## **SIEMENS**

## **Data sheet**

6ES7223-1BL32-0XB0



SIMATIC S7-1200, Digital I/O SM 1223, 16 DI/16 DO, 16 DI 24 V DC, Sink/Source, 16 DO, transistor 0.5 A

General information	
Product type designation	SM 1223, DI 16x24 V DC, DQ 16x24 V DC
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Input current	
from backplane bus 5 V DC, max.	185 mA
Digital inputs	
• from load voltage L+ (without load), max.	4 mA; per channel
output voltage / header	
supply voltage of the transmitters / header	
• present	Yes
Power loss	
Power loss, typ.	4.5 W
Digital inputs	
Number of digital inputs	16
• in groups of	2
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Number of simultaneously controllable inputs	
all mounting positions	
— up to 40 °C, max.	16
horizontal installation	
— up to 40 °C, max.	16
— up to 50 °C, max.	16
vertical installation	
— up to 40 °C, max.	16
Input voltage	
Type of input voltage	DC
Rated value (DC)	24 V
• for signal "0"	5 V DC at 1 mA
• for signal "1"	15 V DC at 2.5 mA
Input current	
• for signal "0", max. (permissible quiescent current)	1 mA
• for signal "1", min.	2.5 mA
• for signal "1", typ.	4 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— 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

For interrupt inputs - parameterizable - parameterizable - shielded, max unshielded, m	
Cable length         • shielded, max.         500 m           • unshielded, max.         300 m           Digital outputs           • in groups of         1           Short-Grout protection         No; to be provided externally           Limitation of inductive shutdown voltage to         L+ (-48 V)           Switching capacity of the outputs         • with resistive load, max.         0.5 A           • on lamp load, max.         5 W           Output voltage         • Rated value (DC)         24 V           • for signal *1", min.         20 V DC           Output current         • for signal *1" rated value         0.5 A           • for signal *1" permissible range, max.         0.5 A           • for signal *0" residual current, max.         10 μA           Output delay with resistive load         • "0" "0"," max.         20 U μS           * "1" to "0", max.         200 μs           Total current of the outputs (per group)         horizontal installation           — up to 50 "C. max.         8 A; Current per mass           Relay outputs         Switching capacity of contacts           — with inductive load, max.         0.5 A           — with resistive load, max.         5 W           — with resistive load, max.         0.5 A      <	
Number of digital outputs  ● in groups of  1  Short-circuit protection  Limitation of inductive shutdown voltage to  L+ (-48 V)  Switching capacity of the outputs  ● with resistive load, max.  ● on lamp load, max.  ■ for signal "0", max.  ■ for signal "1", min.  Output current  ● for signal "1" rated value  ● for signal "1" rated value  ● for signal "1" rated value  ● for signal "0" residual current, max.  ■ for signal "0" residual current, max.  ■ for signal "0" residual current, max.  ■ for signal "1" permissible range, max.  ■ for signal "1" rated value  ■ for signal "0" residual current, max.  ■ 10 µA  Output delay with resistive load  ● "0" to "1", max.  ■ "1" to "0", max.  ■ "1" to "0", max.  ■ 200 µs  Total current of the outputs (per group)  horizontal installation  — up to 50 "C, max.  Relay outputs  Switching capacity of contacts  — with inductive load, max. — on lamp load, max. — on lamp load, max. — with resistive load, max.  ■ with resistive load, max.  ■ with resistive load, max.  ■ shielded, max. ■ unshielded, max.  ■ shielded, max.  ■ shielded, max.  ■ unshielded, max.  ■ shielded, max.  ■ shie	
Number of digital outputs  in groups of  fingroups of  Short-circuit protection  Limitation of inductive shutdown voltage to  L+ (-48 V)  Switching capacity of the outputs  with resistive load, max.  on lamp load, max.  for signal "0", max.  of or signal "1", max.  of or signal "1" rated value  for signal "1" rated value  of or signal "1" rated value  for signal "1" rated value  of or signal "1" rated value  of or signal "1" rated value  of or signal "0" residual current, max.  of or signal "0" residual current, max.  for signal "0" residual current, max.  of or signal "0" residual current, max.  output delay with resistive load  o"0" to "1", max.  o"1" to "0", max.  cut outputs (free group)  horizontal installation  — up to 50 "C, max.  Relay outputs  Switching capacity of contacts  — with inductive load, max.  — on lamp load, max.  — with resistive load, max.  — unshielded, max.  150 m  Interrupts diagnostics/status information  Alarms  Diagnostic alarm  Yes	
