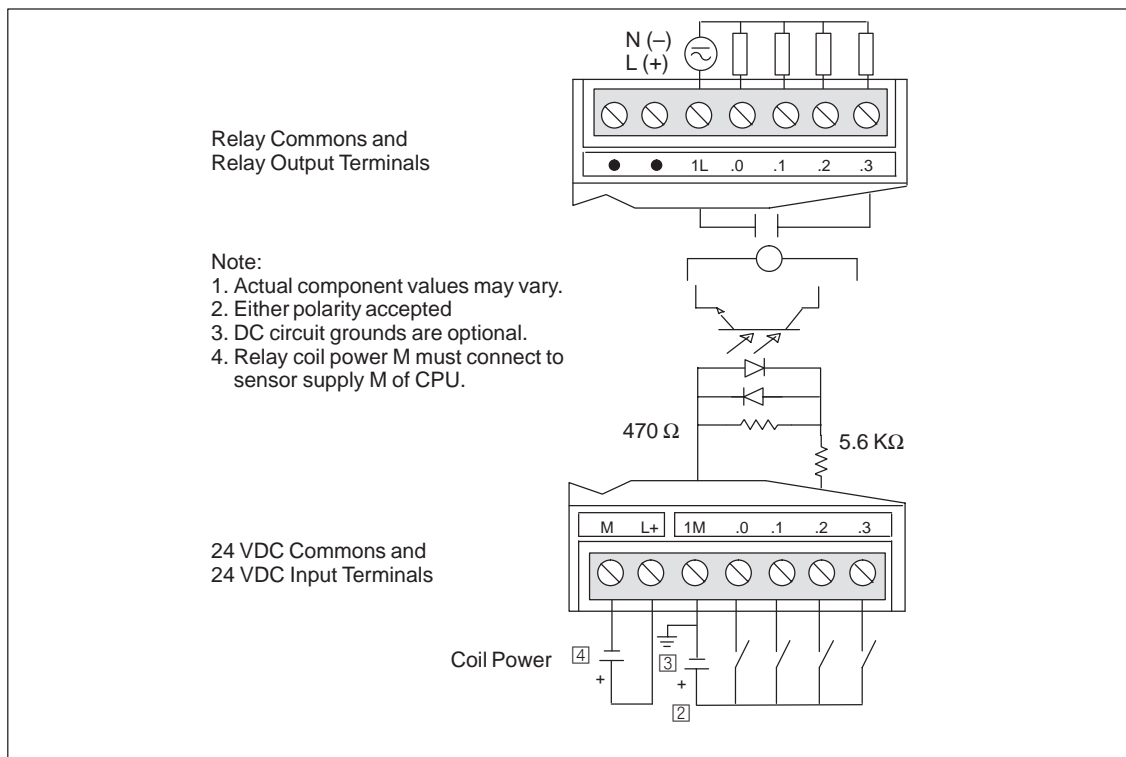


Figure 2 Connector Terminal Identification for EM223 4 x 24 VDC In/4 x Relay Out

EM223 24 VDC 16 In/16 Out and EM223 24 VDC 16 In/16 Relay Out

Table 2 Specifications for EM223 24 VDC 16 In/16 Out and EM223 24 VDC 16 In/16 Relay Out

Description Order Number	EM223 24VDC In/Out 6ES7 223-1BL20-0XA0	EM223 24VDC In/Relay Out 6ES7 223-1PL20-0XA0
Physical Size		
Dimensions (W x H x D)	137.7 mm x 80 mm x 62 mm	137.7 mm x 80 mm x 62 mm
Weight	360 g	400 g
Power loss (dissipation)	6 W	6 W
Input Features		
Number of inputs	16 inputs	16 inputs
Input type	Sink/Source (IEC Type 1 sink)	Sink/Source (IEC Type 1 sink)
Input Voltage		
Maximum continuous permissible	30 VDC	30 VDC
Surge	35 VDC for 0.5 s	35 VDC for 0.5 s
Rated value	24 VDC at 4 mA, nominal	24 VDC at 4 mA, nominal
Logic 1 signal (minimum)	15 VDC at 2.5 mA, minimum	15 VDC at 2.5 mA, minimum
Logic 0 signal (maximum)	5 VDC at 1 mA, maximum	5 VDC at 1 mA, maximum
Isolation		
Optical isolation (galvanic)	500 VAC for 1 minute	500 VAC for 1 minute
Isolation groups of	8 points	8 points
Input Delay Times		
Maximum	4.5 ms	4.5 ms
Connection of 2-Wire Proximity Sensor (Bero)		
Maximum	1 mA	1 mA
Cable Length		
Unshielded	300 m	300 m
Shielded	500 m	500 m
Number of Inputs On Simultaneously		
40 ° C	16	16
55 ° C	16	16

