



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 losses

Power loss, typ.	12 W
Power loss, max.	17.3 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), thermoelements	
• 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 creation	
Measurement principle	integrating
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	14 bit; 12 or 14 bit, parameterizable
• Conversion time (per channel)	16.67 ms; for 12 bit: 16 2/3 ms for 60 Hz, 20 ms for 50 Hz; for 14 bit: 100 ms for 50 and 60 Hz
Settling time	
• for resistive load	0.2 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

- Linearity error (relative to input range), (+/-) 0.05 %
- Temperature error (relative to input range), (+/-) 0.005 %/K
- Linearity error (relative to output range), (+/-) 0.05 %
- Temperature error (relative to output range), (+/-) 0.02 %/K

Operational limit in overall temperature range

- Voltage, relative to input area, (+/-) +/-0.6 to +/-1%
- Current, relative to input area, (+/-) +/-0.6 to +/-1%
- Resistance thermometer, relative to input area, (+/-) +/-0.6 to +/-1%
- Voltage, relative to output area, (+/-) 0.5 %
- Current, relative to output area, (+/-) 0.6 %

Basic error limit (operational limit at 25 °C)

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

Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ interference frequency

- Series mode interference (peak value of interference < rated value of input range), min. 40 dB
- common mode voltage ($U_{SS} < 2.5 \text{ V}$), min. 70 dB

Interrupts/diagnostics/status information

- Substitute values connectable Yes; Parameterizable

Control technology

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

Galvanic isolation

Galvanic isolation controller

- between the channels No

- between the channels and the backplane bus Yes; Optocoupler

Permissible potential difference

between inputs and MANA (UCM)	2.5 V DC
between M internally and the inputs	75V DC/60V AC

Isolation

Isolation checked 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: 12.03.2015