

**Overview**

- Digital inputs and outputs as supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the relevant task
- For subsequent expansion of the system with additional inputs and outputs

**Technical specifications**

Article number	<b>6ES7223-1BH32-0XB0</b>	<b>6ES7223-1BL32-0XB0</b>	<b>6ES7223-1PH32-0XB0</b>	<b>6ES7223-1PL32-0XB0</b>	<b>6ES7223-1QH32-0XB0</b>
	DIGITAL I/O SM 1223, 8 DI / 8 DO	DIGITAL I/O SM 1223, 16DI/16DO	DIGITAL I/O SM 1223, 8DI/8DO	DIGITAL I/O SM 1223, 16DI/16DO	DIGITAL I/O SM 1223, 8DI AC/ 8DO RLY
<b>Product type designation</b>					
<b>Supply voltage</b>					
Rated value (DC)					
• 24 V DC	Yes	Yes	Yes	Yes	Yes
permissible range, lower limit (DC)	20.4 V	20.4 V	20.4 V	20.4 V	20.4 V
permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V	28.8 V	28.8 V
<b>Input current</b>					
from backplane bus 5 V DC, max.	145 mA	185 mA	145 mA	180 mA	120 mA
<b>Digital inputs</b>					
• from load voltage L+ (without load), max.	4 mA; per channel	4 mA; per channel	4 mA/input 11 mA/ relay	4 mA/input 11 mA/ relay	
<b>Output voltage</b>					
<b>Power supply to the transmitters</b>					
• present	Yes	Yes	Yes	Yes	Yes
<b>Power losses</b>					
Power loss, typ.	2.5 W	4.5 W	5.5 W	10 W	7.5 W
<b>Digital inputs</b>					
Number of digital inputs	8	16	8	16	8
• In groups of	2	2	2	2	4
Input characteristic curve in accordance with IEC 61131, type 1	Yes	Yes	Yes	Yes	Yes
<b>Number of simultaneously controllable inputs</b>					
<b>all mounting positions</b>					
- up to 40 °C, max.	8	16	8	16	8
<b>horizontal installation</b>					
- up to 40 °C, max.	8	16	8	16	8
- up to 50 °C, max.	8	16	8	16	8
<b>vertical installation</b>					
- up to 40 °C, max.	8	16	8	16	8
<b>Input voltage</b>					
• Type of input voltage	DC	DC	DC	DC	AC
• Rated value (AC)					120/230V AC
• Rated value (DC)	24 V	24 V	24 V	24 V	
• for signal "0"	5 V DC at 1 mA	5 V DC at 1 mA	5 V DC at 1 mA	5 V DC at 1 mA	20 V AC at 1 mA
• for signal "1"	15 VDC at 2.5 mA	15 VDC at 2.5 mA	15 VDC at 2.5 mA	15 VDC at 2.5 mA	79 V AC at 2.5 mA

