Data sheet

6ES7550-1AA00-0AB0



SIMATIC S7-1500, TM count 2x24 V counter module, 2 channels for 24 V incremental or encoder 3 DI, 2 DQ per channel

General information	
Product type designation	TM Count 2x24V
Firmware version	V1.3
 FW update possible 	Yes
Product function	
● I&M data	Yes; I&M0 to I&M3
Isochronous mode	Yes
Engineering with	
 STEP 7 TIA Portal configurable/integrated from version 	V12 (FW V1.0) V15 (FW V1.3)/V12 (FW V1.0), V13 (FW V1.1)
 PROFIBUS from GSD version/GSD revision 	GSD Revision 5
 PROFINET from GSD version/GSD revision 	V2.3 / -
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
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
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 curs is accordance with IEC 04404	Von
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	
 Type of input voltage 	DC
Rated value (DC)	24 V
● for signal "0"	-5 +5 V
● for signal "1"	+11 to +30V
 permissible voltage at input, min. 	-30 V; -5 V continuous, -30 V brief reverse polarity protection
 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	
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	Yes; electronic/thermal
 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	
 Type of output voltage 	DC
● 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	

* shielded, max.	Cabla lanath	
e. unshelded, max. Finoacter if Connectable encoders - 2-wire sensor — permissible quiescent current (2-wire sensor), max. Encoder signals, incremental encoder (asymmetrical) - Input vottage 24 V 200 kHz 20	Cable length	1 000 m
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max.		
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Input Voltage 24 V	Encoder signals, incremental encoder (asymmetrical)	
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offset and zero track • pulse encoder • pulse encoder with direction • pulse encoder with one impulse signal per count direction • pulse encoder with one impulse signal per count direction • pulse encoder with one impulse signal per count direction Encoder signal 24 V — permissible voltage at input, min. — permissible voltage at input, max. 30 V Interface types • Source/sink input • Input characteristic curve in accordance with IEC • Input characteristic curve in accordance with IEC • Initial, type 3 • Source/sink input • Input characteristic curve in accordance with IEC • Initial, type 3 • Source/sink input • Input characteristic curve in accordance with IEC • Initial, type 3 • Source/sink input • Input characteristic curve in accordance with IEC • Input characteristic curve	·	Yes
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Counter Number of counters Counting frequency, max. Counting functions Can be used with TO High_Speed_Counter Continuous counting Counter response parameterizable Hardware gate via digital input Yes Yes Yes Yes	Filtering and processing time (TCI), min. Bus cycle time (TDP), min. Interrupts/diagnostics/status information Alarms Diagnostic alarm Hardware interrupt Diagnoses Monitoring the supply voltage Wire-break Short-circuit A/B transition error at incremental encoder Diagnostics indication LED RUN LED RROR LED MAINT LED Monitoring of the supply voltage (PWR-LED) Channel status display for channel diagnostics	Yes
Counter Number of counters Counting frequency, max. Counting functions Can be used with TO High_Speed_Counter Continuous counting Counter response parameterizable Hardware gate via digital input Yes Yes Yes Yes	Filtering and processing time (TCI), min. Bus cycle time (TDP), min. Interrupts/diagnostics/status information Alarms Diagnostic alarm Hardware interrupt Diagnoses Monitoring the supply voltage Wire-break Short-circuit A/B transition error at incremental encoder Diagnostics indication LED RUN LED RUN LED ERROR LED MAINT LED Monitoring of the supply voltage (PWR-LED) Channel status display for channel diagnostics Status indicator forward counting (green)	Yes
