SIEMENS

## Data sheet 6AG1551-1AB01-7AB0



Figure similar

SIPLUS S7-1500 TM PosInput 2 based on 6ES7551-1AB01-0AB0 with conformal coating -40...+70 °C . counter and position detection module for RS-422 incremental encoder or SSI absolute encoder, 2 channels, 2 DI, 2 DQ per channel 2 channels, 2 DI, 2 DQ per channel

| | |
|---|---|
| **General information** | |
| Product type designation | TM PosInput 2 |
| Firmware version | V2.0 |
| ● FW update possible | Yes |
| based on | 6ES7551-1AB01-0AB0 |
| Number of channels | 2 |
| Product function | |
| ● I&M data | Yes; I&M0 to I&M3 |
| ● Isochronous mode | Yes |
| Engineering with | |
| ● STEP 7 TIA Portal configurable/integrated from version | see entry ID: 109746275 |
| **Installation type/mounting** | |
| Rail mounting | Yes; S7-1500 mounting rail |
| **Supply voltage** | |
| Load voltage L+ | |
| ● Rated value (DC) | 24 V |
| ● permissible range, lower limit (DC) | 19.2 V |
| ● permissible range, upper limit (DC) | 28.8 V |
| ● Reverse polarity protection | Yes |
| **Input current** | |
| Current consumption, max. | 75 mA; without load |
| **Encoder supply** | |
| Number of outputs | 4; One 5V and 24V encoder supply per channel |
| 5 V encoder supply | |
| ● 5 V | Yes; 5.2 V ±2 % |
| ● Short-circuit protection | Yes |
| ● Output current, max. | 300 mA; Per channel |
| 24 V encoder supply | |
| ● 24 V | Yes; L+ (-0.8 V) |
| ● Short-circuit protection | Yes |
| ● Output current, max. | 300 mA; Per channel |
| **Power** | |
| Power consumption from the backplane bus | 1.3 W |
| **Power loss** | |
| Power loss, typ. | 5.5 W |
| **Address area** | |
| Address space per module | |
| ● Inputs | 32 byte; 16 bytes per channel; 4 bytes for fast mode |


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|---|---|
| ● Outputs | 24 byte; 12 bytes per channel; 4 bytes for Motion Control, 0 bytes for fast mode |
| **Digital inputs** | |
| Number of digital inputs | 4; 2 per channel |
| Digital inputs, parameterizable | Yes |
| Input characteristic curve in accordance with IEC 61131, type 3 | Yes |
| Digital input functions, parameterizable | |
| ● 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 |
| Input voltage | |
| ● Type of input voltage | DC |
| ● 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 |
| Input current | |
| ● 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 |
| for technological functions | |
| — parameterizable | Yes |
| Cable length | |
| ● shielded, max. | 1 000 m |
| ● unshielded, max. | 600 m |
| **Digital outputs** | |
| Type of digital output | Transistor |
| Number of digital outputs | 4; 2 per channel |
| Digital outputs, parameterizable | Yes |
| Short-circuit protection | Yes; electronic/thermal |
| ● Response threshold, typ. | 1 A |
| Limitation of inductive shutdown voltage to | L+ (-33 V) |
| Controlling a digital input | Yes |
| Digital output functions, parameterizable | |
| ● Switching tripped by comparison values | Yes |
| ● Freely usable digital output | Yes |
| Switching capacity of the outputs | |
| ● with resistive load, max. | 0.5 A; Per digital output |
| ● on lamp load, max. | 5 W |
| Load resistance range | |
| ● lower limit | 48 Ω |
| ● upper limit | 12 kΩ |
| Output voltage | |
| ● Type of output voltage | DC |
| ● for signal "1", min. | 23.2 V; L+ (-0.8 V) |
| Output current | |
| ● 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 |
| Output delay with resistive load | |
| ● "0" to "1", max. | 50 µs |
| ● "1" to "0", max. | 50 µs |
| Switching frequency | |
| ● with resistive load, max. | 10 kHz |
| ● with inductive load, max. | 0.5 Hz; Acc. to IEC 60947-5-1, DC-13; observe derating curve |
| ● on lamp load, max. | 10 Hz |


