## SIEMENS

## Data sheet

## 6AG2223-1PL32-1XB0



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

Figure similar

| 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  | 20.0 V                               |
| from backplane bus 5 V DC, max.  | 180 mA                               |
| Digital inputs   |                                      |
| <ul> <li>from load voltage L+ (without load), max.</li> </ul>            | 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  |                                      |
| <ul> <li>for signal "0", max. (permissible quiescent current)</li> </ul> | 1 mA                                 |
| <ul> <li>for signal "1", min.</li> </ul>                                 | 2.5 mA                               |
| <ul> <li>for signal "1", typ.</li> </ul>                                 | 4 mA                                 |
| Input delay (for rated value of input voltage)                           |                                      |
| for standard inputs  |                                      |

| For instruct plops         Provide instruction   | — 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 |
|--|--|---|
| Content evaname         Sold m           • eshelded, max.         Sold m           Objetal extracts         Sold m           Number of digital coputs         10           • in groups of         4           Shott circuit protection         No, to be provided externally           Switcing capacity of the extpands         2 A           • on iamp load, max.         Sold With DC, 200 W with AC           Output solding on         -           • Action value (AC)         SV AC to 250 V AC           Output solding on         -           • or signal 1* rated value         2 A           Output delay with resistive load         10 ms           • To to signal 1* rated value         2 A           Output delay with resistive load         10 ms           • To to signal 1* rated value         2 A           Output delay with resistive load         2 A           • Output sold sinsold         3 A (Current per mass)   | for interrupt inputs   |   |
| • unshided, rax.900 mUprial exceptsWinter of diplat outputs18• in groups of4Stot-circul protectionNo. to be provided externallyStot-circul protection• with resistive load, rax.0. With DC, 200 With DC, 200 With ACOutput value (AC)• Raded value (AC)• Raded value (AC)• Raded value (AC)• Final value (AC)• Or asign (Tri raded value)• Final value (AC)• Or signal (Tri raded value)• Or signal (Tri raded value)   | — parameterizable  | Yes   |
| supplies         300 m           Diplies         300 m           Stantistic of diplis duputs         16           • in groups of         4           Stantistic operation         No. to be provided externally           Stantistic operation         2 A           • on item blad, max.         30 W with DC, 200 W with AC           Output origing   | Cable length   |   |
| Injection         16           Number of digital rotation         14           Short-sicult protection         No. to be provided externally           Short-sicult protection         No. to be provided externally           Short-sicult protection         No. to be provided externally           Short-sicult protection         20           • on any fock, max.         20 W with DC, 200 W with AC           Output values         -           • Fared value (AC)         5 V AC to 30 V DC           • Fared value (AC)         5 V AC to 250 V AC           Output counce         2 A           • for signal ** rated value         2 A           • Or signal ** rated value         2 A           • Output cols value         2 A           • Number of relay outputs         16           • Rated supply values of relay outputs  | • shielded, max.   | 500 m   |
| Number of diplaid captols         16           • in groups of         4           Stont-circu protection         No. to be provided externally           Switching expanding expanding expanding external stores         2 A           • on Iamp lead, max.         30 W with DC, 200 W with AC           Output withe bodd, max.         30 W with DC, 200 W with AC           Output withe Bodd         -           • Fraded value (AC)         5 V AC to 30 V DC           • Or an agent 1" mated value         2 A           • for agent 1" permissible range, max.         2 A           • Or a dight 1" mated value         2 A           • for agent 1" rated value         2 A           • Or a dight 1" mated value         2 A           • Or a dight 1" mated value         2 A           • Or a dight 1" mated value         2 A           • Or a dight (age group)         10 ms           • Tradiacurrent of the outputs         16           • Raid a supply valtage of relay call L+ (DC)         24 V           • Number of relay call L+ (DC)         24 V           • Number of relay call L+ (DC)         24 V           • Number of relay call L+ (DC)         24 V           • Number of relay call L+ (DC)         24 V           • Number of relay call L+ (DC)  | • unshielded, max.   | 300 m   |
