



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
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 kΩ
• -1.75 V to +11.75 V	Yes
— Input resistance (-1.75 V to +11.75 V)	100 kΩ

<ul style="list-style-type: none"> <li>• -80 mV to +80 mV</li> <li>— Input resistance (-80 mV to +80 mV)</li> </ul>	Yes 10 MΩ
<b>Input ranges (rated values), currents</b>	
<ul style="list-style-type: none"> <li>• 0 to 20 mA</li> <li>— Input resistance (0 to 20 mA)</li> <li>• 0 to 23.5 mA</li> <li>— Input resistance (0 to 23.5 mA)</li> <li>• -3.5 mA to +23.5 mA</li> <li>— Input resistance (-3.5 mA to +23.5 mA)</li> <li>• 4 mA to 20 mA</li> <li>— Input resistance (4 mA to 20 mA)</li> </ul>	Yes 50 Ω Yes 50 Ω Yes 50 Ω Yes 50 Ω
<b>Input ranges (rated values), thermocouples</b>	
<ul style="list-style-type: none"> <li>• Type B</li> <li>— Input resistance (Type B)</li> <li>• Type J</li> <li>— Input resistance (type J)</li> <li>• Type K</li> <li>— Input resistance (Type K)</li> <li>• Type R</li> <li>— Input resistance (Type R)</li> <li>• Type S</li> <li>— Input resistance (Type S)</li> </ul>	Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ
<b>Input ranges (rated values), resistance thermometer</b>	
<ul style="list-style-type: none"> <li>• Pt 100</li> <li>— Input resistance (Pt 100)</li> </ul>	Yes 10 MΩ
<b>Thermocouple (TC)</b>	
<b>Temperature compensation</b>	
<ul style="list-style-type: none"> <li>— internal temperature compensation</li> <li>— external temperature compensation with Pt100</li> </ul>	Yes; Parameterizable Yes; Parameterizable
<b>Characteristic linearization</b>	
<ul style="list-style-type: none"> <li>• parameterizable</li> <li>— for thermocouples</li> <li>— for resistance thermometer</li> </ul>	Yes Type B, J, K, R, S Pt100 (standard)
<b>Cable length</b>	
<ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>	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>	
<ul style="list-style-type: none"> <li>• 0 to 10 V</li> <li>• -10 V to +10 V</li> </ul>	Yes Yes
<b>Output ranges, current</b>	
<ul style="list-style-type: none"> <li>• 0 to 20 mA</li> <li>• -20 mA to +20 mA</li> <li>• 4 mA to 20 mA</li> </ul>	Yes Yes Yes
<b>Connection of actuators</b>	
<ul style="list-style-type: none"> <li>• for voltage output two-wire connection</li> <li>• for current output two-wire connection</li> </ul>	Yes Yes
<b>Load impedance (in rated range of output)</b>	
<ul style="list-style-type: none"> <li>• with voltage outputs, min.</li> <li>• with voltage outputs, capacitive load, max.</li> <li>• with current outputs, max.</li> <li>• with current outputs, inductive load, max.</li> </ul>	1 kΩ 1 μF 500 Ω 1 mH
<b>Cable length</b>	
<ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>	200 m; 50 m at 80 mV and thermocouples
<b>Analog value generation for the inputs</b>	
Integration and conversion time/resolution per channel	

- Resolution with overrange (bit including sign), max.
- Conversion time (per channel)

14 bit; 12 bit or 14 bit, parameterizable  
 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 Hz and 60 Hz

### 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 ±1%
• Current, relative to input range, (+/-)	±0.6 to ±1%
• Resistance thermometer, relative to input range, (+/-)	±0.6 to ±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
-----------------	---------

### Classifications

	Version	Classification
eClass	14	27-24-22-05
eClass	12	27-24-22-05
eClass	9.1	27-24-22-05
eClass	9	27-24-22-05
eClass	8	27-24-22-05
eClass	7.1	27-24-22-05
eClass	6	27-24-22-05

ETIM	10	EC001422
ETIM	9	EC001422
ETIM	8	EC001422
ETIM	7	EC001422
IDEA	4	3567
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval



EG-Konf.

[Miscellaneous](#)



UL

[Metrological Approval](#)



General Product Approval

EMV

For use in hazardous locations



RCM

[China RoHS](#)

[Miscellaneous](#)



RCM



RCM



IECEX

For use in hazardous locations



ATEX

[EM](#)



CCC



IECEX

[Type Examination Certificate](#)



ATEX

Maritime application



ABS



BUREAU  
VERITAS



DNV



LRS

[NK / Nippon Kaiji Kyokai](#)



PRS

Maritime application



RINA



RMRS

[CCS \(China Classification Society\)](#)

last modified:

6/7/2025