



SIMATIC S7-400, function module FM 450-1 for counter function with 2 channels
incl. configuration package on CD

Supply voltage

Auxiliary voltage 1L+, load voltage 2L+

• Rated value (DC)	24 V
• permissible range, lower limit (DC)	20.4 V; Dynamic 18.5 V
• permissible range, upper limit (DC)	28.8 V; dynamic 30.2 V

Input current

from load voltage 1L+ (without load), max.	50 mA
from load voltage 2L+ (without load), max.	60 μ A
from backplane bus 5 V DC, max.	300 mA

Encoder supply

5 V encoder supply

• 5 V	Yes; 5.2 V $\pm$ 2 %
• Short-circuit protection	Yes
• Output current, max.	300 mA

24 V encoder supply

• 24 V	Yes; 1L+ (-3 V)
• Short-circuit protection	Yes
• Output current, max.	300 mA

Power loss

Power loss, typ.	6 W
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Digital inputs

Number of digital inputs	6
Functions	1 for gate start, 1 for gate stop, 1 for setting the counter

Input voltage

• for signal "0"	-28.8 ... +5V
• for signal "1"	+11 to +28.8V

Input current

• for signal "1", typ.	9 mA
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Input delay (for rated value of input voltage)

• Input frequency (with a time delay of 0.1 ms), max.	200 kHz
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for standard inputs

— parameterizable	Yes
— at "0" to "1", max.	2.5 μ s; $\geq$ 2.5 μ s (200 kHz); $\leq$ 25 μ s (20 kHz)

Digital outputs

Number of digital outputs	4
Short-circuit protection	Yes; Clocked electronically
Limitation of inductive shutdown voltage to	2L+ (-39 V)

Output voltage

• for signal "0", max.	3 V
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• for signal "1", min.	2L+ (-1,5 V)		
Output current			
• for signal "1" rated value	0.5 A; Res. / P.D. 5 W tungsten 24 V DC		
• for signal "1" permissible range for 0 to 60 °C, min.	5 mA		
• for signal "1" permissible range for 0 to 60 °C, max.	0.6 A		
Output delay with resistive load			
• "0" to "1", max.	300 μs		
Encoder			
Connectable encoders			
• Incremental encoder (symmetrical)	Yes; With 2 pulse trains offset by 90°		
• Incremental encoder (asymmetrical)	Yes		
• 24 V initiator	Yes		
• 24 V directional element	Yes; 1 pulse train, 1 direction level		
Interrupts/diagnostics/status information			
Status indicator	Yes; 14 green LEDs for status of CR, DIR, inputs and outputs		
Diagnostics function	Yes		
Alarms			
• Diagnostic alarm	Yes; Parameterizable		
• Hardware interrupt	Yes; Parameterizable		
Diagnoses			
• Diagnostic information readable	Yes		
Diagnostics indication LED			
• internal fault INTF (red)	Yes		
• external fault EXTf (red)	Yes		
• Status indicator digital input (green)	Yes		
• Status indicator digital output (green)	Yes		
Counter			
Number of counter inputs	2; 32 bit or ±31 bit		
Counter input 5 V			
• Type	RS 422		
• Terminating resistor	220 Ω		
• Differential input voltage	min. 0.5 V		
• Counting frequency, max.	500 kHz		
Counter input 24 V			
• Input voltage for signal "0"	-30 to +5 V		
• Input voltage for signal "1"	+11 to +30V		
• Input current for signal "1", typ.	9 mA		
• Counting frequency, max.	200 kHz		
• Minimum pulse width	≥ 2.5 μs (200 kHz); ≥ 25 μs (20 kHz) (parameterizable)		
Potential separation			
Potential separation digital inputs			
• between the channels and backplane bus	Yes; Optocoupler		
Potential separation digital outputs			
• between the channels and backplane bus	Yes; Optocoupler		
Potential separation counter			
• between the channels and backplane bus	Yes; Optocoupler		
Isolation			
Isolation tested with	500 V		
Connection method			
required front connector	1x 48-pin		
Dimensions			
Width	25 mm		
Height	290 mm		
Depth	210 mm		
Weights			
Weight, approx.	650 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	For use in hazardous locations
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[Miscellaneous](#)



[China RoHS](#)



For use in hazardous locations



[FM](#)



[Type Examination Certificate](#)



Maritime application



[NK / Nippon Kaiji Kyokai](#)



Maritime application

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

last modified: 6/7/2025