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 Continuous counting Counter response parameterizable Hardware gate via digital input Yes Yes 	Filtering and processing time (TCI), min. Bus cycle time (TDP), min. Interrupts/diagnostics/status information Alarms Diagnostic alarm Hardware interrupt Diagnoses Monitoring the supply voltage Wire-break Short-circuit A/B transition error at incremental encoder Diagnostics indication LED RUN LED RROR LED MAINT LED Monitoring of the supply voltage (PWR-LED) Channel status display for channel diagnostics Status indicator forward counting (green) Status indicator backward counting (green) Integrated Functions Counter Number of counters	Yes
 Counter response parameterizable Hardware gate via digital input Yes 	Filtering and processing time (TCI), min. Bus cycle time (TDP), min. Interrupts/diagnostics/status information Alarms Diagnostic alarm Hardware interrupt Diagnoses Monitoring the supply voltage Wire-break Short-circuit A/B transition error at incremental encoder Diagnostics indication LED RUN LED RUN LED RUN LED MAINT LED Monitoring of the supply voltage (PWR-LED) Channel status display for channel diagnostics Status indicator forward counting (green) Status indicator backward counting (green) Integrated Functions Counter Number of counters Counting frequency, max.	Yes
Hardware gate via digital input Yes	Filtering and processing time (TCI), min. Bus cycle time (TDP), min. Interrupts/diagnostics/status information Alarms Diagnostic alarm Hardware interrupt Diagnoses Monitoring the supply voltage Wire-break Short-circuit A/B transition error at incremental encoder Diagnostics indication LED RUN LED RUN LED RUN LED MAINT LED Monitoring of the supply voltage (PWR-LED) Channel status display for channel diagnostics Status indicator forward counting (green) Status indicator backward counting (green) Integrated Functions Counter Number of counters Counting frequency, max.	Yes Yes Yes Yes Yes Yes Yes Yes Yes; green LED Yes; red LED Yes; green LED Yes; red LED Yes; with quadruple evaluation
	Filtering and processing time (TCI), min. Bus cycle time (TDP), min. Interrupts/diagnostics/status information Alarms Diagnostic alarm Hardware interrupt Diagnoses Monitoring the supply voltage Wire-break Short-circuit A/B transition error at incremental encoder Diagnostics indication LED RUN LED RROR LED MAINT LED Monitoring of the supply voltage (PWR-LED) Channel status display for channel diagnostics Status indicator forward counting (green) Status indicator backward counting (green) Status indicator backward counting (green) Integrated Functions Counter Number of counters Counting frequency, max. Counting functions Can be used with TO High_Speed_Counter	Yes
Software gate Yes	Filtering and processing time (TCI), min. Bus cycle time (TDP), min. Interrupts/diagnostics/status information Alarms • Diagnostic alarm • Hardware interrupt Diagnoses • Monitoring the supply voltage • Wire-break • Short-circuit • A/B transition error at incremental encoder Diagnostics indication LED • RUN LED • ERROR LED • MAINT LED • Monitoring of the supply voltage (PWR-LED) • Channel status display • for channel diagnostics • Status indicator forward counting (green) • Status indicator backward counting (green) Integrated Functions Counter • Number of counters • Counting frequency, max. Counting functions • Can be used with TO High_Speed_Counter • Continuous counting	Yes Yes Yes Yes Yes Yes Yes Yes Yes; green LED Yes; red LED Yes; Yellow LED Yes; green LED Yes; with quadruple evaluation Yes Yes
	Filtering and processing time (TCI), min. Bus cycle time (TDP), min. Interrupts/diagnostics/status information Alarms • Diagnostic alarm • Hardware interrupt Diagnoses • Monitoring the supply voltage • Wire-break • Short-circuit • A/B transition error at incremental encoder Diagnostics indication LED • RUN LED • ERROR LED • MAINT LED • Monitoring of the supply voltage (PWR-LED) • Channel status display • for channel diagnostics • Status indicator forward counting (green) • Status indicator backward counting (green) Integrated Functions Counter • Number of counters • Counting frequency, max. Counting functions • Can be used with TO High_Speed_Counter • Continuous counting • Counter response parameterizable	Yes

