

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 $\mu$ s
Cable length	
• shielded, max.	100 m
Digital outputs	
Number of digital outputs	8
Short-circuit protection	Yes
Switching capacity of the outputs	
• with resistive load, max.	1 A
• on lamp load, max.	30 W
Output voltage	
• Rated value (DC)	24 V; L+
• for signal "1", min.	L+ (-3 V)
• for signal "1", max.	3 V
Output current	
• 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
Output delay with resistive load	
• "0" to "1", max.	500 $\mu$ s
Switching frequency	
• with resistive load, max.	500 Hz
• with inductive load, max.	0.5 Hz
Relay outputs	

• 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
<b>Output ranges, voltage</b>	
• -10 V to +10 V	Yes
<b>Analog value generation for the outputs</b>	
<b>Integration and conversion time/resolution per channel</b>	
• Resolution with overrange (bit including sign), max.	15 bit
<b>Encoder</b>	
Number of connectable encoders, max.	4
<b>Connectable encoders</b>	
• Incremental encoder (symmetrical)	Yes
• Absolute encoder (SSI)	Yes
• 2-wire sensor	Yes
— permissible quiescent current (2-wire sensor), max.	2 mA
<b>Encoder signals, incremental encoder (symmetrical)</b>	
• Trace mark signals	A, notA, B, notB
• Zero mark signal	N, notN
• Input voltage	5 V difference signal (phys. RS 422)
• Input frequency, max.	1 MHz
• Cable length, shielded, max.	35 m; 35 m at max. 500 kHz; 10 m at max. 1 MHz
<b>Encoder signals, absolute encoder (SSI)</b>	
• Input signal	5 V difference signal (phys. RS 422)
• Data signal	DATA, notDATA
• Clock signal	CL, notCL
• Telegram length, parameterizable	13, 21, 24 bit
• Clock frequency, max.	1.5 MHz; 187.5 kHz 1.5 MHz (parameterizable)
• Binary code	Yes
• Gray code	Yes
• Cable length, shielded, max.	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

Interrupts/diagnostics/status information	
<b>Alarms</b>	
• Diagnostic alarm	Yes
<b>Drive interface</b>	
Number of drive interfaces	4
<b>Analog drive</b>	
<b>Setpoint signal</b>	
— 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 V·A
— 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
<b>Potential separation</b>	
<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
<b>Degree and class of protection</b>	
Degree of protection acc. to EN 60529	IP20
<b>Ambient conditions</b>	
<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

#### Dimensions

Width 160 mm  
Height 125 mm  
Depth 118 mm

#### Weights

Weight, approx. 1 kg

**last modified:** 05/29/2019