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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-coded label	CC01
Product function	
● I&M data	Yes; I&M0 to I&M3
Engineering with	
● 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+	
● Rated value (DC)	24 V
● permissible range, lower limit (DC)	20.4 V
● permissible range, upper limit (DC)	28.8 V
● Reverse polarity protection	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	

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● Gate start/stop	Yes
● Counter for incremental encoder	Yes
— Number, max.	1
Input voltage	
● Type of input voltage	sin/cos 1 Vpp
Input delay (for rated value of input voltage)	
● Minimum pulse width for program reactions	2.5 µs
for technological functions	
— Parameterizable	Yes
Cable length	
● 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
● 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
Interfaces	
Number of RS 485 interfaces	0
Interrupts/diagnostics/status information	
Diagnostics function	Yes; see chapter "Diagnostic Messages" in the manual
Alarms	
● Diagnostic alarm	Yes
● Hardware interrupt	No
Diagnoses	
● Monitoring the supply voltage	Yes
● Wire break	Yes
● short-circuit	Yes
● A/B transition error at incremental encoder	Yes
Diagnostics indication LED	
● 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
Integrated Functions	
Counter	Yes
● Number of counters	1
● Counting frequency, max.	800 kHz; with quadruple evaluation
Safety monitoring functions	
● Safe Operating Stop (SOS)	Yes
● Safely-Limited Speed (SLS)	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	
— Frequency measurement, min.	0.04 Hz
— Frequency measurement, max.	800 kHz; with quadruple evaluation

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— 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)
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
Ecological footprint	
● environmental product declaration	Yes
Global warming potential	
— global warming potential, (total) [CO2 eq]	88.3 kg
— global warming potential, (during production) [CO2 eq]	13.1 kg
— global warming potential, (during operation) [CO2 eq]	76.6 kg
— global warming potential, (after end of life cycle) [CO2 eq]	-1.37 kg
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
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	42 g
Classifications	

	Version	Classification

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eClass	16	27-24-26-05
eClass	14	27-24-26-05
eClass	12	27-24-26-05
eClass	9.1	27-24-26-05
eClass	9	27-24-26-05
eClass	8	27-24-26-05
eClass	7.1	27-24-26-05
eClass	6	27-24-26-05
ETIM	10	EC001601
ETIM	9	EC001601
ETIM	8	EC001601
ETIM	7	EC001601
IDEA	4	3567
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval

Manufacturer Declaration

Miscellaneous

General Product Approval

China RoHS

For use in hazardous locations

FM

For use in hazardous locations

CCC-Ex

Functional Saftey

TUEV

Type Examination Certificate

Functional Saftey

TUEV

Maritime application

NK / Nippon Kaiji Kyokai

Maritime application

CCS (China Classification Society)

KR (Korean Register of Shipping)

Environment

Industrial Communication

PROFIsafe

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