SIEMENS

Data sheet

6ES7416-3ES06-0AB0

*********** Replacement part ******** SIMATIC S7-400, CPU 416-3 PN/DP Central processing unit with: work memory 16 MB, (8 MB code, 8 MB data), Interfaces: 1st interface MPI/DP 12 Mbit/s, (X1), 2nd interface Ethernet/PROFINET (X5), 3rd interface plug-in IFM module (IF1)



| General information | |
|---|--|
| Product type designation | CPU 416-3 PN/DP |
| HW functional status | 01 |
| Firmware version | V6.0 |
| Product function | |
| Isochronous mode | Yes; Via PROFIBUS DP or PROFINET interface |
| Engineering with | |
| Programming package | STEP 7 V5.5 or higher/iMap V3.0 + iMap STEP 7 Add-on V3.0 SP5 or higher |
| CiR - Configuration in RUN | |
| CiR synchronization time, basic load | 100 ms |
| CiR synchronization time, time per I/O byte | 10 μs; Time per I/O byte |
| Supply voltage | |
| Rated value (DC) | |
| • 24 V DC | No; Power supply via system power supply |
| Input current | |

| | 1.3 A |
|--|---|
| from backplane bus 5 V DC, typ. from backplane bus 5 V DC, max. | 1.5 A |
| from backplane bus 24 V DC, max. | 300 mA; 150 mA per DP interface |
| from interface 5 V DC, max. | 90 mA; At each DP interface |
| | , |
| Power loss | |
| Power loss, typ. | 6.5 W |
| Power loss, max. | 7.5 W |
| Memory | |
| Type of memory | RAM |
| Work memory | |
| • integrated | 16 Mbyte |
| integrated (for program) | 8 Mbyte |
| integrated (for data) | 8 Mbyte |
| • expandable | No |
| Load memory | |
| expandable FEPROM | Yes; with Memory Card (FLASH) |
| • expandable FEPROM, max. | 64 Mbyte |
| ● integrated RAM, max. | 1 Mbyte |
| • expandable RAM | Yes; with Memory Card (RAM) |
| • expandable RAM, max. | 64 Mbyte |
| Backup | |
| • present | Yes |
| • with battery | Yes; all data |
| • without battery | No |
| Battery | |
| Backup battery | |
| Backup current, typ. | 125 μA; up to 40 °C |
| Backup current, max. | 450 μΑ |
| Backup time, max. | Dealt with in the module data manual with the secondary |
| | conditions and the factors of influence |
| Feeding of external backup voltage to CPU | 5 V DC to 15 V DC |
| CPU processing times | |
| for bit operations, typ. | 30 ns |
| for word operations, typ. | 30 ns |
| for fixed point arithmetic, typ. | 30 ns |
| for floating point arithmetic, typ. | 90 ns |
| CPU-blocks | |
| DB | |
| • Number, max. | 10 000; Number range: 1 to 16000 |
| | |

