6ES7314-6BH04-0AB0

Data sheet



SIMATIC S7-300, CPU 314C-2 PTP Compact CPU with MPI, 24 DI/16 DO, 4 AI, 2 AO, 1 Pt100, 4 high-speed counters (60 kHz), integrated interface RS485, Integr. power supply 24 V DC, work memory 192 KB, Front connector (2x 40-pole) and Micro Memory Card required

| General information | |
|---|---|
| HW functional status | 01 |
| Firmware version | V3.3 |
| Engineering with | |
| Programming package | STEP 7 as of V5.5 + SP1 or STEP 7 V5.3 + SP2 or higher with HSP 204 |
| Supply voltage | |
| Rated value (DC) | 24 V |
| permissible range, lower limit (DC) | 19.2 V |
| permissible range, upper limit (DC) | 28.8 V |
| external protection for power supply lines (recommendation) | Miniature circuit breaker, type C; min. 2 A; miniature circuit breaker type B, min. 4 A |
| Mains buffering | |
| Mains/voltage failure stored energy time | 5 ms |
| Repeat rate, min. | 1 s |
| Load voltage L+ | |
| Digital inputs | |
| — load voltage / at digital input / at DC / rated value | 24 V |
| Reverse polarity protection | Yes |
| Digital outputs | |
| — Rated value (DC) | 24 V |
| Reverse polarity protection | No |
| Input current | |
| Current consumption (rated value) | 660 mA |
| Current consumption (in no-load operation), typ. | 150 mA |
| Inrush current, typ. | 5 A |
| l²t | 0.7 A ² ·s |
| Digital inputs | |
| from load voltage L+ (without load), max. | 80 mA |
| Digital outputs | |
| • from load voltage L+, max. | 50 mA |
| Power loss | |
| Power loss, typ. | 13 W |
| Memory | |
| Work memory | |
| • integrated | 192 kbyte |
| expandable | No |
| Load memory | |
| • Plug-in (MMC) | Yes |
| Plug-in (MMC), max. | 8 Mbyte |
| Data management on MMC (after last programming), min. | 10 a |

| Backup | |
|---|--|
| • present | Yes; Guaranteed by MMC (maintenance-free) |
| without battery | Yes; Program and data |
| CPU processing times | |
| for bit operations, typ. | 0.06 µs |
| for word operations, typ. | 0.12 µs |
| for fixed point arithmetic, typ. | 0.16 µs |
| for floating point arithmetic, typ. | 0.59 µs |
| CPU-blocks | |
| Number of blocks (total) | 1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be |
| . , | reduced by the MMC used. |
| DB | |
| Number, max. | 1 024; Number range: 1 to 16000 |
| Size, max. | 64 kbyte |
| FB | |
| Number, max. | 1 024; Number range: 0 to 7999 |
| • Size, max. | 64 kbyte |
| FC | |
| Number, max. | 1 024; Number range: 0 to 7999 |
| • Size, max. | 64 kbyte |
| OB | |
| Number, max. | see instruction list |
| • Size, max. | 64 kbyte |
| Number of free cycle OBs | 1; OB 1 |
| Number of time alarm OBs | 1; OB 10 |
| Number of delay alarm OBs | 2; OB 20, 21 |
| Number of cyclic interrupt OBs | 4; OB 32, 33, 34, 35 |
| Number of process alarm OBs | 1; OB 40 |
| Number of startup OBs | 1; OB 100 |
| Number of asynchronous error OBs | 4; OB 80, 82, 85, 87 |
| Number of synchronous error OBs | 2; OB 121, 122 |
| Nesting depth | |
| per priority class | 16 |
| additional within an error OB | 4 |
| Counters, timers and their retentivity | |
| S7 counter | |
| • Number | 256 |
| Retentivity | |
| — adjustable | Yes |
| — preset | Z 0 to Z 7 |
| 0 " | |
| Counting range | |
| — lower limit | 0 |
| — lower limit — upper limit | |
| — lower limit — upper limit IEC counter | 0 999 |
| lower limit upper limit IEC counter • present | 0 999 Yes |
| lower limit upper limit IEC counter • present • Type | 0 999 Yes SFB |
| lower limit upper limit IEC counter • present • Type • Number | 0 999 Yes |
| - lower limit - upper limit IEC counter • present • Type • Number S7 times | 0 999 Yes SFB Unlimited (limited only by RAM capacity) |
| - lower limit - upper limit IEC counter • present • Type • Number S7 times • Number | 0 999 Yes SFB |
| lower limit upper limit IEC counter • present • Type • Number S7 times • Number Retentivity | 0 999 Yes SFB Unlimited (limited only by RAM capacity) |
| lower limit upper limit IEC counter • present • Type • Number S7 times • Number Retentivity adjustable | 0 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes |
| - lower limit - upper limit IEC counter • present • Type • Number S7 times • Number Retentivity - adjustable - preset | 0 999 Yes SFB Unlimited (limited only by RAM capacity) |
| - lower limit - upper limit IEC counter • present • Type • Number S7 times • Number Retentivity - adjustable - preset Time range | O 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes No retentivity |
| lower limit upper limit IEC counter • present • Type • Number S7 times • Number Retentivity adjustable preset Time range lower limit | 0 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes No retentivity 10 ms |
| lower limit upper limit IEC counter • present • Type • Number S7 times • Number Retentivity adjustable preset Time range lower limit upper limit | O 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes No retentivity |
| lower limit upper limit IEC counter • present • Type • Number S7 times • Number Retentivity adjustable preset Time range lower limit upper limit IEC timer | O 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes No retentivity 10 ms 9 990 s |
| lower limit upper limit IEC counter • present • Type • Number S7 times • Number Retentivity adjustable preset Time range lower limit upper limit IEC timer • present | O 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes No retentivity 10 ms 9 990 s Yes |
| lower limit upper limit IEC counter • present • Type • Number S7 times • Number Retentivity adjustable preset Time range lower limit upper limit IEC timer • present • Type | O 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes No retentivity 10 ms 9 990 s Yes SFB |
| lower limit upper limit IEC counter • present • Type • Number S7 times • Number Retentivity adjustable preset Time range lower limit upper limit IEC timer • present | O 999 Yes SFB Unlimited (limited only by RAM capacity) 256 Yes No retentivity 10 ms 9 990 s Yes |

| Flog | |
|---|---|
| Flag ◆ Size, max. | 256 byte |
| Retentivity available | Yes; MB 0 to MB 255 |
| • | |
| Retentivity preset Number of clearly represents. | MB 0 to MB 15 |
| Number of clock memories Pata blacks | 8; 1 memory byte |
| Data blocks | Versite are estate according DD |
| Retentivity adjustable | Yes; via non-retain property on DB |