**SIMATIC S7-1200 basic controller**

I/O modules

Digital modules

**SM 1223 digital input/output modules****Technical specifications (continued)**

Article number	<b>6ES7223-1BH32-0XB0</b> DIGITAL I/O SM 1223, 8 DI / 8 DO	<b>6ES7223-1BL32-0XB0</b> DIGITAL I/O SM 1223, 16DI/16DO	<b>6ES7223-1PH32-0XB0</b> DIGITAL I/O SM 1223, 8DI/8DO	<b>6ES7223-1PL32-0XB0</b> DIGITAL I/O SM 1223, 16DI/16DO	<b>6ES7223-1QH32-0XB0</b> DIGITAL I/O SM 1223, 8DI AC/ 8DO RLY
<b>Input current</b>					
• for signal "0", max. (permissible quiescent current)	1 mA	1 mA	1 mA	1 mA	1 mA
• for signal "1", min.	2.5 mA	2.5 mA	2.5 mA	2.5 mA	2.5 mA
• for signal "1", typ.	4 mA; Typical	4 mA; Typical	4 mA; Typical	4 mA; Typical	9 mA; Typical
<b>Input delay (for rated value of input voltage) 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; 0.2 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; 0.2 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; 0.2 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; 0.2 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
<b>for interrupt inputs</b>					
- Parameterizable	Yes	Yes	Yes	Yes	Yes
<b>Cable length</b>					
• shielded, max.	500 m	500 m	500 m	500 m	500 m
• Unshielded, max.	300 m	300 m	300 m	300 m	300 m
<b>Digital outputs</b>					
Number of digital outputs	8	16	8	16	8
• In groups of	1	1	2	4	4
short-circuit protection	No; to be provided externally	No; to be provided externally	No; to be provided externally	No; to be provided externally	No; to be provided externally
Limitation of inductive shutdown voltage to	L+ (-48 V)	L+ (-48 V)			
<b>Switching capacity of the outputs</b>					
• with resistive load, max.	0.5 A	0.5 A	2 A	2 A	2 A
• on lamp load, max.	5 W	5 W	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC
<b>Output voltage</b>					
• Rated value (DC)	24 V	24 V	5 V DC to 30 V DC	5 V DC to 30 V DC	5 V DC to 30 V DC
• Rated value (AC)			5 V AC to 250 V AC	5 V AC to 250 V AC	5 V AC to 250 V AC
• for signal "0", max.	0.1 V; with 10 kOhm load	0.1 V; with 10 kOhm load			
• for signal "1", min.	20 V DC	20 V DC			
<b>Output current</b>					
• for signal "1" rated value	0.5 A	0.5 A			
• for signal "1" permissible range, max.	0.5 A	0.5 A	2 A	2 A	2 A
• for signal "0" residual current, max.	10 µA	10 µA			
<b>Output delay with resistive load</b>					
• "0" to "1", max.	50 µs	50 µs	10 ms	10 ms	10 ms
• "1" to "0", max.	200 µs	200 µs	10 ms	10 ms	10 ms
<b>Aggregate current of outputs (per group)</b>					
<b>horizontal installation</b>					
- up to 50 °C, max.	4 A; Current per mass	8 A; Current per mass	10 A; Current per mass	8 A; Current per mass	8 A; Current per mass
<b>Relay outputs</b>					
• Number of relay outputs			8	16	8
• Rated input voltage of relay coil L+ (DC)			24 V	24 V	24 V
• Number of operating cycles, max.			mechanically 10 million, at rated load voltage 100,000	mechanically 10 million, at rated load voltage 100,000	mechanically 10 million, at rated load voltage 100,000
<b>Switching capacity of contacts</b>					
- with inductive load, max.	0.5 A	0.5 A	2 A	2 A	2 A
- on lamp load, max.	5 W	5 W	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC
- with resistive load, max.	0.5 A	0.5 A	2 A	2 A	2 A

**Technical specifications** (continued)

Article number	<b>6ES7223-1BH32-0XB0</b>	<b>6ES7223-1BL32-0XB0</b>	<b>6ES7223-1PH32-0XB0</b>	<b>6ES7223-1PL32-0XB0</b>	<b>6ES7223-1QH32-0XB0</b>
	DIGITAL I/O SM 1223, 8 DI / 8 DO	DIGITAL I/O SM 1223, 16DI/16DO	DIGITAL I/O SM 1223, 8DI/8DO	DIGITAL I/O SM 1223, 16DI/16DO	DIGITAL I/O SM 1223, 8DI AC/ 8DO RLY
<b>Cable length</b>					
• shielded, max.	500 m	500 m	500 m	500 m	500 m
• Unshielded, max.	150 m	150 m	150 m	150 m	150 m
<b>Interrupts/diagnostics/status information</b>					
<b>Alarms</b>					
• Alarms	Yes	Yes	Yes	Yes	Yes
• Diagnostic alarm	Yes	Yes	Yes	Yes	Yes
<b>Diagnostic messages</b>					
• Diagnostic functions	Yes	Yes	Yes	Yes	Yes
• Monitoring the supply voltage	Yes		Yes	Yes	
<b>Diagnostics indication LED</b>					
• for status of the inputs	Yes	Yes	Yes	Yes	Yes
• For status of the outputs	Yes	Yes	Yes	Yes	Yes
• for maintenance	Yes	Yes	Yes	Yes	Yes
• Status indicator digital output (green)	Yes	Yes	Yes	Yes	Yes
• Status indicator digital input (green)	Yes	Yes	Yes	Yes	Yes
<b>Galvanic isolation</b>					
<b>Galvanic isolation digital inputs</b>					
• between the channels, in groups of	2	2	2	2	2
<b>Galvanic isolation digital outputs</b>					
• between the channels			Relays	Relays	Relays
• between the channels, in groups of	1	1	2	4	2
• between the channels and the backplane bus	500 V AC	500 V AC	1500 V AC for 1 minute	1500 V AC for 1 minute	1500 V AC for 1 minute
<b>Permissible potential difference</b>					
between different circuits			750 V AC for 1 minute	750 V AC for 1 minute	750 V AC for 1 minute
<b>Degree and class of protection</b>					
Degree of protection to EN 60529					
• IP20	Yes	Yes	Yes	Yes	Yes
<b>Standards, approvals, certificates</b>					
CE mark	Yes	Yes	Yes	Yes	Yes
CSA approval	Yes	Yes	Yes	Yes	Yes
cULus	Yes	Yes	Yes	Yes	Yes
FM approval	Yes	Yes	Yes	Yes	Yes
RCM (formerly C-TICK)	Yes	Yes	Yes	Yes	Yes
<b>Marine approval</b>					
• Marine approval	Yes		Yes	Yes	Yes
<b>Ambient conditions</b>					
<b>Free fall</b>					
• Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
<b>Ambient temperature in operation</b>					
• Permissible temperature range	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing	-20 °C to +60 °C horizontal mounting, -20 °C to 50 °C vertical mounting, 95% humidity, non-condensing

