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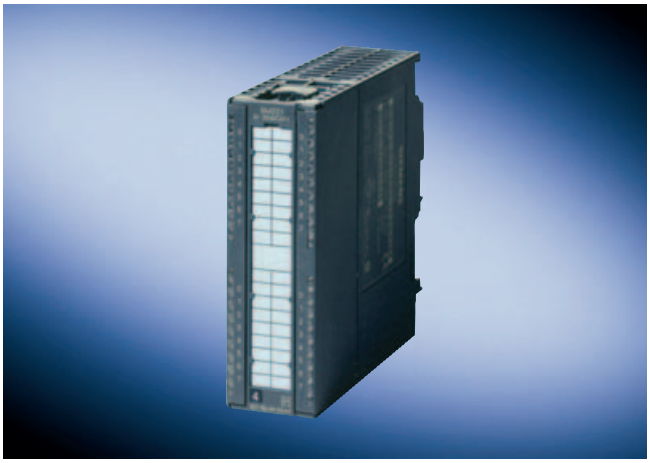
SM 321 digital input modules

Overview



- Digital inputs
- For connecting standard switches and two-wire proximity switches (BERO)

Technical specifications

	6ES7 321-1BH02-0AA0	6ES7 321-1BH50-0AA0	6ES7 321-1BL00-0AA0	6ES7 321-1BH10-0AA0
Voltages and currents				
Load voltage L+				
• Rated value (DC)	24 V	24 V	24 V	24 V
Current consumption				
from load voltage L+ (without load), max.	25 mA			
from backplane bus DC 5 V, max.	10 mA	10 mA	15 mA	110 mA
Power loss, typ.	3.5 W	3.5 W	6.5 W	3.8 W
Connection point				
required front connectors	20-pin	20-pin	40-pin	20-pin
Isochronous mode				
Isochronouos mode	No	No	No	Yes
Digital inputs				
Number of digital inputs	16	16	32	16
Number of simultaneously controllable inputs				
• vertical installation				
- up to 40 °C, max.	16	16	32	16
• horizontal installation				
- up to 40 °C, max.			32	
- up to 60 °C, max.	16	16	16	16
Cable length				
• Cable length, shielded, max.	1,000 m	1,000 m	1,000 m	1,000 m
• Cable length unshielded, max.	600 m	600 m	600 m	600 m
Input characteristic curve to IEC 1131, type 1	Yes	Yes	Yes	Yes
Input voltage				
• Rated value, DC	24 V	24 V	24 V	24 V
• for signal "0"	-30 V to 5 V	30 V to -5V	-30 to 5 V	-30 V to 5 V
• for signal "1"	13 to 30 V	-13 to -30 V	13 to 30 V	13 to 30 V
Input current				
• for signal "1", typ.	7 mA	7 mA	7 mA	7 mA

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Technical specifications (continued)

	6ES7 321-1BH02-0AA0	6ES7 321-1BH50-0AA0	6ES7 321-1BL00-0AA0	6ES7 321-1BH10-0AA0
Digital inputs				
Input delay (for rated value of input voltage)				
• for standard inputs				
- at "0" to "1", min.	1.2 ms	1.2 ms	1.2 ms	25 µs
- at "0" to "1", max.	4.8 ms	4.8 ms	4.8 ms	75 µs
Encoder				
Connectable encoders				
• 2-wire BEROS	Yes	Yes	Yes	Yes
• permissible quiescent current (2-wire BEROS), max.	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Status information/ alarms/diagnostics				
Alarms				
• Alarms	No	No	No	No
Diagnoses				
• Diagnostic functions	No	No	No	No
Diagnostics indication LED				
• Status indicator digital input (green)	Yes	Yes	Yes	Yes
Isolation				
Isolation checked with	500 V DC	500 V DC	500 V DC	500 V DC
Isolation				
Galvanic isolation, digital inputs				
• between the channels			Yes	
• between the channels, in groups of	16	16	16	16
• between the channels and the backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Dimensions and weight				
Width	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm	120 mm
Weights				
Weight, approx.	200 g	200 g	260 g	200 g

	6ES7 321-7BH01-0AB0	6ES7 321-1CH00-0AA0	6ES7 321-1CH20-0AA0	6ES7 321-1FH00-0AA0
Voltages and currents				
Load voltage L+				
• Rated value (DC)	24 V	24 V	48 V	
Load voltage L1				
• Rated value (AC)		24 V		230 V; 120/230 V AC; all load voltages must have the same phase.
Current consumption				
from load voltage L+ (without load), max.	90 mA			
from backplane bus DC 5 V, max.	130 mA	100 mA	40 mA	29 mA
Power loss, typ.	4 W	1.5 W	4.3 W	4.9 W
Connection point				
required front connectors	20-pin	40-pin	20-pin	20-pin

