## SIEMENS

## Data sheet

## 6AG2223-0BD30-1XB0



SIPLUS S7-1200 SB 1223 2DI/2DQ T1 rail based on 6ES7223-0BD30-0XB0 with conformal coating, -25...+55 °C, OT1 with ST1/2 (+70 °C für 10 minutes), digital input/output 2 DI 24 V DC/2 DQ 24 V DC

F	ig	ur	e	si	m	il	ar

General information					
Product type designation	SB 1223, DI 2x24 V DC/DQ 2x24 V DC				
based on	6ES7223-0BD30-0XB0				
Engineering with					
<ul> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	see entry ID: 109746275				
Supply voltage					
permissible range, lower limit (DC)	20.4 V				
permissible range, upper limit (DC)	28.8 V				
Input current					
from backplane bus 5 V DC, typ.	50 mA				
output voltage / header					
supply voltage of the transmitters / header					
<ul> <li>Supply current, max.</li> </ul>	4 mA; per channel				
Power loss					
Power loss, typ.	1 W				
Digital inputs					
Number of digital inputs	2; Current-sinking				
• in groups of	1				
Input characteristic curve in accordance with IEC 61131, type 1	Yes				
Number of simultaneously controllable inputs					
all mounting positions					
— up to 40 °C, max.	2				
Input voltage					
<ul> <li>Type of input voltage</li> </ul>	DC				
<ul> <li>Rated value (DC)</li> </ul>	24 V				
● for signal "0"	0 to 5 V				
● for signal "1"	+15 to +30 V				
Input current					
<ul> <li>for signal "0", max. (permissible quiescent current)</li> </ul>	1 mA				
<ul> <li>for signal "1", typ.</li> </ul>	0.5 A				
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				
— at "0" to "1", max.	2 µs				
— at "1" to "0", max.	10 µs				
for interrupt inputs					
— parameterizable	Yes				
for technological functions					

Cable tength         500 m           • unshided, max.         500 m           Number of digital outputs         2. MOSPET, solid-state (current-senting/current-seorems)           • in groups of         1.           Stort-drace protection         No           Stort-drace protection         0.6.A           Stort-drace protection         0.6.A           - on lamp (load, max.         5.W           - upper firmt         0.6.D           - or signal '0', max.         0.7.W in 10 KOm load           - or signal '0', max.         0.7.W in 10 KOm load           - or signal '0', max.         0.7.W in 10 KOm load           - or signal '0', max.         0.7.W in 10 KOm load           - or signal '0', max.         0.7.W in 10 KOm load           - or signal '0' residual corter, max.         10 µA           - Or signal '0' residual corter, max.         10 µA           - Or signal '0' residual corter, max.         500 m           - or signal '0' residual corter, max.         500 m           - or signal '0' residual corter, max.         500 m           - or signal '0' residual corter, max.         500 m           - or signal '0' residual corter, max.         500 m           - or signal '0' residual corter, max.         500 m           - or signal '0' r	— parameterizable	Yes
• shelded, max.500 mJurah Idedd, max.300 mJurah Idedd, max.300 m• in group of1Shot I could protectionNoShot I could protectionNoShot I could protection0 S A• on large last, max.5 W• unper Imin.0 S A• on large last, max.5 W• upper Imin.0 S A• on large last, max.5 W• upper Imin.0 A• Graghal 'T; min.20 V• Graghal 'T; min.0 J V• Graghal 'T; min.0 J A• Graghal 'T; min.0 J A• Graghal 'T; permisable range, max.0 J A• Graghal 'T; min.0 J A• Graghal 'T; min.0 J A• Graghal 'T; permisable range, max.0 J A• Graghal 'T; min.0 J A• Graghal 'T; permisable range, max.10 J A• Status of the output.Yes• Status of the output.		
