



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+	
<ul style="list-style-type: none"> <li>Rated value (DC)</li> </ul>	24 V
<ul style="list-style-type: none"> <li>permissible range, lower limit (DC)</li> </ul>	20.4 V; Dynamic 18.5 V
<ul style="list-style-type: none"> <li>permissible range, upper limit (DC)</li> </ul>	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 $\mu$ A
from backplane bus 5 V DC, max.	300 mA
Encoder supply	
5 V encoder supply	
<ul style="list-style-type: none"> <li>5 V</li> </ul>	Yes; 5.2 V $\pm$ 2 %
<ul style="list-style-type: none"> <li>Short-circuit protection</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Output current, max.</li> </ul>	300 mA
24 V encoder supply	
<ul style="list-style-type: none"> <li>24 V</li> </ul>	Yes; 1L+ (-3 V)
<ul style="list-style-type: none"> <li>Short-circuit protection</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Output current, max.</li> </ul>	300 mA
Power loss	
Power loss, typ.	6 W
Digital inputs	
Number of digital inputs	6
Functions	1 for gate start, 1 for gate stop, 1 for setting the counter
Input voltage	
<ul style="list-style-type: none"> <li>for signal "0"</li> </ul>	-28.8 ... +5V
<ul style="list-style-type: none"> <li>for signal "1"</li> </ul>	+11 to +28.8V
Input current	
<ul style="list-style-type: none"> <li>for signal "1", typ.</li> </ul>	9 mA
Input delay (for rated value of input voltage)	
<ul style="list-style-type: none"> <li>Input frequency (with a time delay of 0.1 ms), max.</li> </ul>	200 kHz
for standard inputs	
<ul style="list-style-type: none"> <li>parameterizable</li> </ul>	Yes
<ul style="list-style-type: none"> <li>at "0" to "1", max.</li> </ul>	2.5 $\mu$ s; $\geq$ 2.5 $\mu$ s (200 kHz); $\leq$ 25 $\mu$ 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	
<ul style="list-style-type: none"> <li>for signal "0", max.</li> </ul>	3 V
<ul style="list-style-type: none"> <li>for signal "1", min.</li> </ul>	2L+ (-1,5 V)

<b>Output current</b>		
<ul style="list-style-type: none"> <li>for signal "1" rated value</li> <li>for signal "1" permissible range for 0 to 60 °C, min.</li> <li>for signal "1" permissible range for 0 to 60 °C, max.</li> </ul>	0.5 A; Res. / P.D. 5 W tungsten 24 V DC 5 mA 0.6 A	
<b>Output delay with resistive load</b>		
<ul style="list-style-type: none"> <li>"0" to "1", max.</li> </ul>	300 µs	
<b>Encoder</b>		
<b>Connectable encoders</b>		
<ul style="list-style-type: none"> <li>Incremental encoder (symmetrical)</li> <li>Incremental encoder (asymmetrical)</li> <li>24 V initiator</li> <li>24 V directional element</li> </ul>	Yes; With 2 pulse trains offset by 90° Yes Yes Yes; 1 pulse train, 1 direction level	
<b>Interrupts/diagnostics/status information</b>		
Status indicator	Yes; 14 green LEDs for status of CR, DIR, inputs and outputs	
Diagnostics function	Yes	
<b>Alarms</b>		
<ul style="list-style-type: none"> <li>Diagnostic alarm</li> <li>Hardware interrupt</li> </ul>	Yes; Parameterizable Yes; Parameterizable	
<b>Diagnoses</b>		
<ul style="list-style-type: none"> <li>Diagnostic information readable</li> </ul>	Yes	
<b>Diagnostics indication LED</b>		
<ul style="list-style-type: none"> <li>internal fault INTF (red)</li> <li>external fault EXTF (red)</li> <li>Status indicator digital input (green)</li> <li>Status indicator digital output (green)</li> </ul>	Yes Yes Yes Yes	
<b>Counter</b>		
Number of counter inputs	2; 32 bit or ±31 bit	
<b>Counter input 5 V</b>		
<ul style="list-style-type: none"> <li>Type</li> <li>Terminating resistor</li> <li>Differential input voltage</li> <li>Counting frequency, max.</li> </ul>	RS 422 220 Ω min. 0.5 V 500 kHz	
<b>Counter input 24 V</b>		
<ul style="list-style-type: none"> <li>Input voltage for signal "0"</li> <li>Input voltage for signal "1"</li> <li>Input current for signal "1", typ.</li> <li>Counting frequency, max.</li> <li>Minimum pulse width</li> </ul>	-30 to +5 V +11 to +30V 9 mA 200 kHz ≥ 2.5 µs (200 kHz); ≥ 25 µs (20 kHz) (parameterizable)	
<b>Potential separation</b>		
<b>Potential separation digital inputs</b>		
<ul style="list-style-type: none"> <li>between the channels and backplane bus</li> </ul>	Yes; Optocoupler	
<b>Potential separation digital outputs</b>		
<ul style="list-style-type: none"> <li>between the channels and backplane bus</li> </ul>	Yes; Optocoupler	
<b>Potential separation counter</b>		
<ul style="list-style-type: none"> <li>between the channels and backplane bus</li> </ul>	Yes; Optocoupler	
<b>Isolation</b>		
Isolation tested with	500 V	
<b>connection method</b>		
required front connector	1x 48-pin	
<b>Dimensions</b>		
Width	25 mm	
Height	290 mm	
Depth	210 mm	
<b>Weights</b>		
Weight, approx.	650 g	
<b>Classifications</b>		
	<b>Version</b>	<b>Classification</b>
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	For use in hazardous locations
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[Miscellaneous](#)



For use in hazardous locations	Marine / Shipping
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[FM](#)



[Type Examination Certificate](#)



Marine / Shipping	
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[NK / Nippon Kaiji Kyokai](#)



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

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