| • in groups of     4       Short-circuit protection     No: to be provided externally       • with resistive load, max.     2 A       • on lamp load, max.     30 W with DC, 200 W with AC       Outset veltage     •       • Relet value (AC)     5 V DC to 30 V DC       • Relet value (AC)     5 V DC to 30 V DC       • Relet value (AC)     5 V DC to 30 V DC       • Or signal "I" rated value     2 A       • Or of signal "I" rated value     2 A       • Or of signal "I" rated value     2 A       • Or of signal "I" rated value     2 A       • Or of signal "I" rated value     2 A       • Or of signal "I" rated value     2 A       • Or of signal "I" rated value     2 A       • Or of signal "I" rated value     2 A       • Or of signal "I" rated value     2 A       • Or of signal "I" rated value     2 A       • Output circuits for many cotputs     10 ms       • "I'to 1", max.     10 ms       • Pup 5 D °C, max.     8 A' Current per mass       Relaty sotphy with a for any cotputs     18       • Number of relaty cotputs     18       • Number of relaty cotputs     2 A       • Number of relaty cotputs     2 A       • Output sotif relation max.     2 A       • Number of operating cotputs, max.     30 W with DC, 20   | Digital outputs  |   |
| Short-drug protection         No: to be provided externally           Switching capacity of the outputs         2           • with resistive load, max.         30 W with DC, 200 W with AC           Output settings         5 V DC to 30 V DC           • Rated value (DC)         5 V DC to 30 V DC           • Rated value (DC)         5 V AC to 250 V AC           Output settings         2 A           • for signal "1' permissible load         2 A           Output deley with resistive load         0 ms           • '0" to '1", max.         10 ms           • '1" to '1", max.         10 ms           • To 10 or, max.         10 ms           • Part of value of the outputs (per group)         broccord installation           • Number of relay outputs         16           • Rated samply voltage of rolay col L + (DC)         24 V           • Number of operating cycles, max.         mechanically 10 million, at rated load voltage 100 000           Switching graphicly donad, max.         2.A           • on any load, max.         2.A  | Number of digital outputs                                      | 16  |
| Switching capacity of the outputs         2 A           • of lamp load, max.         30 W with DC, 200 W with AC           Output voltage         -           • Relet value (AC)         5 V DC to 30 V DC           • Relet value (AC)         5 V DC to 30 V DC           • Or signal "1" rated value         2 A           • Output current         2 A           • Output current         2 A           • Output classitie range, max.         2 A           • Output classitie range, max.         10 ms           • "1" to "", max.         10 ms           • "1" to "", max.         10 ms           • "1" to "", max.         10 ms           • output classitie group         8 A: Current per mass           Relay outputs         16           • Relat outpoly contakes         2 A           • outpol classities, max.         30 W with DC, 200 W with AC           • Number of rolay outputs         16           • Related supply contage of rolay outputs         16           • Number of rolay outputs         16           • Number of rolay outputs         2 A           • Output end load, max.         30 W with DC, 200 W with AC           • - with resistive load, max.         30 W with DC, 200 W with AC           • output end load,   | • in groups of   | 4   |
| • with resistive load, max.2 A• on lamp load, max.30 W with DC, 200 W with AC• Ordigut witing de5 V DC to 30 V DC• Rated value (DC)5 V AC to 230 V AC• Ordigut value (AC)5 V DC to 30 V DC• for signal '1' permissible range, max.2 A• for signal '1' permissible range, max.2 A• for signal '1' permissible range, max.10 ms• '0' to '1', max.10 ms• '0' to '1', max.10 ms• '1' to '0', max.10 ms• '1' to '0', max.10 ms• Total current of the adduts (ger group)• mut po 30 °C, mas.8 A; Current per massRelay subputs16• Rated suply values of relay out  + (DC)'24 V• Number of relay outputs16• Rated supputs16• Number of age range products• with inductive load, max.2 A• on inam load, max.20 W with AC• on inam load, max.2 A• on inam load, max.3 0 W with AC• on inam load, max.2 A• on inam load, max.3 0 W with AC• on inam load, max.2 A• on inam load, max.2 A• on inam load, max.3 0 W with AC• on inam load, max.3 0 W with AC• on inam load, max.2 A• D   | Short-circuit protection                                       | No; to be provided externally   |