• unshidding mak.500 mhypital soluputs2, MOSPET, solid-state (current-sinking/current-sourcing)• in groups of1• Stort-circul protectionNoStort-circul protection0.5 A• with readitive solut, max.0.5 A• on amp load, max.0.5 A- coper limit0.5 A• on group of the coluputs		500 m
Diputed number         UNOPEET, solid-state (current-sinking/current-sourcing)           in groups of         1           Short-arcuit protection         No           Skort-arcuit protection         No           Skort-arcuit protection         No           Skort-arcuit protection         Skort-arcuit protection           with residue's total, max.         5 K           - upper limit         0.6 A           - arcuit protection         Skort-arcuit protection           - arcuit protection         Yes           Diagnostic inflation         Yes           - arcuit protection         Yes           - arcuit protection arcuit protection         Yes           - arcuit protection arcuit protectio		
Number of digital outputs         2. MOSFET, solid state (current sinking/current sourceng)           in groups of         1           Stort-arout protection         No           Swelteng bagantly of the outputs         0.5 A           on lamp load, max.         0.5 A           on lamp load, max.         0.0 Ω           Output visite control         24 V           Relation control         24 V           Instruction control         24 V           Instruction control         20 V           Output visite (DC)         24 V           Instruction control         20 V           Output visite control         Ves <t< td=""><td></td><td></td></t<>		
• in groups of Short-Group production1Short-Group productionNoShort-Group productionNo• with resistive load, max.0.5 A• on lamp load productionShort-Group Production• upper limit0.6 OCollade Violage-• resistive load, max.0.4 V• for signal '0', max.0.1 V, with 10 kOhm load• for signal '0', max.0.1 V, with 10 kOhm load• for signal '1' permissible range, max.0.5 A• for signal '1' permissible range, max.0.5 A• for signal '1' permissible range, max.10 µACible length-• a helded, max.100 m• unablebbbb, max.100 m• a helded, max.100 m• a helded, max.100 m• a helded, max.100 m• for situs of the inputsYes• En bol21-2Yes; EMC for rail vehicles• En bol21-3Yes; EMC for rail vehicles• En bol21-4Yes; EMC for rail vehicles• En bol22-5Yes; EMC for rail vehicles <td></td> <td>2: MOSEET solid-state (current-sinking/current-sourcing)</td>		2: MOSEET solid-state (current-sinking/current-sourcing)
Short-out protectionNoSwitching capacity of the outputs• with resistive load, max.0.5 Å• out may load, max.6.0 GCold resistione range• upper limit0.6 G• Output voltage9.8 Å• for signal '0', max.0.4 V• for signal '0', max.0.4 V• for signal '1' permissible range, max.0.5 Å• for signal '1' permissible range, max.0.5 M• for signal '1' permissible range, max.150 m <tr< td=""><td></td><td></td></tr<>		
Satebar op pace by the outputsSatebar op pace by the sate by the		
• why residue load, max.0.5 A• on lamp load, max.5 WLoad resistance range5 W• upper limit0.6 ΩOutput storage7• Rated value (DC)24 V• for signal "Tr, min.20 V• Original "Tr, min.20 V• Original "Tr persistile range, max.5 S A• for signal "Tr ensistile range, max.50 A• for signal "Tr ensistile range, max.900 n• original "Tree range, max.700 VDC (type test) and according to EN 50156 (routine test)• original "Tree range, max.700 VDC (type test) and according to EN 50156 (routine test)• EN 5012-3Yes: EM for range value delescommunications system		NO
• on lamp bad, max.5 WLoad resistance range•• upper limit0.6 0Oxford violage•• Reted viola (CO)6 4 V• for signal '0', max.0.1 V, with 10 kOhm load• for signal '0', max.0.5 A• for signal '0' permissible range, max.10.9 A• Cable regin		0.5.4
Lead resistance range         0.0 0.00000000000000000000000000000000		
• upper limit.0.8 ΩOutput voltage		5 W
Output vortage         24 V           • Raided value (DC)         24 V           • for signal "0", max,         0.1 Vi, with 10 kOhm load           • for signal "1", min.         20 V           Output current         10 JA           • for signal "1" residual current, max.         10 JA           • for signal "1" residual current, max.         10 JA           • a fielded, max.         500 m           • unshelded, max.         150 m           • a fielded, max.         150 m           • for signal "0" residual current, max.         150 m           • a fielded, max.         150 m           • a fielded, max.         150 m           • for status of the inputs         Yes           Diagnostics function         Yes           Diagnostics function ED         Yes           • for status of the inputs         Yes           • for status of the inputs         Yes           • for status of the inputs         Yes           • EN 50121-3-2         Yes; EMC for rall vehicles           • EN 50121-3-2         Yes; EMC for signal and telecommunications systems           • EN 50125-1         Yes; EMC for signal and telecommunications systems           • EN 50125-1         Yes; Statustand telecore-acadespory OV2; pollution degree PD2; rated surge ov		06.0