**SIMATIC S7-1200 basic controller**

I/O modules

Digital modules

**SM 1223 digital input/output modules****Technical specifications (continued)**

Article number	<b>6ES7223-1BH32-0XB0</b> DIGITAL I/O SM 1223, 8 DI / 8 DO	<b>6ES7223-1BL32-0XB0</b> DIGITAL I/O SM 1223, 16DI/16DO	<b>6ES7223-1PH32-0XB0</b> DIGITAL I/O SM 1223, 8DI/8DO	<b>6ES7223-1PL32-0XB0</b> DIGITAL I/O SM 1223, 16DI/16DO	<b>6ES7223-1QH32-0XB0</b> DIGITAL I/O SM 1223, 8DI AC/ 8DO RLY
<b>Ambient temperature in operation</b> (continued)					
• Min.	-20 °C	-20 °C	-20 °C	-20 °C	-20 °C
• max.	60 °C	60 °C	60 °C	60 °C; Number of simultaneously activated outputs: 8 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 16 at 55 °C horizontal or 45 °C vertical	60 °C; Number of simultaneously activated outputs: 4 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 8 at 55 °C horizontal or 45 °C vertical
• Permissible temperature change	5°C to 55°C, 3°C / minute	5°C to 55°C, 3°C / minute	5°C to 55°C, 3°C / minute	5°C to 55°C, 3°C / minute	5°C to 55°C, 3°C / minute
<b>Storage/transport temperature</b>					
• Min.	-40 °C	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	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	660 hPa	660 hPa
• Storage/transport, max.	1 080 hPa	1 080 hPa	1 080 hPa	1 080 hPa	1 080 hPa
<b>Relative humidity</b>					
• Permissible range (without condensation) at 25 °C	95 %	95 %	95 %	95 %	95 %
<b>Connection method</b>					
required front connector	Yes	Yes	Yes	Yes	Yes
<b>Mechanics/material</b>					
Type of housing (front)					
• plastic	Yes	Yes	Yes	Yes	Yes
<b>Dimensions</b>					
Width	45 mm	70 mm	45 mm	70 mm	45 mm
Height	100 mm	100 mm	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm	75 mm	75 mm
<b>Weights</b>					
Weight, approx.	210 g	310 g	230 g	350 g	230 g

**Ordering data****SM 1223 digital input/output signal module**

8 inputs, 24 V DC,  
IEC type 1 current sinking;  
8 24 V DC transistor outputs,  
0.5 A, 5 W

**6ES7223-1BH32-0XB0**

16 inputs, 24 V DC,  
IEC type 1 current sinking;  
16 24 V DC transistor outputs,  
0.5 A, 5 W

**6ES7223-1BL32-0XB0**

8 inputs, 24 V DC,  
IEC type 1 current sinking;  
8 relay outputs, 5 ... 30 V DC/  
5 ... 250 V AC, 2 A, 30 W DC/  
200 W AC

**6ES7223-1PH32-0XB0**

16 inputs, 24 V DC,  
IEC type 1 current sinking;  
16 relay outputs, 5 ... 30 V DC/  
5 ... 250 V AC, 2 A, 30 W DC/  
200 W AC

**6ES7223-1PL32-0XB0**

8 inputs, 120/230 V AC;  
8 relay outputs, 5 ... 30 V DC/  
5 ... 250 V AC, 2 A, 30 W DC/  
200 W AC

**6ES7223-1QH32-0XB0****Extension cable for two-tier configuration**

for connecting digital/analog  
signal modules;  
length 2 m

**Article No.****6ES7290-6AA30-0XA0****Terminal block (spare part)**

for 8/16-channel digital signal  
modules  
with 7 screws, zinc-plated; 4 pcs.

**6ES7292-1AG30-0XA0****Front flap set (spare part)**

for 8/16-channel signal modules  
for 32-channel signal modules

**6ES7291-1BA30-0XA0****6ES7291-1BB30-0XA0**