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| Total current of the outputs | |
| ● Current per module, max. | 2 A |
| Cable length | |
| ● shielded, max. | 1 000 m |
| ● unshielded, max. | 600 m |
| **Encoder** | |
| Encoder signals, incremental encoder (symmetrical) | |
| ● Input voltage | RS 422 |
| ● Input frequency, max. | 1 MHz |
| ● Counting frequency, max. | 4 MHz; with quadruple evaluation |
| ● Cable length, shielded, max. | 32 m; at 1 MHz |
| ● Signal filter, parameterizable | Yes |
| ● Incremental encoder with A/B tracks, 90° phase offset | Yes |
| ● Incremental encoder with A/B tracks, 90° phase offset and zero track | Yes |
| ● pulse encoder | Yes |
| ● Pulse encoder with direction | Yes |
| ● pulse encoder with one impulse signal per count direction | Yes |
| Encoder signals, incremental encoder (asymmetrical) | |
| ● Input voltage | 5 V TTL (push-pull encoders only) |
| ● Input frequency, max. | 1 MHz |
| ● Counting frequency, max. | 4 MHz; with quadruple evaluation |
| ● Signal filter, parameterizable | Yes |
| ● Incremental encoder with A/B tracks, 90° phase offset | Yes |
| ● Incremental encoder with A/B tracks, 90° phase offset and zero track | Yes |
| ● pulse encoder | Yes |
| ● pulse encoder with direction | Yes |
| ● pulse encoder with one impulse signal per count direction | Yes |
| Encoder signals, absolute encoder (SSI) | |
| ● Input signal | to RS-422 |
| ● Telegram length, parameterizable | 10 ... 40 bit |
| ● Clock frequency, max. | 2 MHz; 125 kHz, 250 kHz, 500 kHz, 1 MHz, 1.5 MHz or 2 MHz |
| ● Binary code | Yes |
| ● Gray code | Yes |
| ● 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. |
| ● Parity bit, parameterizable | Yes |
| ● Monoflop time | 16, 32, 48, 64 µs & automatic |
| ● Multiturn | Yes |
| ● Singleturn | Yes |
| Interface types | |
| ● TTL 5 V | Yes; push-pull encoders only |
| ● RS 422 | Yes |
| **Interrupts/diagnostics/status information** | |
| Alarms | |
| ● Diagnostic alarm | Yes |
| ● Hardware interrupt | Yes |
| Diagnoses | |
| ● Monitoring the supply voltage | Yes |
| ● Wire-break | Yes |
| ● Short-circuit | Yes |
| ● A/B transition error at incremental encoder | Yes |
| ● Telegram error at SSI encoder | Yes |
| Diagnostics indication LED | |
| ● RUN LED | Yes; green LED |
| ● ERROR LED | Yes; red LED |
| ● MAINT LED | Yes; Yellow LED |


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| ● Monitoring of the supply voltage (PWR-LED) | Yes; green LED |
| ● Channel status display | Yes; green LED |
| ● for channel diagnostics | Yes; red LED |
| **Integrated Functions** | |
| Counter | Yes |
| ● Number of counters | 2 |
| ● 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; Per channel |
| — 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 | No |
| ● between the channels and backplane bus | Yes |
| ● Between the channels and load voltage L+ | No |
| **Isolation** | |
| Isolation tested with | 707 V DC (type test) |
| **Ambient conditions** | |
| Ambient temperature during operation | |
| ● horizontal installation, min. | -40 °C; = Tmin (incl. condensation/frost) |
| ● horizontal installation, max. | 70 °C; Please note derating for inductive loads |
| ● vertical installation, min. | -40 °C; = Tmin (incl. condensation/frost) |
| ● vertical installation, max. | 40 °C; Please note derating for inductive loads |
| Ambient temperature during storage/transportation | |
| ● min. | -40 °C |
| ● max. | 70 °C |
| Altitude during operation relating to sea level | |
| ● Installation altitude above sea level, max. | 5 000 m |
| ● Ambient air temperature-barometric pressure-altitude | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) |


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| Relative humidity | |
| ● With condensation, tested in accordance with IEC 60068-2-38, max. | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation |
| Resistance | |
| Coolants and lubricants | |
| — Resistant to commercially available coolants and lubricants | Yes; Incl. diesel and oil droplets in the air |
| Use in stationary industrial systems | |
| — to biologically active substances according to EN 60721-3-3 | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request |
| — to chemically active substances according to EN 60721-3-3 | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| — to mechanically active substances according to EN 60721-3-3 | Yes; Class 3S4 incl. sand, dust, * |
| Use on ships/at sea | |
| — to biologically active substances according to EN 60721-3-6 | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request |
| — to chemically active substances according to EN 60721-3-6 | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| — to mechanically active substances according to EN 60721-3-6 | Yes; Class 6S3 incl. sand, dust; * |
| Usage in industrial process technology | |
| — Against chemically active substances acc. to EN 60654-4 | Yes; Class 3 (excluding trichlorethylene) |
| — Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04 | Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil) |
| Remark | |
| — Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04 | * The supplied plug covers must remain in place over the unused interfaces during operation! |
| Conformal coating | |
| ● Coatings for printed circuit board assemblies acc. to EN 61086 | Yes; Class 2 for high reliability |
| ● Protection against fouling acc. to EN 60664-3 | Yes; Type 1 protection |
| ● Military testing according to MIL-I-46058C, Amendment 7 | Yes; Discoloration of coating possible during service life |
| ● Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A | Yes; Conformal coating, Class A |
| **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 | 35 mm |
| Height | 147 mm |
| Depth | 129 mm |
| **Weights** | |
| Weight, approx. | 325 g |

**Classifications**

| | Version | Classification |
|---|---|---|
| eClass | 14 | 27-24-22-05 |
| eClass | 12 | 27-24-22-05 |
| eClass | 9.1 | 27-24-22-05 |
| eClass | 9 | 27-24-22-05 |
| eClass | 8 | 27-24-22-05 |
| eClass | 7.1 | 27-24-22-05 |
| eClass | 6 | 27-24-22-05 |
| ETIM | 10 | EC001422 |


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|---|---|---|
| ETIM | 9 | EC001422 |
| ETIM | 8 | EC001422 |
| ETIM | 7 | EC001422 |

## Approvals / Certificates

### General Product Approval






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