• Relevalue (CC)         24 V           • for signal "C, max.         0.1 V, with 10 kChm load           • for signal "C, max.         0.5 A           • for signal "C persistive range, max.         0.5 A           • for signal "C messive range.         0.5 A           • shelded, max.         0.50 m           • shelded, max.         500 m           • shelded, max.         500 m           • unshelded, max.         150 m           • deriverballer deriverballer         700 m           • for status of the inputs         Yes           • for status of the outputs         Yes <td></td> <td>0.0 12</td>		0.0 12
• for signal "1", min.0.1 V; with 10 kOhm load• for signal "1", min.20 VOutput current0.0 µA• for signal "0" residual current, max.0.5 A• for signal "0" residual current, max.0.0 µA• collei length10 µA• sheleded, max.500 m• unsheleded, max.500 m• unsheleded, max.500 m• for signal "0" residual current, max.500 m• for status of the inputsYesDiagnostics indication LEDYes• for status of the outputsYes• for status of the outpu		041/
• for signal ***, min.20 VOutput current0.5 A• for signal *** persissible range, max.0.5 A• for signal *** persissible range, max.0.5 A• for signal *** persissible range, max.0.5 A• shielded, max.500 m• unshelded, max.150 m• unshelded, max.150 m• unshelded, max.150 m• shielded, max.YesOr status of the inputsYes• for status of the inputsYes• for status of the outputsYes• for status of the outputsYes• for status of the outputs750 VDC (type test) and according to EN 50155 (routine test)• for status of the outputsYes• for holdesYes• for status of the outputsYes• for holdesYes• for		
Output current:       0.5 A         • for signal 1° residual current, max.       0.9 A         Cable length       500 m         • shielded, max.       500 m         • unshielded, max.       150 m         • unshielded, max.       150 m         • Diagnostic structus information       160 m         Diagnostic function       Yes         Diagnostic function       Yes         Diagnostic function ED       Yes         • for status of the louputs		
• for signal "1" permissible range, max.         0.5 A           • for signal "1" restidual current, max.         10 µA           • shielded, max.         500 m           • unshielded, max.         150 m           • Unspression information         Yes           • for status of the inputs         Yes           • for status of the outputs         Yes           • for status o		20 V
• for signal "0" residual current, max.         10 µÅ           Cable length         500 m           • shielded, max.         500 m           • unshielded, max.         500 m           • unshielded, max.         500 m           • unshielded, max.         150 m           • unshielded, max.         Yes           Diagnostics function         Yes           Diagnostics indication LED         •           • for status of the inputs         Yes           • for status of the outputs         Yes           • for status of the inputs         Yes           • for status of the outputs	•	
Cable length         • sinkledd, max.       500 m         • unskledd, max.       150 m         terrupts/diagnostics/status information       150 m         Aterms       Yes         Diagnostics indication LED       Yes         • for status of the inputs       Yes         • for status of the inputs       Yes         • for status of the outputs       Yes		
• shielded, max.500 m• unshielded, max.150 mAlarmsYesDiagnostics/status informationYesDiagnostics indication LED•• for status of the inputsYes• for status of the outputsYes• for status of		10 µA
• unshielded, max.150 mterruptic//ilaginostics/indication lifeDiagnostics functionYesDiagnostics indication LED*• for status of the outputsYes• for status of the outputsYesIsolation tested with750 V DC (type test) and according to EN 50155 (routine test)Tandards, approvals, certificates*Ralway application*• EN 50121-3-2Yes; EMC for rail vehicles• EN 50121-4.1Yes; EMC for signal and telecommunications systems• EN 50124.1Yes; Ralway applications - overvoltage category OV2; pollution degree PD2; raided surge volke). (Wind Test Ave)• EN 50125.1Yes; Ralvehicles - see ambient conditions• EN 50125.2Yes; Stationary electrical equipment - see ambient conditions; vbraftom tack)• EN 50125.3Yes; Ral vehicles - see ambient conditions• EN 50155Yes; Ral vehicles - temperature class OTI, STI/ST2, horizontal mounting position• EN 50155Yes; Ral vehicles - temperature class OTI, STI/ST2, horizontal mounting position• EN 50155Yes; Ral vehicles - temperature class OTI, STI/ST2, horizontal mounting position• EN 50155Yes; Ral vehicles - temperature class OTI, STI/ST2, horizontal mounting position• EN 50155Yes; Cra Train (incl. condensation/frost)• EN 50155Yes; Cra Train (incl. condensation/frost)• En fail height, max.0.3 m; fre times, in product packageArribert condition spratementerFree fail• fail height, max.60 °C; = Traix, +70 °C for 10 min (OT1, STI/ST2 acc, to	5	