| Number, max. \$ 000; Number range: 0 to 7999 Size, max. 64 kbyte FC Number, max. \$ 000; Number range: 0 to 7999 Size, max. 64 kbyte OB Number, max. \$ 64 kbyte Number of free cycle OBs 1; OB 1 Number of time alarm OBs 4; OB 20-23 Number of delay alam OBs 4; OB 20-23 Number of cyclic interrupt OBs 9; OB 30-38 (shortest cycle that can be set = 500 µs) Number of process alarm OBs 4; OB 40-47 Number of process alarm OBs 4; OB 61-64 Number of multicomputing OBs 1; OB 60 Number of startup OBs 1; OB 80 Number of startup OBs 3; OB 100-102 Number of startup OBs 3; OB 100-102 Number of startup OBs 3; OB 100-102 Number of startup OBs 2; OB 80-88 Number of startup OBs 2; OB 121, 122 Nesting depth per priority class 2 Counters, timers and their retentivity S' counter - lower limit 0 - upper limit 2 047 - upper limit 0 - upper limit 999 IEC counter | FB | |
|---|--|--|
| FC 5000; Number range: 0 to 7999 • Size, max. 64 kbyte OB 64 kbyte • Number, max. see instruction list • Size, max. 64 kbyte • Number of free cycle OBs 1: 0B 1 • Number of file cycle OBs 1: 0B 1 • Number of file cycle OBs 9: 0B 30:38 (shortest cycle that can be set = 500 µs) • Number of cyclic interrupt OBs 9: 0B 30:38 (shortest cycle that can be set = 500 µs) • Number of process alarm OBs 8: 0B 40-47 • Number of DPV1 alarm OBs 3: 0B 55-57 • Number of sochronous mode OBs 1: 0B 80 • Number of startup OBs 1: 0B 80 • Number of startup OBs 1: 0B 90 • Number of synchronous error OBs 2: 0B 121, 122 Nesting depth 2 • per priority class 24 • additional within an error OB 2 ST counter 2 048 • Number - adjustable • lower limit 0 - lower limit 0 - upper limit 2 047 - preset Z 0 to Z 7 Countery limit 0 <td>• Number, max.</td> <td>5 000; Number range: 0 to 7999</td> | • Number, max. | 5 000; Number range: 0 to 7999 |
| • Number, max.5 000; Number range: 0 to 7999• Size, max.64 kbyteOB | • Size, max. | 64 kbyte |
| • Size, max.64 kbyleOB• Number, max.see instruction list• Size, max.64 kbyle• Number of the cycle OBs1.0B 1• Number of time alarn OBs8: 0B 10-17• Number of delay alarn OBs9: OB 30-38 (shortest cycle that can be set = 500 µs)• Number of cyclic interrupt OBs9: OB 30-38 (shortest cycle that can be set = 500 µs)• Number of process alarn OBs8: OB 40-47• Number of DPV1 alarn OBs3: OB 55-57• Number of sochronous mode OBs4: OB 60• Number of multicomputing OBs1: OB 90• Number of satrup OBs3: OB 100-102• Number of asynchronous error OBs9: OB 80-88• Number of synchronous error OBs2: OB 121, 122Netter• per priority class• per priority class24• additional within an error OB2Strounter• Outsets, timers and their retentivityStrounter• Outsets, timers and their retentivity• number2 048Retentivity• adjustable• number Imit0• upper limit2 047• preset2 016 Z 7• Counting range• Un Z 7• number limit0• nupper limit0• upper limit0• preset2 016 Z 7 | FC | |
| OB see instruction list • Number, max. 64 kbyte • Number of free cycle OBs 1:0B 1 • Number of free cycle OBs 1:0B 1 • Number of delay alarn OBs 8:0B 10-17 • Number of cyclic interrupt OBs 9:0B 30-38 (shortest cycle that can be set = 500 µs) • Number of cyclic interrupt OBs 9:0B 30-38 (shortest cycle that can be set = 500 µs) • Number of process alarn OBs 8:0B 40-47 • Number of DPV1 alarn OBs 3:0B 55-57 • Number of multicomputing OBs 1:0B 60 • Number of stochronous mode OBs 4:0B 80-447 • Number of stochronous error OBs 9:0B 80-88 • Number of stochronous error OBs 9:0B 80-88 • Number of synchronous error OBs 2:0B 80-88 • Number of synchronous error OBs 2:0B 121, 122 Nesting depth 2 • per priority class 24 • additional within an error OB 2 S7 counter 2 048 • Number 9 • number limit 0 - lower limit 0 - upper limit 2 047 - preset 2 016 Z 7 | • Number, max. | 5 000; Number range: 0 to 7999 |
| • Number, max.see instruction list• Size, max.64 kbyte• Number of free cycle OBs1; OB 1• Number of time alarm OBs8; OB 10-17• Number of delay alarm OBs4; OB 20-23• Number of cyclic interrupt OBs9; OB 30-38 (shortest cycle that can be set = 500 µs)• Number of process alarm OBs8; OB 40-47• Number of DPV1 alarm OBs3; OB 55-57• Number of bickground OBs4; OB 60• Number of bickground OBs1; OB 60• Number of bickground OBs1; OB 90• Number of startup OBs3; OB 100-102• Number of synchronous error OBs9; OB 80-88• Number of synchronous error OBs2; OB 121, 122Nesting depth2• Counters, timers and their retentivity2S7 counter2• Number2 043• number initit0- cuper limit2 047- preset2 010 Z 7• Counting range lower limit0- upper limit999 | • Size, max. | 64 kbyte |
| Namber of free cycle OBs Number of free cycle OBs Number of time alarm OBs Number of delay alarm OBs Number of delay alarm OBs Number of cyclic interrupt OBs Number of process alarm OBs Number of DPV1 alarm OBs Number of DPV1 alarm OBs Number of isochronous mode OBs Number of multicomputing OBs Number of background OBs Number of startup OBs Number of synchronous error OBs OB 80-88 <li< td=""><td>OB</td><td></td></li<> | OB | |
| Number of free cycle OBs1; OB 1Number of time alarm OBs8; OB 10-17Number of delay alarm OBs4; OB 20-23Number of cyclic interrupt OBs9; OB 30-38 (shortest cycle that can be set = 500 µs)Number of process alarm OBs8; OB 40-47Number of DPV1 alarm OBs3; OB 55-57Number of isochronous mode OBs4; OB 60Number of startup OBs1; OB 90Number of startup OBs3; OB 100-102Number of asynchronous error OBs9; OB 80-88Number of synchronous error OBs9; OB 121, 122Nesting depth2• Number2• Number2• Number2• Number2• Number2• Number2• Outers, timers and their retentivityYes• over limit0• upper limit2 047• preset2 0 to Z 7• Counting range lower limit0- upper limit999 | • Number, max. | see instruction list |
| Number of time alarm OBs8; OB 10-17Number of delay alarm OBs4; OB 20-23Number of cyclic interrupt OBs9; OB 30-38 (shortest cycle that can be set = 500 µs)Number of process alarm OBs8; OB 40-47Number of DPV1 alarm OBs3; OB 55-57Number of isochronous mode OBs4; OB 61-64Number of background OBs1; OB 60Number of startup OBs1; OB 90Number of startup OBs3; OB 100-102Number of asynchronous error OBs9; OB 80-88Number of synchronous error OBs2; OB 121, 122Nesting depth24• per priority class24• additional within an error OB2Counters, timers and their retentivity2048Retentivity adjustableYes- lower limit0- upper limit2047- presetZ 0 to Z 7Counting range lower limit0- upper limit999 | • Size, max. | 64 kbyte |
| • Number of delay alarm OBs4; OB 20-23• Number of cyclic interrupt OBs9; OB 30-38 (shortest cycle that can be set = 500 µs)• Number of process alarm OBs8; OB 40-47• Number of DPV1 alarm OBs3; OB 55-57• Number of isochronous mode OBs4; OB 61-64• Number of multicomputing OBs1; OB 60• Number of startup OBs3; OB 100-102• Number of startup OBs3; OB 100-102• Number of synchronous error OBs9; OB 80-88• Number of synchronous error OBs2; OB 121, 122Nesting depth24• per priority class24• additional within an error OB2 Counters, timers and their retentivity 2 048 Retentivity adjustableYes- lower limit0- upper limit2 047- presetZ 0 to Z 7 Counting range lower limit0- upper limit999 | Number of free cycle OBs | 1; OB 1 |
| Number of cyclic interrupt OBs9: OB 30-38 (shortest cycle that can be set = 500 µs)Number of process alarm OBs8: OB 40-47Number of DPV1 alarm OBs3: OB 55-57Number of isochronous mode OBs4: OB 61-64Number of multicomputing OBs1: OB 60Number of sartup OBs3: OB 100-102Number of asynchronous error OBs9: OB 80-88Number of synchronous error OBs9: OB 121, 122Nesting depth24e per priority class24e additional within an error OB2S7 counter2048e lower limit0- adjustableYes- preset2 047- preset2 047- preset2 047- preset2 047- preset2 047- preset999 | Number of time alarm OBs | 8; OB 10-17 |
| • Number of process alarn OBs8; OB 40-47• Number of DPV1 alarn OBs3; OB 55-57• Number of isochronous mode OBs4; OB 61-64• Number of multicomputing OBs1; OB 90• Number of background OBs1; OB 90• Number of sartup OBs3; OB 100-102• Number of asynchronous error OBs9; OB 80-88• Number of synchronous error OBs2; OB 121, 122Nesting depth24• per priority class24• additional within an error OB2Counters, timers and their retentivity2048Retentivity10- adjustable9- lower limit0- upper limit2047- presetZ 047- nower limit0- nower limit0- nower limit999 | Number of delay alarm OBs | 4; OB 20-23 |
| • Number of DPV1 alarm OBs3; OB 55-57• Number of isochronous mode OBs4; OB 61-64• Number of multicomputing OBs1; OB 60• Number of background OBs1; OB 90• Number of startup OBs3; OB 100-102• Number of asynchronous error OBs9; OB 80-88• Number of synchronous error OBs2; OB 121, 122Nesting depth24• per priority class24• additional within an error OB2 Counters, timers and their retentivityS7 counter - adjustableYes- adjustable0- upper limit0- preset2 047- preset2 047- preset2 01o 2 7Counting range999 | Number of cyclic interrupt OBs | 9; OB 30-38 (shortest cycle that can be set = 500 μ s) |
| • Number of isochronous mode OBs4; OB 61-64• Number of multicomputing OBs1; OB 60• Number of background OBs1; OB 90• Number of startup OBs3; OB 100-102• Number of asynchronous error OBs9; OB 80-88• Number of synchronous error OBs2; OB 121, 122Nesting depth24• per priority class24• additional within an error OB2 Counters, timers and their retentivity 2 S7 counter 2• Number2 048Retentivity0- adjustable0- lower limit0- preset2 047- preset2 047- nower limit0- nover limit0- nover limit0- preset2 0 to Z 7Counting range nover limit0- upper limit999 | Number of process alarm OBs | 8; OB 40-47 |
| • Number of multicomputing OBs1; OB 60• Number of background OBs1; OB 90• Number of startup OBs3; OB 100-102• Number of asynchronous error OBs9; OB 80-88• Number of synchronous error OBs2; OB 121, 122Nesting depth24• per priority class24• additional within an error OB2Counters, timers and their retentivity2S7 counter2• Number2 048Retentivity2- adjustableYes- lower limit0- preset2 047- preset2 047- lower limit0- preset2 047- lower limit999 | Number of DPV1 alarm OBs | 3; OB 55-57 |
| Number of background OBs1; OB 90• Number of startup OBs3; OB 100-102• Number of asynchronous error OBs9; OB 80-88• Number of synchronous error OBs2; OB 121, 122Nesting depth• per priority class24• additional within an error OB2Counters, timers and their retentivityS7 counter2 048• Number2 048Retentivity- adjustableYes- lower limit0- upper limit2 047- presetZ 047- lower limit0- presetZ 0 to Z 7Counting range- lower limit0- upper limit999 | Number of isochronous mode OBs | 4; OB 61-64 |
| Number of startup OBs3; OB 100-102• Number of synchronous error OBs9; OB 80-88• Number of synchronous error OBs2; OB 121, 122Nesting depth24• per priority class24• additional within an error OB2Counters, timers and their retentivityS7 counter2 048Retentivity | Number of multicomputing OBs | 1; OB 60 |
| • Number of asynchronous error OBs9; OB 80-88• Number of synchronous error OBs2; OB 121, 122Nesting depth24• per priority class24• additional within an error OB2Counters, timers and their retentivityS7 counter2 048• Number2 048Retentivity adjustableYes- lower limit0- upper limit2 047- presetZ 047- lower limit0 0- upper limit999 | Number of background OBs | 1; OB 90 |
| • Number of synchronous error OBs2; OB 121, 122Nesting depth24• per priority class24• additional within an error OB2Counters, timers and their retentivityS7 counter• Number2 048Retentivity adjustableYes- lower limit0- upper limit2 047- presetZ 0 to Z 7Counting range- lower limit0- upper limit999 | Number of startup OBs | 3; OB 100-102 |
| Nesting depth 24 • per priority class 24 • additional within an error OB 2 Counters, timers and their retentivity S7 counter • Number 2 048 • Number 2 048 Retentivity - adjustable - adjustable Yes - lower limit 0 - upper limit 2 047 - preset Z 0 to Z 7 Counting range - - lower limit 0 - preset Z 0 to Z 7 | Number of asynchronous error OBs | 9; OB 80-88 |
| • per priority class24• additional within an error OB2Counters, timers and their retentivityS7 counter• Number2 048Retentivity- adjustableYes- lower limit0- upper limit2 047- presetZ 0 to Z 7Counting range- lower limit0- upper limit999 | Number of synchronous error OBs | 2; OB 121, 122 |
| additional within an error OB 2 Counters, timers and their retentivity S7 counter Number 2 048 Retentivity - adjustable - lower limit 0 - upper limit 2 047 counting range - lower limit 0 upper limit 9999 | Nesting depth | |
| Counters, timers and their retentivity S7 counter 2 048 Number 2 048 Retentivity Yes - adjustable Yes - lower limit 0 - upper limit 2 047 - preset Z 0 to Z 7 Counting range 999 | ● per priority class | 24 |
| S7 counter 2 048 Retentivity - adjustable - adjustable Yes - lower limit 0 - upper limit 2 047 - preset Z 0 to Z 7 Counting range - - lower limit 0 - upper limit 999 | additional within an error OB | 2 |
| • Number2 048RetentivityYes- adjustable0- lower limit0- upper limit2 047- presetZ 0 to Z 7Counting range0- lower limit0- upper limit999 | Counters, timers and their retentivity | |
| Retentivity Yes - adjustable 0 - lower limit 0 - upper limit 2 047 - preset Z 0 to Z 7 Counting range - lower limit 0 - upper limit 999 | S7 counter | |
| - adjustableYes- lower limit0- upper limit2 047- presetZ 0 to Z 7Counting range- lower limit0- upper limit999 | • Number | 2 048 |
| lower limit0 upper limit2 047 presetZ 0 to Z 7Counting range lower limit0 upper limit999 | Retentivity | |
| - upper limit2 047- presetZ 0 to Z 7Counting range- lower limit0- upper limit999 | — adjustable | |
| preset Z 0 to Z 7 Counting range lower limit upper limit 0 999 | — lower limit | |
| Counting range — lower limit 0 — upper limit 999 | — upper limit | |
| lower limit upper limit 999 | — preset | Z 0 to Z 7 |
| — upper limit 999 | Counting range | |
| | — lower limit | 0 |
| IEC counter | | 999 |
| | IEC counter | |
| • present Yes | | |
| • Type SFB | • Туре | |
| Number Unlimited (limited only by RAM capacity) | | Unlimited (limited only by RAM capacity) |
| S7 times | | |
| Number 2 048 | Number | 2 048 |

