



SIMATIC S7-1500,
 TM COUNT 2X24V COUNTING MODULE,
 2 CHANNELS FOR 24V INCREMENTAL ENCODER OR
 24V PULSES,
 3DI, 2DQ PER CHANNEL

General information	
Product function	
I&M data	Yes ; I&M 0
Engineering with	
STEP 7 TIA Portal can be configured/integrated as of version	V12.0 / V12.0
STEP 7 can be configured/integrated as of version	as of V5.5 SP3 / -
PROFINET as of GSD version/GSD revision	V2.3
Installation type/mounting	
Mounting rail installation possible	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 24 V 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 losses	
Power loss, typ.	4 W
Address area	
Occupied address area	
Outputs	12 byte ; Per channel
Inputs	16 byte ; Per channel
Digital inputs	
Number/binary inputs	6 ; 3 per channel
Digital inputs, configurable	Yes
Input characteristic curve acc. to 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"	-30 to +5 V
for signal "1"	+11 to +30 V
Permissible voltage at input, max.	30 V
Permissible voltage at input, min.	-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 counter/technological functions	
Parameterizable	Yes

Cable length	
Cable length, shielded, max.	1000 m
Cable length unshielded, max.	600 m
Digital outputs	
Type of digital output	Transistor
Number/binary outputs	4 ; 2 per channel
Digital outputs, configurable	Yes
Functionality/short-circuit strength	Yes ; electronic/thermal
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 k Ω
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 μ s
"1" to "0", max.	50 μ s
Switching frequency	
with resistive load, max.	10 kHz
with inductive load, max.	0.5 Hz ; Acc. to IEC 947-5-1, DC-13; observe derating curve
on lamp load, max.	10 Hz
Aggregate current of the outputs	
Max. current per module	2 A
Cable length	
Cable length, shielded, max.	1000 m

Cable length unshielded, max.	600 m
Encoder	
Connectable encoders	
2-wire sensor	Yes
Permissible quiescent current (2-wire sensor), max.	1.5 mA
Encoder signals, incremental encoder (asymmetrical)	
Input frequency, max.	200 kHz
Counting frequency, max.	800 kHz ; with quadruple evaluation
Signal filter, can be parameterized	Yes
Cable length, shielded, max.	600 m ; depending on input frequency, encoder and cable quality; max. 50 m at 200 kHz
Incremental encoder with A/B tracks, 90° out of phase	Yes
Incremental encoder with A/B tracks, 90° out of phase 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, max.	30 V
	-30 V
Interface types	
Input characteristic curve in accordance with IEC 61131, type 3	Yes
m/p-reading	Yes
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes
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
Diagnostic messages	
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 the supply voltage	Yes ; Green LED
Channel status display	Yes
for channel diagnostics	Yes
Status indicator backward counting (green)	Yes
Status indicator forward counting (green)	Yes
Integrated Functions	
Number of counters	2
Counter frequency (counter) max.	800 kHz ; with quadruple evaluation
Counting functions	
Continuous counting	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	
Incremental acquisition	Yes
Suitable for S7-1500 Motion Control	Yes
Measuring functions	
Measuring time, parameterizable	Yes
Dyn. measuring time adjustment	Yes
Number of thresholds, parameterizable	2
Measuring range	
Frequency measurement, max.	800 kHz
Frequency measurement, min.	0.04 Hz
Period measurement, max.	25 s
Period measurement, min.	1.25 μ s
Accuracy	
Frequency measurement	100 ppm; depending on measuring interval and signal evaluation
Speed measurement	100 ppm; depending on measuring interval and signal evaluation
Cycle duration measurement	100 ppm; depending on measuring interval and signal evaluation
Galvanic isolation	
Electrical isolation channels	
between the channels	No

between the channels and the backplane bus	Yes
between the channels and the load voltage L+	No
Permissible potential difference	
between different circuits	75 VDC / 60 VAC
Isolation	
Isolation checked with	707 V DC
Ambient conditions	
Operating temperature	
horizontal installation, min.	0 °C
horizontal installation, max.	60 °C ; Please note derating for inductive loads
vertical installation, min.	0 °C
vertical installation, max.	40 °C ; Please note derating for inductive loads
Decentralized operation	
to SIMATIC S7-1500	Yes
to standard PROFINET controller	Yes
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weight	
Weight, approx.	250 g
Status	Mar 25, 2013