thermuptis/diagnostics/status information         Yes           Alarms         Yes           Diagnostics function         Yes           Diagnostics function         Yes           or status of the inputs         Yes           of or status of the outputs         Yes           stolation         Total the outputs           Isolation tested with         750 V DC (type test) and according to EN 50155 (routine test)           tandards, approvals, cortificates         Total the outputs           #EN 50121-3-2         Yes, EMC for rail vehicles           • EN 50121-4         Yes, EMC for rail vehicles           • EN 50121-4         Yes, Rail vehicles - see ambient conditions systems           • EN 50125-1         Yes, Rail vehicles - see ambient conditions           • EN 50125-2         Yes, Signal and telecommunications systems - see ambient conditions           • EN 50125-3         Yes, Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting position           • EN 50155         Yes, For proof of contrnity, see Service & Support           • EN 50155         Yes, For proof of contrnity, see Service & Support           • Ere fall         -25 °C; = Tmin (incl. condensation/frost)           • Free fall         -25 °C; = Tmin (incl. condensation/frost)           • end:         -25 °C; = Tmin		
Alarms       Yes         Diagnostics function       Yes         Diagnostics function       Yes         I or status of the inputs       Yes         • for status of the outputs       Yes         i or status of the outputs       Yes         I or status of the outputs       Yes         • for status of the outputs       Yes         I or status of the outputs       Yes         I or status of the outputs       Yes         • for status of the outputs       Yes         • EN 50121-1       Yes; EMC for rail vehicles       - see ambient conditions         • EN 50125-1       Yes; Stationary electrical equipment - 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 for	• unshielded, max.	150 m
Diagnostics function         Yes           Diagnostics indication LED	nterrupts/diagnostics/status information	
Diagnostics indication LED           • for status of the inputs         Yes           • for status of the outputs         Yes           • for status of the outputs         750 V DC (type test) and according to EN 50155 (routine test)           tandards, approvals, cortificates         Test outputs           Raiway application         Yes; EMC for rail vehicles           • EN 50121-3-2         Yes; EMC for rail vehicles           • EN 50121-4         Yes; EMC for signal and telecommunications systems           • 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 anditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)           • EN 50125-3         Yes; Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting position           • EN 50155         Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B           • EN 61373         Yes; For proof of conformity, see Service & Support           • The input temperature during operation         -25 °C; = Tmin (incl. condensation/frost)           • Fire fall         -25 °C; = Tmin (incl. condensation/frost)           • vertical installation, min.         -25 °C; = Tmin (incl. condensation/frost)           • vertical installation,	Alarms	Yes
• for status of the inputsYes• for status of the outputsYes• totatomYes• totatomYes• totatomYes• totatomYes• totatomYes• totatom status of the outputsYes• totatom stat	Diagnostics function	Yes
• for status of the outputsYesiolationisolation (based with tardards.approvals, cortificatesRaiway application• EN 50121-3-2Yes; EMC for rail vehicles• EN 50121-4Yes; EMC for signal and telecommunications systems• EN 50121-4Yes; EMC for signal and telecommunications systems• EN 50121-4Yes; EMC for signal and telecommunications systems• EN 50125-1Yes; Stationary electrical equipment - see ambient conditions• EN 50125-2Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)• EN 50125-3Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)• EN 50155Yes; Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting position• EN 61373Yes; For proof of conformity, see Service & Support• The conditions-25 °C; = Train (incl. condensation/frost) • error of conformity, see Service & Support• Frei fall height, max.60 °C; = Trnax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155) • veritcal installation, min. • everitcal installation, min. 	Diagnostics indication LED	
