



*** spare part *** SIMATIC ET 200SP, TM Posinput 1 counter and position decoder module for RS-422 incremental encoder or SSI absolute encoder, 2 DI, 2 DQ

General information	
Product type designation	TM PosInput 1
Firmware version	V1.3
<ul style="list-style-type: none"> FW update possible 	Yes
usable BaseUnits	BU type A0
Product function	
<ul style="list-style-type: none"> I&M data 	Yes; I&M0 to I&M3
<ul style="list-style-type: none"> Isochronous mode 	Yes
Engineering with	
<ul style="list-style-type: none"> STEP 7 TIA Portal configurable/integrated from version 	V13 (FW V1.0), V14 (V1.2), V15 (FW V1.3) / V13 (FW V1.0), V14 SP1 (V1.2)
<ul style="list-style-type: none"> STEP 7 configurable/integrated from version 	As of V5.5 SP3, only up to FW V1.2
<ul style="list-style-type: none"> PROFIBUS from GSD version/GSD revision 	GSD Revision 5
<ul style="list-style-type: none"> PROFINET from GSD version/GSD revision 	GSDML V2.3
Supply voltage	
Load voltage L+	
<ul style="list-style-type: none"> Rated value (DC) 	24 V
<ul style="list-style-type: none"> permissible range, lower limit (DC) 	19.2 V
<ul style="list-style-type: none"> permissible range, upper limit (DC) 	28.8 V
<ul style="list-style-type: none"> Reverse polarity protection 	Yes
Input current	
Current consumption, max.	75 mA; without load
Encoder supply	
Number of outputs	1
24 V encoder supply	
<ul style="list-style-type: none"> 24 V 	Yes; L+ (-0.8 V)
<ul style="list-style-type: none"> Short-circuit protection 	Yes; electronic/thermal
<ul style="list-style-type: none"> Output current, max. 	300 mA
Power loss	
Power loss, typ.	1.9 W
Address area	
Address space per module	
<ul style="list-style-type: none"> Inputs 	16 byte; 4 bytes in Fast mode
<ul style="list-style-type: none"> Outputs 	12 byte; 4 bytes for Motion Control, 0 bytes for Fast mode
Hardware configuration	
Automatic encoding	
<ul style="list-style-type: none"> Type of mechanical coding element 	type B

Digital inputs	
Number of digital inputs	2
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
<ul style="list-style-type: none"> • Gate start/stop 	Yes; only for pulse and incremental encoders
<ul style="list-style-type: none"> • Capture 	Yes
<ul style="list-style-type: none"> • Synchronization 	Yes; only for pulse and incremental encoders
<ul style="list-style-type: none"> • Freely usable digital input 	Yes
Input voltage	
<ul style="list-style-type: none"> • Rated value (DC) 	24 V
<ul style="list-style-type: none"> • for signal "0" 	-5 ... +5 V
<ul style="list-style-type: none"> • for signal "1" 	+11 to +30V
<ul style="list-style-type: none"> • permissible voltage at input, min. 	-30 V; -5 V continuous, -30 V brief reverse polarity protection
<ul style="list-style-type: none"> • permissible voltage at input, max. 	30 V
Input current	
<ul style="list-style-type: none"> • 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	
<ul style="list-style-type: none"> • shielded, max. 	1 000 m
<ul style="list-style-type: none"> • unshielded, max. 	600 m
Digital outputs	
Type of digital output	Transistor
Number of digital outputs	2
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
<ul style="list-style-type: none"> • Response threshold, typ. 	1 A
Limitation of inductive shutdown voltage to	L+ (-33 V)
Controlling a digital input	Yes
Digital output functions, parameterizable	
<ul style="list-style-type: none"> • Switching tripped by comparison values 	Yes
<ul style="list-style-type: none"> • Freely usable digital output 	Yes
Switching capacity of the outputs	
<ul style="list-style-type: none"> • with resistive load, max. 	0.5 A; Per digital output
<ul style="list-style-type: none"> • on lamp load, max. 	5 W
Load resistance range	
<ul style="list-style-type: none"> • lower limit 	48 Ω
<ul style="list-style-type: none"> • upper limit 	12 kΩ
Output voltage	
<ul style="list-style-type: none"> • for signal "1", min. 	23.2 V; L+ (-0.8 V)
Output current	
<ul style="list-style-type: none"> • for signal "1" rated value 	0.5 A; Per digital output
<ul style="list-style-type: none"> • for signal "1" permissible range, max. 	0.6 A; Per digital output
<ul style="list-style-type: none"> • for signal "1" minimum load current 	2 mA
<ul style="list-style-type: none"> • for signal "0" residual current, max. 	0.5 mA
Output delay with resistive load	
<ul style="list-style-type: none"> • "0" to "1", max. 	50 µs
<ul style="list-style-type: none"> • "1" to "0", max. 	50 µs
Switching frequency	
<ul style="list-style-type: none"> • with resistive load, max. 	10 kHz
<ul style="list-style-type: none"> • with inductive load, max. 	0.5 Hz; Acc. to IEC 60947-5-1, DC-13; observe derating curve