| on lamp load, max.30 W with DC, 200 W with ACOutput voltage5 V DC to 30 V DCRated value (AC)5 V AC to 250 V ACOutput during (AC)5 V AC to 250 V ACOutput during (AC)2 Afor signal '1' rated value2 Afor signal '1' rated value2 Afor signal '1' rated value2 A'0' to '1', max.10 ms-'1' to '1', max.10 ms'1' to '1', max.10 msTotal current of the outputs (per group)10 msTotal current of the outputs (per group)10 msNumber of relay culputs16Relay culputs16Relay culputs10 msNumber of relay culputs16Relay culputs10 msNumber of relay culputs16Relay culputs30 W with DC, 200 W with AC- with inductive load, max.2 A- with map load, max.30 W with DC, 200 W with AC- with relative load, max.150 m- with relative load, max.150 mInterrupts/diagnosticis/status informationYesAurosYesDiagnostic sinctionYesAurosYesDiagnostic sinctionYesPotential separation diputsYesPotential separation diputsYesPotential separation diputsYesPotential separation diputsYesPotential separation diputs1500 V AC for 1 minutePotential separation diputs1500 V AC for 1 minutePotential separation diputs1500 V AC fo   | Switching capacity of the outputs                              |   |
| Output voltage         F Vasted value (AC)           F Rated value (AC)         5 VAC to 250 VAC           Output output         2 A           F or signal ''1 central value         2 A           Output delay with resistive load         -           - ''0' to ''1' max.         10 ms           - ''1' to ''1' max.         24 V           Number of relay cult + (DC.)         24 V           - ''1' to ''1' max.         20 Mont DC. 200 W with AC   | <ul> <li>with resistive load, max.</li> </ul>                  | 2 A   |
| <ul> <li>Rated value (RC)</li> <li>S V RC to 30 V RC</li> <li>Output cancer</li> <li>S V RC to 30 V RC</li> <li>Output cancer</li> <li>S V RC to 30 V RC</li> </ul> <ul> <li>S V RC to 30 V RC</li> <li>S V RC to 30 V RC</li> </ul> <ul> <li>S V RC to 30 V RC</li> <li>S V RC to 30 V RC</li> </ul> <ul> <li>S V RC to 30 V RC</li> </ul> <ul> <li>S V RC to 30 V RC</li> <li>S V RC to 30 V RC to 40 V V RC</li> <li>S V RC to 30 V RC to 40 V V RC</li> <li>S V RC to 30 V RC to 40 V V RC</li> <li>S V RC to 30 V RC to 40 V V</li></ul>  | <ul> <li>on lamp load, max.</li> </ul>                         | 30 W with DC, 200 W with AC   |
| • Rated value (AC)         5 V AC to 250 V AC           Output detarement         2 A           • for signal "1" permissible range, max.         2 A           Output detarement         2 A           • for signal "1" permissible range, max.         10 ms           • '0' to '1', max.         10 ms           • '0' to '1', max.         10 ms           • '1' to '0', max.         10 ms           • Total current of the outputs (or group)         Total current of the outputs (or group)           - who so '0', max.         8 A Current per mass           Relay outputs         16           • Rated suble (AC)         24 V           • Number of relay outputs         16           • Rated suble (Max.         2A           • - on lamp load, max.         2 A           - on lamp load, max.         160 m           • unshielded, max.         160 m           • on lamp load, max.         160 m           • on lamp load, max.         160 m           • Diagnostic slorem         Yes           Diagnostic slorem         Yes           Diagnostic slorem  | Output voltage   |   |
| Output current         2 A           • for signal "1" rated value         2 A           • Output delay with resistive load         -           • '' to '', max.         10 ms           • '' to '', max.         10 ms           • '' to '', max.         10 ms           - '' to '', max.         8 A, Current per mass           Relay outputs         16           • Number of relay outputs         24 V           • Number of relay outputs         30 W with DC, 200 W with AC           with inductive load, max.         20 W models           with inductive load, max.         30 W with DC, 200 W with AC           with resistive load, max.         30 W mit DC, 200 W with AC           - with resistive load, max.         10 So '''           - on inamp load, max.         30 W mit DC, 200 W with AC           - with resistive load, max.         10 So '''   | Rated value (DC)   | 5 V DC to 30 V DC   |
| • for signal *1* rated value     2 A       • for signal *1* permissible range, max.     2 A       • Output desky thressitive load     •       • of to *1*, max.     10 ms       • '1* to *0*, max.     10 ms       • Total current of the outputs (per group)     •       horizontial installation     •       - up to 50 *C, max.     8 A: Current per mass       Relay outputs     16       • Rated supply valtage of relay coll L + (DC)     24 V       • Number of orelay outputs     16       • Rated supply valtage of relay coll L + (DC)     24 V       • Number of orelay outputs     16       • Rated supply valtage of relay coll L + (DC)     24 V       • Number of operating cycles, max.     mechanically 10 million, at rated load voltage 100 000       Switching capacity of contracts     2 A       - on lamp load, max.     2 A       - on lamp load, max.     2 A       - on lamp load, max.     30 W with AC       - with resistive load, max.     160 m       • unshelded, max.     160 m       • Diagnostic sfunction     Yes       Di   | Rated value (AC)   | 5 V AC to 250 V AC  |
| • for signal ** permissible range, max.     2 A       Output delay, with resistive load     10 ms       • ``(*) * (*) *, max.     10 ms       • Total current of the outputs (per group)     10 ms       horizontal installation   | Output current   |   |