Isolation       750 V DC (type test) and according to EN 50155 (routine test)         Isolation tested with       750 V DC (type test) and according to EN 50155 (routine test)         Railway application       • EN 50121-3-2         • 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 UN1 = 0.5 KV; UMn = 24 V DC         • EN 50125-1       Yes; Rail vehicles - see ambient conditions         • EN 50125-2       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; For proof of conformity, see Service & Support         • EN 61373       Yes; For proof of conformity, see Service & Support         • End films       -25 °C; = Tmin (incl. condensation/frost)         • min.       -25 °C; = Tmin (incl. condensation/frost)         • writical installation, min.       -25 °C; = Tmin (incl. condensation/frost)         • writical installation, min.       -25 °C; = Tmin (incl. condensation/frost)         • writical installation, min.       -26 °C; = Tmax         • writical installation, min.       -26 °C; = Tmin (incl. condensation/frost)         • min.       -40 °C         • min.       -40 °C         • min.       -40 °C	<ul> <li>for status of the inputs</li> </ul>	Yes
Isolation lested with T50 V DC (type test) and according to EN 50155 (routine test) Tendards, approvals, certificates Railway application Exb0121-3-2 Exb0121-3-2 Exb0121-3-2 Exb0121-3-2 Exb0121-4 Exb0121-4 Exb0121-1 Exb0121-1 Exb0121-1 Exb0125-1 Exb0125-2 Exb0125-2 Exb0125-3	<ul> <li>for status of the outputs</li> </ul>	Yes
tandards, approvals, certificates         Railway application         • EN 50121-3-2         • EN 50121-4         • EN 50121-4         • EN 50124-1         • EN 50124-1         • EN 50124-1         • EN 50124-1         • EN 50125-1         • EN 50125-2         • EN 50125-3         • EN 50125-3         • EN 50125-3         • EN 50125-4         • EN 50125-5         • EN 50125-5         • EN 50125-6         • EN 50125-7         • EN 50125-8         • EN 50125-1         • EN 50125-2         • EN 50155         • EN 50155         • EN 50155         • Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Category 1 Class A/B         • Fire protection acc. to EN 45545-2         • Yes; Fail vehicles - vibrations and shocks: Category 1 Class A/B         • Fire protection acc. to EN 45545-2         • Yes; For proof of conformity, see Service & Support         Imbient 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)         • vertical installation, min.       -25 °C	solation	
Railway application       EN 50121-3-2       Yes; EMC for rail vehicles         EN 50121-3-2       Yes; EMC for signal and telecommunications systems         EN 50124-1       Yes; Rail vehicles - see ambient conditions         EN 50125-1       Yes; Stationary electrical equipment - see ambient conditions         EN 50125-2       Yes; Stationary electrical equipment - see ambient conditions         EN 50125-3       Yes; Stationary electrical equipment - see ambient conditions;         Ves; Stationary electrical equipment - see ambient conditions;       Yes; Stationary electrical equipment - see ambient conditions;         EN 50125-3       Yes; Stationary electrical equipment - see ambient conditions;         Ves; Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting position       Yes; Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting position         EN 61373       Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B         Free fall       Free fall         • Fall height, max.       0.3 m; five times, in product package         Ambient temperature during operation       -25 °C; = Tmin (incl. condensation/frost)         • wartical installation, min.       -25 °C; = Tmin (incl. condensation/frost)         • vertical installation, max.       50 °C; = Tmax         Ambient temperature during storage/transportation       -0 °C         • min.       -40 °C <t< td=""><td>Isolation tested with</td><td>750 V DC (type test) and according to EN 50155 (routine test)</td></t<>	Isolation tested with	750 V DC (type test) and according to EN 50155 (routine test)
• EN 50121-3-2Yes; EMC for rail vehicles• EN 50121-4Yes; EMC for signal and telecommunications systems• EN 50124-1Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UN1 = 0.5 KV; UNn = 24 V DC• EN 50125-1Yes; Rail vehicles - see ambient conditions• EN 50125-2Yes; Stationary electrical equipment - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)• EN 50125-3Yes; Signal and telecommunications systems - see ambient conditions; 	Standards, approvals, certificates	
• EN 50121-4Yes; EMC for signal and telecommunications systems• EN 50124-1Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage Unit = 0.5 KV; UNm = 24 V DC• EN 50125-1Yes; Rail vehicles - see ambient conditions• EN 50125-2Yes; Stationary electrical equipment - see ambient conditions• EN 50125-3Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)• EN 50155Yes; Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting position• EN 61373Yes; Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting position• EN 61373Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B Yes; For proof of conformity, see Service & Support• Ent foltionsYes; For proof of conformity, see Service & Support• Ent foltionsVes; For proof of conformity, see Service & Support• Ent foltions-25 °C; = Tmin (incl. condensation/frost)• Free fall-25 °C; = Tmin (incl. condensation/frost)• max.60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155)• vertical installation, min. • 25 °C; = Tmin• vertical installation, max.50 °C; = Tmix• max.70 °C• max.70 °C	Railway application	