| Retentivity preset | Yes |
| Local data | |
| per priority class, max. | 32 kbyte; Max. 2048 bytes per block |
| Address area | |
| I/O address area | |
| • Inputs | 1 024 byte |
| Outputs | 1 024 byte |
| of which distributed | |
| — Inputs | none |
| — Outputs | none |
| Process image | |
| • Inputs | 1 024 byte |
| Outputs | 1 024 byte |
| Inputs, adjustable | 1 024 byte |
| Outputs, adjustable | 1 024 byte |
| Inputs, default | 128 byte |
| Outputs, default | 128 byte |
| Default addresses of the integrated channels | |
| — Digital inputs | 124.0 to 126.7 |
| — Digital outputs | 124.0 to 125.7 |
| — Analog inputs | 752 to 761 |
| Analog outputs | 752 to 755 |
| Digital channels | |
| • Inputs | 1 016 |
| — of which central | 1 016 |
| Outputs | 1 008 |
| — of which central | 1 008 |
| Analog channels | |
| • Inputs | 253 |
| — of which central | 253 |
| Outputs | 250 |
| — of which central | 250 |
| Hardware configuration | |
| Number of expansion units, max. | 3 |
| Number of DP masters | |
| • integrated | none |
| • via CP | 4 |
| | 4 |
| Number of operable FMs and CPs (recommended) | 0 |
| • FM | 8 |
| • CP, PtP | 8 |
| • CP, LAN | 10 |
| Rack | |
| • Racks, max. | 4 |
| Modules per rack, max. | 8; In rack 3 max. 7 |
| Time of day | |
| Clock | |
| Hardware clock (real-time) | Yes |
| retentive and synchronizable | Yes |
| Backup time | 6 wk; At 40 °C ambient temperature |
| Deviation per day, max. | 10 s; Typ.: 2 s |
| Behavior of the clock following POWER-ON | Clock continues running after POWER OFF |
| Behavior of the clock following expiry of backup period | the clock continues at the time of day it had when power was switched off |
| Operating hours counter | |
| | |

| Number/Number range Range of values O to 2°31 hours (when using SFC 101) Granularity retentive Yes; Must be restarted at each restart Clock synchronization supported to MPI, master to MPI, slave in AS, master in AS, slave No Pigital inputs Number of digital inputs of which inputs usable for technological functions integrated channels (DI) Input characteristic curve in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. — up to 60 °C, max. — up to 40 °C, max. Input voltage Rated value (DC) for signal "0" of signal "0" of signal "1", typ. Input delay (for rated value of input voltage) for standard inputs Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs) | | |
|--|---|---|
| Range of values Granularity Granularity Granularity Frenetrive Fresh Must be restarted at each restart Clock synchronization **Supported **Ves **In MPI, master **Ves **In MPI, slave **In AS, naster **Integrated channels (DI) **Input characteristic curve in accordance with IEC 61131, type 1 **Input characteristic curve in accordance with IEC 61131, type 1 **Input characteristic curve in accordance with IEC 61131, type 1 **Input characteristic curve in accordance with IEC 61131, type 1 **Input characteristic curve in accordance with IEC 61131, type 1 **Input characteristic curve in accordance with IEC 61131, type 1 **Input of 00 °C, max. **— up to 60 °C, max. **— up to 60 °C, max. **— up to 60 °C, max. **— up to 40 °C, max. **— 12 **Input closted value (DC) **— of or signal "1" **— for signal "1" **— parameterizable **— Parted value **— a "0" to "1", max. **— a "1" to "0" "1", max. **— a "1" to "0" to "1", max. **— a "1" to "1", max. **— a " | Number | 1 |
| Granularity retentive retentive supported supported to MPI, salve to MPI, salve in AS, master yes in AS, lave No pigital inputs Number of digital inputs verification in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs horizontal installation | - | |
| e retentive Clock synchronization * supported * to MPI, master * to MPI, slave * in AS, master * in AS, slave Polital Imputs Number of digital inputs * of which inputs usable for technological functions integrated channels (DI) Input characteristic curve in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs horizontal installation - up to 40 °C, max. - up to 60 °C, max. 24 - up to 60 °C, max. 24 - up to 60 °C, max. 12 vertical installation - up to 40 °C, max. 12 vertical installation - up to 40 °C, max. 12 vertical installation - up to 40 °C, max. 12 vertical installation - up to 40 °C, max. 12 vertical installation - up to 40 °C, max. 12 vertical installation - up to 40 °C, max. 15 vertical installation - up to 40 °C, max. 16 Name of signal °1° - for signal °1 | - | · · · · · · · · · · · · · · · · · · · |
| Clock synchronization * supported * to MPI, master * to MPI, slave * in AS, master * in AS, slave * No * possible inputs Number of digital inputs * of which inputs usable for technological functions integrated channels (DI) Input characteristic curve in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs * horizontal installation — up to 40 °C, max. — up to 60 °C, max. — up to 60 °C, max. * vertical installation — up to 40 °C, max. — up to 60 °C, max. † 2 Input vortage * Rated value (DC) * for signal "1" * of signal "1" * for sign | | |
| Supported to MPI, slave to MPI, slave in AS, master in AS, master in AS, slave in AS, slave No Digital inputs Number of digital inputs of which inputs usable for technological functions integrated channels (DI) Input characteristic curve in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs horizontal installation | | Yes; Must be restarted at each restart |
| • to MPI, master • to MPI, slave • in AS, master • in AS, slave No Digital inputs Number of digital inputs • of which inputs usable for technological functions integrated channels (DI) - of which inputs usable for technological functions integrated channels (DI) - up to 40 °C, max. - up to 60 °C, max. 12 Input voltage • Rated value (DC) • for signal °1' • 15 to +30 V Input certain stallation - up to 40 °C, max. • for signal *1' - this to +30 V Input certain • for signal *1' - rated value of input voltage for standard inputs - parameterizable - Rated value of input voltage) for standard inputs - Rated value for technological functions - at "0" to "1", max. 28 µs, Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. • unshielded, max. • of vitich high-speed outputs • (Witch high-speed out | | |
