











Figure similar

SIPLUS S7-1200 SM 1221 16DI, based on 6ES7221-1BH32-0XB0 with conformal coating, -20...+60 °C, 16 DI, 24 V DC, sink/source

| General information | |
|--|--|
| Product type designation | SM 1221, DI 16x24 V DC |
| based on | 6ES7221-1BH32-0XB0 |
| 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. | 130 mA |
| Digital inputs | |
| <ul style="list-style-type: none"> from load voltage L+ (without load), max. | 4 mA; per channel |
| output voltage / header | |
| supply voltage of the transmitters / header | |
| <ul style="list-style-type: none"> present | Yes |
| Power loss | |
| Power loss, typ. | 2.5 W |
| Digital inputs | |
| Number of digital inputs | 16 |
| <ul style="list-style-type: none"> in groups of | 4 |
| 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 | |
| <ul style="list-style-type: none"> Rated value (DC) | 24 V |
| <ul style="list-style-type: none"> for signal "0" | 5 V DC at 1 mA |
| <ul style="list-style-type: none"> for signal "1" | 15 V DC at 2.5 mA |
| Input current | |
| <ul style="list-style-type: none"> for signal "0", max. (permissible quiescent current) | 1 mA |
| <ul style="list-style-type: none"> for signal "1", min. | 2.5 mA |
| <ul style="list-style-type: none"> 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 |
| Interrupts/diagnostics/status information | |
| Diagnostics function | Yes |
| Alarms | |
| • Diagnostic alarm | Yes |
| Diagnoses | |
| • Monitoring the supply voltage | Yes |
| Diagnostics indication LED | |
| • for status of the inputs | Yes |
| • for maintenance | Yes |
| Potential separation | |
| Potential separation digital inputs | |
| • between the channels, in groups of | 4 |
| 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 |
| Ambient conditions | |
| Free fall | |
| • Fall height, max. | 0.3 m; five times, in product package |
| Ambient temperature during operation | |
| • min. | -20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C |
| • max. | 60 °C; = Tmax |
| • At cold restart, min. | 0 °C |
| Ambient temperature during storage/transportation | |
| • min. | -40 °C |
| • max. | 70 °C |
| Altitude during operation relating to sea level | |
| • Installation altitude above sea level, max. | 5 000 m |
| • Ambient air temperature-barometric pressure-altitude | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) |
| Relative humidity | |
| • With condensation, tested in accordance with IEC 60068-2-38, max. | 100 %; RH incl. condensation/frost (no commissioning under condensation conditions) |
| Resistance | |
| Coolants and lubricants | |
| — Resistant to commercially available coolants and lubricants | Yes |
| 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 ships/at sea | |
| — to biologically active substances according to EN 60721-3-6 | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request |
| — to chemically active substances according to EN | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity |

| | | | |
|---|---|--|--|
| 60721-3-6 | degree 3); * | | |
| — to mechanically active substances according to EN 60721-3-6 | Yes; Class 6S3 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 and control systems acc. to ANSI/ISA-71.04 | Yes; Level GX group A/B (excluding trichlorethylene; harmful gas 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 | | |
| • 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 | 45 mm | | |
| Height | 100 mm | | |
| Depth | 75 mm | | |
| Weights | | | |
| Weight, approx. | 210 g | | |
| 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 |  EG-Konf. | Manufacturer Declaration |  |
| | | |  UL |
| | | | KC |
| EMV | | | |
| For use in hazardous locations | | Marine / Shipping | Environment |
|  RCM |  IECEX |  CCC |  DNV |
| | | |  EPD |

