



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
Parallel switching of two outputs	

• for logic links	Yes
Switching frequency	
• with resistive load, max.	100 Hz
• with inductive load, max.	0.5 Hz
• on lamp load, max.	100 Hz
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 — Input resistance (0 to 10 V)	Yes 100 k Ω
• -1.75 V to +11.75 V — Input resistance (-1.75 V to +11.75 V)	Yes 100 k Ω
• -80 mV to +80 mV — Input resistance (-80 mV to +80 mV)	Yes 10 M Ω
Input ranges (rated values), currents	
• 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
Input ranges (rated values), thermocouples	
• Type B — Input resistance (Type B)	Yes 10 M Ω
• Type J — Input resistance (type J)	Yes 10 M Ω
• Type K — Input resistance (Type K)	Yes 10 M Ω
• Type R — Input resistance (Type R)	Yes 10 M Ω
• Type S — Input resistance (Type S)	Yes 10 M Ω
Input ranges (rated values), resistance thermometer	
• Pt 100 — Input resistance (Pt 100)	Yes 10 M Ω
Thermocouple (TC)	
Temperature compensation	
— internal temperature compensation	Yes; Parameterizable
— external temperature compensation with Pt100	Yes; Parameterizable
Characteristic linearization	
• parameterizable — for thermocouples — for resistance thermometer	Yes Type B, J, K, R, S Pt100 (standard)
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		
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%		
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 %		
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	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](#)

[KC](#)

General Product Ap-
proval

EMV

For use in hazardous locations



[EM](#)

For use in hazardous locations

Marine / Shipping



[Type Examination Cer-
tificate](#)



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tion Society\)](#)

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