MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

PRODUCT BRAND

Siemens

PRODUCT MODEL

6ES7221-3BD30-0XB0

Siemens 6ES7221-3BD30-0XB0 is an S7-1200 SB 1221 signal board with four 24 V DC current-sourcing digital inputs. The inputs support single-phase high-speed counting up to 200 kHz.

OFFICIAL SOURCE

S7-1200 Programmable Controller System Manual

A5E02486680-AP

Open current Siemens source

Published by Amikon Limited

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Selected official Siemens pages follow this cover with source content and source pagination retained.

Diagnostic alarm	Error code (decimal)	STATUS (W#16#...)	Meaning (IO-Link error code)	IO-Link master	IO-Link device
Safety shut-down	25	1880	Serious error (master has to be re-placed)	X	
External fault	26	1809 180A 180B 180C 180D	Error in data storage	X	
		1808	More than 6 errors are pending simul-taneously on the IO-Link device		

A.13 Digital signal boards (SBs)

A.13.1 SB 1221 200 kHz digital input specifications

Table A-189 General specifications

Technical data	SB 1221 DI 4 x 24 V DC, 200 kHz	SB 1221 DI 4 x 5 V DC, 200 kHz
Article number	6ES7221-3BD30-0XB0	6ES7221-3AD30-0XB0
Dimensions W x H x D (mm)	38 x 62 x 21	
Weight	35 grams	
Power dissipation	1.5 W	1.0 W
Current consumption (SM Bus)	40 mA	
Current consumption (24 V DC)	7 mA / input + 20 mA	15 mA / input + 15 mA

Table A-190 Digital inputs

Technical data	SB 1221 DI 4 x 24 V DC, 200 kHz	SB 1221 DI 4 x 5 V DC, 200 kHz
Number of inputs	4	
Type	Source	
Rated voltage	24 V DC at 7 mA, nominal	5 V DC at 15 mA, nominal
Continuous permissible voltage	28.8 V DC	6 V DC
Surge voltage	35 V DC for 0.5 sec.	6 V
Logic 1 signal	0 V (10 mA) to L+ minus 10 V (2.9 mA)	0 V (20 mA) to L+ minus 2.0 V (5.1 mA)
Logic 0 signal	L+ minus 5 V (1.4 mA) to L+ (0 mA)	L+ minus 1.0 V (2.2 mA) to L + (0 mA)
HSC clock input rates (max.)	Single phase: 200 kHz Quadrature phase: 160 kHz	
Isolation (field side to logic)	707 V DC (type test)	
Isolation groups	1	

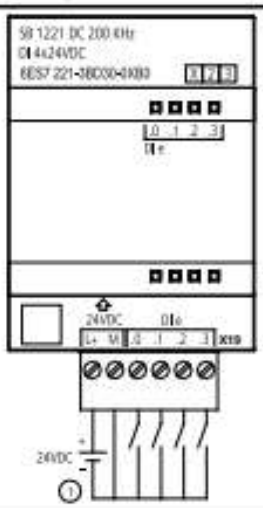
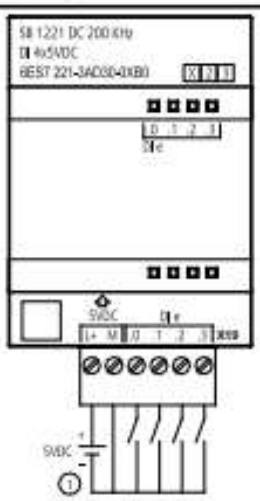
Technical data		SB 1221 DI 4 x 24 V DC, 200 kHz	SB 1221 DI 4 x 5 V DC, 200 kHz
Filter times	us settings	0.1, 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, 10.0,12.8, 20.0	
	ms settings	0.05, 0.1, 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, 10.0, 12.8, 20.0	
Number of inputs on simultaneously		• 2 (no adjacent points) at 60 °C horizontal or 50 °C vertical • 4 at 55 °C horizontal or 45 °C vertical	4
Cable length (meters)		50 shielded twisted pair	

Note

When switching frequencies above 20 kHz, it is important that the digital inputs receive a square wave. Consider the following options to improve the signal quality to the inputs:

- Minimize the cable length
- Change a driver from a sink only driver to a sinking and sourcing driver
- Change to a higher quality cable
- Reduce the circuit/components from 24 V to 5 V
- Add an external load at the input

Table A-191 Wiring diagrams for the 200 kHz digital input SBs

SB 1221 DI 4 x 24 V DC, 200 kHz (6ES7221-3BD30-0XB0)	SB 1221 DI 4 x 5 V DC, 200 kHz (6ES7221-3AD30-0XB0)
	

① Supports sourcing inputs only

Table A-192 Connector pin locations for SB 1221 DI 4 x 24 V DC, 200 kHz (6ES7221-3BD30-0XB0)

Pin	X19
1	L+ / 24 V DC
2	M / 24 V DC