| Retentivity | |
|--|---|
| — adjustable | Yes |
| — lower limit | 0 |
| — upper limit | 2 047 |
| — preset | No times retentive |
| Time range | |
| — lower limit | 10 ms |
| — upper limit | 9 990 s |
| IEC timer | |
| • present | Yes |
| • Туре | SFB |
| Number | Unlimited (limited only by RAM capacity) |
| | |
| Data areas and their retentivity retentive data area in total | Total working and load memory (with backup battery) |
| Flag | . otal working and road moniory (with backup battery) |
| • Number, max. | 16 kbyte; Size of bit memory address area |
| Retentivity available | Yes |
| Retentivity preset | MB 0 to MB 15 |
| Number of clock memories | 8; in 1 memory byte |
| Local data | |
| adjustable, max. | 32 kbyte |
| • preset | 16 kbyte |
| • preset | |
| Address area | |
| I/O address area | |
| Inputs | 16 kbyte |
| Outputs | 16 kbyte |
| Process image | |
| Inputs, adjustable | 16 kbyte |
| Outputs, adjustable | 16 kbyte |
| Inputs, default | 512 byte |
| Outputs, default | 512 byte |
| • consistent data, max. | 244 byte |
| Access to consistent data in process image | Yes |
| Subprocess images | |
| Number of subprocess images, max. | 15 |
| Digital channels | |
| • Inputs | 131 072 |
| — of which central | 131 072 |
| Outputs | 131 072 |
| — of which central | 131 072 |
| Analog channels | |
| | |

