SIEMENS

Data sheet   **6AG1550-1AA00-7AB0**

SIPLUS S7-1500 TM Count 2x24V -40...+70°C with conformal coating based on 6ES7550-1AA00-0AB0 . Counter module, 2 channels for 24 V incremental or encoder 3 DI, 2 DQ per channel

Figure similar

General information	
Product type designation	TM Count 2x24V
Product function	
● I&M data	Yes
● Isochronous mode	Yes

Installation type/mounting	
Rail mounting	Yes; S7-1500 mounting rail

Supply voltage	
Load voltage L+	
● Rated value (DC)	24 V
● permissible range, lower limit (DC)	19.2 V
● permissible range, upper limit (DC)	28.8 V
● Reverse polarity protection	Yes

Input current	
Current consumption, max.	75 mA; without load

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Encoder supply	
Number of outputs	1; A common 24V encoder supply for both channels

24 V encoder supply	
● 24 V	Yes; L+ (-0.8 V)
● Short-circuit protection	Yes
● Output current, max.	1 A; Total current of all encoders / channels; > +60 °C max. total current 0.5 A

Power	
Power available from the backplane bus	1.3 W

Power loss	
Power loss, typ.	4 W

Address area	

Address space per module	
● Inputs	16 byte; Per channel
● Outputs	12 byte; per channel; 4 bytes for Motion Control

Digital inputs	
Number of digital inputs	6; 3 per channel
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes

Digital input functions, parameterizable	
● Gate start/stop	Yes
● Capture	Yes
● Synchronization	Yes
● Freely usable digital input	Yes

Input voltage	
● Rated value (DC)	24 V
● for signal "0"	-30 to +5 V
● for signal "1"	+11 to +30V
● permissible voltage at input, min.	-30 V
● permissible voltage at input, max.	30 V

Input current	
● for signal "1", typ.	2.5 mA

Input delay (for rated value of input voltage)	
for standard inputs	
— parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
— at "0" to "1", min.	6 µs; for parameterization "none"
— at "1" to "0", min.	6 µs; for parameterization "none"
for technological functions	
— parameterizable	Yes

Cable length	

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• shielded, max.	1 000 m
• unshielded, max.	600 m

Digital outputs

Type of digital output	Transistor
Number of digital outputs	4; 2 per channel
Digital outputs, parameterizable	Yes
Short-circuit protection	
• Response threshold, typ.	1 A
Limitation of inductive shutdown voltage to	L+ (-33 V)
Controlling a digital input	Yes

Digital output functions, parameterizable

• Switching tripped by comparison values	Yes
• Freely usable digital output	Yes

Switching capacity of the outputs

• with resistive load, max.	0.5 A; Per digital output
• on lamp load, max.	5 W

Load resistance range

• lower limit	48 Ω
• upper limit	12 kΩ

Output voltage

• for signal "1", min.	23.2 V; L+ (-0.8 V)

Output current

• for signal "1" rated value	0.5 A; Per digital output
• for signal "1" permissible range, max.	0.6 A; Per digital output
• for signal "1" minimum load current	2 mA
• for signal "0" residual current, max.	0.5 mA

Output delay with resistive load

• "0" to "1", max.	50 µs
• "1" to "0", max.	50 µs

Switching frequency

• with resistive load, max.	10 kHz
• with inductive load, max.	0.5 Hz; Acc. to IEC 60947-5-1, DC-13; observe derating curve
• on lamp load, max.	10 Hz

Total current of the outputs

• Current per module, max.	2 A; > +60 °C max. total current of outputs 1 A

Cable length

• shielded, max.	1 000 m
• unshielded, max.	600 m

Encoder

Connectable encoders

• 2-wire sensor	Yes

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— permissible quiescent current (2-wire sensor), max.	1.5 mA
Encoder signals, incremental encoder (asymmetrical)	
● Input voltage	24 V
● Input frequency, max.	200 kHz
● Counting frequency, max.	800 kHz; with quadruple evaluation
● Cable length, shielded, max.	600 m; depending on input frequency, encoder and cable quality; max. 50 m at 200 kHz
● Signal filter, parameterizable	Yes
● Incremental encoder with A/B tracks, 90° phase offset	Yes
● Incremental encoder with A/B tracks, 90° phase offset and zero track	Yes
● Pulse encoder	Yes
● Pulse encoder with direction	Yes
● Pulse encoder with one impulse signal per count direction	Yes
Encoder signal 24 V	
— permissible voltage at input, min.	-30 V
— permissible voltage at input, max.	30 V
Interface types	
● Source/sink input	Yes
● Input characteristic curve in accordance with IEC 61131, type 3	Yes

Isochronous mode	
Filtering and processing time (TCI), min.	130 µs
Bus cycle time (TDP), min.	250 µs

Interrupts/diagnostics/status information	
Alarms	
● Diagnostic alarm	Yes
● Hardware interrupt	Yes
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
● MAINT LED	Yes; Yellow LED
● Monitoring of the supply voltage (PWR-LED)	Yes; green LED
● Channel status display	Yes; green LED

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● for channel diagnostics	Yes; red LED
● Status indicator forward counting (green)	Yes
● Status indicator backward counting (green)	Yes

Integrated Functions

Number of counters	2
Counting frequency (counter) max.	800 kHz; with quadruple evaluation

Counting functions

● Can be used with TO High_Speed_Counter	Yes
● Continuous counting	Yes
● Counter response parameterizable	Yes
● Hardware gate via digital input	Yes
● Software gate	Yes
● Event-controlled stop	Yes
● Synchronization via digital input	Yes
● Counting range, parameterizable	Yes

Comparator

— Number of comparators	2; Per channel
— Direction dependency	Yes
— Can be changed from user program	Yes

Position detection

● Suitable for S7-1500 Motion Control	Yes

Measuring functions

● Measuring time, parameterizable	Yes
● Dynamic measurement period adjustment	Yes
● Number of thresholds, parameterizable	2

Measuring range

— Frequency measurement, min.	0.04 Hz
— Frequency measurement, max.	800 kHz
— Cycle duration measurement, min.	1.25 µs
— Cycle duration measurement, max.	25 s

Accuracy

— Frequency measurement	100 ppm; depending on measuring interval and signal evaluation
— Cycle duration measurement	100 ppm; depending on measuring interval and signal evaluation
— Velocity measurement	100 ppm; depending on measuring interval and signal evaluation

Potential separation

Potential separation channels

● between the channels	No
● between the channels and backplane bus	Yes
● Between the channels and load voltage L+	No

Isolation

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Isolation tested with	707 V DC (type test)

Ambient conditions

Ambient temperature during operation

● horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
● horizontal installation, max.	70 °C; = Tmax; note derating for inductive loads; > +60 °C total current of the encoder supply max. 0.5 A, total current of the outputs max. 1 A
● vertical installation, min.	-40 °C; = Tmin; Startup @ -25 °C
● vertical installation, max.	40 °C; Please note derating for inductive loads

Ambient temperature during storage/transportation

● min.	-40 °C
● max.	70 °C

Altitude during operation relating to sea level

● Installation altitude above sea level, max.	5 000 m
● Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)

Relative humidity

● With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

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, *

Use on ships/at sea

— to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
— 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; *

Usage in industrial process technology

— Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)

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— 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	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

Decentralized operation	
to SIMATIC S7-1500	Yes
to standard PROFINET controller	Yes

Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm

Weights	
Weight, approx.	250 g

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