

SIPLUS ET 200SP TM PULSE 2x24V -25°C...60°C T1 with 70°C for 10 min with conformal coating BasedOn:6ES7138-6DB00-0BB1 . PWM and pulse output 2 channels 2 A for proportional valves and DC motors

### General information

Product type designation	TM Pulse 2x24 V
Firmware version	
<ul style="list-style-type: none"> <li>FW update possible</li> </ul>	Yes
usable BaseUnits	BU type B1
Color code for module-specific color identification plate	CC40
<b>Product function</b>	
<ul style="list-style-type: none"> <li>I&amp;M data</li> </ul>	Yes; I&M 0
<ul style="list-style-type: none"> <li>Isochronous mode</li> </ul>	Yes

### Supply voltage

<b>Load voltage L+</b>	
<ul style="list-style-type: none"> <li>Rated value (DC)</li> </ul>	24 V
<ul style="list-style-type: none"> <li>permissible range, lower limit (DC)</li> </ul>	19.2 V
<ul style="list-style-type: none"> <li>permissible range, upper limit (DC)</li> </ul>	28.8 V
<ul style="list-style-type: none"> <li>Short-circuit protection</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Reverse polarity protection</li> </ul>	Yes; against destruction

### Input current

Current consumption, max.	70 mA; without load
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### Encoder supply

Number of outputs	2; A common 24V encoder supply for both channels
<b>24 V encoder supply</b>	
<ul style="list-style-type: none"> <li>24 V</li> </ul>	Yes; L+ (-0.8 V)
<ul style="list-style-type: none"> <li>Short-circuit protection</li> </ul>	Yes; per module, electronic
<ul style="list-style-type: none"> <li>Output current, max.</li> </ul>	300 mA

### Power loss

Power loss, typ.	1.7 W
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### Address area

<b>Occupied address area</b>	
<ul style="list-style-type: none"> <li>Inputs</li> </ul>	16 byte; 8 per channel
<ul style="list-style-type: none"> <li>Outputs</li> </ul>	24 byte; 12 per channel

### Digital inputs

Number of digital inputs	2; 1 per channel
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
<b>Digital input functions, parameterizable</b>	
<ul style="list-style-type: none"> <li>• Freely usable digital input</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• HW enable for digital output</li> </ul>	Yes
<b>Input voltage</b>	
<ul style="list-style-type: none"> <li>• Type of input voltage</li> </ul>	DC
<ul style="list-style-type: none"> <li>• Rated value (DC)</li> </ul>	24 V
<ul style="list-style-type: none"> <li>• for signal "0"</li> </ul>	-30 to +5V
<ul style="list-style-type: none"> <li>• for signal "1"</li> </ul>	+11 to +30V
<ul style="list-style-type: none"> <li>• permissible voltage at input, min.</li> </ul>	-30 V
<ul style="list-style-type: none"> <li>• permissible voltage at input, max.</li> </ul>	30 V
<b>Input current</b>	
<ul style="list-style-type: none"> <li>• for signal "1", typ.</li> </ul>	2.5 mA
<b>Input delay (for rated value of input voltage)</b>	
for standard inputs	
<ul style="list-style-type: none"> <li>— parameterizable</li> </ul>	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
<ul style="list-style-type: none"> <li>— at "0" to "1", min.</li> </ul>	4 µs; for parameterization "none"
<ul style="list-style-type: none"> <li>— at "1" to "0", min.</li> </ul>	4 µs; for parameterization "none"
<b>Digital outputs</b>	
Type of digital output	P- and M-switching
Number of digital outputs	2; 1 per channel
Current-sinking	Yes
Current-sourcing	Yes
Short-circuit protection	Yes; electronic/thermal
<ul style="list-style-type: none"> <li>• Response threshold, typ.</li> </ul>	6.8 A with Standard output, 2 A with High Speed output
Limitation of inductive shutdown voltage to	-0.8 V
Controlling a digital input	Yes
Accuracy of pulse duration	±100 ppm ±0.5 µs with High Speed output, ±100 ppm ±9 µs with Standard output
minimum pulse duration	1.5 µs; With High Speed output, 10 µs with Standard output
<b>Digital output functions, parameterizable</b>	
<ul style="list-style-type: none"> <li>• Freely usable digital output</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• PWM output</li> </ul>	Yes
<ul style="list-style-type: none"> <li>— Number, max.</li> </ul>	2; 1 per channel
<ul style="list-style-type: none"> <li>— Cycle duration, parameterizable</li> </ul>	Yes; Max. 85 s
<ul style="list-style-type: none"> <li>— ON period, min.</li> </ul>	0 %
<ul style="list-style-type: none"> <li>— ON period, max.</li> </ul>	100 %
<ul style="list-style-type: none"> <li>— Resolution of the duty cycle</li> </ul>	0.0036 %; For S7 analog format, min. 20 ns
<ul style="list-style-type: none"> <li>• Connection of a proportional valve</li> </ul>	Yes

