



## SB 1223 digital input/output modules

### Overview

- Digital inputs and outputs as supplement to the integral I/O of the SIMATIC S7-1200 CPUs
- Can be plugged direct into the CPU

### Application

The SB 1223 digital input/output signal board permits:

- Connection of the controller to digital signals of the process
- Output of digital signals from the controller to the process.

### Design

The signal boards are plugged directly into the receptacle on the front of each S7-1200 CPU.

- Mounting:  
Signal boards are plugged directly into the SIMATIC S7-1200 CPU and are thus electrically and mechanically connected to the CPU
- The CPU mounting dimensions remain unchanged
- All signal boards are easy to replace thanks to removable connecting terminals ("independent wiring")

### Function

The SB 1223 digital input/output signal board converts

- the level of the external digital signals from the process into the internal signal level of the S7-1200 controller and
- the internal signal level of the SIMATIC S7-1200 Controller into the external signal level required for the process.

### Technical specifications

Article number	6ES7223-0BD30-0XB0	6ES7223-3AD30-0XB0	6ES7223-3BD30-0XB0
	Signal Board SB1223, 2 DI/2 DO	Signal Board SB 1223, 2DI/2DQ 5V 200KHz	Signal Board SB 1223, 2DI/2DQ 24V 200KHz
<b>General information</b>			
Product type designation	SB 1223, DI 2x24 V DC/DQ 2x24 V DC	SB 1223, DI 2x5 V DC/DQ 2x5 V DC 200 kHz	SB 1223, DI 2x24 V DC/DQ 2x24 V DC 200 kHz
<b>Supply voltage</b>			
permissible range, lower limit (DC)	20.4 V		
permissible range, upper limit (DC)	28.8 V		
<b>Input current</b>			
from backplane bus 5 V DC, typ.	50 mA	35 mA	35 mA
<b>output voltage / header supply voltage of the transmitters / header</b>			
• supply current / from supply voltage for transmitter / maximum	4 mA; per channel		
<b>Power loss</b>			
Power loss, typ.	1 W	0.5 W	0.5 W
<b>Digital inputs</b>			
Number of digital inputs	2; Current-sinking	2; Current-sourcing	2; Current-sourcing
• in groups of	1	2	2
Input characteristic curve in accordance with IEC 61131, type 1	Yes		
<b>Number of simultaneously controllable inputs</b>			
<b>all mounting positions</b>			
— up to 40 °C, max.	2		2
<b>Input voltage</b>			
• Type of input voltage	DC	DC	DC
• Rated value (DC)	24 V	5 V	24 V
• for signal "0"	0 to 5 V	(L+ minus 1.0 V DC) ... L+	(L+ minus 5.0 V DC) ... L+
• for signal "1"	+15 to +30 V	0 V ... (L+ minus 2.0 V DC)	0 V ... (L+ minus 10 V DC)
<b>Input current</b>			
• for signal "0", max. (permissible quiescent current)	1 mA	2.2 mA	1.4 mA
• for signal "1", min.		5.1 mA	2.9 mA
• for signal "1", typ.	7 mA	15 mA	7 mA
<b>Input delay (for rated value of input voltage)</b>			
<b>for standard inputs</b>			
— parameterizable	Yes; 0.2 ms, 0.4 ms, 0.8 ms, 1.6 ms, 3.2 ms, 6.4 ms and 12.8 ms, selectable in groups of four	Yes; 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 μs; 0.05 / 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 ms	Yes; 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 μs; 0.05 / 0.1 / 0.2 / 0.4 / 0.8 / 1.6 / 3.2 / 6.4 / 10.0 / 12.8 / 20.0 ms
— at "0" to "1", max.	2 μs		
— at "1" to "0", max.	10 μs		
<b>for interrupt inputs</b>			

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	Signal Board SB1223, 2 DI/2 DO	Signal Board SB 1223, 2DI/2DQ 5V 200KHz	Signal Board SB 1223, 2DI/2DQ 24V 200KHz
— parameterizable	Yes	Yes	Yes
<b>for technological functions</b>			
— parameterizable	Yes	Yes	Yes
<b>Cable length</b>			
• shielded, max.	50 m	50 m; shielded, twisted pair	50 m; shielded, twisted pair
<b>Digital outputs</b>			
Number of digital outputs	2; MOSFET, solid-state (current-sinking/current-sourcing)	2; MOSFET, solid-state (current-sinking/current-sourcing)	2; MOSFET, solid-state (current-sinking/current-sourcing)
• in groups of	1	2	2
Short-circuit protection	No	No	No
<b>Switching capacity of the outputs</b>			
• with resistive load, max.	0.5 A	0.1 A	0.1 A
• on lamp load, max.	5 W		
<b>Load resistance range</b>			
• upper limit	0.6 Ω	7 Ω	
<b>Output voltage</b>			
• Rated value (DC)	24 V	5 V	24 V
• for signal "0", max.	0.1 V; with 10 kOhm load	0.2 V	1 V
• for signal "1", min.	20 V	L+ minus 0.7 V DC	L+ (-1.5 V)
• for signal "1", max.		6 V	
<b>Output current</b>			
• for signal "1" permissible range, max.	0.5 A	0.1 A	0.1 A
• for signal "0" residual current, max.	10 μA		
<b>Cable length</b>			
• shielded, max.	50 m	50 m	50 m
<b>Interrupts/diagnostics/status information</b>			
Alarms	Yes		
Diagnostics function	Yes		
<b>Diagnostics indication LED</b>			
• for status of the inputs	Yes	Yes	Yes
• for status of the outputs	Yes	Yes	Yes
<b>Standards, approvals, certificates</b>			
CE mark	Yes	Yes	Yes
CSA approval	Yes	Yes	Yes
UL approval	Yes	Yes	Yes
cULus	Yes	Yes	Yes
FM approval	Yes	Yes	Yes
RCM (formerly C-TICK)	Yes	Yes	Yes
KC approval	Yes	Yes	Yes
Marine approval	Yes	Yes	Yes
<b>Ambient conditions</b>			
<b>Free fall</b>			
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package
<b>Ambient temperature during operation</b>			
• min.	-20 °C	-20 °C	-20 °C
• max.	60 °C	60 °C	60 °C
• horizontal installation, min.	-20 °C	-20 °C	-20 °C
• horizontal installation, max.	60 °C	60 °C	60 °C
• vertical installation, min.	-20 °C	-20 °C	-20 °C
• vertical installation, max.	50 °C	50 °C	50 °C
<b>Ambient temperature during storage/transportation</b>			
• min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
<b>Air pressure acc. to IEC 60068-2-13</b>			
• Storage/transport, min.	660 hPa	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa	1 080 hPa
<b>Relative humidity</b>			
• Operation at 25 °C without condensation, max.	95 %	95 %	95 %
<b>Mechanics/material</b>			
Enclosure material (front)			
• Plastic	Yes	Yes	Yes
<b>Dimensions</b>			
Width	38 mm	38 mm	38 mm
Height	62 mm	62 mm	62 mm
Depth	21 mm	21 mm	21 mm
<b>Weights</b>			
Weight, approx.	40 g	35 g	35 g