| Output delay with resistive load         10 ms           • ° ° ° ° ° °, max.         10 ms           • ° ° ° ° °, max.         10 ms           Total current of the outputs (per group)         horizontal installation  | <ul> <li>for signal "1" rated value</li> </ul>                 | 2 A   |
| • O' to *1', max.     10 ms       • '' to '', max.     10 ms       • Otal current of the audputs (per group)       • up to 50 °C, max.     8 A; Current per mass       • Relay outputs     16       • Number of relay outputs     16       • Rated supply voltage of relay coll 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 imp load, max.     30 W with DC, 200 W with AC       - with relative load, max.     2 A       Cable length     -       • inielided, max.     150 m       Interrupts/dilagnostics/status information     Yes       Diagnostics/status information     Yes       Diagnostics function     Yes       Diagnostics indication LED     -       • Or status of the inputs     Yes       Diagnostics indication LED     Yes       • Or status of the inputs     Yes       • Ior maintenance     Yes       Potential separation digital inputs     Yes       • between the channels in groups of     2       • between the channels in groups of     4       • between the channels in groups of     4       • between the channels in groups of     4   | • for signal "1" permissible range, max.                       | 2 A   |
| • *** to *0*, max.     10 ms       Total current of the outputs (ser group)  | Output delay with resistive load                               |   |
| Total current of the outputs (per group)           hortzontal installation   | • "0" to "1", max.   | 10 ms   |
| horizontal installation  | • "1" to "0", max.   | 10 ms   |
| up to 50 °C, max.     8 A; Current per mass       Relacy outputs     16       • 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 contrateds     -       on Iamp load, max.     2 A       on Iamp load, max.     30 W with DC, 200 W with AC       with inductive load, max.     2 A       on Iamp load, max.     500 m       with inductive load, max.     500 m       with insistive load, max.     500 m       with insistive load, max.     500 m       with resistive load, max.     500 m       with insistive load, max.     500 m       Nontright support     Yes       Diagnostic struction     Yes       Or status of the inputs     Yes       or status of the inputs     Yes       or status of the inputs  | Total current of the outputs (per group)                       |   |
| Relay outputs       16         • Number of relay outputs       16         • Rade 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         • shielded, max.       500 m         • unshielded, max.       150 m         Interrupts/diagnostics/status information       4         Alarms       Yes         Diagnostic alarm       Yes         Potential separation       Yes         • for status of the inputs       Yes         • for status of the inputs       Yes         • for status of the channels in groups of       2         • Potential separation digital inputs       Yes         • for status of the channels in groups of       2         • between the channels in groups of       2         Potential separation digital inputs  | horizontal installation  |   |
| • Number of relay outputs       16         • Rated supply voltage of relay coll 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         - unshelded, max.       150 m         Interrupts/diagnostics/status information       Yes         Alarms       Yes         Diagnostic alarm       Yes         Diagnostic sinciation LED       Yes         - for status of the outputs       Yes         - betwen  | — up to 50 °C, max.  | 8 A; Current per mass   |
| • 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       2 A         - 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       500 m         • unshielded, max.       500 m         • longnostic function       Yes         Diagnostic function       Yes         Diagnostic alarm       Yes         • Diagnostic alarm       Yes         Diagnostic alarm       Yes         Diagnostic function       Yes         Diagnostic alarm       Yes         Diagnostic indicaton LED       -         • for maintenance       Yes         • for maintenance       Yes         Potential separation digital inputs       -         • between the channels, in groups of <td>Relay outputs</td> <td></td>   | Relay outputs  |   |
| • 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       500 m         • unshielded, max.       500 m         • unshielded, max.       150 m         Interrupts/diagnostics/status information       Yes         Alarms       Yes         Diagnostic function       Yes         Diagnostics indication LED       Yes         • for status of the inputs       Yes         • for status of the inputs       Yes         • for status of the outputs       Yes         • for status of the inputs       Yes         • for status of the outputs       Yes         • for maintenance       Yes         Potential separation       2         Potential separation digital inputs       4         • between the channels, in groups of       2         • between the channels and backplane bus       1500 V AC for 1 minute         Permissible potential difference       500 V AC for 1 minute         between the channels and backplane bus       1500 V AC for 1 min  | <ul> <li>Number of relay outputs</li> </ul>                    | 16  |