Table 2 Specifications for EM223 24 VDC 16 In/16 Out and EM223 24 VDC 16 In/16 Relay Out

Description Order Number	EM223 24VDC In/Out 6ES7 223-1BL20-0XA0	EM223 24VDC In/Relay Out 6ES7 223-1PL20-0XA0
Output Features		
Number of integrated outputs	16 points	16 points
Output type	Solid State-MOSFET	Relay, dry contact
Output Voltage		
Permissible range	20.4 to 28.8 VDC	5 to 30 VDC or 5 to 250 VAC
Rated value	24 VDC	–
Logic 1 signal at maximum current	20 VDC, minimum	–
Logic 0 signal with 10K Ω load	0.1 VDC, maximum	–
Output Current		
Logic 1 signal	0.75 A	2.00 A
Number of output groups	3	4
Number of outputs on (maximum)	16	16
Per group – horizontal mounting (maximum)	4/4/8	4
Per group – vertical mounting (maximum)	4/4/8	4
Maximum current per common/group	3/3/6 A	8 A
Lamp load	5 W	30 W DC/200 W AC
ON state resistance (contact resistance)	0.3 Ω	0.2 Ω , maximum when new
Leakage current per point	10 μ A, maximum	–
Surge current	8 A for 100 ms, maximum	7 A with contacts closed
Overload protection	No	No
Isolation		
Optical isolation (galvanic)	500 VAC for 1 minute	–
Isolation resistance	–	100 M Ω , minimum when new
Isolation coil to contact	–	1500 VAC for 1 minute
Isolation between open contacts	–	750 VAC for 1 minute
In groups of	4/4/8 points	4 points
Inductive Load Clamping		
Repetitive Energy dissipation < 0.5 L I ² x switching rate	1 W, all channels	–
Clamp voltage limits	L+ minus 48V	–
Output Delay		
Off to On	50 μ s, maximum	–
On to Off	200 μ s, maximum	–
Relay		
Switching delay	–	10 ms, maximum
Lifetime mechanical (no load)	–	10,000,000 open/close cycles
Lifetime contacts at rated load	–	100,000 open/close cycles
Cable Length		
Unshielded	150 m	150 m
Shielded	500 m	500 m
Power Consumption		
From +5 VDC (from I/O bus)	160 mA	150 mA
From L+	–	9 mA per output when On
L+ coil power voltage range	–	20.4 to 28.8 VDC

