SIEMENS

## Product data sheet 6ES7352-5AH01-0AE0

SIMATIC S7-300, FM352-5 WITH SINK OUT,
HIGH SPEED BOOLEAN PROCESSOR,
FOR HIGH-SPEED LOGIC OPERATION 12 DI,
8 DO,
1 ENCODER INTERF. FOR RS422 INCR./SSI
ENCODER

| | |
|---|---|
| **Supply voltage** | |
| 24 V DC | Yes |
| **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 voltage1L+, 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 encoder), max. | 200 mA ; typ. 80 mA |
| from backplane bus 5 V DC, max. | 135 mA ; typ. |
| **Encoder supply** | |
| **5 V encoder supply** | |

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| 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 losses | |
| Power loss, typ. | 6.5 W |
| Memory | |
| Memory card, RAM | 128 kbyte ; required for operation, MMC |
| Digital inputs | |
| Number/binary 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 30 V |
| 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 µs, 10 µs, 15 µs, 20 µs, 50 µs, 1.6 ms |
| Minimum pulse width for program reactions | 1 µs, 5 µs, 10 µs, 15 µs, 20 µs, 50 µs, 1.6 ms |
| for standard inputs | |
| at "0" to "1", max. | 3 µs ; typ. 1.5 µs |
| Cable length | |
| Cable length, shielded, max. | 600 m |
| Cable length unshielded, max. | 100 m ; Shielded cable recommended if filtering delay is set to less than 1.6 ms |

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| **Digital outputs** | |
| Number/binary outputs | 8 |
| Current-sinking | Yes |
| Current-sourcing | No |
| Functionality/short-circuit strength | 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 to -55 V); comment: no protection against inductive kickback >55mJ |
| Lamp load, max. | 5 W |
| Controlling a digital input | No |
| **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 µs ; 0.6 µs 50 mA / 1.0 µs 0.5 A |
| 1 to | 1.5 µs ; 1.7 µs 50 mA / 1.5 µs 0.5 A |
| **Parallel switching of 2 outputs** | |
| for increased power | 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** | |
| Cable length, shielded, max. | 600 m |
| Cable length unshielded, max. | 100 m |
| **Encoder** | |

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| **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 signal | 5 V difference signal (phys. RS 422) |
| Input frequency, max. | 500 kHz |
| 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)** | |
| Trace mark signals | A, B |
| Zero mark signal | N |
| Input voltage | 24 V |
| Input frequency, max. | 200 kHz |
| Cable length, shielded, max. | 50 m ; Cable length, HTL incremental encoder, Siemens, type 6FX2001-4: 50 kHz, 25 m shielded, max., 25 kHz, 50 m shielded, max. |
| **Encoder signals, absolute encoder (SSI)** | |
| Data signal | DATA, notDATA |
| Clock signal | CK, notCK |
| Telegram length | 13 or 25 bit |
| Clock frequency, max. | 1 MHz ; 125 kHz, 250 kHz, 500 kHz or 1 MHz |
| Cable length, shielded, max. | 320 m ; At 125 kHz |
| Monoflop time | settable: 16/32/48/64 µs |
| Listening mode | Yes ; one or two stations |
| Multiturn | Yes ; 25 bit message frame |
| **Encoder signal evaluation** | |
| Counting direction, forward | Yes |
| Counting direction, backward | Yes |

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| **Response times** | |
| Input and output response time | 5 V input to 24 V output, 0 filter: 1 to 4 µs (typ.); 24 V input to 24 V output, 0 filter: 2 to 6 µs (typ.) |
| **Interfaces** | |
| **Point-to-point** | |
| Updating time | PLC interface: 1.7 ms |
| **Interrupts/diagnostics/status information** | |
| **Alarms** | |
| Diagnostic alarm | Yes ; 1L, 2L, 3L missing; MMC error; output overload (8); encoder supply overload; differential wire break; parameterization errror; SSI message frame overflow |
| Hardware interrupt | Yes ; 8 available; for generation by user program |
| **Diagnostic messages** | |
| Wire break in signal transmitter cable | Yes |
| Overflow/underflow | Yes |
| Missing load voltage | Yes |
| **Diagnostics indication LED** | |
| Module supply 5 V DC (green) | Yes |
| I/O status IOF (red) | Yes |
| Micro Memory Card error MCF (red) | Yes |
| Run mode RUN (green) | Yes |
| Group error SF (red) | Yes |
| Status indicator digital output (green) | Yes ; Q 0 to Q 7 |
| Status indicator digital input (green) | Yes ; I 0 to I 11 |
| Stop mode STOP (yellow) | Yes |
| 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 | -2147483648 |
| Counting range, upper limit | 2147483647 |
| **Counting mode** | |

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| Counting mode, individual | Yes |
| Counting mode, continuous | Yes |
| Counting mode, periodic | Yes |
| **Galvanic isolation** | |
| between 1L and 2L and 3L | Yes ; 75 VDC / 60 VAC |
| between digital I/O and 2L and encoder I/O and 3L | Yes (75 V DC, 60 V AC) |
| between backplane bus and digital encoder I/O & 1L & 2L & 3L | Yes (75 V DC, 60 V AC) |
| **Galvanic isolation digital inputs** | |
| Galvanic isolation digital inputs | Yes ; Yes CPU, I/O and sensor units are isolated |
| **Degree and class of protection** | |
| IP20 | Yes |
| **Ambient conditions** | |
| **Operating temperature** | |
| Min. | 0 °C |
| max. | 60 °C |
| **Storage/transport temperature** | |
| Min. | -40 °C |
| max. | 70 °C |
| **Configuration** | |
| **programming** | |
| Program cycle time (scan) | 1 µs |
| **Connection method** | |
| required front connector | 1x 40-pin |
| **Dimensions** | |
| Width | 80 mm |
| Height | 125 mm |
| Depth | 120 mm |
| **Weight** | |
| 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) |
| Status | Apr 9, 2012 |