| Inputs | 8 192 |
|---|---|
| — of which central | 8 192 |
| Outputs | 8 192 |
| — of which central | 8 192 |
| Hardware configuration | |
| Integrated power supply | No |
| Number of expansion units, max. | 21 |
| connectable OPs | 95 |
| Multicomputing | Yes; 4 CPUs max. (with UR1 or UR2) |
| Interface modules | |
| Number of connectable IMs (total), max. | 6 |
| Number of connectable IM 460s, max. | 6 |
| Number of connectable IM 463s, max. | 4; IM 463-2 |
| Number of DP masters | |
| • integrated | 1 |
| • via CP | 10; CP 443-5 Extended |
| ● via IM 467 | 4 |
| Mixed mode IM + CP permitted | No; IM 467 not suitable for use with CP 443-5 Ext. and CP 443-1 EX4x, EX20, GX20 (in PROFINET IO mode) |
| • via interface module | 1; IF 964-DP |
| Number of pluggable S5 modules (via adapter | 6 |
| capsule in central device), max. | |
| Number of IO Controllers | |
| • integrated | 1 |
| ● via CP | 4; No mixed operation of CP443-1 EX40 and CP443-1 EX 41/EX20/GX20, max. 4 in central controller |
| Number of operable FMs and CPs (recommended) | |
| • FM | Limited by number of slots or number of connections |
| • CP, PtP | CP 440: Limited by number of slots; CP 441: Limited by number of slots and number of connections |
| PROFIBUS and Ethernet CPs | 14; In total max. 10 CPs as DP master and PROFINET controller, of which up to 10 IMs or CPs as DP master and up to 4 CPs as PROFINET controller |
| Slots | |
| required slots | 2 |
| Time of day | |
| Clock | |
| Hardware clock (real-time) | Yes |
| retentive and synchronizable | Yes |
| Resolution | 1 ms |
| Deviation per day (buffered), max. | 1.7 s; Power off |
| Deviation per day (unbuffered), max. | 8.6 s; For power On |
| - Deviation per day (unbuilded), max. | |

| Operating hours counter | |
|---|--|
| • Number | 16 |
| Number/Number range | 0 to 15 |
| Range of values | SFCs 2, 3 and 4: 0 to 32767 hours SFC 101: 0 to 2^31 - 1 hours |
| Granularity | 1 h |
| retentive | Yes |
| Clock synchronization | |
| supported | Yes |
| • to MPI, master | Yes |
| • to MPI, slave | Yes |
| • to DP, master | Yes |
| • to DP, slave | Yes |
| • in AS, master | Yes |
| • in AS, slave | Yes |
| on Ethernet via NTP | Yes; As client |
| • to IF 964 DP | Yes |
| Time difference in system when synchronizing via | |
| • Ethernet, max. | 10 ms |
| • MPI, max. | 200 ms |
| | |
| Interfaces | |
| Interfaces/bus type | 1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports), 1 x PROFIBUS DP (optionally pluggable) |
| Number of RS 485 interfaces | 1 |
| Number of other interfaces | 0 |
| Optical interface | No |
| | |
| 1. Interface | |
| Interface type | |
| Physics Isolated | RS 485 / PROFIBUS + MPI Yes |
| Power supply to interface (15 to 30 V DC), max. | 150 mA |
| Protocols | |
| • MPI | Yes |
| PROFIBUS DP master | Yes |
| PROFIBUS DP slave | Yes |
| MPI | |
| Number of connections | 44; If a diagnostics repeater is used on the line, the number of |
| | connection resources on the line is reduced by 1 |
| | |
| • Transmission rate, max. | 12 Mbit/s |
| Transmission rate, max. Services | 12 Mbit/s |
| | 12 Mbit/s Yes |
| Services | |

| — Global data communication | Yes |
|---|--|
| — S7 basic communication | Yes |
| — S7 communication | Yes |
| — S7 communication, as client | Yes |
| — S7 communication, as server | Yes |
| PROFIBUS DP master | |
| Number of connections, max. | 32; If a diagnostics repeater is used on the line, the number of |
| | connection resources on the line is reduced by 1 |
| • Transmission rate, max. | 12 Mbit/s |
| • Number of DP slaves, max. | 32 |
| Services | |
| — PG/OP communication | Yes |
| — Routing | Yes |
| — Global data communication | No |
| — S7 basic communication | Yes |
| — S7 communication | Yes |
| — S7 communication, as client | Yes |
| — S7 communication, as server | Yes |
| — Equidistance | Yes |
| — Isochronous mode | Yes |
| - SYNC/FREEZE | Yes |
| Activation/deactivation of DP slaves | Yes |
| Direct data exchange (slave-to-slave communication) | Yes |
| — DPV1 | Yes |
| Address area | |
| — Inputs, max. | 2 kbyte |
| — Outputs, max. | 2 kbyte |
| User data per DP slave | |
| — User data per DP slave, max. | 244 byte |
| — Inputs, max. | 244 byte |
| — Outputs, max. | 244 byte |
| — Slots, max. | 244 |
| — per slot, max. | 128 byte |
| PROFIBUS DP slave | |
| Number of connections | 32 |
| • GSD file | http://support.automation.siemens.com/WW/view/en/113652 |
| • Transmission rate, max. | 12 Mbit/s |
| • automatic baud rate search | No |
| Address area, max. | 32; Virtual slots |
| • User data per address area, max. | 32 byte |
| — of which consistent, max. | 32 byte |
| | |

| Services | |
|---|--|
| — PG/OP communication | Yes; with interface active |
| — Routing | Yes; with interface active |
| — Global data communication | No |
| — S7 basic communication | No |
| - S7 communication | Yes |
| — S7 communication, as client | Yes |
| — S7 communication, as server | Yes |
| — Direct data exchange (slave-to-slave | No |
| communication) | |
| — DPV1 | No |
| Transfer memory | |
| — Inputs | 244 byte |
| — Outputs | 244 byte |
| | |
| 2. Interface Interface type | PROFINET |
| Physics | Ethernet RJ45 |
| Isolated | Yes |
| automatic detection of transmission rate | Yes; Autosensing |
| Autonegotiation | Yes |
| Autocrossing | Yes |
| Change of IP address at runtime, supported | Yes; Assignment by higher-level IO-Controller or by the user |
| | program with SFB104 "IP_CONF" |
| Number of connection resources | 96 |
| Interface types | |
| Number of ports | 2 |
| integrated switch | Yes |
| Protocols | |
| PROFINET IO Controller | Yes |
| PROFINET IO Device | Yes |
| PROFINET CBA | Yes |
| PROFIBUS DP master | No |
| PROFIBUS DP slave | No |
| Open IE communication | Yes |
| Web server | Yes |
| Point-to-point connection | No |
| Media redundancy | Yes |
| PROFINET IO Controller | |
| Transmission rate, max. | 100 Mbit/s |
| Services | |
| — PG/OP communication | Yes |
| — S7 routing | Yes |
| | |

