## SIEMENS

## Data sheet

## 6ES7136-6CB00-0CA0



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
FW update possible	Yes
usable BaseUnits	BU type A0
Color code for module-specific color identification plate	CC01
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
<ul> <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+	
Rated value (DC)	24 V
• permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
<ul> <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	
• 5 V	Yes; 5.1 V ±3.5 %
Short-circuit protection	Yes; Electronic overload protection; no protection on applying a normal or counter voltage.
Output current, max.	300 mA
Power loss	
Power loss, typ.	1.25 W
Address area	
Address space per module	
• Inputs	14 byte; S7-300/400F CPU, 13 byte
Outputs	5 byte; S7-300/400F CPU, 4 byte
Hardware configuration	
Automatic encoding	Yes
Electronic coding element type H	Yes
Digital inputs	
Number of digital inputs	1; (counter input)
Digital inputs, parameterizable	Yes
Digital input functions, parameterizable	
Gate start/stop	Yes
Counter for incremental encoder	Yes

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— Number, max.	1
Input voltage	1
Type of input voltage	sin/cos 1 Vpp
Input delay (for rated value of input voltage)	Зплооз турр
Minimum pulse width for program reactions	2.5 µs for parameterization "none"
for technological functions	
— parameterizable	Yes
Cable length	103
shielded, max.	150 m
Encoder	
Connectable encoders	
Incremental encoder (symmetrical)	Yes; up to 200 kHz depending on cable type and length
Encoder signals, incremental encoder (symmetrical)	
Input voltage	1 Vpp, centered at 2.5 V offset
<ul> <li>Input requency, max.</li> </ul>	200 kHz
Counting frequency, max.	800 kHz; with quadruple evaluation
Cable length, shielded, max.	150 m
<ul> <li>Incremental encoder with A/B tracks, 90° phase offset</li> </ul>	Yes; sin/cos
<ul> <li>Incremental encoder with A/B tracks, 90° phase offset</li> </ul>	Yes; sin/cos/zero
and zero track	
Interrupts/diagnostics/status information	
Diagnostics function	Yes; see chapter "Diagnostic Messages" in the manual
Alarms	
Diagnostic alarm	Yes
Hardware interrupt	No
Diagnoses	
<ul> <li>Monitoring the supply voltage</li> </ul>	Yes
• Wire-break	Yes
Short-circuit	Yes
<ul> <li>A/B transition error at incremental encoder</li> </ul>	Yes
Diagnostics indication LED	
RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
<ul> <li>Monitoring of the supply voltage (PWR-LED)</li> </ul>	Yes; green LED
Channel status display	Yes; green LED
<ul> <li>for channel diagnostics</li> </ul>	Yes; red LED
for module diagnostics	Yes; green/red DIAG LED
Integrated Functions	
Counter	Yes
Number of counters	1
Counting frequency, max.	800 kHz; with quadruple evaluation
Safety monitoring functions	
<ul> <li>Safe Operating Stop (SOS)</li> </ul>	Yes
<ul> <li>Safely-Limited Speed (SLS)</li> </ul>	Yes
Safe Direction (SDI)	Yes
Safe Speed Monitor (SSM)	Yes
Counting functions	
Continuous counting	Yes
Counter response parameterizable	Yes
Software gate	Yes
Counting range, parameterizable	Yes
Measuring functions	
Measuring range	0.0411
— 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)
	un to 100 mms depending as an an interval a state of the state of the
— 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
<ul> <li>between the channels and backplane bus</li> </ul>	Yes
<ul> <li>Between the channels and load voltage L+</li> </ul>	No
<ul> <li>between the channels and the power supply of the electronics</li> </ul>	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	
<ul> <li>Performance level according to ISO 13849-1</li> </ul>	Cat. 4, PLe
<ul> <li>SIL acc. to IEC 61508</li> </ul>	SIL 3
Probability of failure (for service life of 20 years and repair time	e of 100 hours)
<ul> <li>— low demand mode: PFDavg in accordance with SIL1</li> </ul>	< 2.00E-03 signal monitoring disabled
<ul> <li>Low demand mode: PFDavg in accordance with SIL3</li> </ul>	< 3.00E-05
<ul> <li>— high demand/continuous mode: PFH in accordance with SIL1</li> </ul>	< 3.00E-08 1/h signal monitoring disabled
<ul> <li>High demand/continuous mode: PFH in accordance with SIL3</li> </ul>	< 1.00E-09 1/h
Ambient conditions	
Ambient temperature during operation	
<ul> <li>horizontal installation, min.</li> </ul>	0°0
<ul> <li>horizontal installation, max.</li> </ul>	60 °C
<ul> <li>vertical installation, min.</li> </ul>	0 °C
<ul> <li>vertical installation, max.</li> </ul>	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
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