• EN 50124-1Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 KV; UNm = 24 V DC• EN 50125-1Yes; Rail vehicles - see ambient conditions• EN 50125-2Yes; Stignal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)• EN 50125-3Yes; Stignal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)• EN 50155Yes; Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting position• EN 61373Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B Yes; For proof of conformity, see Service & Support• EN foldionsYes; For proof of conformity, see Service & Support• En fall0.3 m; five times, in product package• Fall height, max.0.3 m; five times, in product package• min25 °C; = Tmin (incl. condensation/frost) o 0° C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155) • vertical installation, min.• vertical installation, max.50 °C; = Tmax• min40 °C r max.• min40 °C r max.• min40 °C r max.• min20 °C r Tima• installation attifue above sea level, max.2 000 m rmin.• homient air temperature-barometric pressure-attifuedTmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m)	• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50124-1Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNI = 0.5 KV; UNM = 24 V DC• EN 50125-1Yes; Rail vehicles - see ambient conditions• EN 50125-2Yes; Stainoary electrical equipment - see ambient conditions• EN 50125-3Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)• EN 50155Yes; Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting position• EN 61373Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B• Fire protection acc. to EN 45545-2Yes; For proof of conformity, see Service & Support <b>unbient conditions</b> -25 °C; = Tmin (incl. condensation/frost)• Fall height, max.0.3 m; five times, in product packageAmbient temperature during operation-25 °C; = Tmin (incl. condensation/frost)• wax.60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155)• vertical installation, min. • vertical installation, max.50 °C; = Tmax• min25 °C; = Tmin• min25 °C; = Tmin• min26 °C = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155)• vertical installation, max.50 °C; = Tmax• Ambient temperature during operation-25 °C; = Tmin• min26 °C• min26 °C• min26 °C• min26 °C• max.70 °C• max26 °C• min26 °C• min26 °C• max26	• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50125-2Yes; Stationary electrical equipment - see ambient conditions• EN 50125-3Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)• EN 50155Yes; Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting position• EN 61373Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B• Fire protection acc. to EN 45545-2Yes; For proof of conformity, see Service & Support• Feal height, max.0.3 m; five times, in product package• Fall height, max.0.3 m; five times, in product package• min25 °C; = Tmin (incl. condensation/frost)• max.60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155)• vertical installation, min25 °C; = Tmin• vertical installation, max.60 °C; = TmaxAmbient temperature during storage/transportation• min26 °C; = Tmin• max.70 °CAmbient temperature during to sea level• installation altitude above sea level, max.2 000 m• Ambient air temperature-barometric pressure-altitudeTmin Tmax at 1140 hPa 795 hPa (-1 000 m +20 00 m)	• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2;
• EN 50125-3Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)• EN 50155Yes; Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting position• EN 61373Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B• Fire protection acc. to EN 45545-2Yes; For proof of conformity, see Service & SupportAmbient conditionsFree fall• Fall height, max.0.3 m; five times, in product packageAmbient temperature during operation-25 °C; = Tmin (incl. condensation/frost)• min25 °C; = Tmin (incl. condensation/frost)• wertical installation, min.50 °C; = Tmax• vertical installation, max.60 °C; = TmaxAmbient temperature during storage/transportation-40 °C• min40 °C• min40 °C• max.70 °C• min20 °C• min40 °C• max.70 °C• min40 °C• max.70 °C• min40 °C• max.70 °C• min40 °C• max.70 °C• Mibient air temperature barometric pressure-altitude• Installation altitude above sea level, max.2000 m• Ambient air temperature-barometric pressure-altitudeTmin Tmax at 1140 hPa 795 hPa (-1 000 m, +2 000 m)	• EN 50125-1	Yes; Rail vehicles - see ambient conditions
vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)• EN 50155Yes; Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting position• EN 61373Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B• Fire protection acc. to EN 45545-2Yes; For proof of conformity, see Service & SupportVmbient conditionsYes; For proof of conformity, see Service & SupportFree fall• Fall height, max.0.3 m; five times, in product packageAmbient temperature during operation-25 °C; = Tmin (incl. condensation/frost)• min25 °C; = Tmin (incl. condensation/frost)• wertical installation, min25 °C; = Tmin• vertical installation, max.60 °C; = TmaxAmbient temperature during storage/transportation-25 °C; = Tmin• min40 °C• min40 °C• max.70 °CAltitude during operation relating to sea level2000 m• Installation altitude above sea level, max.2000 m• Ambient air temperature-barometric pressure-altitudeTmin Tmax at 1140 hPa 795 hPa (-1 000 m +2 000 m)	• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50155Yes; Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting position• EN 61373Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B• Fire protection acc. to EN 45545-2Yes; For proof of conformity, see Service & Support• Mbient conditionsYes; For proof of conformity, see Service & Support• Free fall0.3 m; five times, in product package• Fall height, max.0.3 m; five times, in product package• Ambient temperature during operation-25 °C; = Tmin (incl. condensation/frost)• min25 °C; = Tmin (incl. condensation/frost)• vertical installation, min25 °C; = Tmin• vertical installation, max.60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155)• vertical installation, max.50 °C; = Tmin• nomin40 °C• min40 °C• max.70 °CAttitude during operation relating to sea level-200 m• Installation attitude above sea level, max.2000 m• Ambient air temperature-barometric pressure-altitudeTmin Tmax at 1140 hPa 795 hPa (-1000 m +2000 m)	• EN 50125-3	vibrations and shocks: Application point outside of tracks (1 m to 3 m away
• EN 61373Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B• Fire protection acc. to EN 45545-2Yes; For proof of conformity, see Service & Supportwhilent conditionsFree fall• Fall height, max.0.3 m; five times, in product packageAmbient temperature during operation• min25 °C; = Tmin (incl. condensation/frost)• max.60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155)• vertical installation, min25 °C; = Tmin• vertical installation, max.60 °C; = Tmax;• Ambient temperature during storage/transportation-25 °C; = Tmin• min25 °C; = Tmin• vertical installation, max.60 °C; = Tmax;• Ambient temperature during storage/transportation-40 °C• min40 °C• max.70 °CAttitude during operation telating to sea level2000 m• Installation altitude above sea level, max.2 000 m• Ambient air temperature-barometric pressure-altitudeTmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m)	• EN 50155	Yes; Rail vehicles - temperature class OT1, ST1/ST2, horizontal mounting
• Fire protection acc. to EN 45545-2       Yes; For proof of conformity, see Service & Support         mbient 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)         • vertical installation, min.       -25 °C; = Tmin         • vertical installation, max.       50 °C; = Tmax         Ambient temperature during storage/transportation       -25 °C; = Tmin         • min.       -40 °C         • max.       70 °C         • Mittude during operation relating to sea level       -40 °C         • 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)	• EN 61373	
Imbient conditions         Free fall       0.3 m; five times, in product package         Ambient temperature during operation       -25 °C; = Tmin (incl. condensation/frost)         • min.       -25 °C; = Tmin (incl. condensation/frost)         • max.       60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155)         • vertical installation, min.       -25 °C; = Tmin         • vertical installation, max.       50 °C; = Tmax         Ambient temperature during storage/transportation       -25 °C; = Tmin         • min.       -40 °C         • max.       70 °C         Altitude during operation relating to sea level       -40 °C         • 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)		
Free fall       0.3 m; five times, in product package         Ambient temperature during operation       -25 °C; = Tmin (incl. condensation/frost)         • min.       -25 °C; = Tmin (incl. condensation/frost)         • max.       60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155)         • vertical installation, min.       -25 °C; = Tmin         • vertical installation, max.       50 °C; = Tmax         Ambient temperature during storage/transportation       -60 °C         • min.       -40 °C         • max.       70 °C         Altitude during operation relating to sea level       -70 °C         • 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)	•	
• Fall height, max.0.3 m; five times, in product packageAmbient temperature during operation• min25 °C; = Tmin (incl. condensation/frost)• max.60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155)• vertical installation, min25 °C; = Tmin• vertical installation, max.50 °C; = TmaxAmbient temperature during storage/transportation50 °C; = Tmax• min40 °C• max.70 °CAttitude during operation relating to sea level70 °C• Ambient air temperature-barometric pressure-altitude2 000 m• Ambient air temperature-barometric pressure-altitudeTmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m)		