<ul style="list-style-type: none"> • on lamp load, max. 	10 Hz
Total current of the outputs	
<ul style="list-style-type: none"> • Current per module, max. 	1 A
Cable length	
<ul style="list-style-type: none"> • shielded, max. 	1 000 m
<ul style="list-style-type: none"> • unshielded, max. 	600 m
Encoder	
Encoder signals, incremental encoder (symmetrical)	
<ul style="list-style-type: none"> • Input voltage 	RS 422
<ul style="list-style-type: none"> • Input frequency, max. 	1 MHz
<ul style="list-style-type: none"> • Counting frequency, max. 	4 MHz; with quadruple evaluation
<ul style="list-style-type: none"> • Cable length, shielded, max. 	32 m; at 1 MHz
<ul style="list-style-type: none"> • Signal filter, parameterizable 	Yes
<ul style="list-style-type: none"> • Incremental encoder with A/B tracks, 90° phase offset 	Yes
<ul style="list-style-type: none"> • Incremental encoder with A/B tracks, 90° phase offset and zero track 	Yes
<ul style="list-style-type: none"> • pulse encoder 	Yes
<ul style="list-style-type: none"> • Pulse encoder with direction 	Yes
<ul style="list-style-type: none"> • pulse encoder with one impulse signal per count direction 	Yes
Encoder signals, incremental encoder (asymmetrical)	
<ul style="list-style-type: none"> • Input voltage 	5 V TTL (push-pull encoders only)
<ul style="list-style-type: none"> • Input frequency, max. 	1 MHz
<ul style="list-style-type: none"> • Counting frequency, max. 	4 MHz; with quadruple evaluation
<ul style="list-style-type: none"> • Signal filter, parameterizable 	Yes
<ul style="list-style-type: none"> • Incremental encoder with A/B tracks, 90° phase offset 	Yes
<ul style="list-style-type: none"> • Incremental encoder with A/B tracks, 90° phase offset and zero track 	Yes
<ul style="list-style-type: none"> • pulse encoder 	Yes
<ul style="list-style-type: none"> • pulse encoder with direction 	Yes
<ul style="list-style-type: none"> • pulse encoder with one impulse signal per count direction 	Yes
Encoder signals, absolute encoder (SSI)	
<ul style="list-style-type: none"> • Input signal 	to RS-422
<ul style="list-style-type: none"> • Telegram length, parameterizable 	10 ... 40 bit
<ul style="list-style-type: none"> • Clock frequency, max. 	2 MHz; 125 kHz, 250 kHz, 500 kHz, 1 MHz, 1.5 MHz or 2 MHz
<ul style="list-style-type: none"> • Binary code 	Yes
<ul style="list-style-type: none"> • Gray code 	Yes
<ul style="list-style-type: none"> • Cable length, shielded, max. 	320 m; Cable length, RS-422 SSI absolute encoders, Siemens type 6FX2001-5, 24 V supply: 125 kHz, 320 meters shielded, max.; 250 kHz, 160 meters shielded, max.; 500 kHz, 60 meters shielded, max.; 1 MHz, 20 meters shielded, max. 1.5 MHz, 10 meters shielded, max.; 2 MHz, 8 meters shielded, max.
<ul style="list-style-type: none"> • Parity bit, parameterizable 	Yes
<ul style="list-style-type: none"> • Monoflop time 	16, 32, 48, 64 µs & automatic
<ul style="list-style-type: none"> • Multiturn 	Yes
<ul style="list-style-type: none"> • Singleturn 	Yes
Interface types	
<ul style="list-style-type: none"> • TTL 5 V 	Yes; push-pull encoders only
<ul style="list-style-type: none"> • RS 422 	Yes
Interrupts/diagnostics/status information	
Substitute values connectable	Yes; Parameterizable
Alarms	
<ul style="list-style-type: none"> • Diagnostic alarm 	Yes
<ul style="list-style-type: none"> • Hardware interrupt 	Yes
Diagnoses	
<ul style="list-style-type: none"> • Monitoring the supply voltage 	Yes
<ul style="list-style-type: none"> • Wire-break 	Yes

• Short-circuit	Yes
• A/B transition error at incremental encoder	Yes
• Telegram error at SSI encoder	Yes
• Group error	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes; green LED
• for module diagnostics	Yes; green/red DIAG LED
• Status indicator forward counting (green)	Yes
• Status indicator backward counting (green)	Yes
Integrated Functions	
Counter	Yes
• Number of counters	1
• Counting frequency, max.	4 MHz; with quadruple evaluation
Fast mode	Yes
Counting functions	
• Can be used with TO High_Speed_Counter	Yes; only for pulse and incremental encoders
• 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
— Direction dependency	Yes
— Can be changed from user program	Yes
Position detection	
• Incremental acquisition	Yes
• Absolute 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.	4 MHz
— Cycle duration measurement, min.	0.25 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 and backplane bus	Yes
Isolation	
Isolation tested with	707 V DC (type test)
Standards, approvals, certificates	
Suitable for safety functions	No
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C; Observe derating
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C; Observe derating

Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m; On request: Installation altitudes greater than 2 000 m
Decentralized operation	
to SIMATIC S7-300	Yes
to SIMATIC S7-400	Yes
to SIMATIC S7-1200	Yes
to SIMATIC S7-1500	Yes
to standard PROFIBUS master	Yes
to standard PROFINET controller	Yes
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	45 g
last modified:	3/2/2021 