



Figure similar

SIMATIC ET 200SP, TM Posinput 1 counter and position decoder module for RS-422 incremental encoder or SSI absolute encoder, 2 DI, 2 DQ, suitable for BU type A0, pack quantity: 10 units

General information	
Product type designation	TM PosInput 1
Firmware version	V2.0
<ul style="list-style-type: none"> <li>FW update possible</li> </ul>	Yes
usable BaseUnits	BU type A0
Color code for module-specific color identification plate	CC00
Product function	
<ul style="list-style-type: none"> <li>I&amp;M data</li> </ul>	Yes; I&M0 to I&M3
<ul style="list-style-type: none"> <li>Isochronous mode</li> </ul>	Yes
Engineering with	
<ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	STEP 7 V16 or higher
<ul style="list-style-type: none"> <li>STEP 7 configurable/integrated from version</li> </ul>	V5.6 (use previous version *6BA00*)
<ul style="list-style-type: none"> <li>PROFIBUS from GSD version/GSD revision</li> </ul>	GSD Revision 5
<ul style="list-style-type: none"> <li>PROFINET from GSD version/GSD revision</li> </ul>	GSDML V2.34
Supply voltage	
Load voltage L+	
<ul style="list-style-type: none"> <li>Rated value (DC)</li> </ul>	24 V
<ul style="list-style-type: none"> <li>permissible range, lower limit (DC)</li> </ul>	19.2 V
<ul style="list-style-type: none"> <li>permissible range, upper limit (DC)</li> </ul>	28.8 V
<ul style="list-style-type: none"> <li>Reverse polarity protection</li> </ul>	Yes
Input current	
Current consumption, max.	75 mA; without load
Encoder supply	
Number of outputs	2
5 V encoder supply	
<ul style="list-style-type: none"> <li>5 V</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Short-circuit protection</li> </ul>	Yes; electronic/thermal
<ul style="list-style-type: none"> <li>Output current, max.</li> </ul>	300 mA; Total current of all encoders
24 V encoder supply	
<ul style="list-style-type: none"> <li>24 V</li> </ul>	Yes; L+ (-0.8 V)
<ul style="list-style-type: none"> <li>Short-circuit protection</li> </ul>	Yes; electronic/thermal
<ul style="list-style-type: none"> <li>Output current, max.</li> </ul>	300 mA; Total current of all encoders
Power loss	
Power loss, typ.	1.5 W
Address area	
Address space per module	
<ul style="list-style-type: none"> <li>Inputs</li> </ul>	16 byte; 4 bytes in Fast mode

• Outputs	12 byte; 4 bytes for Motion Control, 0 bytes for Fast mode
<b>Hardware configuration</b>	
Automatic encoding	Yes
• Mechanical coding element	Yes
• Type of mechanical coding element	type B
<b>Digital inputs</b>	
Number of digital inputs	2
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
<b>Digital input functions, parameterizable</b>	
• Gate start/stop	Yes; only for pulse and incremental encoders
• Capture	Yes
• Synchronization	Yes; only for pulse and incremental encoders
• Freely usable digital input	Yes
<b>Input voltage</b>	
• 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
<b>Input current</b>	
• for signal "1", typ.	2.5 mA
<b>Input delay (for rated value of input voltage)</b>	
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
<b>Cable length</b>	
• shielded, max.	1 000 m
• unshielded, max.	600 m
<b>Digital outputs</b>	
Type of digital output	Transistor
Number of digital outputs	2
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
• Response threshold, typ.	1 A
Limitation of inductive shutdown voltage to	L+ (-53 V)
Controlling a digital input	Yes
<b>Digital output functions, parameterizable</b>	
• Switching tripped by comparison values	Yes
• Freely usable digital output	Yes
<b>Switching capacity of the outputs</b>	
• with resistive load, max.	0.5 A; Per digital output
• on lamp load, max.	5 W
<b>Load resistance range</b>	
• lower limit	48 Ω
• upper limit	12 kΩ
<b>Output voltage</b>	
• for signal "1", min.	23.2 V; L+ (-0.8 V)
<b>Output current</b>	
• 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
<b>Output delay with resistive load</b>	
• "0" to "1", max.	50 µs
• "1" to "0", max.	50 µs