Count controlled atom	V
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	
• Incremental acquisition	Yes
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
	No
Between the channels and load voltage L+	No 707 V DC (type test)
Between the channels and load voltage L+ Isolation Isolation tested with	
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions	
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation	707 V DC (type test)
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation • horizontal installation, min.	707 V DC (type test) 0 °C
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max.	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min.	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max.	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ititude during operation relating to sea level	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C 40 °C; Please note derating for inductive loads
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max.	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ititude during operation relating to sea level	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C 40 °C; Please note derating for inductive loads 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Altitude during operation relating to sea level Installation altitude above sea level, max.	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C 40 °C; Please note derating for inductive loads 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ititude during operation relating to sea level Installation altitude above sea level, max. Decentralized operation	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C 40 °C; Please note derating for inductive loads 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ititude during operation relating to sea level Installation altitude above sea level, max. Decentralized operation to SIMATIC S7-300	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C 40 °C; Please note derating for inductive loads 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Altitude during operation relating to sea level Installation altitude above sea level, max. Decentralized operation to SIMATIC S7-300 to SIMATIC S7-400 to SIMATIC S7-1200	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C 40 °C; Please note derating for inductive loads 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual Yes Yes
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Altitude during operation relating to sea level Installation altitude above sea level, max. Decentralized operation to SIMATIC S7-300 to SIMATIC S7-400 to SIMATIC S7-1200 to SIMATIC S7-1500	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C 40 °C; Please note derating for inductive loads 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual Yes Yes Yes Yes Yes
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Altitude during operation relating to sea level Installation altitude above sea level, max. Decentralized operation to SIMATIC S7-300 to SIMATIC S7-400 to SIMATIC S7-1200	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C 40 °C; Please note derating for inductive loads 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual Yes Yes Yes
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Altitude during operation relating to sea level Installation altitude above sea level, max. Decentralized operation to SIMATIC S7-300 to SIMATIC S7-1200 to SIMATIC S7-1500 to standard PROFIBUS master to standard PROFINET controller	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C 40 °C; Please note derating for inductive loads 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual Yes Yes Yes Yes Yes Yes Yes; FW V1.1 and higher
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Altitude during operation relating to sea level Installation altitude above sea level, max. Decentralized operation to SIMATIC S7-300 to SIMATIC S7-400 to SIMATIC S7-1200 to SIMATIC S7-1500 to standard PROFIBUS master to standard PROFINET controller	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C 40 °C; Please note derating for inductive loads 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual Yes Yes Yes Yes Yes Yes; FW V1.1 and higher Yes
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Altitude during operation relating to sea level Installation altitude above sea level, max. Decentralized operation to SIMATIC S7-300 to SIMATIC S7-400 to SIMATIC S7-1200 to SIMATIC S7-1500 to standard PROFIBUS master to standard PROFINET controller Dimensions Width	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C 40 °C; Please note derating for inductive loads 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual Yes Yes Yes Yes Yes Yes; FW V1.1 and higher Yes 35 mm
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ititude during operation relating to sea level Installation altitude above sea level, max. Decentralized operation to SIMATIC S7-300 to SIMATIC S7-400 to SIMATIC S7-1200 to SIMATIC S7-1500 to standard PROFIBUS master to standard PROFINET controller Dimensions Width Height	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C 40 °C; Please note derating for inductive loads 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual Yes Yes Yes Yes Yes Yes Yes; FW V1.1 and higher Yes 35 mm 147 mm
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ititude during operation relating to sea level Installation altitude above sea level, max. Decentralized operation to SIMATIC S7-300 to SIMATIC S7-400 to SIMATIC S7-1200 to SIMATIC S7-1500 to standard PROFIBUS master to standard PROFINET controller Dimensions Width Height Depth	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C 40 °C; Please note derating for inductive loads 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual Yes Yes Yes Yes Yes Yes; FW V1.1 and higher Yes 35 mm
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Altitude during operation relating to sea level Installation altitude above sea level, max. Decentralized operation to SIMATIC S7-300 to SIMATIC S7-400 to SIMATIC S7-1200 to SIMATIC S7-1500 to standard PROFIBUS master to standard PROFINET controller Dimensions Width Height Depth Weights	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C 40 °C; Please note derating for inductive loads 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual Yes Yes Yes Yes Yes Yes; FW V1.1 and higher Yes 35 mm 147 mm 129 mm
Between the channels and load voltage L+ Isolation Isolation tested with Ambient conditions Ambient temperature during operation horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. Ititude during operation relating to sea level Installation altitude above sea level, max. Decentralized operation to SIMATIC S7-300 to SIMATIC S7-400 to SIMATIC S7-1200 to SIMATIC S7-1500 to standard PROFIBUS master to standard PROFINET controller Dimensions Width Height Depth	707 V DC (type test) 0 °C 60 °C; Please note derating for inductive loads 0 °C 40 °C; Please note derating for inductive loads 5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200MP system manual Yes Yes Yes Yes Yes Yes Yes; FW V1.1 and higher Yes 35 mm 147 mm