



Figure similar

SIPLUS ET 200SP F-TM Count HF based on 6ES7136-6CB00-0CA0 with conformal coating -25...+60 °C . 1x1 Vpp 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	
• FW update possible	Yes
based on	6ES7136-6CB00-0CA0
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	
• STEP 7 TIA Portal configurable/integrated from version	see entry ID: 109746275
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	
<ul style="list-style-type: none"> • Gate start/stop • Counter for incremental encoder — Number, max. 	 Yes 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	
— 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
Interfaces	
Number of RS 485 interfaces	0
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	Yes
<ul style="list-style-type: none"> • Number of counters • Counting frequency, max. 	 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	

— 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)
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.	-25 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; +70 °C with spacing modules (6AG1193-6BN00-7BA0) or configured slots to the left and right of the module
• vertical installation, min.	-25 °C; = Tmin
• vertical installation, max.	55 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	On request: Installation altitudes greater than 2 000 m
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	

— Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	
Use in stationary industrial systems		
— to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	
— to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	
— Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0/6AG1193-6AB00-0AA0)	
Use on ships/at sea		
— to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	
— to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
— to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	
— Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; class 6M4 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0/6AG1193-6AB00-0AA0)	
Usage in industrial process technology		
— Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	
— Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	
Remark		
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	
Conformal coating		
<ul style="list-style-type: none"> • Coatings for printed circuit board assemblies acc. to EN 61086 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A 	<p>Yes; Class 2 for high reliability</p> <p>Yes; Type 1 protection</p> <p>Yes; Discoloration of coating possible during service life</p> <p>Yes; Conformal coating, Class A</p>	
Dimensions		
Width	15 mm	
Height	73 mm	
Depth	58 mm	
Weights		
Weight, approx.	42 g	
Classifications		
	Version	Classification
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
Approvals / Certificates		
General Product Approval	Functional Safety	

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last modified:

10/23/2025 