● in groups of         1           Short-circuit protection         No; to be provided externally           Limitation of inductive shutdown voltage to         L+ (-48 V)           Switching capacity of the outputs         0.5 A           ● with resistive load, max.         5 W           Output voltage         Rated value (DC)         24 V           ● for signal "0", max.         0.1 V; with 10 kOhm load           ● for signal "1", min.         20 V DC           Output current         0.5 A           ● for signal "1" rated value         0.5 A           ● for signal "0" residual current, max.         10 µA           Output delay with resistive load         0.5 A           ● "0" to "1", max.         50 µs           ● "1" to "0", max.         200 µs           Total current of the outputs (per group)         horizontal installation           — up to 50 °C, max.         8 A; Current per mass           Relay outputs         Switching capacity of contacts           — with inductive load, max.         0.5 A           — with inductive load, max.         0.5 A           — with resistive load, max.         5 W           — with resistive load, max.         5.0 m           — with inductive load, max.         5.0 m           — with indu	
Short-circuit protection  No; to be provided externally  Limitation of inductive shutdown voltage to  L+ (-48 V)  Switching capacity of the outputs  • with resistive load, max.  • on lamp load, max.  Output voltage  • Rated value (DC) • for signal "0", max. • for signal "1", min.  Output current  • for signal "1" rated value • for signal "1" remissible range, max. • for signal "1" remissible range, max. • for signal "0" residual current, max.  Output delay with resistive load  • "0" to "1", max.  50 µs • "1" to "0", max.  200 µs  Total current of the outputs (per group)  horizontal installation  — up to 50 "C, max.  Relay outputs  Switching capacity of contacts  — with inductive load, max. — on lamp load, max. — on lamp load, max. — with resistive load, max.  — with resistive load, max. — with resistive load, max. — with resistive load, max.  — with resistive load, max. — with resistive load, max. — with resistive load, max. — with resistive load, max. — shielded, max.  • Diagnostic alarm  Yes	
Limitation of inductive shutdown voltage to  Switching capacity of the outputs  • with resistive load, max. • on lamp load, max. 5 W  Output voltage  • Rated value (DC) • for signal "1", min. 20 V DC  Output current • for signal "1" permissible range, max. • for signal "1" permissible range, max. • for signal "1" resistive load • for to "1", max. • for signal "1" remissible range, max. • for signal "0" residual current, max.  10 µA  Output delay with resistive load • "0" to "1", max. • "1" to "0", max.  200 µs  Total current of the outputs (per group) horizontal installation — up to 50 "C, max.  Relay outputs  Switching capacity of contacts — with inductive load, max. — on lamp load, max. — on lamp load, max. — with resistive load, max.  - with resistive load, max.  5 W  - with resistive load, max.  5 0 0 m • unshielded, max.  Interrupts/diagnostics/status information  Alarms • Diagnostic alarm  Yes	
Limitation of inductive shutdown voltage to  Switching capacity of the outputs  ● with resistive load, max. ● on lamp load, max. ● on lamp load, max.  ● (Pasted value (DC) ● for signal "1", max. ● for signal "1" rated value ● for signal "1" permissible range, max. ● for signal "1" permissible range, max. ● for signal "1" residual current, max. ● for signal "1" residual current, max. ● for lo "1", max. ● for lo "1", max. ● "0" to "1", max. ● "0" to "1", max. ● "1" to "0", max.  Total current of the outputs (per group) horizontal installation  — up to 50 "C, max.  Relay outputs  Switching capacity of contacts  — with inductive load, max. — on lamp load, max. — on lamp load, max. — with resistive load, max. — with resistive load, max. — with resistive load, max.  — with resistive load, max.  — with resistive load, max. — shielded, max.  ■ shielded	
with resistive load, max.     on lamp load, max.     5 W  Output voltage      Rated value (DC)     of or signal "0", max.     of or signal "1", min.     20 V DC  Output current     of or signal "1" rated value     of or signal "1" reemissible range, max.     of or signal "0" residual current, max.  Output delay with resistive load      "0" to "1", max.     50 μs     of "1" to "0", max.     200 μs  Total current of the outputs (per group)  horizontal installation     — up to 50 °C, max.     8 A; Current per mass  Relay outputs  Switching capacity of contacts     — with inductive load, max.     on lamp load, max.     on lamp load, max.     on on lamp load, max.     on lamp load, max.     on shielded, max.     on shielded, max.     on unshielded, max.	
