

SIMATIC S7-300, INTERFACE MODULE IM174, FOR CONNECTING ANALOG DRIVES AND STEP DRIVES VIA ISOCHRONOUS PROFIBUS TO MOTION CONTROLLERS 4 CHANNELS (4 ENCOD.INP., 4 AO) CONFIGURABLE WITH STEP7 V5.4 SP4



Figure similar

### Supply voltage

Rated value (DC)	
<ul style="list-style-type: none"> <li>• 24 V DC</li> </ul>	Yes
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	
<ul style="list-style-type: none"> <li>• 5 V</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Output current, max.</li> </ul>	1.2 A
<ul style="list-style-type: none"> <li>• Cable length, max.</li> </ul>	25 m
24 V encoder supply	
<ul style="list-style-type: none"> <li>• 24 V</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Output current, max.</li> </ul>	1.4 A
<ul style="list-style-type: none"> <li>• Cable length, max.</li> </ul>	100 m
Absolute encoder (SSI) encoder supply	
<ul style="list-style-type: none"> <li>• Absolute encoder (SSI)</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• short-circuit protection</li> </ul>	Yes

### Power losses

Power loss, typ.	12 W
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### Digital inputs

Number of digital inputs	10
<b>Input voltage</b>	
• for signal "0"	-3 to +5V
• for signal "1"	+11 to +30V
<b>Input current</b>	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	8 mA
<b>Input delay (for rated value of input voltage)</b>	
for standard inputs	
— at "0" to "1", min.	15 $\mu$ s
<b>Cable length</b>	
• shielded, max.	100 m
<b>Digital outputs</b>	
Number of digital outputs	8
short-circuit protection	Yes
<b>Switching capacity of the outputs</b>	
• with resistive load, max.	1 A
• on lamp load, max.	30 W
<b>Output voltage</b>	
• Rated value (DC)	24 V; L+
• for signal "1", min.	L+ (-3 V)
• for signal "1", max.	3 V
<b>Output current</b>	
• for signal "1" permissible range for 0 to 55 °C, min.	5 mA
• for signal "1" permissible range for 0 to 55 °C, max.	300 mA
• for signal "0" residual current, max.	0.4 mA
<b>Output delay with resistive load</b>	
• "0" to "1", max.	500 $\mu$ s
<b>Switching frequency</b>	
• with resistive load, max.	500 Hz
• with inductive load, max.	0.5 Hz
<b>Relay outputs</b>	
• Number of relay outputs	4
• Number of operating cycles, max.	50 000
<b>Switching capacity of contacts</b>	
— with resistive load, max.	1 A
<b>Cable length</b>	
• shielded, max.	600 m
<b>Analog outputs</b>	

Number of analog outputs	4
Output ranges, voltage	
<ul style="list-style-type: none"> <li>-10 V to +10 V</li> </ul>	Yes
<b>Analog value creation</b>	
Integration and conversion time/resolution per channel	
<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
Connectable encoders	
<ul style="list-style-type: none"> <li>Incremental encoder (symmetrical)</li> <li>Absolute encoder (SSI)</li> <li>2-wire sensor <ul style="list-style-type: none"> <li>— Permissible quiescent current (2-wire sensor), max.</li> </ul> </li> </ul>	Yes Yes Yes 2 mA
Encoder signals, incremental encoder (symmetrical)	
<ul style="list-style-type: none"> <li>Trace mark signals</li> <li>Zero mark signal</li> <li>Input signal</li> <li>Input frequency, max.</li> <li>Cable length, shielded, max.</li> </ul>	A, notA, B, notB N, notN 5 V difference signal (phys. RS 422) 1 MHz 35 m; 35 m at max. 500 kHz; 10 m at max. 1 MHz
Encoder signals, absolute encoder (SSI)	
<ul style="list-style-type: none"> <li>Input signal</li> <li>Data signal</li> <li>Clock signal</li> <li>Message frame length, parameterizable</li> <li>Clock frequency, max.</li> <li>Binary code</li> <li>Gray code</li> <li>Cable length, shielded, max.</li> </ul>	5 V difference signal (phys. RS 422) DATA, notDATA CL, notCL 13, 21, 24 bit 1.5 MHz; 187.5 KHz 1.5 MHz (parameterizable) 1 1 250 m; 250 m at 187.5 kHz, 10 m at 1.5 MHz
<b>Isochronous mode</b>	
Isochronous operation (application synchronized up to terminal)	Yes
shortest clock pulse	1.5 ms
<b>Interrupts/diagnostics/status information</b>	
Alarms	
<ul style="list-style-type: none"> <li>Diagnostic alarm</li> </ul>	Yes
<b>Drive interface</b>	
Number of drive interfaces	4
Analog drive	

<b>Setpoint signal</b>	
— Short circuit proof	Yes; max. 45 mA, min. 3.3 kOhm load impedance
— Range of rated voltage	-10.5 V to +10.5 V
— Output current	-3 to +3 mA
<b>Output controller release</b>	
— Number of relay contacts	4
— Switching voltage, max.	30 V
— Switching current, max.	1 A
— Switching capacity, max.	30 V·A
— Number of switching cycles, min.	50 000; at 30 V DC, 1 A
— Cable length (shielded), max.	35 m
<b>Signal output I</b>	
• Number of relay contacts	2
• Switching voltage, max.	30 V
• Switching current, max.	1 A
• Switching capacity, max.	30 V·A
• Number of switching cycles, min.	50 000; at 30 V DC, 1 A
• Cable length (shielded), max.	35 m
<b>Signal output II</b>	
• Differential output voltage, min.	2 V; R = 100 Ohm
• Differential output voltage for signal "1", min.	3.7 V; 3.7 V at I = -20 mA; 4.5 V at I = -100 µA,
• Differential output voltage for signal "0", max.	1 V; For I = -20 mA
• Load resistance, min.	55 Ω
• Output current, max.	60 mA
<b>Signal output III</b>	
• Pulse frequency	750 kHz
• Cable length (shielded), max.	50 m; in hybrid operation with analog axes 35 m, in asymmetrical transmission 10 m
<b>Galvanic isolation</b>	
<b>Galvanic isolation digital inputs</b>	
• Galvanic isolation digital inputs	Yes; to encoders, analog outputs, DP interface; no to other DI/DOs
<b>Galvanic isolation digital outputs</b>	
• Galvanic isolation digital outputs	Yes; to encoders, analog outputs, DP interface; no to other DI/DOs
<b>Degree and class of protection</b>	
Degree of protection to EN 60529	
• IP20	Yes
<b>Ambient conditions</b>	
<b>Ambient temperature in operation</b>	
• Min.	0 °C

• max.	55 °C
<b>Storage/transport temperature</b>	
• Min.	-40 °C
• max.	70 °C
<b>Relative humidity</b>	
• Humidity class F	Yes
<b>Connection method</b>	
required front connector	40-pin
<b>Dimensions</b>	
Width	160 mm
Height	125 mm
Depth	118 mm
<b>Weights</b>	
Weight, approx.	1 kg
<b>last modified:</b>	12.03.2015