| — S7 communication | Yes |
|---|--|
| — Isochronous mode | Yes; Only with IRT and the High Performance option |
| — Shared device | Yes |
| — Prioritized startup | Yes |
| Number of IO devices with prioritized | 32 |
| startup, max. | |
| — Number of connectable IO Devices, max. | 256 |
| — Of which IO devices with IRT, max. | 64 |
| — of which in line, max. | 64 |
| — Number of IO Devices with IRT and the option "high flexibility" | 256 |
| — of which in line, max. | 61 |
| — Number of connectable IO Devices for RT, | 256 |
| max. | |
| — of which in line, max. | 256 |
| Activation/deactivation of IO Devices | Yes |
| Number of IO Devices that can be simultaneously activated/deactivated, max. | 8 |
| — IO Devices changing during operation (partner ports), supported | Yes |
| — Number of IO Devices per tool, max. | 8; 8 parallel calls of the SFC 12 "D_ACT_DP" possible per line. Max. 32 IO Devices changing during operation (partner ports) are supported |
| - Device replacement without swap medium | Yes |
| — Send cycles | 250 $\mu s,$ 500 $\mu s,$ 1 ms, 2 ms, 4 ms additionally with IRT with high performance: 250 μs to 4 ms in 125 μs frame |
| — Updating time | 250 μs to 512 ms; minimum value depends on preset communication share for PROFINET IO, on the number of IO Devices and on the amount of configured user data, see PROFINET system description |
| Address area | |
| — Inputs, max. | 8 kbyte |
| — Outputs, max. | 8 kbyte |
| — User data consistency, max. | 1 024 byte |
| PROFINET IO Device | |
| Services | |
| — PG/OP communication | Yes |
| — S7 routing | Yes |
| — S7 communication | Yes |
| — Isochronous mode | No |
| — IRT | Yes |
| — Prioritized startup | Yes |
| — Shared device | Yes |

| — Number of IO Controllers with shared device, max. | 2 |
|---|---|
| Transfer memory | |
| — Inputs, max. | 1 440 byte; Per IO Controller with shared device |
| — Outputs, max. | 1 440 byte; Per IO Controller with shared device |
| Submodules | |
| — Number, max. | 64 |
| — User data per submodule, max. | 1 024 byte |
| PROFINET CBA | |
| acyclic transmission | Yes |
| • cyclic transmission | Yes |
| Open IE communication | |
| Number of connections, max. | 94 |
| Local port numbers used at the system end | 0, 20, 21, 25, 80, 102, 135, 161, 34962, 34963, 34964, 65532, |
| | 65533, 65534, 65535 |
| Keep-alive function, supported | Yes |
| 3. Interface | |
| Interface type | Pluggable interface module (IF) |
| Plug-in interface modules | IF 964-DP (MLFB: 6ES7964-2AA04-0AB0) |
| Physics | RS 485 / PROFIBUS |
| Isolated | Yes |
| Power supply to interface (15 to 30 V DC), max. | 150 mA |
| automatic detection of transmission rate | No |
| Number of connection resources | 32 |
| Protocols | |
| • MPI | No |
| PROFIBUS DP master | Yes |
| PROFIBUS DP slave | Yes |
| PROFIBUS DP master | |
| Number of connections, max. | 32 |
| • Transmission rate, max. | 12 Mbit/s |
| Number of DP slaves, max. | 125 |
| Services | |
| — PG/OP communication | Yes |
| — Routing | Yes; S7 routing |
| — Global data communication | No |
| — S7 basic communication | Yes |
| — S7 communication | Yes |
| — S7 communication, as client | Yes |
| — S7 communication, as server | Yes |
| — Equidistance | Yes |
| — Isochronous mode | Yes |
| | |

| | Vee |
|--|---|
| - SYNC/FREEZE | Yes |
| Activation/deactivation of DP slaves | Yes |
| — Direct data exchange (slave-to-slave | Yes |
| communication) — DPV0 | Yes |
| | Yes |
| — DPV1 | Tes |
| Address area | |
| — Inputs, max. | 8 kbyte |
| — Outputs, max. | 8 kbyte |
| User data per DP slave | |
| — User data per DP slave, max. | 244 byte |
| — Inputs, max. | 244 byte |
| — Outputs, max. | 244 byte |
| — Slots, max. | 244 |
| — per slot, max. | 128 byte |
| PROFIBUS DP slave | |
| Number of connections | 32 |
| • GSD file | http://support.automation.siemens.com/WW/view/en/113652 |
| • Transmission rate, max. | 12 Mbit/s |
| automatic baud rate search | No |
| Address area, max. | 32; Virtual slots |
| • User data per address area, max. | 32 byte |
| — of which consistent, max. | 32 byte |
| Services | |
| — PG/OP communication | Yes |
| — Routing | Yes; with interface active |
| — Global data communication | No |
| — S7 basic communication | No |
| — S7 communication | Yes |
| — S7 communication, as client | Yes |
| — S7 communication, as server | Yes |
| — Direct data exchange (slave-to-slave | No |
| communication) | |
| — DPV1 | No |
| Transfer memory | |
| — Inputs | 244 byte |
| — Outputs | 244 byte |
| Protocols | |
| Redundancy mode | |
| Media redundancy | |
| — Switchover time on line break, typ. | 200 ms |
| entenever and on me break, typ. | |

| — Number of stations in the ring, max. | 50 |
|--|---|
| Open IE communication | |
| • TCP/IP | Yes; via integrated PROFINET interface and loadable FBs |
| - Number of connections, max. | 94 |
| — Data length, max. | 32 kbyte |
| - several passive connections per port, | Yes |
| supported | |
| • ISO-on-TCP (RFC1006) | Yes; Via integrated PROFINET interface or CP 443-1 and loadable FBs |
| — Number of connections, max. | 94 |
| — Data length, max. | 32 kbyte; 1 452 bytes via CP 443-1 Adv. |
| • UDP | Yes; via integrated PROFINET interface and loadable FBs |
| — Number of connections, max. | 94 |
| — Data length, max. | 1 472 byte |
| Web server | |
| • supported | Yes |
| User-defined websites | Yes |
| Number of HTTP clients | 5 |
| Isochronous mode | |
| Equidistance | Yes |
| Number of DP masters with isochronous mode | 2 |
| User data per isochronous slave, max. | 244 byte |
| shortest clock pulse | 1 ms; 0.5 ms without use of SFC 126, 127 |
| max. cycle | 32 ms |
| Communication functions | |
| PG/OP communication | Yes |
| Number of connectable OPs without message processing | 95 |
| Number of connectable OPs with message processing | 95; When using Alarm_S/SQ and Alarm_D/DQ |
| Data record routing | Yes |
| Global data communication | |
| supported | Yes |
| Number of GD loops, max. | 16 |
| Number of GD packets, transmitter, max. | 16 |
| Number of GD packets, receiver, max. | 32 |
| Size of GD packets, max. | 54 byte |
| Size of GD packet (of which consistent), max. | 1 variable |
| S7 basic communication | |
| • supported | Yes |
| • User data per job, max. | 76 byte |
| User data per job (of which consistent), max. | 1 variable |
| | |