• on lamp load, max.         5 W           Output voltage         24 V           • Fasted value (DC)         24 V           • for signal "0", max.         0.1 V; with 10 kOhm load           • for signal "1", min.         20 V DC           Output current         • for signal "1" rated value         0.5 A           • for signal "1" permissible range, max.         0.5 A           • for signal "0" residual current, max.         10 μA           Output delay with resistive load         • "0" to "1", max.           • "0" to "1", max.         50 μs           • "1" to "0", max.         200 μs           Total current of the outputs (per group)           horizontal installation         - up to 50 "C, max.         8 A; Current per mass           Relay outputs           Switching capacity of contacts           - with inductive load, max.         0.5 A           - on lamp load, max.         5 W           - with resistive load, max.         0.5 A           Cable length           • shielded, max.         500 m           • unshielded, max.         150 m           Interrupts/diagnostics/status information	
Output voltage  • Rated value (DC) • for signal "0", max. • for signal "1", min. 20 V DC  Output current  • for signal "1" rated value • for signal "1" rated value • for signal "0" residual current, max. 0.5 A • for signal "0" residual current, max. 10 μA  Output delay with resistive load • "0" to "1", max. • "1" to "0", max.  Total current of the outputs (per group)  horizontal installation — up to 50 °C, max.  Relay outputs  Switching capacity of contacts — with inductive load, max. — on lamp load, max. — on lamp load, max. — with resistive load, max. • shielded, max. • shielded, max. • unshielded, max. • unshielded, max. • unshielded, max. • unshielded, max.  • Diagnostics/status information  Alarms • Diagnostic alarm  Yes	
<ul> <li>Rated value (DC)</li> <li>for signal "0", max.</li> <li>0.1 V; with 10 kOhm load</li> <li>for signal "1", min.</li> <li>20 V DC</li> <li>Output current</li> <li>for signal "1" rated value</li> <li>for signal "1" permissible range, max.</li> <li>for signal "0" residual current, max.</li> <li>10 μA</li> <li>Output delay with resistive load</li> <li>"0" to "1", max.</li> <li>"1" to "0", max.</li> <li>"1" to "0", max.</li> <li>200 μs</li> <li>Total current of the outputs (per group)</li> <li>horizontal installation</li> <li>— up to 50 °C, max.</li> <li>8 A; Current per mass</li> <li>Relay outputs</li> <li>Switching capacity of contacts</li> <li>— with inductive load, max.</li> <li>— on lamp load, max.</li> <li>— on lamp load, max.</li> <li>— with resistive load, max.</li> <li>5 W</li> <li>— with resistive load, max.</li> <li>150 m</li> <li>Interrupts/diagnostics/status information</li> <li>Alarms</li> <li>Diagnostic alarm</li> <li>Yes</li> </ul>	
<ul> <li>for signal "0", max.</li> <li>for signal "1", min.</li> <li>20 V DC</li> <li>Output current</li> <li>for signal "1" rated value</li> <li>for signal "1" permissible range, max.</li> <li>for signal "0" residual current, max.</li> <li>for signal "0" residual current, max.</li> <li>0.5 A</li> <li>for signal "0" residual current, max.</li> <li>10 μA</li> <li>Output delay with resistive load</li> <li>"0" to "1", max.</li> <li>200 μs</li> <li>Total current of the outputs (per group)</li> <li>horizontal installation</li> <li>— up to 50 °C, max.</li> <li>8 A; Current per mass</li> <li>Relay outputs</li> <li>Switching capacity of contacts</li> <li>— with inductive load, max.</li> <li>— on lamp load, max.</li> <li>— with resistive load, max.</li> <li>5 W</li> <li>— with resistive load, max.</li> <li>0.5 A</li> <li>Cable length</li> <li>Shielded, max.</li> <li>Interrupts/diagnostics/status information</li> <li>Alarms</li> <li>Diagnostic alarm</li> <li>Yes</li> </ul>	
<ul> <li>for signal "1", min.</li> <li>Output current</li> <li>for signal "1" rated value</li> <li>for signal "1" permissible range, max.</li> <li>for signal "0" residual current, max.</li> <li>0.5 A</li> <li>for signal "0" residual current, max.</li> <li>10 μA</li> <li>Output delay with resistive load</li> <li>"0" to "1", max.</li> <li>"1" to "0", max.</li> <li>200 μs</li> <li>Total current of the outputs (per group)</li> <li>horizontal installation</li> <li>— up to 50 °C, max.</li> <li>8 A; Current per mass</li> <li>Relay outputs</li> <li>Switching capacity of contacts</li> <li>— with inductive load, max.</li> <li>— on lamp load, max.</li> <li>— on lamp load, max.</li> <li>S W</li> <li>— with resistive load, max.</li> <li>0.5 A</li> <li>Cable length</li> <li>• shielded, max.</li> <li>• unshielded, max.</li> <li>• unshielded, max.</li> <li>Iso m</li> <li>Interrupts/diagnostics/status information</li> <li>Alarms</li> <li>Diagnostic alarm</li> <li>Yes</li> </ul>	
Output current  • for signal "1" rated value • for signal "1" permissible range, max. • for signal "0" residual current, max.  • for signal "0" residual current, max.  • for signal "0" residual current, max.  • "0" to "1", max. • "1" to "0", max. • "1" to "0", max.  • "1" to "0", max.	