| • to MPI, slave • in AS, master • in AS, slave • in AS, slave No Digital inputs Number of digital inputs • of which inputs usable for technological functions integrated channels (Di) i | • • | |
| in AS, master in AS, slave No Digital inputs Number of digital inputs of simultaneously controllable inputs of consumers of simultaneously controllable inputs of consumers of consumers of consumers of consumers of consumers of signal of consumers of or signal of consumers of consumer | • to MPI, master | |
| • in AS, slave No Olgital Imputs 24 | • to MPI, slave | |
| Number of digital inputs • of which inputs usable for technological functions integrated channels (DI) Input characteristic curve in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. — up to 60 °C, max. — up to 60 °C, max. — up to 40 °C, max. — up to 40 °C, max. — up to 40 °C, max. Input voltage • Rated value (DC) • for signal °C' • for signal °1" • for signal °1" • for signal °1", typ. Input current • for signal °1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable — parameterizable — Rated value for technological functions — at "0" to "1", max. Cable length • Shielded, max. • unshielded, max. • unshielded, max. — shielded, max. • unshielded, max. — unshielded, max. — unshielded, max. — shielded, max. — unshielded, max. — unshielded, max. — shielded, max. — unshielded, max. — unsh | | |
| Number of digital inputs • of which inputs usable for technological functions integrated channels (DI) input characteristic curve in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. — up to 60 °C, max. — up to 60 °C, max. — up to 40 °C, max. — up to 40 °C, max. — up to 40 °C, max. — 12 vertical installation — up to 40 °C, max. — 12 input voltage • Rated value (DC) • for signal °0° • for signal °1° • for signal °1° • for signal °1° • for signal °1°, typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable — parameterizable — parameterizable — parameterizable — rated value for technological functions — at °0° to °1°, max. Cable length • shielded, max. • unshielded, max. • unshielded, max. • unshielded, max. • unshielded, max. - unshielded | | No |
| • of which inputs usable for technological functions integrated channels (DI) Input characteristic curve in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. — up to 60 °C, max. — up to 60 °C, max. — up to 60 °C, max. — up to 40 °C, max. — 12 Input voltage • Rated value (DC) • for signal "0" • of or signal "1" • to for signal "1" • to standard inputs — parameterizable — parameterizable — parameterizable — Pated value — Rated value — at "0" to "1", max. — unshielded, max. — our shielded, max. • unshielded, max. • unshielded, max. • unshielded, max. — | Digital inputs | |
| integrated channels (DI) Input characteristic curve in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. — up to 60 °C, max. 24 — up to 60 °C, max. 21 Input voltage • Rated value (DC) • for signal °0° • for signal °1° • for signal *1* • for signal *1*, typ. Input current • for signal *1*, typ. Input dury (for rated value of input voltage) for standard inputs — parameterizable — parameterizable For technological functions — at "0" to "1", max. Cable length • shielded, max. • unshielded, max. • or technological functions — shielded, max. • unshielded, max. • or technological functions — shielded, max. • o | Number of digital inputs | 24 |
| Input characteristic curve in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. — up to 60 °C, max. — up to 60 °C, max. 12 vertical installation — up to 40 °C, max. 12 Input voltage • Rated value (DC) • for signal °0° • for signal "1° • for signal "1° + 15 to +30 V Input current • for signal "1°, typ. Input delay of rated value of input voltage) for standard inputs — parameterizable — parame | of which inputs usable for technological functions | 16 |
| Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. — up to 60 °C, max. 12 vertical installation — up to 40 °C, max. 12 Input voltage • Rated value (DC) • for signal °0° • for signal °1° • for signal °1°, typ. 8 mA Input delay (for rated value of input voltage) for standard inputs — parameterizable — parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standinputs during program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) — Rated value 3 ms for technological functions — at "0" to "1", max. 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. • unshielded, max. • unshielded, max. — shielded, max. — shielded, max. — unshielded, max. — unshielded, max. — shielded, max. — unshielded, max. — on allowed Digital outputs Number of digital outputs • of which high-speed outputs 16 • of which high-speed outputs 4; Notice: You cannot connect the fast outputs of your CPU in parallel integrated channels (DO) 16 Shoetzeiter versions. 1 A | integrated channels (DI) | 24 |
| horizontal installation | Input characteristic curve in accordance with IEC 61131, type 1 | Yes |
| up to 40 °C, max up to 60 °C, max up to 60 °C, max. 12 vertical installation up to 40 °C, max. 12 Input voltage • Rated value (DC) • for signal "0" • for signal "1" +15 to +30 V Input current • for signal "1", typ. 8 mA Input delay (for rated value of input voltage) for standard inputs parameterizable parameterizable parameterizable Rated value | Number of simultaneously controllable inputs | |
| up to 60 °C, max. 12 vertical installation up to 40 °C, max. 12 Input votige Rated value (DC) 24 V for signal "0" -3 to +5V for signal "1" +15 to +30 V Input current of or signal "1", typ. 8 mA Input delay (for rated value of input voltage) for standard inputs parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standinputs during program runtime. Please note that under certain circumstancy your newly set filter time may not be effective until the next filter cycle.) 3 ms for technological functions at "0" to "1", max. 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1000 m; 50 m for technological functions shielded, max. 600 m; for technological functions our shielded, max. 50 m; at maximum count frequency unshielded, max. not allowed Digital outputs Number of di | 1 1 1 11 11 | |