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Technical specifications (continued)

	6ES7 321-7BH01-0AB0	6ES7 321-1CH00-0AA0	6ES7 321-1CH20-0AA0	6ES7 321-1FH00-0AA0
Isochronous mode				
Isochronouos mode	Yes	No	No	No
Digital inputs				
Number of digital inputs	16	16	16	16
Number of simultanneously controllable inputs				
• vertical installation				
- up to 40 °C, max.	16	16	8	16
• horizontal installation				
- up to 50 °C, max.			8	
- up to 60 °C, max.	16	16	8; 6 to Ue 146 V	16
Cable length				
• Cable length, shielded, max.	1,000 m	1,000 m	1,000 m	1,000 m
• Cable length unshielded, max.	600 m	600 m	600 m	600 m
Input characteristic curve to IEC 1131, type 1		Yes	Yes	Yes
Input characteristic curve to IEC 1131, type 2	Yes			
Input voltage				
• Rated value, AC		24 V; AC 24 or 48 V		230 V; 120/230 V AC
• Rated value, DC	24 V	24 V; DC 24 or 48 V	48 V; DC 48 to 125 V	
• for signal "0"	-30V to 5 V	-5 to 5 V AC	-146 V to 15 V DC	0 to 40 V
• for signal "1"	13 to 30 V	14 to 60 V AC	30 to 146 V DC	85 to 264 V
• Frequency range		0 to 63 Hz		47 to 63 Hz
Input current				
• for signal "1", typ.	7 mA	2.7 mA	3.5 mA	8 mA; (120V, 60Hz), 16mA (230V, 50Hz)
Input delay (for rated value of input voltage)				
• for standard inputs				
- programmable	Yes; 0.1 / 0.5 / 3 / 15 / 20 ms	No		No
- at "0" to "1", min.			0.1 ms	
- at "0" to "1", max.		16 ms	3.5 ms	25 ms
Encoder				
Connectable encoders				
• 2-wire BEROS	Yes	Yes	Yes	Yes
• permissible quiescent current (2-wire BEROS), max.	2 mA	1 mA	1 mA	2 mA
Status information/ alarms/diagnostics				
Alarms				
• Alarms	Yes	No	No	No
• Diagnostic alarm	Yes; parameterizable	No	No	No
• Process alarm	Yes; parameterizable	No	No	No
Diagnoses				
• Diagnostic functions	Yes; parameterizable	No	No	No
Diagnostics indication LED				
• Status indicator digital input (green)	Yes	Yes	Yes	Yes

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Technical specifications (continued)

	6ES7 321-7BH01-0AB0	6ES7 321-1CH00-0AA0	6ES7 321-1CH20-0AA0	6ES7 321-1FH00-0AA0
Isolation				
Isolation checked with	500 V DC	1500 V AC	1500 V DC	4000 V DC
Isolation				
Galvanic isolation, digital inputs				
• between the channels		Yes	Yes	Yes
• between the channels, in groups of	16	1	8	4
• between the channels and the backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Dimensions and weight				
Width	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm	120 mm
Weights				
Weight, approx.	200 g	260 g	200 g	240 g

	6ES7 321-1EL00-0AA0	6ES7 321-1FF01-0AA0	6ES7 321-1FF10-0AA0
Voltages and currents			
Load voltage L1			
• Rated value (AC)	120 V	230 V; 120V/230V AC	230 V; 120/230 V AC; all load voltages must have the same phase.
Current consumption			
from backplane bus DC 5 V, max.	16 mA	29 mA	100 mA
Power loss, typ.	4 W	4.9 W	4.9 W
Connection point			
required front connectors	40-pin	20-pin	40-pin
Isochronous mode			
Isochronouos mode	No	No	No
Digital inputs			
Number of digital inputs	32	8	8
Number of simultaneously controllable inputs			
• vertical installation - up to 40 °C, max.	32	8	8
• horizontal installation - up to 40 °C, max.	32		
- up to 60 °C, max.	24	8	8
Cable length			
• Cable length, shielded, max.	1,000 m	1,000 m	1,000 m
• Cable length unshielded, max.	600 m	600 m	600 m
Input characteristic curve to IEC 1131, type 1		Yes	Yes
Input characteristic curve to IEC 1131, type 2	Yes		
Input voltage			
• Rated value, AC	120 V	230 V; 120/230 V AC	120 V; 120/230 V AC
• for signal "0"	0 to 20 V	0 to 40 V	0 to 40 V
• for signal "1"	74 to 132 V	85 to 264 V	85 to 264 V
• Frequency range	47 to 63 Hz	47 to 63 Hz	47 to 63 Hz