

SIPLUS ET 200SP F-PM-E 24 V DC/8A PPM RAIL -25 ... +55°C T1 with 70°C for 10 min with conformal coating based on 6ES7136-6PA00-0BC0 . POWER M. F-PM-E PPM PROFIsafe, for ET "200SP; 24 V DC safe shutdown of" DQ and F-DQ up to PL D/SIL2 or PL E/SIL3 2 safe dig. inputs 1 safe dig. output PPM



General information	
Product type designation	F-PM-E PPM 24VDC
Firmware version	
<ul style="list-style-type: none"> FW update possible 	Yes
usable BaseUnits	BU type C0
Color code for module-specific color identification plate	CC52
Product function	
<ul style="list-style-type: none"> 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
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
Source/sink input	Yes; P-reading
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 +5 V
<ul style="list-style-type: none"> • for signal "1" 	+15 to +30 V
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 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	
Substitute values connectable	No
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnostics indication LED	
• RUN LED	Yes; green LED

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| • ERROR LED | Yes; red LED |
| • 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 |

Isolation

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

Suitable for safety functions	Yes
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Highest safety class achievable in safety mode

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| • Performance level according to ISO 13849-1 | PLe |
| • 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. |

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 |

Ambient conditions

Ambient temperature during operation

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|---------------------------------|---|
| • horizontal installation, min. | -25 °C; = Tmin (incl. condensation/frost) |
| • horizontal installation, max. | 60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155); +70 °C continuously with configured empty slots to the left and right of the module |

Altitude during operation relating to sea level

<ul style="list-style-type: none"> • Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude 	<p>2 000 m</p> <p>Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)</p>
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 in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
— Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
— to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
— to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
— to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
— to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
— to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
Remark	
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
<ul style="list-style-type: none"> • Coatings for printed circuit board assemblies acc. to EN 61086 • Protection against fouling acc. to EN 60664-3 • Electronic equipment on rolling stock acc. to EN 50155 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A 	<p>Yes; Class 2 for high reliability</p> <p>Yes; Type 1 protection</p> <p>Yes; Class PC2 protective coating acc. to EN 50155:2017</p> <p>Yes; Discoloration of coating possible during service life</p> <p>Yes; Conformal coating, Class A</p>
Dimensions	
Width	20 mm
Height	72 mm
Depth	55 mm
Weights	

Weight, approx.

70 g

Other

Note:

for use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A, Online Support article 109736776

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