| vertical installation — up to 40 °C, max. Input voltage • Rated value (DC) • for signal "1" • for signal "1" • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable — parameterizable — Rated value — Rated value for technological functions — at "0" to "1", max. Cable length • shielded, max. • unshielded, max. • unshielded, max. — to max. — to max. — to max. — to max. — unshielded, max. — to max. — unshielded, max. — to max. — to max. — to max. — to max. — unshielded, max. — to max. — to max. — unshielded, max. — to max. — | — up to 40 °C, max. | 24 |
| up to 40 °C, max. 12 Input voltage • Rated value (DC) | — up to 60 °C, max. | 12 |
| Input voltage • Rated value (DC) • for signal "0" • for signal "1" • for signal "1", typ. • garmeterizable • for standard inputs — parameterizable — parameterizable — parameterizable — Rated value • garmeterizable • for technological functions — at "0" to "1", max. • signal "1", typ. • shielded, max. • unshielded, max. • unshielded, max. — shielded, max. — shielded, max. — unshielded, max. — unshielded, max. — out the max. | vertical installation | |
| Rated value (DC) for signal "0" for signal "1" for signal "1", typ. Input current For signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable — parameterizable — Rated value — To "1", max. — Ves; 0.1/ 0.3 / 3 / 15 ms (You can reconfigure the input delay of the stands inputs during program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) 3 ms for technological functions — at "0" to "1", max. — 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency — ounting frequency 1 000 m; 50 m for technological functions: No for technological functions: — shielded, max. — unshielded, max. — unshiel | — up to 40 °C, max. | 12 |
| • for signal "0" • for signal "1" Input current • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the stands inputs during program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) — Rated value 3 ms for technological functions — at "0" to "1", max. 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. • unshielded, max. — of which high-speed outputs Number of digital outputs Number of digital outputs • of which high-speed outputs integrated channels (DO) Short-circuit protection • Response threshold, typ. 1 A | Input voltage | |
| • for signal "1" +15 to +30 V Input current • for signal "1", typ. 8 mA Input delay (for rated value of input voltage) for standard inputs — parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the stands inputs during program runtime. Please note that under certain circumstancy your newly set filter time may not be effective until the next filter cycle.) 3 ms for technological functions — at "0" to "1", max. 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. • unshielded, max. 600 m; for technological functions: No for technological functions — shielded, max. — unshielded, max. — unshielded, max. — unshielded, max. — unshielded, max. — of which high-speed outputs Number of digital outputs • of which high-speed outputs integrated channels (DO) Short-circuit protection • Response threshold, typ. 1 A | Rated value (DC) | 24 V |
| Input current • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable Parameterizable Rated value 3 ms for technological functions — at "0" to "1", max. • shielded, max. • unshielded, max. • unshielded, max. — shielded, max. — shielded, max. — unshielded, max. Digital outputs Number of digital outputs • of which high-speed outputs integrated channels (DO) Short-circuit protection • Response threshold, typ. 8 mA 8 minume red detate dithriminum pause between pulses at maximum counting frequency 8 ma 8 | • for signal "0" | -3 to +5V |
| • for signal "1", typ. 8 mA Input delay (for rated value of input voltage) for standard inputs parameterizable parameterizable parameterizable Rated value Rated value Rated value at "0" to "1", max. Cable length shielded, max. unshielded, max. shielded, max. shielded, max. shielded, max. shielded, max. unshielded, max. unshielded, max. of which high-speed outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Rated value Rated value yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs of input solder) yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure the input delay of the standard inputs of wings (You can reconfigure that inputs of wings (You can reconfigure thandard inputs of wings (You can reconfigure thandard inputs of wings (You can reconfigure th | • for signal "1" | +15 to +30 V |
| Input delay (for rated value of input voltage) for standard inputs — parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) — Rated value 3 ms for technological functions — at "0" to "1", max. 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. • unshielded, max. 600 m; for technological functions: No for technological functions — shielded, max. — unshielded, max. — unshielded, max. 50 m; at maximum count frequency not allowed Digital outputs Number of digital outputs • of which high-speed outputs integrated channels (DO) Short-circuit protection • Response threshold, typ. 1 A | Input current | |
| for standard inputs — parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) A max support the standard pour newly set filter time may not be effective until the next filter cycle.) The standard program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) The standard program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) The standard program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) The standard program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) The standard program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) The standard program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) The standard program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) The standard program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) The standard program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) The standard program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) The standard program runtime. The standard program runtime. The standard program until the next filter cycle.) The standard program r | ● for signal "1", typ. | 8 mA |
| — parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the stands inputs during program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) — Rated value 3 ms for technological functions — at "0" to "1", max. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. • unshielded, max. • unshielded, max. — shielded, max. — unshielded, max. — unshielded, max. — unshielded, max. — of which high-speed outputs Number of digital outputs Number of digital outputs 16 • of which high-speed outputs integrated channels (DO) Short-circuit protection • Response threshold, typ. 1 A | Input delay (for rated value of input voltage) | |
| inputs during program runtime. Please note that under certain circumstance your newly set filter time may not be effective until the next filter cycle.) — Rated value for technological functions — at "0" to "1", max. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. • unshielded, max. • unshielded, max. — shielded, max. — unshielded, max. — unshielded, max. — unshielded, max. — unshielded, max. — of which high-speed outputs integrated channels (DO) Short-circuit protection • Response threshold, typ. integrated chanols (typ.) integrated chanols (typ.) 1 A | for standard inputs | |
| for technological functions — at "0" to "1", max. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. • unshielded, max. 600 m; for technological functions: No for technological functions — shielded, max. 50 m; at maximum count frequency — unshielded, max. not allowed Digital outputs Number of digital outputs • of which high-speed outputs integrated channels (DO) Short-circuit protection • Response threshold, typ. 1 000 m; 50 m for technological functions 1 000 m; for technological functions: No 1 000 m; for technological functi | — parameterizable | Yes; $0.1/0.3/3/15$ ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) |
| - at "0" to "1", max. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. • unshielded, max. - shielded, max. - shielded, max. - shielded, max. - unshielded, max. Digital outputs Number of digital outputs • of which high-speed outputs integrated channels (DO) Short-circuit protection • Response threshold, typ. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency 1 000 m; 50 m for technological functions: No 50 m; at maximum count frequency not allowed 16 4; Notice: You cannot connect the fast outputs of your CPU in parallel integrated channels (DO) Short-circuit protection • Response threshold, typ. | — Rated value | 3 ms |
| Cable length • shielded, max. • unshielded, max. - unshielded, max. - shielded, max. - unshielded, max. Digital outputs Number of digital outputs 16 • of which high-speed outputs integrated channels (DO) Short-circuit protection • Response threshold, typ. 1 000 m; 50 m for technological functions 600 m; for technological functions 1000 m; 50 m fo | | |
| shielded, max. unshielded, max. for technological functions: No shielded, max. shielded, max. unshielded, max. shielded, max. unshielded, max. unshielded, max. not allowed Digital outputs of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. 1000 m; 50 m for technological functions 600 m; for technological functions not allowed 16 4; Notice: You cannot connect the fast outputs of your CPU in parallel integrated channels (DO) 16 Yes; Clocked electronically Response threshold, typ. | · | |
| unshielded, max. for technological functions — shielded, max. — unshielded, max. — unshielded, max. — unshielded, max. — unshielded, max. — ot allowed Digital outputs Number of digital outputs — of which high-speed outputs integrated channels (DO) Short-circuit protection — Response threshold, typ. 16 Yes; Clocked electronically 1 A | Cable length | |
| for technological functions — shielded, max. — unshielded, max. Digital outputs Number of digital outputs • of which high-speed outputs integrated channels (DO) Short-circuit protection • Response threshold, typ. 50 m; at maximum count frequency not allowed 16 4; Notice: You cannot connect the fast outputs of your CPU in parallel 16 Yes; Clocked electronically | • shielded, max. | 1 000 m; 50 m for technological functions |
| — shielded, max. — unshielded, max. | • unshielded, max. | 600 m; for technological functions: No |
| — unshielded, max. not allowed Digital outputs 16 ● of which high-speed outputs 4; Notice: You cannot connect the fast outputs of your CPU in parallel integrated channels (DO) Short-circuit protection Yes; Clocked electronically ● Response threshold, typ. 1 A | for technological functions | |
| Digital outputs Number of digital outputs 16 ● of which high-speed outputs 4; Notice: You cannot connect the fast outputs of your CPU in parallel integrated channels (DO) Short-circuit protection Yes; Clocked electronically ● Response threshold, typ. 1 A | — shielded, max. | 50 m; at maximum count frequency |
| Number of digital outputs | | not allowed |
| of which high-speed outputs integrated channels (DO) Short-circuit protection Response threshold, typ. 4; Notice: You cannot connect the fast outputs of your CPU in parallel You cannot connect the fast outputs of your CPU in parallel Yes; Clocked electronically | Digital outputs | |
| integrated channels (DO) 16 Short-circuit protection Yes; Clocked electronically • Response threshold, typ. 1 A | Number of digital outputs | 16 |
| Short-circuit protection • Response threshold, typ. Yes; Clocked electronically 1 A | of which high-speed outputs | 4; Notice: You cannot connect the fast outputs of your CPU in parallel |
| • Response threshold, typ. 1 A | integrated channels (DO) | 16 |
| | Short-circuit protection | Yes; Clocked electronically |
| Limitation of inductive shutdown voltage to L+ (-48 V) | Response threshold, typ. | 1A |
| | Limitation of inductive shutdown voltage to | L+ (-48 V) |
| Controlling a digital input Yes | Controlling a digital input | Yes |
| Switching capacity of the outputs | Switching capacity of the outputs | |
| • on lamp load, max. 5 W | • on lamp load, max. | 5 W |
| Load resistance range | Load resistance range | |
| • lower limit 48 Ω | • lower limit | 48 Ω |
| • upper limit 4 kΩ | • upper limit | 4 kΩ |
| Output voltage | Output voltage | |
| ● for signal "1", min. L+ (-0.8 V) | | L+ (-0.8 V) |
| Output current | | |
| • for signal "1" rated value 500 mA | · | 500 mA |
| • for signal "1" permissible range, min. 5 mA | - | 5 mA |

| for circul 11411 pormionible record many | 0.0 A |
|---|--|
| • for signal "1" permissible range, max. | 0.6 A |
