



SIMATIC S7-400, control module FM 455 S, 16 channels, step and pulse, 8/16 AI + 16 DI+ 32 DO

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.	400 mA; typ. 330 mA
Power loss	
Power loss, typ.	10.7 W
Power loss, max.	16.2 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
Digital outputs	
Number of digital outputs	32
Short-circuit protection	Yes; Electronic
Limitation of inductive shutdown voltage to	L+ (-1.5 V)
Controlling a digital input	Yes
Switching capacity of the outputs	
• on lamp load, max.	5 W
Load resistance range	
• lower limit	240 Ω
• upper limit	4 kΩ
Output voltage	
• for signal "1", min.	L+ (-2.5 V)
Output current	
• for signal "1" rated value	0.1 A
• for signal "1" permissible range for 0 to 60 °C, min.	5 mA
• for signal "1" permissible range for 0 to 60 °C, max.	150 mA
• for signal "0" residual current, max.	0.5 mA

<b>Parallel switching of two outputs</b>	
• for logic links	Yes
<b>Switching frequency</b>	
• with resistive load, max.	100 Hz
• with inductive load, max.	0.5 Hz
• on lamp load, max.	100 Hz
<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 — Input resistance (0 to 10 V)	Yes 100 kΩ
• -1.75 V to +11.75 V — Input resistance (-1.75 V to +11.75 V)	Yes 100 kΩ
• -80 mV to +80 mV — Input resistance (-80 mV to +80 mV)	Yes 10 MΩ
<b>Input ranges (rated values), currents</b>	
• 0 to 20 mA — Input resistance (0 to 20 mA)	Yes 50 Ω
• 0 to 23.5 mA — Input resistance (0 to 23.5 mA)	Yes 50 Ω
• -3.5 mA to +23.5 mA — Input resistance (-3.5 mA to +23.5 mA)	Yes 50 Ω
• 4 mA to 20 mA — Input resistance (4 mA to 20 mA)	Yes 50 Ω
<b>Input ranges (rated values), thermocouples</b>	
• type B — Input resistance (Type B)	Yes 10 MΩ
• Type J — Input resistance (type J)	Yes 10 MΩ
• Type K — Input resistance (Type K)	Yes 10 MΩ
• Type R — Input resistance (Type R)	Yes 10 MΩ
• Type S — Input resistance (Type S)	Yes 10 MΩ
<b>Input ranges (rated values), resistance thermometer</b>	
• Pt 100 — Input resistance (Pt 100)	Yes 10 MΩ
<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 — for thermocouples — for resistance thermometer	Yes Type B, J, K, R, S Pt100 (standard)
<b>Cable length</b>	

• shielded, max.	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.	14 bit; 12 bit 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 Hz and 60 Hz
<b>Encoder</b>	
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
<b>Errors/accuracies</b>	
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%
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 %
<b>Interrupts/diagnostics/status information</b>	
Substitute values connectable	Yes; Parameterizable
<b>Integrated Functions</b>	
Control technology	
• Number of closed-loop controllers	16; With thermocouples or 2-wire connection; 8 with Pt 100 or 4-wire connection
<b>Potential separation</b>	
Potential separation controller	
• between the channels	No
• between the channels and backplane bus	Yes; Optocoupler
<b>Isolation</b>	
Isolation tested with	500 V DC
<b>Connection method</b>	
required front connector	2x 48-pin
<b>Dimensions</b>	
Width	50 mm
Height	290 mm
Depth	210 mm
<b>Weights</b>	
Weight, approx.	1 400 g
<b>Classifications</b>	

	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



[Miscellaneous](#)



[Metrological Approval](#)



General Product Approval

EMV

For use in hazardous locations



[China RoHS](#)

[Miscellaneous](#)



For use in hazardous locations



[EM](#)



[Type Examination Certificate](#)



Maritime application



[NK / Nippon Kaiji Kyokai](#)



Maritime application



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

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