| Switching capacity of contacts       2 A   | <ul> <li>Rated supply voltage of relay coil L+ (DC)</li> </ul> | 24 V  |
| 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  | <ul> <li>Number of operating cycles, max.</li> </ul>           | mechanically 10 million, at rated load voltage 100 000  |
| - on lamp load, max.       30 W with DC, 200 W with AC         - with resistive load, max.       2 A         Cable length       500 m         • shielded, max.       500 m         • unshielded, max.       150 m         Interrupts/diagnostics/status information       Aarms         Alarms       Yes         Diagnostics function       Yes         Alarms       Yes         Diagnostic alarm       Yes         Diagnostic indication LED       Yes         • for status of the inputs       Yes         • for status of the inputs       Yes         • for status of the outputs       Yes         • for status of the outputs       Yes         • for status of the channels, in groups of       2         Potential separation digital inputs       Eelays         • between the channels, in groups of       4  | Switching capacity of contacts                                 |   |
| with resistive load, max.     2 A       Cable length     500 m       • shielded, max.     500 m       • unshielded, max.     150 m       Interrupts/diagnostics/status information     150 m       Alarms     Yes       Diagnostics function     Yes       Alarms     Yes       Olignostic alarm     Yes       Diagnostics indication LED     Yes       • Monitoring the supply voltage     Yes       Diagnostics indication LED     Yes       • for status of the inputs     Yes       • for status of the outputs     Yes       • for status of the outputs     Yes       • for maintenance     Yes       Potential separation digital inputs        • between the channels, in groups of     2       • between the channels, in groups of     4       • between the channels and backplane bus     1 500 V AC for 1 minute       Pormissible potential difference        between the channels and backplane bus     1 500 V AC for 1 minute       Permissible potential difference        between the channels and backplane bus     1 500 V AC for 1 minute       Permissible potential difference        between the channels and backplane bus     1 500 V AC for 1 minute       Perene different circuits     750 V AC for 1 minute </td <td>- with inductive load, max.</td> <td>2 A</td>  | - with inductive load, max.                                    | 2 A   |
| Cable length       500 m         • shielded, max.       500 m         • unshielded, max.       150 m         Interrupts/diagnostics/status information       150 m         Alarms       Yes         Diagnostics function       Yes         Alarms       Yes         Obignostic alarm       Yes         Diagnostic alarm       Yes         Obignoses       -         • 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 digital inputs       -         • between the channels, in groups of       2         Potential separation digital outputs       -         • between the channels, in groups of       4         • between the channels, in groups of       4         • between the channels and backplane bus       1 500 V AC for 1 minute         Pormissible potential difference       -         between different circuits   | — on lamp load, max.   | 30 W with DC, 200 W with AC   |
| • shielded, max.     500 m       • unshielded, max.     150 m       Interrupts/diagnostics/status information     150 m       Alarms     Yes       Diagnostic function     Yes       Alarms     Yes       Obignostic function     Yes       Alarms     Yes       • Diagnostic alarm     Yes       Diagnoses     Yes       • Monitoring the supply voltage     Yes       Diagnostic indication LED     Yes       • for status of the inputs     Yes       • for status of the outputs     Yes       • for status of the outputs     Yes       • for maintenance     Yes       Potential separation     Yes       Potential separation digital inputs     2       • between the channels, in groups of     2       • between the channels, in groups of     4       • between the channels and backplane bus     1 500 V AC for 1 minute       Permissible potential difference     Isolation tested with       2 245 V DC (type test) and according to EN 50155 (routine test)       Degree and class of protection   | — with resistive load, max.                                    | 2 A   |
| • unshielded, max.     150 m       Interrupts/diagnostics/status information     ////////////////////////////////////  | Cable length   |   |
