

# SIEMENS

## Product data sheet

**6ES7318-3EL01-0AB0**


SIMATIC S7-300 CPU 319-3 PN/DP,  
CENTRAL PROCESSING UNIT WITH 2 MBYTE  
WORKING MEMORY,

1. INTERFACE MPI/DP 12MBIT/S,
2. INTERFACE DP-MASTER/SLAVE,
3. INTERFACE ETHERNET PROFINET,  
WITH 2 PORT SWITCH,  
MICRO MEMORY CARD NECESSARY

### General information

|                          |      |
|--------------------------|------|
| Hardware product version | 01   |
| Firmware version         | V3.2 |

### Engineering with

|                     |                       |
|---------------------|-----------------------|
| Programming package | STEP7 V 5.5 or higher |
|---------------------|-----------------------|

### Supply voltage

|                                                           |          |
|-----------------------------------------------------------|----------|
| 24 V DC                                                   | Yes      |
| permissible range, lower limit (DC)                       | 19.2 V   |
| permissible range, upper limit (DC)                       | 28.8 V   |
| External protection for supply cables<br>(recommendation) | 2 A min. |

### Mains buffering

|                                          |      |
|------------------------------------------|------|
| Mains/voltage failure stored energy time | 5 ms |
| Repeat rate, min.                        | 1 s  |

### Input current

|                                   |         |
|-----------------------------------|---------|
| Current consumption (rated value) | 1250 mA |
|-----------------------------------|---------|

|                                                       |                                                                                               |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Current consumption (in no-load operation), typ.      | 500 mA                                                                                        |
| Inrush current, typ.                                  | 4 A                                                                                           |
| $I^2t$                                                | 1.2 A <sup>2</sup> ·s                                                                         |
| <b>Power losses</b>                                   |                                                                                               |
| Power loss, typ.                                      | 14 W                                                                                          |
| <b>Memory</b>                                         |                                                                                               |
| <b>Work memory</b>                                    |                                                                                               |
| integrated                                            | 2048 kbyte                                                                                    |
| expandable                                            | No                                                                                            |
| Size of retentive memory for retentive data blocks    | 700 kbyte                                                                                     |
| <b>Load memory</b>                                    |                                                                                               |
| pluggable (MMC)                                       | Yes                                                                                           |
| pluggable (MMC), max.                                 | 8 Mbyte                                                                                       |
| Data management on MMC (after last programming), min. | 10 a                                                                                          |
| <b>Backup</b>                                         |                                                                                               |
| present                                               | Yes                                                                                           |
| without battery                                       | Yes                                                                                           |
| <b>CPU processing times</b>                           |                                                                                               |
| for bit operations, min.                              | 0.0040 µs                                                                                     |
| for word operations, min.                             | 0.01 µs                                                                                       |
| for fixed point arithmetic, min.                      | 0.01 µs                                                                                       |
| for floating point arithmetic, min.                   | 0.04 µs                                                                                       |
| <b>CPU-blocks</b>                                     |                                                                                               |
| Number of blocks (total)                              | 4096 ; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used. |
| <b>DB</b>                                             |                                                                                               |
| Number, max.                                          | 4096 ; Number range: 1 to 16000                                                               |
| Size, max.                                            | 64 kbyte                                                                                      |
| <b>FB</b>                                             |                                                                                               |
| Number, max.                                          | 4096 ; Number range: 0 to 7999                                                                |
| Size, max.                                            | 64 kbyte                                                                                      |
| <b>FC</b>                                             |                                                                                               |
| Number, max.                                          | 4096 ; Number range: 0 to 7999                                                                |

|                                               |                                                                       |
|-----------------------------------------------|-----------------------------------------------------------------------|
| Size, max.                                    | 64 kbyte                                                              |
| <b>OB</b>                                     |                                                                       |
| 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 time interrupt OBs                  | 4 ; OB 32, 33, 34, 35 (OB 35: smallest settable clock pulse = 500 µs) |
| Number of process alarm OBs                   | 1 ; OB 40                                                             |
| Number of DPV1 alarm OBs                      | 3 ; OB 55, 56, 57                                                     |
| Number isochronous mode OBs                   | 1 ; OB 61                                                             |
| Number of startup OBs                         | 1 ; OB 100                                                            |
| Number of asynchronous error OBs              | 6 ; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)             |
| Number of synchronous error OBs               | 2 ; OB 121, 122                                                       |
| <b>Nesting depth</b>                          |                                                                       |
| per priority class                            | 16                                                                    |
| additional within an error OB                 | 4                                                                     |
| <b>Counters, timers and their retentivity</b> |                                                                       |
| <b>S7 counter</b>                             |                                                                       |
| Number                                        | 2048                                                                  |
| <b>Retentivity</b>                            |                                                                       |
| adjustable                                    | Yes                                                                   |
| lower limit                                   | 0                                                                     |
| upper limit                                   | 2047                                                                  |
| preset                                        | Z 0 to Z 7                                                            |
| <b>Counting range</b>                         |                                                                       |
| adjustable                                    | Yes                                                                   |
| lower limit                                   | 0                                                                     |
| upper limit                                   | 999                                                                   |
| <b>IEC counter</b>                            |                                                                       |
| present                                       | Yes                                                                   |
| Type                                          | SFB                                                                   |
| Number                                        | Unlimited (limited only by RAM capacity)                              |