| for signal "1" minimum load current for signal "0" residual current, required | 5 mA |
| • for signal "0" residual current, max. | 0.5 mA |
| Parallel switching of two outputs | No |
| for upratingfor redundant control of a load | Yes |
| Switching frequency | 165 |
| with resistive load, max. | 100 Hz |
| with resistive load, max. with inductive load, max. | 0.5 Hz |
| on lamp load, max. | 100 Hz |
| of the pulse outputs, with resistive load, max. | 2.5 kHz |
| Total current of the outputs (per group) | 2.0 M (2 |
| horizontal installation | |
| — up to 40 °C, max. | 3 A |
| — up to 60 °C, max. | 2 A |
| vertical installation | |
| — up to 40 °C, max. | 2 A |
| Cable length | |
| shielded, max. | 1 000 m |
| • unshielded, max. | 600 m |
| Analog inputs | |
| Number of analog inputs | 5 |
| For voltage/current measurement | 4 |
| For resistance/resistance thermometer measurement | 1 |
| integrated channels (AI) | 5; 4x current/voltage, 1x resistance |
| permissible input voltage for current input (destruction limit), max. | 5 V; Permanent |
| permissible input voltage for voltage input (destruction limit), max. | 30 V; Permanent |
| permissible input current for voltage input (destruction limit), max. | 0.5 mA; Permanent |
| permissible input current for current input (destruction limit), max. | 50 mA; Permanent |
| Electrical input frequency, max. | 400 Hz |
| No-load voltage for resistance-type transmitter, typ. | 3.3 V |
| Constant measurement current for resistance-type transmitter, typ. | 1.25 mA |
| Technical unit for temperature measurement adjustable | Yes; Degrees Celsius / degrees Fahrenheit / Kelvin |
| Input ranges | |
| Voltage | Yes; ± 10 V / 100 k Ω ; 0 V to 10 V / 100 k Ω |
| Current | Yes; ±20 mA / 100 Ω ; 0 mA to 20 mA / 100 Ω ; 4 mA to 20 mA / 100 Ω |
| Resistance thermometer | Yes; Pt 100 / 10 MΩ |
| Resistance | Yes; 0 Ω to 600 Ω / 10 M Ω |
| Input ranges (rated values), voltages | V |
| • 0 to +10 V | Yes |
| — Input resistance (0 to 10 V) | 100 kΩ |
| Input ranges (rated values), currents | Van |
| • 0 to 20 mA | Yes |
| — Input resistance (0 to 20 mA) | 100 Ω |
| • -20 mA to +20 mA | Yes |
| — Input resistance (-20 mA to +20 mA) | 100 Ω |
| • 4 mA to 20 mA | Yes |
| — Input resistance (4 mA to 20 mA) | 100 Ω |
| Input ranges (rated values), resistance thermometer • Pt 100 | Yes |
| — Input resistance (Pt 100) | 10 MΩ |
| Input ranges (rated values), resistors | 10 M77 |
| • 0 to 600 ohms | Yes |
| Input resistance (0 to 600 ohms) | 10 MΩ |
| Thermocouple (TC) | TO MAL |
| Temperature compensation | |
| — parameterizable | No |
| paramotonzable | |

| Characteristic linearization | |
|---|---|
| parameterizable | Yes; by software |
| — for resistance thermometer | Pt 100 |
| Cable length | |
| shielded, max. | 100 m |
| Analog outputs | 100 111 |
| Number of analog outputs | 2 |
| integrated channels (AO) | 2 |
| Voltage output, short-circuit protection | Yes |
| Voltage output, short-circuit current, max. | 55 mA |
| Current output, no-load voltage, max. | 14 V |
| Output ranges, voltage | |
| • 0 to 10 V | Yes |
| • -10 V to +10 V | Yes |
| Output ranges, current | |
| • 0 to 20 mA | Yes |
| • -20 mA to +20 mA | Yes |
| • 4 mA to 20 mA | Yes |
| Connection of actuators | |
| for voltage output two-wire connection | Yes; Without compensation of the line resistances |
| for voltage output four-wire connection | No |
| for current output two-wire connection | Yes |
| Load impedance (in rated range of output) | |
| with voltage outputs, min. | 1 kΩ |
| • with voltage outputs, capacitive load, max. | 0.1 μF |
| with current outputs, max. | 300 Ω |
| with current outputs, inductive load, max. | 0.1 mH |
| Destruction limits against externally applied voltages and currents | |
| Voltages at the outputs towards MANA | 16 V; Permanent |
| current / at the analog outputs / as destruction limit for | 50 mA; Permanent |
| externally applied voltage / maximum permissible | |
| Cable length • shielded, max. | 200 m |
| Analog value generation for the inputs | 200 111 |
| | Actual value energities (eucocceive energyimation) |
| Measurement principle Integration and conversion time/resolution per channel | Actual value encryption (successive approximation) |
| integration and conversion time/resolution ber channel | |
| - I | 12 hit |
| Resolution with overrange (bit including sign), max. | 12 bit Yes: 16.6 / 20 ms |
| Resolution with overrange (bit including sign), max.Integration time, parameterizable | Yes; 16.6 / 20 ms |
| Resolution with overrange (bit including sign), max. | |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference | Yes; 16.6 / 20 ms |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels | Yes; 16.6 / 20 ms 50 / 60 Hz |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Conversion time (per channel) | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Conversion time (per channel) Settling time | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms 12 bit 1 ms |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Conversion time (per channel) Settling time for resistive load | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms 12 bit 1 ms 0.6 ms |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Conversion time (per channel) Settling time for resistive load for capacitive load | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms 12 bit 1 ms 0.6 ms 1 ms |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Conversion time (per channel) Settling time for resistive load for inductive load | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms 12 bit 1 ms 0.6 ms |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Conversion time (per channel) Settling time for resistive load for capacitive load for inductive load Encoder | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms 12 bit 1 ms 0.6 ms 1 ms |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Conversion time (per channel) Settling time for resistive load for capacitive load for inductive load Encoder Connection of signal encoders | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms 12 bit 1 ms 0.6 ms 1 ms 0.5 ms |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Conversion time (per channel) Settling time for resistive load for capacitive load