

SIPLUS ET 200SP F-PM-E 24VDC/8A PPM RAIL -25 ... +55°C T1 with 70°C for 10 min with conformal coating BasedOn 6ES7136-6PA00-0BC0 . F-PM-E PPM Profisafe, for ET 200SP; 24V DC Fail-Safe Switching of DQ and F-DQ up to PL D / SIL2 or pl e / SIL3 2 Fail-Safe Digital Inputs 1 Fail-Safe Digital Output PPM



General information

Product type designation	F-PM-E 24 V DC/8 A PPM ST
usable BaseUnits	BU type C0
Color code for module-specific color identification plate	CC52
Product function	
• I&M data	Yes; I&M0 to I&M3

Supply voltage

Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes

Input current

Current consumption (rated value)	75 mA; without load
Current consumption, max.	21 mA; From the backplane bus

Output voltage

Rated value (DC)	24 V
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Encoder supply	
Number of outputs	2
Short-circuit protection	Yes; Electronic (response threshold 0.7 A to 2.1 A)
Output current	
<ul style="list-style-type: none"> • up to 60 °C, max. 	0.3 A
24 V encoder supply	
<ul style="list-style-type: none"> • 24 V 	Yes; min. L+ (-1.5 V)
<ul style="list-style-type: none"> • Short-circuit protection 	Yes
<ul style="list-style-type: none"> • Output current, max. 	600 mA; Total current of all encoders
Power	
Power available from the backplane bus	70 mW
Power loss	
Power loss, typ.	5 W
Address area	
Address space per module	
<ul style="list-style-type: none"> • Inputs 	7 byte
<ul style="list-style-type: none"> • Outputs 	5 byte
Hardware configuration	
Automatic encoding	Yes
<ul style="list-style-type: none"> • Electronic coding element type F 	Yes
Digital inputs	
Number of digital inputs	2
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Input voltage	
<ul style="list-style-type: none"> • Type of input voltage 	DC
<ul style="list-style-type: none"> • Rated value (DC) 	24 V
<ul style="list-style-type: none"> • for signal "0" 	-30 to +5V
<ul style="list-style-type: none"> • for signal "1" 	+15 to +30V
Input current	
<ul style="list-style-type: none"> • for signal "1", typ. 	3.7 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	Yes
— at "0" to "1", min.	0.4 ms
— at "0" to "1", max.	20 ms
— at "1" to "0", min.	0.4 ms
— at "1" to "0", max.	20 ms
for counter/technological functions	
— parameterizable	No

Cable length	
• shielded, max.	1 000 m
• unshielded, max.	500 m
Digital outputs	
Number of digital outputs	1
Short-circuit protection	Yes
Open-circuit detection	Yes
• Response threshold, typ.	8 mA
Overload protection	Yes
• Response threshold, typ.	8.8 A
Limitation of inductive shutdown voltage to	max. 1.5 V
Switching capacity of the outputs	
• with resistive load, max.	8 A
• on lamp load, max.	100 W
Load resistance range	
• lower limit	3 Ω
• upper limit	2 000 Ω
Output voltage	
• for signal "1", min.	24 V; L+ (-0.5 V)
Output current	
• for signal "1" rated value	8 A
• for signal "0" residual current, max.	1.5 mA; PP-switching: max. 1.5 mA; PM-switching: max. 1 mA
Switching frequency	
• with resistive load, max.	10 Hz; Symmetrical
• with inductive load, max.	0.1 Hz; according to IEC 60947-5-1, DC-13, symmetrical
• on lamp load, max.	4 Hz; Symmetrical
Total current of the outputs	
• Current per channel, max.	8 A; Note derating data in the manual
• Current per module, max.	8 A; Note derating data in the manual
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	500 m
Interrupts/diagnostics/status information	
Diagnostics function	Yes, "Alarms/diagnostic messages" section in the manual
Substitute values connectable	No
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED

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| • Monitoring of the supply voltage (PWR-LED) | Yes; green PWR LED |
| • Channel status display | Yes; Green LED |
| • for channel diagnostics | Yes; Red LED |
| • for module diagnostics | Yes; green/red DIAG LED |

Potential separation

Potential separation channels

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| • between the channels | No |
| • between the channels and backplane bus | Yes |
| • between the channels and the power supply of the electronics | No |

Permissible potential difference

between different circuits	60 V DC/75 V AC
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Isolation

Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
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Standards, approvals, certificates

Railway application

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| • 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 T1, horizontal mounting position, salt spray Class ST2 |
| • EN 61373 | Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B |
| • Fire protection acc. to EN 45545-2 | Yes; Rail vehicles - verification on request |

Highest safety class achievable in safety mode

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| • SIL acc. to IEC 61508 | SIL 3 |
| • SIL in accordance with EN 50126, 50128, 50129 | SIL 2; a higher safety integrity level is possible if tested and approved for the specific application under consideration of all local regulations. |

Ambient conditions

Ambient temperature during operation

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| • horizontal installation, min. | -25 °C; = Tmin |
| • horizontal installation, max. | 60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155) |

Altitude during operation based on sea level

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| • Ambient air temperature-barometric pressure-altitude | Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) |
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Relative humidity	
<ul style="list-style-type: none"> • With condensation, tested in accordance with IEC 60068-2-38, max. 	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Use in stationary industrial systems	
— to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
— to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!
Use on land craft, rail vehicles and special-purpose vehicles	
— to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
— to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75%) including salt spray according to EN 50155 (ST2). The supplied plug covers must remain in place over the unused interfaces during operation!
— to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 including sand and dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Dimensions	
Width	20 mm
Height	72 mm
Depth	55 mm
Other	
Note:	For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776
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