SIEMENS

Data sheet 6AG2223-1PL32-1XB0

Figure similar

SIPLUS S7-1200 SM 1223 16DI/16DQ RLY T1 rail based on 6ES7223-1PL32-0XB0 with conformal coating, -25…+60 °C, OT1 with ST1/2 (+70 °C für 10 minutes), digital input/output 16 DI/16DQ, 16 DI 24 V DC, sink/source, 16 DQ relay 2 A

General information	
Product type designation	SM 1223, DI 16x24 V DC, DQ 16x relay
based on	6ES7223-1PL32-0XB0
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.	180 mA
Digital inputs	
● from load voltage L+ (without load), max.	4 mA/input 11 mA/relay
output voltage / header	
supply voltage of the transmitters / header	
● present	Yes
Power loss	
Power loss, typ.	10 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	Yes
Cable length	
● shielded, max.	500 m
● unshielded, max.	300 m
Digital outputs	
Number of digital outputs	16
● in groups of	4
Short-circuit protection	No; to be provided externally
Switching capacity of the outputs	
● with resistive load, max.	2 A
● on lamp load, max.	30 W with DC, 200 W with AC
Output voltage	
● Rated value (DC)	5 V DC to 30 V DC
● Rated value (AC)	5 V AC to 250 V AC
Output current	
● for signal "1" rated value	2 A
● for signal "1" permissible range, max.	2 A
Output delay with resistive load	
● "0" to "1", max.	10 ms
● "1" to "0", max.	10 ms
Total current of the outputs (per group)	
horizontal installation	
— up to 50 °C, max.	8 A; Current per mass
Relay outputs	
● Number of relay outputs	16
● Rated supply voltage of relay coil L+ (DC)	24 V
● Number of operating cycles, max.	mechanically 10 million, at rated load voltage 100 000
Switching capacity of contacts	
— with inductive load, max.	2 A
— on lamp load, max.	30 W with DC, 200 W with AC
— with resistive load, max.	2 A
Cable length	
● shielded, max.	500 m
● unshielded, max.	150 m
Interrupts/diagnostics/status information	
Alarms	Yes
Diagnostics function	Yes
Alarms	
● Diagnostic alarm	Yes
Diagnoses	
● Monitoring the supply voltage	Yes
Diagnostics indication LED	
● for status of the inputs	Yes
● for status of the outputs	Yes
● for maintenance	Yes
Potential separation	
Potential separation digital inputs	
● between the channels, in groups of	2
Potential separation digital outputs	
● between the channels	Relays
● between the channels, in groups of	4
● between the channels and backplane bus	1 500 V AC for 1 minute
Permissible potential difference	
between different circuits	750 V AC for 1 minute
Isolation	
Isolation tested with	2 545 V DC (type test) and according to EN 50155 (routine test)
Degree and class of protection	
IP degree of protection	IP20

Standards, approvals, certificates	
Ecological footprint	
● environmental product declaration	Yes
Global warming potential	
— global warming potential, (total) [CO2 eq]	123 kg
— global warming potential, (during production) [CO2 eq]	12.1 kg
— global warming potential, (during operation) [CO2 eq]	111 kg
— global warming potential, (after end of life cycle) [CO2 eq]	-0.434 kg
Railway application	
● EN 50121-3-2	Yes; EMC for rail vehicles
● EN 50121-4	Yes; EMC for signal and telecommunications systems
● EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
● EN 50125-1	Yes; Rail vehicles - see ambient conditions
● EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
● EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
● EN 50155	Yes; Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting position
● EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
● Fire protection acc. to EN 45545-2	Yes; For proof of conformity, see Service & Support
Ambient conditions	
Free fall	
● Fall height, max.	0.3 m; five times, in product package
Ambient temperature during operation	
● min.	-25 °C; = Tmin (incl. condensation/frost)
● max.	60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155); number of simultaneously switched on outputs: 8 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 16 at 55 °C horizontal or 45 °C vertical
● vertical installation, min.	-25 °C; = Tmin
● vertical installation, max.	50 °C; = Tmax
Ambient temperature during storage/transportation	
● min.	-40 °C
● max.	70 °C
Altitude during operation relating to sea level	
● Installation altitude above sea level, max.	2 000 m
● Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
● With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
— Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
— to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
— to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
— to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
— to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
Usage in industrial process technology	
— Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
— Environmental conditions for process, measuring	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas

and control systems acc. to ANSI/ISA-71.04	concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
● Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
● Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
● Electronic equipment on rolling stock acc. to EN 50155	Yes; Class PC2 protective coating acc. to EN 50155:2017
● Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
● Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A
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.	350 g
Other	
Note:	for use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A, Online Support article 109736776

Classifications

	Version	Classification
eClass	14	27-24-22-04
eClass	12	27-24-22-04
eClass	9.1	27-24-22-04
eClass	9	27-24-22-04
eClass	8	27-24-22-04
eClass	7.1	27-24-22-04
eClass	6	27-24-22-04
ETIM	9	EC001419
ETIM	8	EC001419
ETIM	7	EC001419
IDEA	4	3566
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval					EMV
Miscellaneous	Manufacturer Declaration	UKCA	CE EG-Konf.	UL	KC

EMV	Railway	Environment
RCM	Confirmation	EPD

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