

SIMATIC S7-300, FM352-5 with NPN output, High Speed Boolean Processor, for high-speed linking, 12 DI, 8 DO, 1 encoder interface for RS422 incr./SSI encoder



Figure similar

Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	20.4 V
• permissible range, upper limit (DC)	28.8 V
• Reverse polarity protection	Yes
Input current	
from load voltage 1L+, max.	150 mA; typ. 60 mA
from load voltage 2L+ (without load), max.	200 mA; typ. 60 mA, DI/DO supply
from load voltage 3L+ (with encoder), max.	600 mA; typ. 80 mA plus encoder supply
from load voltage 3L+ (without load), max.	200 mA; typ. 80 mA
from backplane bus 5 V DC, typ.	135 mA
Encoder supply	
5 V encoder supply	
• 5 V	Yes

• Short-circuit protection	Yes; Electronic overload protection; no protection on applying a normal or counter voltage.
• Output current, max.	250 mA
<b>24 V encoder supply</b>	
• 24 V	Yes
• Short-circuit protection	Yes; Overvoltage and overheating protection if overloaded; diagnostics if output reaches temperature limit; no protection on applying a normal or counter voltage
• Output current, max.	400 mA
<b>Power loss</b>	
Power loss, typ.	6.5 W
<b>Memory</b>	
Type of memory	RAM
Memory size	128 kbyte; required for operation, MMC
<b>Digital inputs</b>	
Number of digital inputs	8; Standard and up to 12 with 24 V DC encoder inputs as digital inputs
<b>Input voltage</b>	
• Rated value (DC)	24 V
• for signal "0"	-30 to +5 V
• for signal "1"	+11 to +30V
<b>Input current</b>	
• for signal "0", max. (permissible quiescent current)	1.5 mA
• for signal "1", typ.	3.8 mA
<b>Input delay (for rated value of input voltage)</b>	
• Input frequency (with a time delay of 0.1 ms), max.	200 kHz
• programmable digital filter delay	None, 5 $\mu$ s, 10 $\mu$ s, 15 $\mu$ s, 20 $\mu$ s, 50 $\mu$ s, 1.6 ms
• Minimum pulse width for program reactions	1 $\mu$ s, 5 $\mu$ s, 10 $\mu$ s, 15 $\mu$ s, 20 $\mu$ s, 50 $\mu$ s, 1,6 ms
<b>for standard inputs</b>	
— at "0" to "1", max.	3 $\mu$ s; typ. 1.5 $\mu$ s
<b>Cable length</b>	
• shielded, max.	600 m
• unshielded, max.	100 m; Shielded cable recommended if filtering delay is set to less than 1.6 ms
<b>Digital outputs</b>	
Number of digital outputs	8
Current-sinking	Yes
Current-sourcing	No
Short-circuit protection	Yes; Overvoltage protection, thermal protection
• Response threshold, typ.	1.7 to 3.5 A

Limitation of inductive shutdown voltage to	2M -45 V typ., (-40 V to -55 V); comment: no protection against inductive kickback >55 mJ
Controlling a digital input	No
<b>Switching capacity of the outputs</b>	
• on lamp load, max.	5 W
<b>Output voltage</b>	
• Rated value (DC)	24 V
• for signal "0", max.	28.8 V
• for signal "1", max.	0.5 V
<b>Output current</b>	
• for signal "1" rated value	0.5 A; At 60 °C
• for signal "1" permissible range for 0 to 60 °C, min.	5 mA
• for signal "1" permissible range for 0 to 60 °C, max.	600 mA
• for signal "0" residual current, max.	1 mA
<b>Output delay with resistive load</b>	
• "0" to "1", max.	1 µs; 0.6 µs 50 mA / 1.0 µs 0.5 A
• "1" to "0", max.	1.5 µs; 1.7 µs 50 mA / 1.5 µs 0.5 A
<b>Parallel switching of two outputs</b>	
• for uprating	Yes; 2
<b>Switching frequency</b>	
• with resistive load, max.	100 kHz; 20 kHz at 0.5 A; 100 kHz at 0.25 A
• with inductive load, max.	2 Hz; 2 Hz at 0.5 A with external commutator diodes; 0.5 Hz at 0.5 A without external commutator diodes
• on lamp load, max.	10 Hz
<b>Cable length</b>	
• shielded, max.	600 m
• unshielded, max.	100 m
<b>Encoder</b>	
<b>Connectable encoders</b>	
• Incremental encoder (symmetrical)	Yes
• Incremental encoder (asymmetrical)	Yes
• Absolute encoder (SSI)	Yes
• 2-wire sensor	Yes
— permissible quiescent current (2-wire sensor), max.	1.5 mA
<b>Encoder signals, incremental encoder (symmetrical)</b>	
• Trace mark signals	A, notA, B, notB
• Zero mark signal	N, notN
• Input voltage	5 V difference signal (phys. RS 422)
• Input frequency, max.	500 kHz

<ul style="list-style-type: none"> <li>• Cable length, shielded, max.</li> </ul>	100 m; 100 m with 24 V supply and 500 kHz; 32 m with 5 V supply and 500 kHz
<b>Encoder signals, incremental encoder (asymmetrical)</b>	
<ul style="list-style-type: none"> <li>• Trace mark signals</li> <li>• Zero mark signal</li> <li>• Input voltage</li> <li>• Input frequency, max.</li> <li>• Cable length, shielded, max.</li> </ul>	<p>A, B</p> <p>N</p> <p>24 V</p> <p>200 kHz</p> <p>50 m; Cable length, HTL incremental encoder, Siemens, type 6FX2001-4: 50 kHz, 25 m shielded, max., 25 kHz, 50 m shielded, max.</p>
<b>Encoder signals, absolute encoder (SSI)</b>	
<ul style="list-style-type: none"> <li>• Data signal</li> <li>• Clock signal</li> <li>• Telegram length, parameterizable</li> <li>• Clock frequency, max.</li> <li>• Cable length, shielded, max.</li> <li>• Monoflop time</li> <li>• Listening mode</li> <li>• Multiturn</li> </ul>	<p>DATA, notDATA</p> <p>CK, notCK</p> <p>13 or 25 bit</p> <p>1 MHz; 125 kHz, 250 kHz, 500 kHz or 1 MHz</p> <p>320 m; At 125 kHz</p> <p>settable: 16/32/48/64 <math>\mu</math>s</p> <p>Yes; one or two stations</p> <p>Yes; 25 bit message frame</p>
<b>Encoder signal evaluation</b>	
<ul style="list-style-type: none"> <li>• Counting direction, forward</li> <li>• Counting direction, backward</li> </ul>	<p>Yes</p> <p>Yes</p>
<b>Response times</b>	
Input- to output response time	5 V input to 24 V output, 0 filter: 1 to 4 $\mu$ s (typ.); 24 V input to 24 V output, 0 filter: 2 to 6 $\mu$ s (typ.)
<b>Interfaces</b>	
<b>Point-to-point connection</b>	
<ul style="list-style-type: none"> <li>• Updating times</li> </ul>	PLC interface: 1.7 ms
<b>Interrupts/diagnostics/status information</b>	
<b>Alarms</b>	
<ul style="list-style-type: none"> <li>• Diagnostic alarm</li> <li>• Hardware interrupt</li> </ul>	<p>Yes; 1L, 2L, 3L missing; MMC error; output overload (8); encoder supply overload; differential wire break; parameterization error; SSI message frame overflow</p> <p>Yes; 8 available; for generation by user program</p>
<b>Diagnoses</b>	
<ul style="list-style-type: none"> <li>• Wire-break in signal transmitter cable</li> <li>• Overflow/underflow</li> <li>• missing load voltage</li> </ul>	<p>Yes</p> <p>Yes</p> <p>Yes</p>
<b>Diagnostics indication LED</b>	
<ul style="list-style-type: none"> <li>• RUN/STOP LED</li> <li>• Module supply 5 V DC (green)</li> <li>• I/O status IOF (red)</li> </ul>	<p>Yes</p> <p>Yes</p> <p>Yes</p>

- Micro Memory Card error MCF (red) Yes
- Group error SF (red) Yes
- Status indicator digital input (green) Yes; I 0 to I 11
- Status indicator digital output (green) Yes; Q 0 to Q 7
- Overload encoder supply voltage 24 V F (red) Yes
- Overload encoder supply voltage 5 V F (red) Yes

### Counter

Counting range, description	Counting range (16-bit counters): -32 768 to 32 767 (user-specific within this range); counting range (32-bit counters): -2 147 483 648 to 2 147 483 647 (user-specific within this range)
Counting range, lower limit	-2 147 483 648
Counting range, upper limit	2 147 483 647
<b>Counting mode</b>	
• Counting mode, individual	Yes
• Counting mode, continuous	Yes
• Counting mode, periodic	Yes

### Potential separation

between 1L and 2L and 3L	Yes
<b>Potential separation digital inputs</b>	
• Potential separation digital inputs	Yes; Yes CPU, I/O and sensor units are isolated

### Ambient conditions

<b>Ambient temperature during operation</b>	
• min.	0 °C
• max.	60 °C
<b>Ambient temperature during storage/transportation</b>	
• min.	-40 °C
• max.	70 °C

### Configuration

<b>Programming</b>	
• Program cycle time (scan)	1 µs

### Connection method

required front connector	1x 40-pin
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### Dimensions

Width	80 mm
Height	125 mm
Depth	120 mm

### Weights

Weight, approx.	434 g; Module weight: approx. 434 g (with 1L connection and without I/O connection or MMC); shipping weight: approx. 500 g (with bus and 1L connection and without I/O connection or MMC)
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