for inductive load for inductive load Encoder Connection of signal encoders for voltage measurement | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms 12 bit 1 ms 0.6 ms 1 ms 0.5 ms |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Conversion time (per channel) Settling time for resistive load for capacitive load for inductive load Fincoder Connection of signal encoders for voltage measurement for current measurement as 2-wire transducer | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms 12 bit 1 ms 0.6 ms 1 ms 0.5 ms Yes Yes; with external supply |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Conversion time (per channel) Settling time for resistive load for capacitive load for inductive load Encoder Connection of signal encoders for voltage measurement for current measurement as 2-wire transducer for current measurement as 4-wire transducer | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms 12 bit 1 ms 0.6 ms 1 ms 0.5 ms Yes Yes; with external supply Yes |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Conversion time (per channel) Settling time for resistive load for capacitive load for inductive load Fincoder Connection of signal encoders for voltage measurement for current measurement as 2-wire transducer for current measurement as 4-wire transducer for resistance measurement with two-wire connection | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms 12 bit 1 ms 0.6 ms 1 ms 0.5 ms Yes Yes; with external supply Yes Yes; Without compensation of the line resistances |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Conversion time (per channel) Settling time for resistive load for capacitive load for inductive load for inductive load Encoder Connection of signal encoders for voltage measurement for current measurement as 2-wire transducer for current measurement as 4-wire transducer for resistance measurement with two-wire connection for resistance measurement with three-wire connection | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms 12 bit 1 ms 0.6 ms 1 ms 0.5 ms Yes Yes; with external supply Yes Yes; Without compensation of the line resistances No |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Conversion time (per channel) Settling time for resistive load for capacitive load for inductive load Fincoder Connection of signal encoders for voltage measurement for current measurement as 2-wire transducer for current measurement as 4-wire transducer for resistance measurement with two-wire connection for resistance measurement with four-wire connection | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms 12 bit 1 ms 0.6 ms 1 ms 0.5 ms Yes Yes; with external supply Yes Yes; Without compensation of the line resistances |
| Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released) Analog value generation for the outputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Conversion time (per channel) Settling time for resistive load for capacitive load for inductive load for inductive load Encoder Connection of signal encoders for voltage measurement for current measurement as 2-wire transducer for current measurement as 4-wire transducer for resistance measurement with two-wire connection for resistance measurement with three-wire connection | Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms 1 ms 12 bit 1 ms 0.6 ms 1 ms 0.5 ms Yes Yes; with external supply Yes Yes; Without compensation of the line resistances No |

| permissible quiescent current (2-wire sensor), max. | 1.5 mA |
|---|---|
| — permissible quiescent current (z-wire sensor), max. Errors/accuracies | ראוו ע.ו |
| Temperature error (relative to input range), (+/-) | 0.006 %/K |
| Crosstalk between the inputs, min. | 60 dB |
| Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) | 0.06 % |
| Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-) | 0.1 % |
| Linearity error (relative to output range), (+/-) | 0.15 % |
| Temperature error (relative to output range), (+/-) | 0.01 %/K |
| Crosstalk between the outputs, min. | 60 dB |
| Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) | 0.06 % |
| Operational error limit in overall temperature range | |
| Voltage, relative to input range, (+/-) | 1 % |
| Current, relative to input range, (+/-) | 1 % |
| Resistance, relative to input range, (+/-) | 1 % |
| Voltage, relative to output range, (+/-) | 1 % |
| Current, relative to output range, (+/-) | 1 % |
| Basic error limit (operational limit at 25 °C) | |
| Voltage, relative to input range, (+/-) | 0.8 %; Linearity error ±0.06 % |
| • Current, relative to input range, (+/-) | 0.8 %; Linearity error ±0.06 % |
| Resistance, relative to input range, (+/-) | 0.8 %; Linearity error ±0.2 % |
| Resistance thermometer, relative to input range, (+/-) Neltage relative to extract range (+/-) | 0.8 % |
| Voltage, relative to output range, (+/-) | 0.8 % |
| • Current, relative to output range, (+/-) | 0.8 % |
| Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference Series mode interference (peak value of interference < | 30 dB |
| rated value of input range), min. | 40 dP |
| Common mode interference, min. Interfaces | 40 dB |
| Number of industrial Ethernet interfaces | 0 |
| Number of PROFINET interfaces | 0 |
| Number of RS 485 interfaces | 1: MPI |
| Number of RS 422 interfaces | 1; RS 422 / 485 combined |
| Point-to-point connection | , |
| Cable length, max. | 1 200 m |
| Integrated protocol driver | |
| — 3964 (R) | Yes |
| — ASCII | Yes |
| — RK 512 | Yes |
| Transmission rate, RS 422/485 | |
| — with 3964 (R) protocol, max. | 19.2 kbit/s; 38.4 kbit/s half duplex; 19.2 kbit/s full duplex |
| — with ASCII protocol, max. | 19.2 kbit/s; 38.4 kbit/s half duplex; 19.2 kbit/s full duplex |
| — with RK 512 protocol, max. | 19.2 kbit/s; 38.4 kbit/s half duplex; 19.2 kbit/s full duplex |
| 1. Interface | |
| Interface type | Integrated RS 485 interface |
| Isolated | No |
| Interface types | |
| • RS 485 | Yes |
| Output current of the interface, max. | 200 mA |
| Protocols | |
| • MPI | Yes |
| PROFIBUS DP master | No |
| PROFIBUS DP slave | No |
| Point-to-point connection | No |
| MPI | |
| Transmission rate, max. | 187.5 kbit/s |
| Services | W |
| — PG/OP communication | Yes |
| — Routing | No Yea |
| Global data communication | Yes |

