



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+	
<ul style="list-style-type: none"> Rated value (DC) 	24 V
<ul style="list-style-type: none"> permissible range, lower limit (DC) 	20.4 V
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> Rated value (DC) 	24 V
<ul style="list-style-type: none"> for signal "0" 	-3 to +5V
<ul style="list-style-type: none"> for signal "1" 	13 to 30V
Input current	
<ul style="list-style-type: none"> for signal "1", typ. 	7 mA
Cable length	
<ul style="list-style-type: none"> shielded, max. 	1 000 m
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> on lamp load, max. 	5 W
Load resistance range	
<ul style="list-style-type: none"> lower limit 	240 Ω
<ul style="list-style-type: none"> upper limit 	4 kΩ
Output voltage	
<ul style="list-style-type: none"> for signal "1", min. 	L+ (-2.5 V)
Output current	
<ul style="list-style-type: none"> for signal "1" rated value 	0.1 A

<ul style="list-style-type: none"> • for signal "1" permissible range for 0 to 60 °C, min. • for signal "1" permissible range for 0 to 60 °C, max. • for signal "0" residual current, max. 	5 mA 150 mA 0.5 mA
Parallel switching of two outputs	
<ul style="list-style-type: none"> • for logic links 	Yes
Switching frequency	
<ul style="list-style-type: none"> • with resistive load, max. • with inductive load, max. • on lamp load, max. 	100 Hz 0.5 Hz 100 Hz
Cable length	
<ul style="list-style-type: none"> • shielded, max. • unshielded, max. 	1 000 m 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	
<ul style="list-style-type: none"> • Voltage • Current • Thermocouple • Resistance thermometer 	Yes Yes Yes Yes
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> • 0 to +10 V <ul style="list-style-type: none"> — Input resistance (0 to 10 V) • -1.75 V to +11.75 V <ul style="list-style-type: none"> — Input resistance (-1.75 V to +11.75 V) • -80 mV to +80 mV <ul style="list-style-type: none"> — Input resistance (-80 mV to +80 mV) 	Yes 100 kΩ Yes 100 kΩ Yes 10 MΩ
Input ranges (rated values), currents	
<ul style="list-style-type: none"> • 0 to 20 mA <ul style="list-style-type: none"> — Input resistance (0 to 20 mA) • 0 to 23.5 mA <ul style="list-style-type: none"> — Input resistance (0 to 23.5 mA) • -3.5 mA to +23.5 mA <ul style="list-style-type: none"> — Input resistance (-3.5 mA to +23.5 mA) • 4 mA to 20 mA <ul style="list-style-type: none"> — Input resistance (4 mA to 20 mA) 	Yes 50 Ω Yes 50 Ω Yes 50 Ω Yes 50 Ω
Input ranges (rated values), thermocouples	
<ul style="list-style-type: none"> • Type B <ul style="list-style-type: none"> — Input resistance (Type B) • Type J <ul style="list-style-type: none"> — Input resistance (type J) • Type K <ul style="list-style-type: none"> — Input resistance (Type K) • Type R <ul style="list-style-type: none"> — Input resistance (Type R) • Type S <ul style="list-style-type: none"> — Input resistance (Type S) 	Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ
Input ranges (rated values), resistance thermometer	
<ul style="list-style-type: none"> • Pt 100 <ul style="list-style-type: none"> — Input resistance (Pt 100) 	Yes 10 MΩ
Thermocouple (TC)	
Temperature compensation	
<ul style="list-style-type: none"> — internal temperature compensation — external temperature compensation with Pt100 	Yes; Parameterizable Yes; Parameterizable
Characteristic linearization	

<ul style="list-style-type: none"> parameterizable — for thermocouples — for resistance thermometer 	Yes Type B, J, K, R, S Pt100 (standard)
Cable length	
<ul style="list-style-type: none"> shielded, max. 	200 m; 50 m at 80 mV and thermocouples
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> Resolution with overrange (bit including sign), max. 	14 bit; 12 bit or 14 bit, parameterizable
Encoder	
Connection of signal encoders	
<ul style="list-style-type: none"> for voltage measurement for current measurement as 4-wire transducer 	Yes Yes
Connectable encoders	
<ul style="list-style-type: none"> 2-wire sensor — permissible quiescent current (2-wire sensor), max. 	Yes 1.5 mA
Errors/accuracies	
Operational error limit in overall temperature range	
<ul style="list-style-type: none"> Voltage, relative to input range, (+/-) Current, relative to input range, (+/-) Resistance thermometer, relative to input range, (+/-) 	±0.6 to ±1% ±0.6 to ±1% ±0.6 to ±1%
Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> Voltage, relative to input range, (+/-) Current, relative to input range, (+/-) Resistance thermometer, relative to input range, (+/-) 	±0.4 to ±0.6 % ±0.4 to ±0.6 % ±0.4 to ±0.6 %
Interrupts/diagnostics/status information	
Substitute values connectable	Yes; Parameterizable
Integrated Functions	
Control technology	
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> between the channels between the channels and backplane bus 	No 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:	12/18/2020 