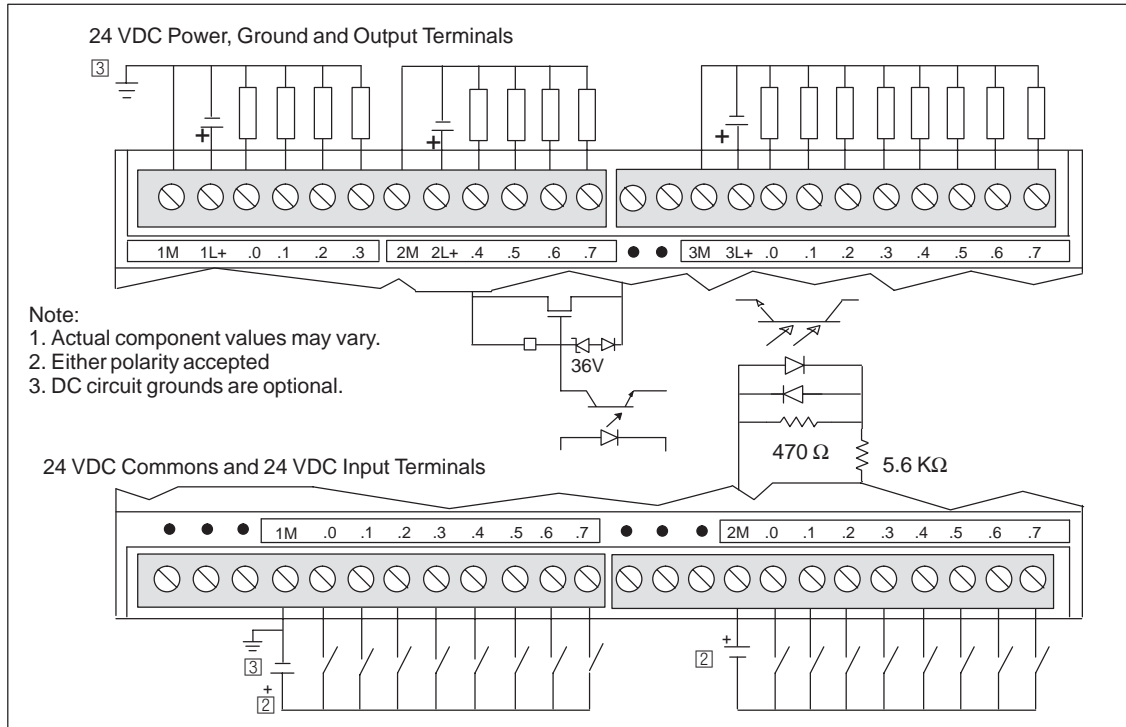


Figure 3 Connector Terminal Identification for EM223 16 x 24 VDC In/ 16 x 24 VDC Out

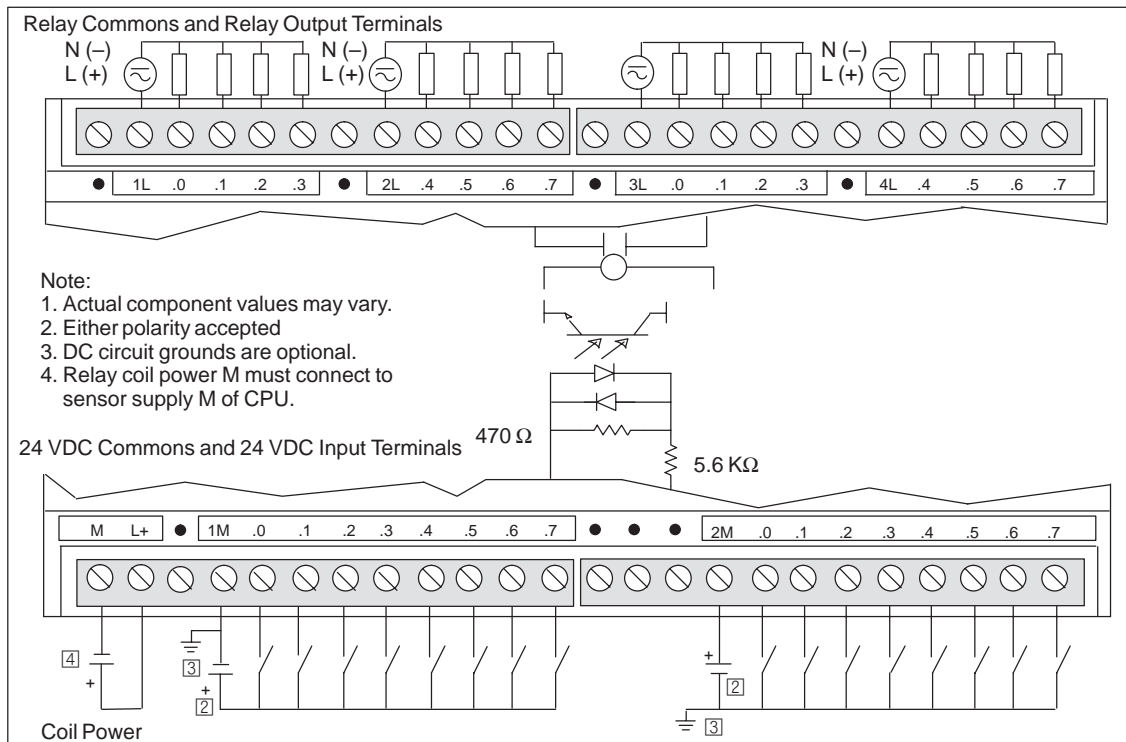


Figure 4 Connector Terminal Identification for EM223 24 VDC 16 In/16 Relay Out