| Interrupts/diagnostics/status information         Alarms       Yes         Diagnostics function       Yes         Alarms       Yes         Alarms       Yes         Alarms       Yes         Diagnostic alarm       Yes         Diagnoses       Yes         Objects indication LED       Yes         • for status of the inputs       Yes         • for status of the outputs       Yes         • for status of the outputs       Yes         • for status of the outputs       Yes         • for maintenance       Yes         Potential separation       Yes         Potential separation digital inputs          • between the channels, in groups of       2         Potential separation digital outputs          • between the channels, in groups of       4         • between difference       Image: Contential difference         between different circuits       750 V AC for 1 minute         Isolation tested with       2 545 V DC (t   | <ul> <li>shielded, max.</li> </ul>                             | 500 m   |
| Alarms       Yes         Diagnostics function       Yes         Alarms       • Diagnostic alarm         • Diagnostic alarm       Yes         Diagnoses       • Monitoring the supply voltage         • 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       Yes         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       2 545 V DC (type test) and according to EN 50155 (routine test)         Degree and class of protection       •  | <ul> <li>unshielded, max.</li> </ul>                           | 150 m   |
| Diagnostics function       Yes         Alarms       Yes <ul> <li>Diagnostic alarm</li> <li>Yes</li> <li>Diagnostic alarm</li> <li>Yes</li> <li>Monitoring the supply voltage</li> <li>Yes</li> <li>Monitoring the supply voltage</li> <li>Yes</li> <li>for status of the inputs</li> <li>Yes</li> <li>for status of the inputs</li> <li>Yes</li> <li>for status of the outputs</li> <li>Yes</li> <li>for maintenance</li> <li>Yes</li> <li>Potential separation</li> <li>Potential separation digital inputs</li> <li>between the channels, in groups of</li> <li>2</li> <li>Potential separation digital outputs</li> <li>between the channels</li> <li>Relays</li> <li>between the channels in groups of</li> <li>4</li> <li>between the channels and backplane bus</li> <li>1500 V AC for 1 minute</li> <li>Potential difference</li> <li>between different circuits</li> <li>750 V AC for 1 minute</li> <li>Isolation tested with</li> <li>2 545 V DC (type test) and according to EN 50155 (routine test)</li> <li>Degree and class of protection</li> <li>Diagnostice and backplane</li> <li>Diagnostice and backplane</li> <li>Diagnostice and backplane</li> <li>Diagnostice and class of protection</li> <li>Diagnostice and class of protection</li></ul> | Interrupts/diagnostics/status information                      |   |
| Alarms <ul> <li>Diagnostic alarm</li> <li>Yes</li> </ul> Diagnoses <ul> <li>Monitoring the supply voltage</li> <li>Yes</li> </ul> Diagnostics indication LED <ul> <li>for status of the inputs</li> <li>Yes</li> </ul> <ul> <li>for status of the outputs</li> <li>Yes</li> <li>for status of the outputs</li> <li>Yes</li> </ul> <ul> <li>for maintenance</li> <li>Yes</li> </ul> <ul> <li>for maintenance</li> <li>Yes</li> </ul> <ul> <li>for attais separation</li> <li>gital inputs</li> <li>between the channels, in groups of</li> <li>2</li> </ul> <ul> <li>between the channels and backplane bus</li> <li>1500 V AC for 1 minute</li> </ul> <ul> <li>permissible potential difference</li> <li>between different circuits</li> <li>750 V AC for 1 minute</li> </ul> Isol  | Alarms   | Yes   |
| • Diagnostic alarm        Yes          Diagnoses           • Monitoring the supply voltage             • Monitoring the supply voltage        Yes          Diagnostics indication LED               • for status of the inputs        Yes             • for status of the outputs        Yes             • for status of the outputs        Yes             • for maintenance        Yes             Potential separation        Yes             Potential separation digital inputs               • between the channels, in groups of           2             • between the channels, in groups of           4             • between the channels, in groups of           4             • between the channels, in groups of           4             • between the channels, in groups of             • between the channels, in groups of             • between the channels and backplane bus             • between different circuits             Pormissible potential difference             between different circuits   | Diagnostics function   | Yes   |
| Diagnoses         • Monitoring the supply voltage       Yes         Diagnostics indication LED       •         • for status of the inputs       Yes         • for status of the outputs       Yes         • for status of the outputs       Yes         • for maintenance       Yes         Potential separation       Yes         Potential separation digital inputs       2         • between the channels, in groups of       2         Potential separation digital outputs       -         • between the channels, in groups of       4         • 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       2 545 V DC (type test) and according to EN 50155 (routine test)         Degree and class of protection       -  | Alarms   |   |
