

SIMATIC S7-200

Digital modules

Digital modules

Overview

3



- Digital inputs/outputs to supplement the onboard I/Os of the CPUs
- For flexible adaptation of PLC to respective task
- For subsequent upgrading of the system with additional inputs and outputs

Technical specifications EM 221

	6ES7 221-1BH22-0XA0	6ES7 221-1BF22-0XA0	6ES7 221-1EF22-0XA0
Current consumption			
from backplane bus DC 5 V, max.	70 mA	30 mA	30 mA
Power loss, typ.	3 W	2 W	3 W
Connection point			
pluggable I/O terminals	Yes	Yes	Yes
Digital inputs			
Number of digital inputs	16	8	8
Cable length			
• Cable length, shielded, max.	500 m	500 m	500 m
• Cable length unshielded, max.	300 m	300 m	300 m
m/p-reading	Yes	Yes	
Input characteristic curve to IEC 1131, Typ 1	Yes		Yes
Input voltage			
• Rated value, AC			230 V; AC 220/230 V (47 to 63 Hz)
• Rated value, DC	24 V	24 V	
• for signal "0"	0 to 5 V	0 to 5 V	up to 20 V AC
• for signal "1"	15 to 30 V	15 to 30 V	79 V AC or more
Input current			
• for signal "1", typ.	4 mA	4 mA	2.5 mA
Input delay (for rated value of input voltage)			
• for standard inputs - at "0" to "1", max.	4.5 ms	4.5 ms	15 ms
Encoder			
Connectable encoders			
• 2-wire BEROs	Yes	Yes	Yes
• permissible quiescent current (2-wire BEROs), max.	1 mA	1 mA	1 mA
Isolation			
Galvanic isolation, digital inputs			
• galvanic isolation, digital inputs	Yes	Yes	Yes
• between the channels, in groups of	4	4	1; (8 groups)

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Technical specifications EM 222 (continued)

	6ES7 222-1BD22-0XA0	6ES7 222-1BF22-0XA0	
Dimensions and weight			
Width	45 mm	45 mm	
Height	80 mm	80 mm	
Depth	62 mm	62 mm	
Weights			
Weight, approx.	120 g	150 g	
	6ES7 222-1HD22-0XA0	6ES7 222-1HF22-0XA0	6ES7 222-1EF22-0XA0
Voltages and currents			
Load voltage L+			
• Rated value (DC)	24 V	24 V	
• permissible range, lower limit (DC)	12 V	5 V	
• permissible range, upper limit (DC)	30 V	30 V	
Load voltage L1			
• Rated value (AC)	24 V; 24 to 230 V AC	24 V; 24 to 230 V AC	230 V; 220/230 V AC
• permissible range, lower limit (AC)	12 V	5 V	65 V
• permissible range, upper limit (AC)	250 V	250 V	264 V
• permissible frequency range, lower limit		47 Hz	47 Hz
• permissible frequency range, upper limit		63 Hz	63 Hz
Current consumption			
Digital outputs			
• from load voltage L+, max.	80 mA; 20 mA per switched output	72 mA; 9 mA per switched output	
from backplane bus DC 5 V, max.	30 mA	40 mA	110 mA
Power loss, typ.	4 W	2 W	4 W
Connection point			
pluggable I/O terminals	Yes	Yes	Yes
Digital outputs			
Number of digital outputs	4; Relay	8; Relay	8
Cable length, shielded, max.	500 m	500 m	500 m
Cable length unshielded, max.	150 m	150 m	150 m
Short-circuit protection of the output	No; to be provided externally (see manual package "Setting up an S7-200")	No; to be provided externally (see manual package "Setting up an S7-200")	No; to be provided externally (see manual package "Setting up an S7-200")
Limitation of inductive shutdown voltage to	to be provided externally (see manual package "Setting up an S7-200")	to be provided externally (see manual package "Setting up an S7-200")	to be provided externally (see manual package "Setting up an S7-200")
Output voltage			
• for signal "1", min.			L1 (-0.9 V)
Output current			
• for signal "1", permissible range for 0 to 55 °C, max.	10 A	2 A	500 mA; AC
• for signal "1" minimum load current			50 mA
• for signal "0" residual current, max.	0 mA	0 mA	1,8 mA; at 264 V AC
Aggregate current of the outputs (per group)			
• horizontal installation			
- up to 55 °C, max.	20 A	8 A	0.5 A
• up to 40 °C, max.	40 A	8 A	0.5 A
• maximum current per conductor/group	10 A	8 A	0.5 A
Relay outputs			
Number of operating cycles	30,000,000; mechanically 30 million, at rated load voltage 30,000	10,000,000; mechanically 10 million, at rated load voltage 100,000	