• Dithering	Yes
— Frequency adjustable	Yes
— Amplitude adjustable	Yes
• Current measurement	Yes
• Current control	Yes
• Connection of a DC motor	Yes
• ON-delay	Yes
• OFF-delay	Yes
• Frequency output	Yes
• Pulse train	Yes
• Pulse output	Yes
<b>Switching capacity of the outputs</b>	
• with resistive load, max.	2 A
• on lamp load, max.	10 W; 1 W with High Speed output
<b>Load resistance range</b>	
• lower limit	12 Ω; 240 ohm with High Speed output
• upper limit	12 kΩ
<b>Output voltage</b>	
• Type of output voltage	DC
• for signal "0", max.	1 V
• for signal "1", min.	23.2 V; L+ (-0.8 V)
<b>Output current</b>	
• for signal "1" rated value	2 A; 0.1 A with High Speed output, observe derating
<b>Output delay with resistive load</b>	
• "0" to "1", typ.	0 μs; With High Speed output, 4.5 μs with Standard output
• "0" to "1", max.	0.8 μs; With High Speed output, 9 μs with Standard output
• "1" to "0", typ.	0 μs; With High Speed output, 4.5 μs with Standard output
• "1" to "0", max.	0.8 μs; With High Speed output, 9 μs with Standard output
<b>Parallel switching of two outputs</b>	
• for uprating	Yes
<b>Switching frequency</b>	
• with resistive load, max.	100 kHz; With High Speed output, 10 kHz with standard output
• with inductive load, max.	100 kHz; With High Speed output, 10 kHz with standard output
• on lamp load, max.	10 Hz
<b>Total current of the outputs</b>	
• Current per channel, max.	2 A
• Current per group, max.	4 A
• Current per module, max.	4 A
<b>Isochronous mode</b>	
Isochronous operation (application synchronized up to terminal)	Yes

Bus cycle time (TDP), min.	250 µs; with 1 channel configuration, 375 µs with 2 channel configuration
Jitter, max.	1 µs; typically ±

### Interrupts/diagnostics/status information

Diagnostics function	Yes
Substitute values connectable	Yes; Parameterizable

### Alarms

• Diagnostic alarm	Yes
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### Diagnostic messages

• Monitoring the supply voltage	Yes
• Short-circuit	Yes

### Diagnostics indication LED

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

### Potential separation

#### Potential separation channels

• between the channels	No
• between the channels and backplane bus	Yes

### 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

• 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

• horizontal installation, min.	-40 °C; = Tmin; Startup @ -25 °C
• horizontal installation, max.	60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)

#### Altitude during operation relating to sea level

<ul style="list-style-type: none"> <li>• Installation altitude above sea level, max.</li> <li>• Ambient air temperature-barometric pressure-altitude</li> </ul>	<p>2 000 m</p> <p>Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)</p>
<b>Relative humidity</b>	
<ul style="list-style-type: none"> <li>• With condensation, tested in accordance with IEC 60068-2-38, max.</li> </ul>	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
<b>Resistance</b>	
<b>Coolants and lubricants</b>	
— Resistant to commercially available coolants and lubricants	Yes
<b>Use in stationary industrial systems</b>	
— 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, *
<b>Use on land craft, rail vehicles and special-purpose vehicles</b>	
— 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; *
<b>from supply voltage 1L+</b>	
— Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!
<b>Decentralized operation</b>	
to SIMATIC S7-300	Yes
to SIMATIC S7-400	Yes
to SIMATIC S7-1200	Yes
to SIMATIC S7-1500	Yes
to standard PROFIBUS master	Yes
to standard PROFINET controller	Yes
<b>Dimensions</b>	
Width	20 mm
Height	73 mm
Depth	58 mm
<b>Weights</b>	
Weight, approx.	50 g
<b>Other</b>	

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Note:

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

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