

SIMATIC S7-300, Interface module IM174, for connection of analog drives and stepper drives on isochronous PROFIBUS to Motion Control systems 4 channels (4 encoder inputs, 4 AO), configurable with STEP 7 V5.4 SP4



Figure similar

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	
Current consumption, max.	500 mA
from backplane bus 5 V DC, max.	100 mA
Encoder supply	
5 V encoder supply	
• 5 V	Yes
• Output current, max.	1.2 A
• Cable length, max.	25 m
24 V encoder supply	
• 24 V	Yes
• Output current, max.	1.4 A
• Cable length, max.	100 m
Absolute encoder (SSI) encoder supply	
• Absolute encoder (SSI)	Yes
• Short-circuit protection	Yes
Power loss	
Power loss, typ.	12 W
Digital inputs	
Number of digital inputs	10
Input voltage	
• for signal "0"	-3 to +5V
• for signal "1"	+11 to +30V
Input current	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	8 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— at "0" to "1", min.	15 µs
Cable length	
• shielded, max.	100 m
Digital outputs	
Number of digital outputs	8
Short-circuit protection	Yes
Switching capacity of the outputs	

<ul style="list-style-type: none"> <li>with resistive load, max.</li> <li>on lamp load, max.</li> </ul>	<p>1 A</p> <p>30 W</p>
<b>Output voltage</b>	
<ul style="list-style-type: none"> <li>Rated value (DC)</li> <li>for signal "1", min.</li> <li>for signal "1", max.</li> </ul>	<p>24 V; L+</p> <p>L+ (-3 V)</p> <p>3 V</p>
<b>Output current</b>	
<ul style="list-style-type: none"> <li>for signal "1" permissible range for 0 to 55 °C, min.</li> <li>for signal "1" permissible range for 0 to 55 °C, max.</li> <li>for signal "0" residual current, max.</li> </ul>	<p>5 mA</p> <p>300 mA</p> <p>0.4 mA</p>
<b>Output delay with resistive load</b>	
<ul style="list-style-type: none"> <li>"0" to "1", max.</li> </ul>	500 µs
<b>Switching frequency</b>	
<ul style="list-style-type: none"> <li>with resistive load, max.</li> <li>with inductive load, max.</li> </ul>	<p>500 Hz</p> <p>0.5 Hz</p>
<b>Relay outputs</b>	
<ul style="list-style-type: none"> <li>Number of relay outputs</li> <li>Number of operating cycles, max.</li> </ul>	<p>4</p> <p>50 000</p>
<b>Switching capacity of contacts</b>	
— with resistive load, max.	1 A
<b>Cable length</b>	
<ul style="list-style-type: none"> <li>shielded, max.</li> </ul>	600 m
<b>Analog outputs</b>	
Number of analog outputs	4
<b>Output ranges, voltage</b>	
<ul style="list-style-type: none"> <li>-10 V to +10 V</li> </ul>	Yes
<b>Analog value generation for the outputs</b>	
<b>Integration and conversion time/resolution per channel</b>	
<ul style="list-style-type: none"> <li>Resolution with overrange (bit including sign), max.</li> </ul>	15 bit
<b>Encoder</b>	
Number of connectable encoders, max.	4
<b>Connectable encoders</b>	
<ul style="list-style-type: none"> <li>Incremental encoder (symmetrical)</li> <li>Absolute encoder (SSI)</li> <li>2-wire sensor</li> <li>— permissible quiescent current (2-wire sensor), max.</li> </ul>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>2 mA</p>
<b>Encoder signals, incremental encoder (symmetrical)</b>	
<ul style="list-style-type: none"> <li>Trace mark signals</li> <li>Zero mark signal</li> <li>Input voltage</li> <li>Input frequency, max.</li> <li>Cable length, shielded, max.</li> </ul>	<p>A, notA, B, notB</p> <p>N, notN</p> <p>5 V difference signal (phys. RS 422)</p> <p>1 MHz</p> <p>35 m; 35 m at max. 500 kHz; 10 m at max. 1 MHz</p>
<b>Encoder signals, absolute encoder (SSI)</b>	
<ul style="list-style-type: none"> <li>Input signal</li> <li>Data signal</li> <li>Clock signal</li> <li>Telegram length, parameterizable</li> <li>Clock frequency, max.</li> <li>Binary code</li> <li>Gray code</li> <li>Cable length, shielded, max.</li> </ul>	<p>5 V difference signal (phys. RS 422)</p> <p>DATA, notDATA</p> <p>CL, notCL</p> <p>13, 21, 24 bit</p> <p>1.5 MHz; 187.5 KHz 1.5 MHz (parameterizable)</p> <p>Yes</p> <p>Yes</p> <p>250 m; 250 m at 187.5 kHz, 10 m at 1.5 MHz</p>
<b>Interrupts/diagnostics/status information</b>	
<b>Alarms</b>	
<ul style="list-style-type: none"> <li>Diagnostic alarm</li> </ul>	Yes
<b>Drive interface</b>	
Number of drive interfaces	4
<b>Analog drive</b>	
Setpoint signal	
— Short-circuit proof	Yes; max. 45 mA, min. 3.3 kOhm load impedance

— Rated voltage range	-10.5 V to +10.5 V
— Output current	-3 to +3 mA
<b>Output controller enable</b>	
— Number of relay contacts	4
— Switching voltage, max.	30 V
— Switching current, max.	1 A
— Switching capacity, max.	30 VA
— Number of switching cycles, min.	50 000; at 30 V DC, 1 A
— Cable length, shielded, max.	35 m

<b>Stepper drive</b>	
• Differential output voltage, min.	2 V; R = 100 Ohm
• Differential output voltage for signal "0", max.	1 V; For I = -20 mA
• Differential output voltage for signal "1", min.	3.7 V; 3.7 V at I = -20 mA; 4.5 V at I = -100 µA,
• Load resistance, min.	55 Ω
• Output current, max.	60 mA
• Pulse frequency	750 kHz
• Cable length, shielded, max.	50 m; in hybrid operation with analog axes 35 m, in asymmetrical transmission 10 m

### Potential separation

<b>Potential separation digital inputs</b>	
• Potential separation digital inputs	Yes; to encoders, analog outputs, DP interface; no to other DI/DOs

<b>Potential separation digital outputs</b>	
• Potential separation digital outputs	Yes; to encoders, analog outputs, DP interface; no to other DI/DOs

### Ambient conditions

<b>Ambient temperature during operation</b>	
• min.	0 °C
• max.	55 °C

<b>Ambient temperature during storage/transportation</b>	
• min.	-40 °C
• max.	70 °C

### Connection method

required front connector	40-pin
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### Dimensions

Width	160 mm
Height	125 mm
Depth	118 mm

### Weights

Weight, approx.	1 kg
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### Classifications

	Version	Classification
eClass	14	27-24-22-05
eClass	12	27-24-22-05
eClass	9.1	27-24-22-05
eClass	9	27-24-22-05
eClass	8	27-24-22-05
eClass	7.1	27-24-22-05
eClass	6	27-24-22-05
ETIM	10	EC001422
ETIM	9	EC001422
ETIM	8	EC001422
ETIM	7	EC001422
IDEA	4	3567
UNSPSC	15	32-15-17-05

### Approvals / Certificates

<b>General Product Approval</b>	<b>EMV</b>	<b>For use in hazardous locations</b>
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[Manufacturer Declaration](#)



[Manufacturer Declaration](#)



For use in hazardous locations

Maritime application

[EM](#)



Maritime application

[NK / Nippon Kaiji Kyokai](#)



[CCS \(China Classification Society\)](#)

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