

SIMATIC S7-400, control module FM 455 C, 16 channels,
continuous, 8/16 AI + 16 DI+ 16 AO



Figure similar

Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	20.4 V
• permissible range, upper limit (DC)	28.8 V
Input current	
from load voltage L+ (without load), max.	440 mA; typ. 370 mA
Power loss	
Power loss, typ.	12 W
Digital inputs	
Number of digital inputs	16
Input characteristic curve in accordance with IEC 61131, type 2	Yes
Input voltage	
• Rated value (DC)	24 V
• for signal "0"	-3 to +5V

• for signal "1"	13 to 30V
Input current	
• for signal "1", typ.	7 mA
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	600 m
Analog inputs	
Number of analog inputs	16; With thermocouples or 2-wire connection; 8 with Pt 100 or 4-wire connection
permissible input voltage for voltage input (destruction limit), max.	20 V
permissible input current for current input (destruction limit), max.	40 mA
Input ranges	
• Voltage	Yes
• Current	Yes
• Thermocouple	Yes
• Resistance thermometer	Yes
Input ranges (rated values), voltages	
• 0 to +10 V	Yes
— Input resistance (0 to 10 V)	100 k Ω
• -1.75 V to +11.75 V	Yes
— Input resistance (-1.75 V to +11.75 V)	100 k Ω
• -80 mV to +80 mV	Yes
— Input resistance (-80 mV to +80 mV)	10 M Ω
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	50 Ω
• 0 to 23.5 mA	Yes
— Input resistance (0 to 23.5 mA)	50 Ω
• -3.5 mA to +23.5 mA	Yes
— Input resistance (-3.5 mA to +23.5 mA)	50 Ω
• 4 mA to 20 mA	Yes
— Input resistance (4 mA to 20 mA)	50 Ω
Input ranges (rated values), thermocouples	
• Type B	Yes
— Input resistance (Type B)	10 M Ω
• Type J	Yes
— Input resistance (type J)	10 M Ω
• Type K	Yes
— Input resistance (Type K)	10 M Ω
• Type R	Yes

— Input resistance (Type R)	10 M Ω
• Type S	Yes
— Input resistance (Type S)	10 M Ω
Input ranges (rated values), resistance thermometer	
• Pt 100	Yes
— Input resistance (Pt 100)	10 M Ω
Thermocouple (TC)	
Temperature compensation	
— internal temperature compensation	Yes; Parameterizable
— external temperature compensation with Pt100	Yes; Parameterizable
Characteristic linearization	
• parameterizable	Yes
— for thermocouples	Type B, J, K, R, S
— for resistance thermometer	Pt100 (standard)
Cable length	
• shielded, max.	200 m; 50 m at 80 mV and thermocouples
Analog outputs	
Number of analog outputs	16
Voltage output, short-circuit protection	Yes
Voltage output, short-circuit current, max.	25 mA
Current output, no-load voltage, max.	18 V
Output ranges, voltage	
• 0 to 10 V	Yes
• -10 V to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
Connection of actuators	
• for voltage output two-wire connection	Yes
• for current output two-wire connection	Yes
Load impedance (in rated range of output)	
• with voltage outputs, min.	1 k Ω
• with voltage outputs, capacitive load, max.	1 μ F
• with current outputs, max.	500 Ω
• with current outputs, inductive load, max.	1 mH
Cable length	
• shielded, max.	200 m; 50 m at 80 mV and thermocouples
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	

- Resolution with overrange (bit including sign), max.

14 bit; 12 bit or 14 bit, parameterizable

Analog value generation for the outputs

Settling time

- for resistive load 0.1 ms
- for capacitive load 3.3 ms
- for inductive load 0.5 ms

Encoder

Connection of signal encoders

- for voltage measurement Yes
- for current measurement as 4-wire transducer Yes

Connectable encoders

- 2-wire sensor Yes
- permissible quiescent current (2-wire sensor), max. 1.5 mA

Errors/accuracies

Operational error limit in overall temperature range

- Voltage, relative to input range, (+/-) ± 0.6 to $\pm 1\%$
- Current, relative to input range, (+/-) ± 0.6 to $\pm 1\%$
- Resistance thermometer, relative to input range, (+/-) ± 0.6 to $\pm 1\%$
- Voltage, relative to output range, (+/-) 0.5 %
- Current, relative to output range, (+/-) 0.6 %

Basic error limit (operational limit at 25 °C)

- Voltage, relative to input range, (+/-) ± 0.4 to ± 0.6 %
- Current, relative to input range, (+/-) ± 0.4 to ± 0.6 %
- Resistance thermometer, relative to input range, (+/-) ± 0.4 to ± 0.6 %
- Voltage, relative to output range, (+/-) 0.4 %
- Current, relative to output range, (+/-) 0.5 %

Interrupts/diagnostics/status information

Substitute values connectable

Yes; Parameterizable

Integrated Functions

Control technology

- Number of closed-loop controllers 16; With thermocouples or 2-wire connection; 8 with Pt 100 or 4-wire connection

Potential separation

Potential separation controller

- between the channels No
- between the channels and backplane bus Yes; Optocoupler

Isolation

Isolation tested with 500 V DC

Connection method

required front connector 2x 48-pin

Dimensions

Width 50 mm

Height 290 mm

Depth 210 mm

Weights

Weight, approx. 1 400 g

last modified: 10/13/2020