<ul> <li>for signal "1" rated value</li> <li>for signal "1" permissible range, max.</li> <li>for signal "0" residual current, max.</li> <li>10 μA</li> <li>Output delay with resistive load</li> <li>"0" to "1", max.</li> <li>"1" to "0", max.</li> <li>200 μs</li> <li>Total current of the outputs (per group)</li> <li>horizontal installation</li> <li>— up to 50 °C, max.</li> <li>8 A; Current per mass</li> <li>Relay outputs</li> <li>Switching capacity of contacts</li> <li>— with inductive load, max.</li> <li>— on lamp load, max.</li> <li>— with resistive load, max.</li> <li>— with resistive load, max.</li> <li>— with resistive load, max.</li> <li>— shielded, max.</li> <li>• shielded, max.</li> <li>150 m</li> <li>Interrupts/diagnostics/status information</li> <li>Alarms</li> <li>Diagnostic alarm</li> <li>Yes</li> </ul>	
• for signal "1" permissible range, max. • for signal "0" residual current, max.  Output delay with resistive load  • "0" to "1", max. • "1" to "0", max.  200 μs  Total current of the outputs (per group)  horizontal installation — up to 50 °C, max.  Relay outputs  Switching capacity of contacts — with inductive load, max. — on lamp load, max. — with resistive load, max. — with resistive load, max.	
• for signal "0" residual current, max.  Output delay with resistive load  • "0" to "1", max.  • "1" to "0", max.  200 μs  Total current of the outputs (per group)  horizontal installation  — up to 50 °C, max.  Relay outputs  Switching capacity of contacts  — with inductive load, max. — on lamp load, max. — with resistive load, max.  — with resistive load, max.  5 W  Cable length  • shielded, max.  • unshielded, max.  • unshielded, max.  150 m  Interrupts/diagnostics/status information  Alarms  • Diagnostic alarm  Yes	
Output delay with resistive load  • "0" to "1", max. • "1" to "0", max.  200 µs  Total current of the outputs (per group)  horizontal installation  — up to 50 °C, max.  Relay outputs  Switching capacity of contacts — with inductive load, max. — on lamp load, max. — with resistive load, max. — with resistive load, max.  5 W  - with resistive load, max.  5 W  Cable length  • shielded, max.  • unshielded, max.  150 m  Interrupts/diagnostics/status information  Alarms  • Diagnostic alarm  Yes	
• "0" to "1", max.  • "1" to "0", max.  Total current of the outputs (per group)  horizontal installation  — up to 50 °C, max.  8 A; Current per mass  Relay outputs  Switching capacity of contacts  — with inductive load, max. — on lamp load, max. — with resistive load, max. — with resistive load, max.  5 W  — with resistive load, max.  5 0.5 A  Cable length  • shielded, max. • unshielded, max.  • unshielded, max.  Interrupts/diagnostics/status information  Alarms  • Diagnostic alarm  Yes	
• "1" to "0", max.  Total current of the outputs (per group)  horizontal installation  — up to 50 °C, max.  8 A; Current per mass  Relay outputs  Switching capacity of contacts  — with inductive load, max. — on lamp load, max. — with resistive load, max. — with resistive load, max.  5 W  — with resistive load, max.  5 Shielded, max.  • shielded, max.  • unshielded, max.  150 m  Interrupts/diagnostics/status information  Alarms  • Diagnostic alarm  Yes	
Total current of the outputs (per group)  horizontal installation  — up to 50 °C, max.  Relay outputs  Switching capacity of contacts  — with inductive load, max. — on lamp load, max. — with resistive load, max.  — with resistive load, max.  5 W  Cable length  • shielded, max.  • unshielded, max.  150 m  Interrupts/diagnostics/status information  Alarms  • Diagnostic alarm  Yes	