| S7 communication | |
|--|---|
| supported | Yes |
| • as server | Yes |
| • as client | Yes |
| • User data per job, max. | 64 kbyte |
| User data per job (of which consistent), max. | 462 byte; 1 variable |
| S5 compatible communication | |
| supported | Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5 |
| User data per job, max. | 8 kbyte |
| User data per job (of which consistent), max. | 240 byte |
| Number of simultaneous AG-SEND/AG-RECV orders per CPU, max. | 64/64 |
| Standard communication (FMS) | |
| • supported | Yes; Via CP and loadable FB |
| PROFINET CBA (at set setpoint communication load) | |
| Setpoint for the CPU communication load | 20 % |
| Number of remote interconnection partners | 32 |
| Number of functions, master/slave | 150 |
| Total of all master/slave connections | 6 000 |
| Data length of all incoming connections master/slave, max. | 65 000 byte |
| Data length of all outgoing connections master/slave, max. | 65 000 byte |
| Number of device-internal and PROFIBUS interconnections | 1 000 |
| Data length of device-internal und PROFIBUS interconnections, max. | 16 000 byte |
| Data length per connection, max. | 2 000 byte |
| Remote interconnections with acyclic transmission | |
| — Sampling interval, min. | 200 ms; Depending on preset communication load, number of interconnections and data length used |
| - Number of incoming interconnections | 500 |
| - Number of outgoing interconnections | 500 |
| Data length of all incoming interconnections, max. | 16 000 byte |
| Data length of all outgoing interconnections, max. | 16 000 byte |
| — Data length per connection, max. | 2 000 byte |
| Remote interconnections with cyclic transmission | |
| Transmission frequency: Transmission interval, min. Number of incoming interconnections | 1 ms; Depending on preset communication load, number of interconnections and data length used300 |
| | |