| • 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       Yes         Potential separation digital inputs       2         • 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, in groups of       4         • between the channels and backplane bus       1 500 V AC for 1 minute         Permissible potential difference       750 V AC for 1 minute         Isolation       2 545 V DC (type test) and according to EN 50155 (routine test)         Degree and class of protection       2 545 V DC (type test) and according to EN 50155 (routine test)  | Diagnostic alarm   | Yes   |
| Diagnostics indication LED         • for status of the inputs       Yes         • for status of the outputs       Yes         • for maintenance       Yes         Potential separation       Yes         Potential separation digital inputs       •         • between the channels, in groups of       2         Potential separation digital outputs       •         • between the channels, in groups of       4         • between the channels, in groups of       4         • between the channels, in groups of       4         • between the channels in groups of       4         • between the channels in groups of       500 V AC for 1 minute         Permissible potential difference       500 V AC for 1 minute         Isolation       2 545 V DC (type test) and according to EN 50155 (routine test)         Degree and class of protection       2  | Diagnoses  |   |
| • for status of the inputsYes• for status of the outputsYes• for maintenanceYesPotential separationYesPotential separation digital inputs2• between the channels, in groups of2Potential separation digital outputs2• between the channelsRelays• between the channels, in groups of4• between the channels, in groups of4• between the channels, in groups of4• between the channels and backplane bus1 500 V AC for 1 minutePermissible potential difference750 V AC for 1 minuteIsolation2 545 V DC (type test) and according to EN 50155 (routine test)Degree and class of protection1500 V AC for 1 minute  | Monitoring the supply voltage                                  | Yes   |
| • for status of the outputs       Yes         • for maintenance       Yes         Potential separation       Yes         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       1500 V AC for 1 minute         between different circuits       750 V AC for 1 minute         Isolation tested with       2 545 V DC (type test) and according to EN 50155 (routine test)         Degree and class of protection   | Diagnostics indication LED                                     |   |
| • for maintenance       Yes         Potential separation       Potential separation digital inputs         • between the channels, in groups of       2         Potential separation digital outputs       2         • between the channels       Relays         • between the channels, in groups of       4         • between the channels, in groups of       4         • between the channels and backplane bus       1 500 V AC for 1 minute         Permissible potential difference       500 V AC for 1 minute         Isolation       2 545 V DC (type test) and according to EN 50155 (routine test)         Degree and class of protection       2  | <ul> <li>for status of the inputs</li> </ul>                   | 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       Permissible potential difference         between different circuits       750 V AC for 1 minute         Isolation tested with       2 545 V DC (type test) and according to EN 50155 (routine test)         Degree and class of protection   | <ul> <li>for status of the outputs</li> </ul>                  | Yes   |
| 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       1 500 V AC for 1 minute         between different circuits       750 V AC for 1 minute         Isolation       2 545 V DC (type test) and according to EN 50155 (routine test)         Degree and class of protection       1   | • for maintenance  | Yes   |
| • 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       1 500 V AC for 1 minute         between different circuits       750 V AC for 1 minute         Isolation       2 545 V DC (type test) and according to EN 50155 (routine test)         Degree and class of protection       2   | Potential separation   |   |
| 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       750 V AC for 1 minute         between different circuits       750 V AC for 1 minute         Isolation       2 545 V DC (type test) and according to EN 50155 (routine test)         Degree and class of protection  | Potential separation digital inputs                            |   |
| • between the channelsRelays• between the channels, in groups of4• between the channels and backplane bus1 500 V AC for 1 minutePermissible potential differencebetween different circuits750 V AC for 1 minuteIsolation1 solation tested withIsolation tested with2 545 V DC (type test) and according to EN 50155 (routine test)Degree and class of protection   | <ul> <li>between the channels, in groups of</li> </ul>         | 2   |
