



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"> FW update possible 	Yes
usable BaseUnits	BU type A0
Color code for module-specific color identification plate	CC01
Product function	
<ul style="list-style-type: none"> I&M data 	Yes; I&M0 to I&M3
Engineering with	
<ul style="list-style-type: none"> STEP 7 TIA Portal configurable/integrated from version 	Step 7 V17 or higher: use GSDML for prior versions
Supply voltage	
Rated value (DC)	24 V
power supply according to NEC Class 2 required	No
Load voltage L+	
<ul style="list-style-type: none"> Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection 	24 V 20.4 V 28.8 V 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"> 5 V Short-circuit protection Output current, max. 	Yes; 5.1 V \pm 3.5 % Yes; Electronic overload protection; no protection on applying a normal or counter voltage. 300 mA
Power loss	
Power loss, typ.	1.25 W
Address area	
Address space per module	
<ul style="list-style-type: none"> Inputs Outputs 	14 byte; S7-300/400F CPU, 13 byte 5 byte; S7-300/400F CPU, 4 byte
Hardware configuration	
Automatic encoding	Yes
<ul style="list-style-type: none"> Electronic coding element type H 	Yes
Digital inputs	
Number of digital inputs	1; (counter input)
Digital inputs, parameterizable	Yes
Digital input functions, parameterizable	
<ul style="list-style-type: none"> Gate start/stop 	Yes

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

— Frequency 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)
— Cycle duration 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)
— 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)
-----------------------	----------------------

Standards, approvals, certificates

Suitable for safety functions	Yes
-------------------------------	-----

Highest safety class achievable in safety mode

• Performance level according to ISO 13849-1	Cat. 4, PL _e
• 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: PFD _{avg} in accordance with SIL1	< 2.00E-03 signal monitoring disabled
— Low demand mode: PFD _{avg} 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
--	---

Dimensions

Width	15 mm
Height	73 mm
Depth	58 mm

Weights

Weight, approx.	42 g
-----------------	------

last modified: 9/11/2023 