| interconnections, max. 4 800 byte Data length of all outgoing interconnections, max. 4 800 byte Data length per connection, max. 450 byte Data length per connection, max. 450 byte Number of stations that can log on for HMI variables (PN OPC/IX/Map) Other of HMI variables 500 ms Number of HMI variables, max. 48 000 byte Number of HMI variables, max. 48 000 byte Number of HMI variables, max. 240 byte: Slave-dependent Supported Vesrall Openation reserved for PG communication reserved for PG communication reserved for OP communication, max. adjustable for OP communication reserved for S7 basic communication reserved for S7 basic communication, max. adjustable for S7 basic communication, max. adjustable for S7 communication, max. adjustable for routing reserved for S7 communication, max. adjustable for routing reserved for S7 communication, max. adjustable for routing, max | — Number of outgoing interconnections | 300 |
|---|--|--|
| - Data length of all outgoing interconnections, max. 4800 byte - Data length per connection, max. 450 byte HMI variables via PROFINET (exyclic) 2x PN OPC/1x iMap - Number of stations that can log on for HMI variables (PN OPC/Map) 2x PN OPC/1x iMap - HMI variable updating 500 ms - Data length of all HMI variables, max. 48 000 byte PROFIBUS proxy functionality 48 000 byte PROFIBUS proxy functionality 48 000 byte - Data length or connection, max. 48 000 byte Versi 32 PROFIBUS slaves max. connectable 0 - Data length per connection, max. 48 000 byte I connections 48 000 byte - Data length per connection, max. 96 • overall 96 • overall 96 • usable for PG communication 1 - reserved for PG communication, max. 0 • usable for OP communication, max. 0 - reserved for S7 basic communication 1 - reserved for S7 basic communication 0 - reserved for S7 communication 0 - reserved for S7 communication 0 - reserved for S7 communicatio | — Data length of all incoming | 4 800 byte |
| interconnections, max. 450 byte HM variables via PROFINET (expetic) 2x PN OPC/1x iMap | interconnections, max. | |
| | | 4 800 byte |
| HMI variables via PROFINET (acyclic) 2x PN OPC/1x iMap | | |
| | | 450 byte |
| variables (PN OPC/IMap) 500 ms - HMI variable updating 500 ms - Number of HMI variables, max. 1500 - Data length of all HMI variables, max. 90 PROFIBUS proxy functionality 240 byte; Slave-dependent - Data length per connection, max. 240 byte; Slave-dependent Number of connections 96 - usable for PG communication 1 - eserved for PG communication 1 - reserved for PG communication 1 - reserved for CP communication 1 - reserved for CP communication, max. 0 - usable for OP communication 1 - reserved for S7 basic communication 0 - adjustable for S7 basic communication 0 - eserved for S7 communication 0 - eserved for S7 communication, max. 0 - eserved for S7 communication 0 - eserved for S7 communication 0 - eserved for S7 communication 0 - reserved for S7 communication, max. 0 - eserved for S7 communication, max. 0 - usable for routing <t< td=""><td></td><td></td></t<> | | |
| Number of HMI variables 1 500 Data length of all HMI variables, max. 48 000 byte PROFIBUS proxy functionality 240 byte; Slave-dependent Data length per connection, max. 240 byte; Slave-dependent Number of connections 240 byte; Slave-dependent • overal 96 • overal 96 • usable for PG communication 1 adjustable for PG communication 1 reserved for OP communication 1 reserved for OP communication 1 reserved for OP communication 1 adjustable for OP communication, max. 0 •usable for S7 basic communication, max. 0 reserved for S7 basic communication, max. 0 reserved for S7 basic communication, max. 0 adjustable for S7 basic communication, max. 0 adjustable for S7 communication, max. 0 served for S7 communication 0 adjustable for s7 communication, max. 0 adjustable for routing 0 adjustable for routing, max. 0 Y message functions ysith Alarm, Alarm_S, Alarm_SP, Notify and Notify_S (e.g. | - | 2x PN OPC/1x iMap |
| | — HMI variable updating | 500 ms |
| PROFIBUS proxy functionality Yes; 32 PROFIBUS slaves max. connectable - Data length per connection, max. 240 byte; Slave-dependent Number of connections 96 • overall 96 • usable for PG communication 1 - adjustable for PG communication 1 - reserved for OP communication 1 - adjustable for OP communication, max. 0 • usable for S7 basic communication 1 - reserved for S7 basic communication, max. 0 • usable for S7 basic communication 0 - reserved for S7 basic communication 0 - reserved for S7 basic communication 0 - adjustable for S7 communication 0 - reserved for S7 communication 0 - reserved for S7 communication, max. 0 • usable for roting 0 - reserved for S7 communication, max. 0 • usable for routing 0 - reserved for S7 communication, max. 0 • usable for routing 0 - reserved for routing 0 - reserved for routing, max. 0 Symbol-related messages Yes | — Number of HMI variables | 1 500 |
| | — Data length of all HMI variables, max. | 48 000 byte |
| — Data length per connection, max. 240 byte; Slave-dependent Number of connections 96 • overall 96 • usable for PG communication 1 — adjustable for PG communication, max. 0 • usable for OP communication 1 — reserved for OP communication 1 — adjustable for OP communication 1 — adjustable for OP communication, max. 0 • usable for S7 basic communication, max. 0 • usable for S7 basic communication 0 — reserved for S7 basic communication 0 — reserved for S7 communication, max. 0 • usable for routing 0 — reserved for routing 0 — reserved for routing, max. 0 • usable for routing, max. 0 • usable for routing, max. 95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm_AR, Alarm_BR, Notify and Notify 8 (e.g. WinCC) | PROFIBUS proxy functionality | |
| Number of connections 96 • overall 96 • usable for PG communication 1 - reserved for PG communication, max. 0 • usable for OP communication 1 - adjustable for OP communication 1 - reserved for OP communication 1 - adjustable for OP communication 1 - adjustable for S7 basic communication 0 - reserved for S7 basic communication 0 - adjustable for S7 basic communication 0 - adjustable for S7 communication 0 - reserved for S7 communication 0 - adjustable for S7 communication 0 - reserved for routing 0 - reserved for routing 0 - adjustable for routing max. 0 Stations for message functions, max. 95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm_Alarm_S/SQ and Notify_8 (e.g. WinCC) Symbol-related messages Yes Program alarms Yes Process diagnostic messages | — supported | Yes; 32 PROFIBUS slaves max. connectable |
| • overall 96 • usable for PG communication 1 - adjustable for PG communication, max. 0 • usable for OP communication 1 - adjustable for OP communication 1 - adjustable for OP communication 1 - adjustable for OP communication, max. 0 • usable for S7 basic communication 1 - reserved for S7 basic communication 0 - reserved for S7 basic communication 0 - adjustable for S7 basic communication, max. 0 • usable for S7 communication 0 - reserved for S7 communication 0 - reserved for S7 communication 0 - reserved for S7 communication, max. 0 • usable for routing 0 - reserved for routing 0 - reserved for routing 0 - adjustable for routing, max. 0 S7 message functions 95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm_Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC) Symbol-related messages Yes SCAN procedure Yes Process diagnostic messages Yes Procese diagnostic mess | — Data length per connection, max. | 240 byte; Slave-dependent |
| Version | Number of connections | |
| — reserved for PG communication 1 — adjustable for PG communication, max. 0 • usable for OP communication 1 — reserved for OP communication 1 — adjustable for OP communication, max. 0 • usable for S7 basic communication 0 — reserved for S7 basic communication 0 — adjustable for S7 basic communication 0 — adjustable for S7 basic communication 0 — adjustable for S7 communication 0 — reserved for S7 communication, max. 0 • usable for routing 0 — reserved for routing 0 — reserved for routing 0 — reserved for routing, max. 0 S7 message functions with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm_Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC) Symbol-related messages SCAN procedure Yes Program alarms Yes Process diagnostic messages Yes Process diagnostic messages | • overall | 96 |
| — adjustable for PG communication, max. 0 • usable for OP communication 1 — adjustable for OP communication 1 — adjustable for OP communication, max. 0 • usable for S7 basic communication 0 — reserved for S7 basic communication 0 — adjustable for S7 communication 0 — reserved for S7 communication, max. 0 — reserved for S7 communication, max. 0 — adjustable for S7 communication, max. 0 — reserved for routing 0 — reserved for routing 0 — reserved for routing 0 — adjustable for routing, max. 0 S7 message functions with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC) Symbol-related messages Symbol-related messages Yes Process diagnostic messages Yes Process diagnostic messages Yes Process diagnostic messages Yes <tr< td=""><td> usable for PG communication </td><td></td></tr<> | usable for PG communication | |
| Legistration of the Southern number of t | — reserved for PG communication | 1 |
| reserved for OP communication1 adjustable for OP communication, max.0• usable for S7 basic communication0 reserved for S7 basic communication0 adjustable for S7 basic communication, max.0 adjustable for S7 communication0 adjustable for S7 communication0 reserved for S7 communication0 reserved for S7 communication0 reserved for S7 communication, max.0 adjustable for S7 communication, max.0 adjustable for S7 communication, max.0 reserved for S7 communication, max.0 reserved for routing0 reserved for routing, max.0S7 message functions95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8Number of login stations for message functions, max.95; Max. 95 with Alarm_SP, Notify and Notify_8 (e.g. WinCC)Symbol-related messagesYesSCAN procedureYesProgram alarmsYesProcess diagnostic messagesYesSimultaneously active Alarm-S blocks, max.1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | — adjustable for PG communication, max. | 0 |
| adjustable for OP communication, max.0• usable for S7 basic communication0 reserved for S7 basic communication, max.0 adjustable for S7 communication, max.0 reserved for S7 communication0 reserved for S7 communication0 adjustable for S7 communication0 adjustable for S7 communication0 adjustable for S7 communication, max.0 adjustable for S7 communication, max.0 adjustable for s7 communication, max.0 reserved for routing0 reserved for routing, max.0 adjustable for routing, max.0S7 message functions95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)Symbol-related messagesYesSCAN procedureYesProgram alarmsYesProcess diagnostic messagesYesSimultaneously active Alarm-S blocks, max.1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | usable for OP communication | |
| • usable for S7 basic communication 0 - reserved for S7 basic communication 0 - adjustable for S7 basic communication, max. 0 • usable for S7 communication 0 - reserved for S7 communication 0 - reserved for S7 communication 0 - adjustable for S7 communication 0 - adjustable for S7 communication, max. 0 • usable for routing 0 - reserved for routing 0 - reserved for routing 0 - adjustable for routing, max. 0 S7 message functions 95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC) Symbol-related messages SCAN procedure Yes Program alarms Yes Process diagnostic messages Yes Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | — reserved for OP communication | 1 |
| reserved for S7 basic communication 0 adjustable for S7 basic communication, max. 0 • usable for S7 communication 0 reserved for S7 communication 0 reserved for S7 communication, max. 0 adjustable for S7 communication, max. 0 adjustable for S7 communication, max. 0 adjustable for S7 communication, max. 0 reserved for routing 0 reserved for routing 0 reserved for routing, max. 0 S7 message functions 95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8P, Notify and Notify_8 (e.g. WinCC) Symbol-related messages Yes SCAN procedure Yes Program alarms Yes Process diagnostic messages Yes Simultaneously active Alarm-S blocks, max. 1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | — adjustable for OP communication, max. | 0 |
| | usable for S7 basic communication | |
| max.• usable for S7 communication- reserved for S7 communication0- adjustable for S7 communication, max.0• usable for routing- reserved for routing- reserved for routing- adjustable for routing, max.0- adjustable for routing, max.0S7 message functionsNumber of login stations for message functions, max.95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)Symbol-related messagesYesSCAN procedureProgram alarmsProcess diagnostic messagesYesProcess diagnostic messagesYessimultaneously active Alarm-S blocks, max.1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | - reserved for S7 basic communication | 0 |
| • usable for S7 communication0- reserved for S7 communication0- adjustable for S7 communication, max.0• usable for routing0- reserved for routing0- adjustable for routing, max.0S7 message functions0S7 message functions95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8Number of login stations for message functions, max.95; Max. 95 with Alarm_8P, Notify and Notify_8 (e.g. WinCC)Symbol-related messagesYesSCAN procedureYesProgram alarmsYesProcess diagnostic messagesYessimultaneously active Alarm-S blocks, max.1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | adjustable for S7 basic communication, | 0 |
| reserved for S7 communication0 adjustable for S7 communication, max.0• usable for routing0 reserved for routing0 adjustable for routing, max.0S7 message functionsNumber of login stations for message functions, max.95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)Symbol-related messagesYesSCAN procedureYesProgram alarmsYesProcess diagnostic messagesYessimultaneously active Alarm-S blocks, max.1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | max. | |
| | usable for S7 communication | |
| • usable for routing0- reserved for routing0- adjustable for routing, max.0S7 message functionsNumber of login stations for message functions, max.95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)Symbol-related messagesYesSCAN procedureYesProgram alarmsYesProcess diagnostic messagesYessimultaneously active Alarm-S blocks, max.1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | reserved for S7 communication | 0 |
| reserved for routing0 adjustable for routing, max.0S7 message functionsNumber of login stations for message functions, max.95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)Symbol-related messagesYesSCAN procedureYesProgram alarmsYesProcess diagnostic messagesYessimultaneously active Alarm-S blocks, max.1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | adjustable for S7 communication, max. | 0 |
| — adjustable for routing, max.0S7 message functions95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)Symbol-related messagesYesSCAN procedureYesProgram alarmsYesProcess diagnostic messagesYesSimultaneously active Alarm-S blocks, max.1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | usable for routing | |
| S7 message functions Number of login stations for message functions, max. 95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC) Symbol-related messages Yes SCAN procedure Yes Program alarms Yes Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | — reserved for routing | 0 |
| Number of login stations for message functions, max.95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)Symbol-related messagesYesSCAN procedureYesProgram alarmsYesProcess diagnostic messagesYessimultaneously active Alarm-S blocks, max.1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | — adjustable for routing, max. | 0 |
| Number of login stations for message functions, max.95; Max. 95 with Alarm_S/SQ and Alarm_D/DQ (OPs); max. 8 with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)Symbol-related messagesYesSCAN procedureYesProgram alarmsYesProcess diagnostic messagesYessimultaneously active Alarm-S blocks, max.1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | S7 massage functions | |
| with Alarm, Alarm_8, Alarm_8P, Notify and Notify_8 (e.g. WinCC)Symbol-related messagesYesSCAN procedureYesProgram alarmsYesProcess diagnostic messagesYessimultaneously active Alarm-S blocks, max.1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | | 95: Max. 95 with Alarm S/SQ and Alarm D/DQ (OPs); max. 8 |
| SCAN procedure Yes Program alarms Yes Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | | |
| Program alarms Yes Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | Symbol-related messages | Yes |
| Process diagnostic messages Yes simultaneously active Alarm-S blocks, max. 1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | SCAN procedure | Yes |
| simultaneously active Alarm-S blocks, max. 1 000; Simultaneously active alarm_S/SQ blocks or alarm_D/DQ | Program alarms | Yes |
| | Process diagnostic messages | Yes |
| blocks | simultaneously active Alarm-S blocks, max. | |
| | | blocks |

