

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
<b>Input current</b>	
• for signal "1", typ.	7 mA
<b>Cable length</b>	
• shielded, max.	1 000 m
• unshielded, max.	600 m
<b>Analog inputs</b>	
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
<b>Input ranges</b>	
• Voltage	Yes
• Current	Yes
• Thermocouple	Yes
• Resistance thermometer	Yes
<b>Input ranges (rated values), voltages</b>	
• 0 to +10 V	Yes
— Input resistance (0 to 10 V)	100 k $\Omega$
• -1.75 V to +11.75 V	Yes
— Input resistance (-1.75 V to +11.75 V)	100 k $\Omega$
• -80 mV to +80 mV	Yes
— Input resistance (-80 mV to +80 mV)	10 M $\Omega$
<b>Input ranges (rated values), currents</b>	
• 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	50 $\Omega$
• 0 to 23.5 mA	Yes
— Input resistance (0 to 23.5 mA)	50 $\Omega$
• -3.5 mA to +23.5 mA	Yes
— Input resistance (-3.5 mA to +23.5 mA)	50 $\Omega$
• 4 mA to 20 mA	Yes
— Input resistance (4 mA to 20 mA)	50 $\Omega$
<b>Input ranges (rated values), thermocouples</b>	
• Type B	Yes
— Input resistance (Type B)	10 M $\Omega$
• Type J	Yes
— Input resistance (type J)	10 M $\Omega$
• Type K	Yes
— Input resistance (Type K)	10 M $\Omega$
• Type R	Yes

— Input resistance (Type R)	10 M $\Omega$
• Type S	Yes
— Input resistance (Type S)	10 M $\Omega$
<b>Input ranges (rated values), resistance thermometer</b>	
• Pt 100	Yes
— Input resistance (Pt 100)	10 M $\Omega$
<b>Thermocouple (TC)</b>	
<b>Temperature compensation</b>	
— internal temperature compensation	Yes; Parameterizable
— external temperature compensation with Pt100	Yes; Parameterizable
<b>Characteristic linearization</b>	
• parameterizable	Yes
<b>Cable length</b>	
• shielded, max.	200 m; 50 m at 80 mV and thermocouples
<b>Analog outputs</b>	
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
<b>Output ranges, voltage</b>	
• 0 to 10 V	Yes
• -10 V to +10 V	Yes
<b>Output ranges, current</b>	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
<b>Connection of actuators</b>	
• for voltage output two-wire connection	Yes
• for current output two-wire connection	Yes
<b>Load impedance (in rated range of output)</b>	
• with voltage outputs, min.	1 k $\Omega$
• with voltage outputs, capacitive load, max.	1 $\mu$ F
• with current outputs, max.	500 $\Omega$
• with current outputs, inductive load, max.	1 mH
<b>Cable length</b>	
• shielded, max.	200 m; 50 m at 80 mV and thermocouples
<b>Analog value generation for the inputs</b>	
<b>Integration and conversion time/resolution per channel</b>	
• 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, (+/-)                | $\pm 0.6$ to $\pm 1\%$ |
| • Current, relative to input range, (+/-)                | $\pm 0.6$ to $\pm 1\%$ |
| • Resistance thermometer, relative to input range, (+/-) | $\pm 0.6$ 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, (+/-)                | $\pm 0.4$ to $\pm 0.6$ % |
| • Current, relative to input range, (+/-)                | $\pm 0.4$ to $\pm 0.6$ % |
| • Resistance thermometer, relative to input range, (+/-) | $\pm 0.4$ to $\pm 0.6$ % |
| • 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:** 06/09/2020