<b>Switching frequency</b>	
<ul style="list-style-type: none"> <li>with resistive load, max.</li> <li>with inductive load, max.</li> <li>on lamp load, max.</li> </ul>	<p>10 kHz</p> <p>0.5 Hz; Acc. to IEC 60947-5-1, DC-13; observe derating curve</p> <p>10 Hz</p>
<b>Total current of the outputs</b>	
<ul style="list-style-type: none"> <li>Current per module, max.</li> </ul>	1 A
<b>Cable length</b>	
<ul style="list-style-type: none"> <li>shielded, max.</li> <li>unshielded, max.</li> </ul>	<p>1 000 m</p> <p>600 m</p>
<b>Encoder</b>	
<b>Encoder signals, incremental encoder (symmetrical)</b>	
<ul style="list-style-type: none"> <li>Input voltage</li> <li>Input frequency, max.</li> <li>Counting frequency, max.</li> <li>Cable length, shielded, max.</li> <li>Signal filter, parameterizable</li> <li>Incremental encoder with A/B tracks, 90° phase offset</li> <li>Incremental encoder with A/B tracks, 90° phase offset and zero track</li> <li>pulse encoder</li> <li>Pulse encoder with direction</li> <li>pulse encoder with one impulse signal per count direction</li> </ul>	<p>RS 422</p> <p>1 MHz</p> <p>4 MHz; with quadruple evaluation</p> <p>32 m; at 1 MHz</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>
<b>Encoder signals, incremental encoder (asymmetrical)</b>	
<ul style="list-style-type: none"> <li>Input voltage</li> <li>Input frequency, max.</li> <li>Counting frequency, max.</li> <li>Signal filter, parameterizable</li> <li>Incremental encoder with A/B tracks, 90° phase offset</li> <li>Incremental encoder with A/B tracks, 90° phase offset and zero track</li> <li>pulse encoder</li> <li>pulse encoder with direction</li> <li>pulse encoder with one impulse signal per count direction</li> </ul>	<p>5 V TTL (push-pull encoders only)</p> <p>1 MHz</p> <p>4 MHz; with quadruple evaluation</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>
<b>Encoder signals, absolute encoder (SSI)</b>	
<ul style="list-style-type: none"> <li>Input signal</li> <li>Telegram length, parameterizable</li> <li>Clock frequency, max.</li> <li>Binary code</li> <li>Gray code</li> <li>Cable length, shielded, max.</li> <li>Parity bit, parameterizable</li> <li>Monoflop time</li> <li>Multiturn</li> <li>Singleturn</li> </ul>	<p>to RS-422</p> <p>10 ... 40 bit</p> <p>2 MHz; 125 kHz, 250 kHz, 500 kHz, 1 MHz, 1.5 MHz or 2 MHz</p> <p>Yes</p> <p>Yes</p> <p>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.</p> <p>Yes</p> <p>16, 32, 48, 64 µs &amp; automatic</p> <p>Yes</p> <p>Yes</p>
<b>Interface types</b>	
<ul style="list-style-type: none"> <li>TTL 5 V</li> <li>RS 422</li> </ul>	<p>Yes; push-pull encoders only</p> <p>Yes</p>
<b>Interrupts/diagnostics/status information</b>	
Substitute values connectable	Yes; Parameterizable
<b>Alarms</b>	
<ul style="list-style-type: none"> <li>Diagnostic alarm</li> <li>Hardware interrupt</li> </ul>	<p>Yes</p> <p>Yes</p>
<b>Diagnoses</b>	
<ul style="list-style-type: none"> <li>Monitoring the supply voltage</li> </ul>	Yes

• Wire-break	Yes
• Short-circuit	Yes
• A/B transition error at incremental encoder	Yes
• Telegram error at SSI encoder	Yes
• Group error	Yes
<b>Diagnostics indication LED</b>	
• 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
<b>Integrated Functions</b>	
Counter	Yes
• Number of counters	1
• Counting frequency, max.	4 MHz; with quadruple evaluation
Fast mode	Yes
<b>Counting functions</b>	
• 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
<b>Comparator</b>	
— Number of comparators	2
— Direction dependency	Yes
— Can be changed from user program	Yes
<b>Position detection</b>	
• Incremental acquisition	Yes
• Absolute acquisition	Yes
• Suitable for S7-1500 Motion Control	Yes
<b>Measuring functions</b>	
• Measuring time, parameterizable	Yes
• Dynamic measurement period adjustment	Yes
• Number of thresholds, parameterizable	2
<b>Measuring range</b>	
— Frequency measurement, min.	0.04 Hz
— Frequency measurement, max.	4 MHz
— Cycle duration measurement, min.	0.25 µs
— Cycle duration measurement, max.	25 s
<b>Accuracy</b>	
— 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
<b>Potential separation</b>	
<b>Potential separation channels</b>	
• between the channels and backplane bus	Yes
<b>Isolation</b>	
Isolation tested with	707 V DC (type test)
<b>Standards, approvals, certificates</b>	
Suitable for safety functions	No
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• horizontal installation, min.	-30 °C
• horizontal installation, max.	60 °C; Observe derating
• vertical installation, min.	-30 °C
• vertical installation, max.	50 °C; Observe derating

- ceiling installation, min. -30 °C
- ceiling installation, max. 50 °C; Observe derating
- floor installation, min. -30 °C
- floor installation, max. 50 °C; Observe derating

#### Altitude during operation relating to sea level

- Installation altitude above sea level, max. 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual

#### 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
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**last modified:** 12/28/2021 