Ambient temperature during operation       -25 °C; = Tmin (incl. condensation/frost)         • max.       60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155)         • vertical installation, min.       -25 °C; = Tmin         • vertical installation, max.       50 °C; = Tmax         Ambient temperature during storage/transportation       50 °C; = Tmax         • min.       -40 °C         • max.       70 °C         Altitude during operation relating to sea level       70 °C         • 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)		0.3 m; five times, in product package
<ul> <li>min.</li> <li>-25 °C; = Tmin (incl. condensation/frost)</li> <li>max.</li> <li>60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155)</li> <li>-25 °C; = Tmin</li> <li>-26 °C; = Tmax</li> <li>-26 °C; = Tmax</li> <li>-26 °C; = Tmax</li> <li>-40 °C</li> <li>-40 °C</li> <li>-40 °C</li> <li>-40 °C</li> <li>-40 °C</li> <li>-50 °C</li> <li>Attitude during operation relating to sea level</li> <li>-40 °C</li> <li>-40 °C</li></ul>		o.om, nye umes, in product package
• max.60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155)• vertical installation, min25 °C; = Tmin• vertical installation, max.50 °C; = TmaxAmbient temperature during storage/transportation-40 °C• max40 °C• max.70 °CAltitude during operation relating to sea level-20 °C• Installation altitude above sea level, max.2 000 m• Ambient air temperature-barometric pressure-altitudeTmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m)		25 °C: - Train (incl. condencation/fract)
• vertical installation, min25 °C; = Tmin• vertical installation, max.50 °C; = TmaxAmbient temperature during storage/transportation-40 °C• min40 °C• max.70 °CAltitude during operation relating to sea level2 000 m• Ambient air temperature-barometric pressure-altitudeTmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m)		
• vertical installation, max.       50 °C; = Tmax         Ambient temperature during storage/transportation       -40 °C         • min.       -40 °C         • max.       70 °C         Altitude during operation relating to sea level       2000 m         • Ambient air temperature-barometric pressure-altitude       70 °C		
Ambient temperature during storage/transportation         • min.       -40 °C         • max.       70 °C         Altitude during operation relating to sea level       2000 m         • Ambient air temperature-barometric pressure-altitude       2000 m         • Ambient air temperature-barometric pressure-altitude       Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m)		
<ul> <li>min.</li> <li>-40 °C</li> <li>max.</li> <li>70 °C</li> <li>Altitude during operation relating to sea level</li> <li>Installation altitude above sea level, max.</li> <li>Ambient air temperature-barometric pressure-altitude</li> <li>Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m)</li> </ul>		50 °C; = 1 max
• max.     70 °C       Altitude during operation relating to sea level     2000 m       • 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)		
Altitude during operation relating to sea level         • Installation altitude above sea level, max.         • Ambient air temperature-barometric pressure-altitude         Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m)	• min.	
Installation altitude above sea level, max.     Ambient air temperature-barometric pressure-altitude     Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m)		70 °C
Ambient air temperature-barometric pressure-altitude     Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m)	Altitude during operation relating to sea level	
	<ul> <li>Installation altitude above sea level, max.</li> </ul>	2 000 m
Relative humidity	Ambient air temperature-barometric pressure-altitude	Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m)

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2-38, max.	horizontal installation
Resistance	
Coolants and lubricants	
<ul> <li>Resistant to commercially available coolants and lubricants</li> </ul>	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 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 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)
<ul> <li>Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04</li> </ul>	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	
<ul> <li>— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and 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 Compound for Printed Board Assemblies according to IPC- CC-830A</li> </ul>	Yes; Conformal coating, Class A
lechanics/material	
Enclosure material (front)	
Plastic	Yes
Dimensions	
Width	38 mm
Height	62 mm
Depth	21 mm
Veights	
Weight, approx.	40 g
Dther	
Note:	for use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A, Online Support article 109736776

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