| Alarm 8-blocks | Yes |
|--|---|
| Number of instances for alarm 8 and S7 | 4 000 |
| communication blocks, max. | |
| ● preset, max. | 600 |
| Process control messages | Yes |
| Number of archives that can log on simultaneously | 32 |
| (SFB 37 AR_SEND) | |
| Number of messages | |
| • overall, max. | 1 024 |
| • in 100 ms grid, max. | 128 |
| ● in 500 ms grid, max. | 512 |
| ● in 1000 ms grid, max. | 1 024 |
| Number of additional values | |
| • with 100 ms grid, max. | 1 |
| • with 500, 1000 ms grid, max. | 10 |
| Tast source is significant and | |
| Test commissioning functions Status block | Yes; Up to 16 simultaneously |
| Single step | Yes |
| Number of breakpoints | 16 |
| Status/control | |
| Status/control variable | Yes; Up to 16 variable tables |
| Variables | Inputs/outputs, memory bits, DBs, distributed I/Os, timers, |
| - valabes | counters |
| Number of variables, max. | 70; Status/control |
| Forcing | |
| ● Forcing | Yes |
| Forcing, variables | Inputs/outputs, bit memories, distributed I/Os |
| Number of variables, max. | 512 |
| Diagnostic buffer | |
| • present | Yes |
| Number of entries, max. | 3 200 |
| — adjustable | Yes |
| — preset | 120 |
| Service data | |
| • can be read out | Yes |
| EN O | |
| EMC Emission of radio interference acc. to EN 55 011 | |
| Limit class A, for use in industrial areas | Yes |
| Limit class B, for use in residential areas | No |
| | |
| Configuration | |
| Configuration software | |

| • STEP 7 | Yes |
|---|----------------------------|
| Programming | |
| Command set | see instruction list |
| Nesting levels | 7 |
| Access to consistent data in process image | Yes |
| 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 |
| Number of simultaneously active SFCs | |
| — DPSYC_FR | 2 |
| — D_ACT_DP | 8 |
| - RD_REC | 8 |
| — WR_REC | 8 |
| — WR_PARM | 8 |
| — PARM_MOD | 1 |
| — WR_DPARM | 2 |
| — DPNRM_DG | 8 |
| — RDSYSST | 8 |
| - DP_TOPOL | 1 |
| Number of simultaneously active SFBs | |
| — RDREC | 8 |
| — WRREC | 8 |
| Know-how protection | |
| User program protection/password protection | Yes |
| Block encryption | Yes; With S7 block Privacy |
| Dimensions | |
| Width | 50 mm |
| Height | 290 mm |
| Depth | 219 mm |
| Weights | |
| Weight, approx. | 900 g |
| last modified: | 10/09/2020 |
| | |