horizontal installation  — up to 50 °C, max.  Relay outputs  Switching capacity of contacts  — with inductive load, max. — on lamp load, max. — with resistive load, max.  — with resistive load, max.  5 W  — with resistive load, max.  5 SOO m  shielded, max.  unshielded, max.  150 m  Interrupts/diagnostics/status information  Alarms  Diagnostic alarm  Yes	
up to 50 °C, max.  Relay outputs  Switching capacity of contacts  with inductive load, max on lamp load, max with resistive load, max with resi	
Relay outputs  Switching capacity of contacts  - with inductive load, max. 0.5 A  - on lamp load, max. 5 W  - with resistive load, max. 0.5 A  Cable length  • shielded, max. 500 m  • unshielded, max. 150 m  Interrupts/diagnostics/status information  Alarms  • Diagnostic alarm Yes	
Switching capacity of contacts  - with inductive load, max on lamp load, max with resistive load, max. 5 W - with resistive load, max. 0.5 A  Cable length • shielded, max. • unshielded, max. 150 m  Interrupts/diagnostics/status information  Alarms • Diagnostic alarm  Yes	
- with inductive load, max on lamp load, max with resistive load, max.  - with resistive load, max.  - with resistive load, max.  - Shielded, max.  - shielded, max unshielded, max unshielded, max.  - Unshielded, max.  - Diagnostics/status information  Yes	
<ul> <li>— on lamp load, max.</li> <li>— with resistive load, max.</li> <li>Cable length</li> <li>● shielded, max.</li> <li>● unshielded, max.</li> <li>Interrupts/diagnostics/status information</li> </ul> Alarms <ul> <li>Diagnostic alarm</li> <li>Yes</li> </ul>	
— with resistive load, max.  Cable length  • shielded, max.  • unshielded, max.  150 m  Interrupts/diagnostics/status information  Alarms  • Diagnostic alarm  Yes	
Cable length  • shielded, max.  • unshielded, max.  150 m  Interrupts/diagnostics/status information  Alarms  • Diagnostic alarm  Yes	
shielded, max.     unshielded, max.  Interrupts/diagnostics/status information  Alarms  Diagnostic alarm  Yes	
<ul> <li>unshielded, max.</li> <li>Interrupts/diagnostics/status information</li> <li>Alarms</li> <li>Diagnostic alarm</li> <li>Yes</li> </ul>	
Interrupts/diagnostics/status information  Alarms  • Diagnostic alarm  Yes	
Alarms  ● Diagnostic alarm  Yes	
Diagnostic alarm     Yes	
Diagnostics indication LED	
• for status of the inputs  Yes	
• for status of the outputs  Yes	
Potential separation	
Potential separation digital inputs	
• between the channels, in groups of 2	
Potential separation digital outputs	
• between the channels, in groups of 1	
• between the channels and backplane bus 500 V AC	
Degree and class of protection	
IP degree of protection IP20	
Standards, approvals, certificates	
CE mark Yes	
CSA approval Yes	
UL approval Yes	
cULus Yes	
FM approval Yes	
RCM (formerly C-TICK)  Yes	
KC approval Yes	
Marine approval Yes	
Ambient conditions	
Free fall	

Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C
<ul> <li>horizontal installation, min.</li> </ul>	-20 °C
<ul> <li>horizontal installation, max.</li> </ul>	60 °C
<ul> <li>vertical installation, min.</li> </ul>	-20 °C
<ul> <li>vertical installation, max.</li> </ul>	50 °C
permissible temperature change	5°C to 55°C, 3°C / minute
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Air pressure acc. to IEC 60068-2-13	
<ul> <li>Storage/transport, min.</li> </ul>	660 hPa
Storage/transport, max.	1 080 hPa
Relative humidity	
<ul> <li>Operation at 25 °C without condensation, max.</li> </ul>	95 %
connection method	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	70 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	310 g

3/12/2024

last modified: