

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
24 V encoder supply	
• 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
Power loss	
Power loss, typ.	6.5 W
Memory	
Type of memory	RAM
Memory size	128 kbyte; required for operation, MMC
Digital inputs	
Number of digital inputs	8; Standard and up to 12 with 24 V DC encoder inputs as digital inputs
Input voltage	
• Rated value (DC)	24 V
• for signal "0"	-30 to +5 V
• for signal "1"	+11 to +30V
Input current	
• for signal "0", max. (permissible quiescent current)	1.5 mA
• for signal "1", typ.	3.8 mA
Input delay (for rated value of input voltage)	
• Input frequency (with a time delay of 0.1 ms), max.	200 kHz
• programmable digital filter delay	None, 5 μ s, 10 μ s, 15 μ s, 20 μ s, 50 μ s, 1.6 ms
• Minimum pulse width for program reactions	1 μ s, 5 μ s, 10 μ s, 15 μ s, 20 μ s, 50 μ s, 1,6 ms
for standard inputs	
— at "0" to "1", max.	3 μ s; typ. 1.5 μ s
Cable length	
• shielded, max.	600 m
• unshielded, max.	100 m; Shielded cable recommended if filtering delay is set to less than 1.6 ms
Digital outputs	
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
Switching capacity of the outputs	
• on lamp load, max.	5 W
Output voltage	
• Rated value (DC)	24 V
• for signal "0", max.	28.8 V
• for signal "1", max.	0.5 V
Output current	
• 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
Output delay with resistive load	
• "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
Parallel switching of two outputs	
• for uprating	Yes; 2
Switching frequency	
• 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
Cable length	
• shielded, max.	600 m
• unshielded, max.	100 m
Encoder	
Connectable encoders	
• 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
Encoder signals, incremental encoder (symmetrical)	
• 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"> • Cable length, shielded, max. 	100 m; 100 m with 24 V supply and 500 kHz; 32 m with 5 V supply and 500 kHz
Encoder signals, incremental encoder (asymmetrical)	
<ul style="list-style-type: none"> • Trace mark signals • Zero mark signal • Input voltage • Input frequency, max. • Cable length, shielded, max. 	<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>
Encoder signals, absolute encoder (SSI)	
<ul style="list-style-type: none"> • Data signal • Clock signal • Telegram length, parameterizable • Clock frequency, max. • Cable length, shielded, max. • Monoflop time • Listening mode • Multiturn 	<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 μs</p> <p>Yes; one or two stations</p> <p>Yes; 25 bit message frame</p>
Encoder signal evaluation	
<ul style="list-style-type: none"> • Counting direction, forward • Counting direction, backward 	<p>Yes</p> <p>Yes</p>
Response times	
Input- to output response time	5 V input to 24 V output, 0 filter: 1 to 4 μ s (typ.); 24 V input to 24 V output, 0 filter: 2 to 6 μ s (typ.)
Interfaces	
Point-to-point connection	
<ul style="list-style-type: none"> • Updating times 	PLC interface: 1.7 ms
Interrupts/diagnostics/status information	
Alarms	
<ul style="list-style-type: none"> • Diagnostic alarm • Hardware interrupt 	<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>
Diagnoses	
<ul style="list-style-type: none"> • Wire-break in signal transmitter cable • Overflow/underflow • missing load voltage 	<p>Yes</p> <p>Yes</p> <p>Yes</p>
Diagnostics indication LED	
<ul style="list-style-type: none"> • RUN/STOP LED • Module supply 5 V DC (green) • I/O status IOF (red) 	<p>Yes</p> <p>Yes</p> <p>Yes</p>

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| • 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

Counting mode

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|-----------------------------|-----|
| • Counting mode, individual | Yes |
| • Counting mode, continuous | Yes |
| • Counting mode, periodic | Yes |

Potential separation

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

Ambient conditions

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

Configuration

Programming	
• 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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last modified:

10/13/2020