| between the channels, in groups of     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   | Potential separation digital outputs                           |   |
| between the channels and backplane bus Permissible potential difference between different circuits 750 V AC for 1 minute Isolation Isolation Isolation tested with 2 545 V DC (type test) and according to EN 50155 (routine test) Degree and class of protection  | between the channels   | Relays  |
| 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   | <ul> <li>between the channels, in groups of</li> </ul>         | 4   |
| between different circuits     750 V AC for 1 minute       Isolation     Isolation tested with       Degree and class of protection     2 545 V DC (type test) and according to EN 50155 (routine test)  | <ul> <li>between the channels and backplane bus</li> </ul>     | 1 500 V AC for 1 minute   |
| Isolation       Isolation tested with       Degree and class of protection   | Permissible potential difference                               |   |
| Isolation tested with     2 545 V DC (type test) and according to EN 50155 (routine test)       Degree and class of protection   | between different circuits                                     | 750 V AC for 1 minute   |
| Degree and class of protection   | Isolation  |   |
| Degree and class of protection   | 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   |
| <ul> <li>— global warming potential, (during production) [CO2<br/>eq]</li> </ul>  | 12.1 kg  |
| — global warming potential, (during operation) [CO2<br>eq]  | 111 kg   |
| — global warming potential, (after end of life cycle)<br>[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   |  |
| <ul> <li>Fall height, max.</li> </ul>   | 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<br>simultaneously switched on outputs: 8 (no adjacent points) at 60 °C horizontal<br>or 50 °C vertical, 16 at 55 °C horizontal or 45 °C vertical |
| <ul> <li>vertical installation, min.</li> </ul>   | -25 °C; = Tmin   |
| <ul> <li>vertical installation, max.</li> </ul>   | 50 °C; = Tmax  |
| Ambient temperature during storage/transportation   |  |
| • min.  | -40 °C   |
| max.     Altitude during exerction relating to applicately lower  | 70 °C  |
| Altitude during operation relating to sea level   | 2 000 m  |
| <ul> <li>Installation altitude above sea level, max.</li> <li>Ambient air temperature-barometric pressure-altitude</li> </ul> | Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m)   |
| Relative humidity   | 111111 1111ax at 1 140 11Fa 735 11Fa (-1 000 111 +2 000 111)   |
| With condensation, tested in accordance with IEC 60068-   | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation  |
| 2-38, max.<br>Resistance  | nonzontarinistanation  |
| Coolants and lubricants   |  |
|   | Yes; Incl. diesel and oil droplets in the air  |
| Use in stationary industrial systems  |  |
| <ul> <li>— to biologically active substances according to EN 60721-3-3</li> </ul>   | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request   |
| <ul> <li>— to chemically active substances according to EN 60721-3-3</li> </ul>   | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *   |
| <ul> <li>— to mechanically active substances according to EN 60721-3-3</li> </ul>   | Yes; Class 3S4 incl. sand, dust, *   |
| Use on land craft, rail vehicles and special-purpose vehicles   |  |
| <ul> <li>— to biologically active substances according to EN 60721-3-5</li> </ul>   | Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request   |
| <ul> <li>— to chemically active substances according to EN<br/>60721-3-5</li> </ul>   | Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *   |
| <ul> <li>— to mechanically active substances according to EN<br/>60721-3-5</li> </ul>   | Yes; Class 5S3 incl. sand, dust; *   |
| Usage in industrial process technology  |  |
| <ul> <li>Against chemically active substances acc. to EN 60654-4</li> </ul>   | 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   |  |
| <ul> <li>— Note regarding classification of environmental<br/>conditions acc. to EN 60721, EN 60654-4 and<br/>ANSI/ISA-71.04</li> </ul>            | * The supplied plug covers must remain in place over the unused interfaces during operation!   |
| Conformal coating  |  |
| <ul> <li>Coatings for printed circuit board assemblies acc. to EN 61086</li> </ul>   | Yes; Class 2 for high reliability  |
| <ul> <li>Protection against fouling acc. to EN 60664-3</li> </ul>  | Yes; Type 1 protection   |
| <ul> <li>Electronic equipment on rolling stock acc. to EN 50155</li> </ul>   | Yes; Class PC2 protective coating acc. to EN 50155:2017  |
| <ul> <li>Military testing according to MIL-I-46058C, Amendment 7</li> </ul>  | Yes; Discoloration of coating possible during service life   |
| <ul> <li>Qualification and Performance of Electrical Insulating<br/>Compound for Printed Board Assemblies according to IPC-<br/>CC-830A</li> </ul> | 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 |

last modified:

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