| — S7 basic communication | Yes |
|--|---|
| — S7 communication | Yes; Only server, configured on one side |
| — S7 communication, as client | No; but via CP and loadable FB |
| — S7 communication, as server | Yes |
| 2. Interface | 165 |
| Interface type | Integrated RS 422/ 485 interface |
| Isolated | Yes |
| Interface types | |
| • RS 485 | Yes; RS 422 / 485 (X.27) |
| Output current of the interface, max. | No |
| Protocols | 110 |
| • MPI | No |
| PROFINET IO Controller | No |
| PROFINET IO Device | No |
| PROFINET CBA | No |
| PROFIBUS DP master | No |
| PROFIBUS DP slave | No |
| Point-to-point connection | Yes |
| Point-to-point connection | |
| Transmission rate, max. | 19.2 kbit/s; 38.4 kbit/s half duplex; 19.2 kbit/s full duplex |
| Interface controllable from the user program | Yes |
| Interface controllable from the dash program Interface can trigger alarm/interrupt in the user program | Yes; Message on break - identification |
| Protocols | |
| PROFIsafe | No |
| communication functions / header | 110 |
| PG/OP communication | Yes |
| Data record routing | No |
| Global data communication | NO |
| supported | Yes |
| Number of GD loops, max. | 8 |
| Number of GD packets, max. | 8 |
| Number of GD packets, max. Number of GD packets, transmitter, max. | 8 |
| Number of GD packets, transmitter, max. Number of GD packets, receiver, max. | 8 |
| Size of GD packets, max. | 22 byte |
| Size of GD packet (of which consistent), max. | 22 byte |
| S7 basic communication | 22 byto |
| communication function / S7 basic communication | Yes |
| User data per job, max. | 76 byte |
| User data per job, max. User data per job (of which consistent), max. | 76 byte; 76 bytes (with X SEND or X RCV); 64 bytes (with X PUT or X GET |
| • Osci data per job (or willer consistent), max. | as server) |
| S7 communication | |
| • supported | Yes |
| • as server | Yes |
| • as client | Yes; Via CP and loadable FB |
| User data per job, max. | 180 kbyte; With PUT/GET |
| User data per job (of which consistent), max. | 240 byte; as server |
| S5 compatible communication | |
| • supported | Yes; via CP and loadable FC |
| Number of connections | |
| • overall | 12 |
| usable for PG communication | 11 |
| reserved for PG communication | 1 |
| adjustable for PG communication, min. | 1 |
| adjustable for PG communication, max. | 11 |
| usable for OP communication | 11 |
| reserved for OP communication | 1 |
| adjustable for OP communication, min. | 1 |
| adjustable for OP communication, max. | 11 |
| usable for S7 basic communication | 8 |
| reserved for S7 basic communication | 0 |
| adjustable for S7 basic communication, min. | 0 |
| | |

| — adjustable for S7 basic communication, max. | 8 |
|--|--|
| S7 message functions | |
| Number of login stations for message functions, max. | 12; Depending on the configured connections for PG/OP and S7 basic communication |
| Process diagnostic messages | Yes |
| simultaneously active Alarm-S blocks, max. | 300 |
| Test commissioning functions | |
| Status block | Yes; Up to 2 simultaneously |
| Single step | Yes |
| Number of breakpoints | 4 |
| Status/control | |
| Status/control variable | Yes |
| Variables | Inputs, outputs, memory bits, DB, times, counters |
| Number of variables, max. | 30 |
| of which status variables, max. | 30 |
| of which control variables, max. | 14 |
| Forcing | 17 |
| • | Yes |
| ForcingForcing, variables | |
| Forcing, variablesNumber of variables, max. | Inputs, outputs 10 |
| · | 10 |
| Diagnostic buffer | Von |
| • present | Yes |
| Number of entries, max. | 500 No. |
| — adjustable | No |
| — of which powerfail-proof | 100; Only the last 100 entries are retained |
| Number of entries readable in RUN, max. | 499 |
| — adjustable | Yes; From 10 to 499 |
| — preset | 10 |
| Service data | |
| can be read out | Yes |
| Interrupts/diagnostics/status information | |
| Diagnostics indication LED | |
| Status indicator digital input (green) | Yes |
| Status indicator digital output (green) | Yes |
| Integrated Functions | |
| Frequency measurement | Yes |
| Number of frequency meters | 4; up to 60 kHz (see "Technological Functions" manual) |
| controlled positioning | Yes |
| integrated function blocks (closed-loop control) | Yes; PID controller (see "Technological Functions" manual) |
| PID controller | Yes |
| Number of pulse outputs | 4; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual) |
| Limit frequency (pulse) | 2.5 kHz |
| Potential separation | |
| Potential separation digital inputs | |
| Potential separation digital inputs | Yes |
| • between the channels | No |
| • between the channels and backplane bus | Yes |
| Potential separation digital outputs | |
| Potential separation digital outputs | Yes |
| between the channels | Yes |
| between the channels, in groups of | 8 |
| between the channels and backplane bus | Yes |
| Potential separation analog inputs | |
| Potential separation analog inputs | Yes; common for analog I/O |
| between the channels | No |
| between the channels and backplane bus | Yes |
| Potential separation analog outputs | |
| Potential separation analog outputs | Yes; common for analog I/O |
| | |
| - · · · · · · · · · · · · · · · · · · · | |
| between the channels between the channels and backplane bus | No Yes |

| Isolation | |
|---|--|
| Isolation tested with | 600 V DC |
| Ambient conditions | |
| Ambient temperature during operation | |
| • min. | 0 °C |
| • max. | 60 °C |
| configuration / header | |
| Configuration software | |
| • STEP 7 | Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203 |
| STEP 7 Lite | No |
| configuration / programming / header | |
| Command set | see instruction list |
| Nesting levels | 8 |
| System functions (SFC) | see instruction list |
| System function blocks (SFB) | see instruction list |
| Programming language | |
| — LAD | Yes |
| — FBD | Yes |
| — STL | Yes |
| — SCL | Yes |
| — CFC | Yes |
| — GRAPH | Yes |
| — HiGraph® | Yes |
| Know-how protection | |
| User program protection/password protection | Yes |
| Block encryption | Yes; With S7 block Privacy |
| Dimensions | |
| Width | 120 mm |
| Height | 125 mm |
| Depth | 130 mm |
| Weights | |
| Weight, approx. | 680 g |

3/12/2024

last modified: