



SIMATIC ET 200SP, F-TM Count 1x1Vpp sin/cos HF, PROFIsafe, 1 channel, for incremental rotary encoders, sin/cos 1 Vpp, suitable for BU type A0, pack quantity: 1 unit

General information	
Product type designation	F-TM Count 1x1Vpp sin/cos HF
Firmware version	V1.0
<ul style="list-style-type: none"> <li>FW update possible</li> </ul>	Yes
usable BaseUnits	BU type A0
Color code for module-specific color identification plate	CC01
Product function	
<ul style="list-style-type: none"> <li>I&amp;M data</li> </ul>	Yes; I&M0 to I&M3
Engineering with	
<ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	Step 7 V17 or higher: use GSDML for prior versions
Supply voltage	
power supply according to NEC Class 2 required	No
Load voltage L+	
<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
<ul style="list-style-type: none"> <li>permissible range, upper limit (DC)</li> </ul>	28.8 V
<ul style="list-style-type: none"> <li>Reverse polarity protection</li> </ul>	Yes
Input current	
Current consumption, max.	50 mA; without load, 150 mA with 300 mA encoder load
Encoder supply	
5 V encoder supply	
<ul style="list-style-type: none"> <li>5 V</li> </ul>	Yes; 5.1 V $\pm$ 3.5 %
<ul style="list-style-type: none"> <li>Short-circuit protection</li> </ul>	Yes; Electronic overload protection; no protection on applying a normal or counter voltage.
<ul style="list-style-type: none"> <li>Output current, max.</li> </ul>	300 mA
Power loss	
Power loss, typ.	1.25 W
Address area	
Address space per module	
<ul style="list-style-type: none"> <li>Inputs</li> </ul>	14 byte; S7-300/400F CPU, 13 byte
<ul style="list-style-type: none"> <li>Outputs</li> </ul>	5 byte; S7-300/400F CPU, 4 byte
Hardware configuration	
Automatic encoding	Yes
<ul style="list-style-type: none"> <li>Electronic coding element type H</li> </ul>	Yes
Digital inputs	
Number of digital inputs	1; (counter input)
Digital inputs, parameterizable	Yes
Digital input functions, parameterizable	
<ul style="list-style-type: none"> <li>Gate start/stop</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Counter for incremental encoder</li> </ul>	Yes

— Number, max.	1
<b>Input voltage</b>	
• Type of input voltage	sin/cos 1 Vpp
<b>Input delay (for rated value of input voltage)</b>	
• Minimum pulse width for program reactions	2.5 µs for parameterization "none"
for technological functions	
— parameterizable	Yes
<b>Cable length</b>	
• shielded, max.	150 m
<b>Encoder</b>	
<b>Connectable encoders</b>	
• Incremental encoder (symmetrical)	Yes; up to 200 kHz depending on cable type and length
<b>Encoder signals, incremental encoder (symmetrical)</b>	
• Input voltage	1 Vpp, centered at 2.5 V offset
• Input frequency, max.	200 kHz
• Counting frequency, max.	800 kHz; with quadruple evaluation
• Cable length, shielded, max.	150 m
• Incremental encoder with A/B tracks, 90° phase offset	Yes; sin/cos
• Incremental encoder with A/B tracks, 90° phase offset and zero track	Yes; sin/cos/zero
<b>Interrupts/diagnostics/status information</b>	
Diagnostics function	Yes; see chapter "Diagnostic Messages" in the manual
<b>Alarms</b>	
• Diagnostic alarm	Yes
• Hardware interrupt	No
<b>Diagnoses</b>	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• A/B transition error at incremental encoder	Yes
<b>Diagnostics indication LED</b>	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
• for module diagnostics	Yes; green/red DIAG LED
<b>Integrated Functions</b>	
<b>Counter</b>	
• Number of counters	1
• Counting frequency, max.	800 kHz; with quadruple evaluation
<b>Safety monitoring functions</b>	
• Safe Operating Stop (SOS)	Yes
• Safely-Limited Speed (SLS)	Yes
• Safe Direction (SDI)	Yes
• Safe Speed Monitor (SSM)	Yes
<b>Counting functions</b>	
• Continuous counting	Yes
• Counter response parameterizable	Yes
• Software gate	Yes
• Counting range, parameterizable	Yes
<b>Measuring functions</b>	
<b>Measuring range</b>	
— Frequency measurement, min.	0.04 Hz
— Frequency measurement, max.	800 kHz; with quadruple evaluation
— Cycle duration measurement, min.	1 µs
— Cycle duration measurement, max.	25 s
— Velocity measurement, min.	0 (speed in configured units per selected time basis - speed*1 000)
— Velocity measurement, max.	2 147 483 (speed in configured units per selected time basis - speed*1 000)
<b>Accuracy</b>	
— Frequency measurement	up to 100 ppm; depending on measuring interval and signal evaluation; at low

— Cycle duration measurement

frequency external noise may have an effect on accuracy (reference the graph in 2.2.3)

up to 100 ppm; depending on measuring interval and signal evaluation; at low frequency external noise may have an effect on accuracy (reference the graph in 2.2.3)

— Velocity measurement

up to 100 ppm; depending on measuring interval and signal evaluation; at low frequency external noise may have an effect on accuracy (reference the graph in 2.2.3)

#### Potential separation

Potential separation channels	
• between the channels	No; Only one channel is available
• between the channels and backplane bus	Yes
• Between the channels and load voltage L+	No
• between the channels and the power supply of the electronics	No

#### Isolation

Isolation tested with	707 V DC (type test)
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#### Standards, approvals, certificates

Suitable for safety functions	Yes
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#### Highest safety class achievable in safety mode

• Performance level according to ISO 13849-1	Cat. 4, PLe
• SIL acc. to IEC 61508	SIL 3

#### Probability of failure (for service life of 20 years and repair time of 100 hours)

— low demand mode: PFDavg in accordance with SIL1	< 2.00E-03 signal monitoring disabled
— Low demand mode: PFDavg in accordance with SIL3	< 3.00E-05
— high demand/continuous mode: PFH in accordance with SIL1	< 3.00E-08 1/h signal monitoring disabled
— High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09 1/h

#### Ambient conditions

Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	55 °C

#### Altitude during operation relating to sea level

• Ambient air temperature-barometric pressure-altitude	On request: Installation altitudes greater than 2 000 m
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#### Dimensions

Width	15 mm
Height	73 mm
Depth	58 mm

#### Weights

Weight, approx.	42 g
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last modified:

12/28/2021 