|                                  |                                          |
|----------------------------------|------------------------------------------|
| S7 times                         |                                          |
| Number                           | 2048                                     |
| Retentivity                      |                                          |
| adjustable                       | Yes                                      |
| lower limit                      | 0                                        |
| upper limit                      | 2047                                     |
| preset                           | No retentivity                           |
| Time range                       |                                          |
| lower limit                      | 10 ms                                    |
| upper limit                      | 9990 s                                   |
| IEC timer                        |                                          |
| present                          | Yes                                      |
| Type                             | SFB                                      |
| Number                           | Unlimited (limited only by RAM capacity) |
| Data areas and their retentivity |                                          |
| retentive data area, total       | All, max. 700 KB                         |
| Flag                             |                                          |
| Number, max.                     | 8192 byte                                |
| Retentivity available            | Yes ; MB 0 to MB 8191                    |
| Retentivity preset               | MB 0 to MB 15                            |
| Number of clock memories         | 8 ; 1 memory byte                        |
| Data blocks                      |                                          |
| Number, max.                     | 4096 ; Number range: 1 to 16000          |
| Size, max.                       | 64 kbyte                                 |
| Retentivity adjustable           | Yes ; via non-retain property on DB      |
| Retentivity preset               | Yes                                      |
| Local data                       |                                          |
| per priority class, max.         | 32768 byte ; Max. 2048 bytes per block   |
| Address area                     |                                          |
| I/O address area                 |                                          |
| Inputs                           | 8192 byte                                |
| Outputs                          | 8192 byte                                |
| of which, distributed            |                                          |

|                                                                                    |                                                                            |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Inputs                                                                             | 8192 byte                                                                  |
| Outputs                                                                            | 8192 byte                                                                  |
| <b>Process image</b>                                                               |                                                                            |
| Inputs                                                                             | 8192 byte                                                                  |
| Outputs                                                                            | 8192 byte                                                                  |
| Inputs, adjustable                                                                 | 8192 byte                                                                  |
| Outputs, adjustable                                                                | 8192 byte                                                                  |
| Inputs, default                                                                    | 256 byte                                                                   |
| Outputs, default                                                                   | 256 byte                                                                   |
| <b>Subprocess images</b>                                                           |                                                                            |
| Number of subprocess images, max.                                                  | 1 ; With PROFINET IO, the length of the user data is limited to 1600 bytes |
| <b>Digital channels</b>                                                            |                                                                            |
| Inputs                                                                             | 65536                                                                      |
| Outputs                                                                            | 65536                                                                      |
| Inputs, of which central                                                           | 1024                                                                       |
| Outputs, of which central                                                          | 1024                                                                       |
| <b>Analog channels</b>                                                             |                                                                            |
| Inputs                                                                             | 4096                                                                       |
| Outputs                                                                            | 4096                                                                       |
| Inputs, of which central                                                           | 256                                                                        |
| Outputs, of which central                                                          | 256                                                                        |
| <b>Hardware configuration</b>                                                      |                                                                            |
| Racks, max.                                                                        | 4                                                                          |
| Modules per rack, max.                                                             | 8                                                                          |
| <b>Number of DP masters</b>                                                        |                                                                            |
| integrated                                                                         | 2                                                                          |
| via CP                                                                             | 4                                                                          |
| <b>Configuration / Number of FMs and CPs that can be operated (recommendation)</b> |                                                                            |
| FM                                                                                 | 8                                                                          |
| CP, point-to-point                                                                 | 8                                                                          |
| CP, LAN                                                                            | 10                                                                         |
| <b>Time of day</b>                                                                 |                                                                            |
| <b>Clock</b>                                                                       |                                                                            |

|                                                         |                                                                          |
|---------------------------------------------------------|--------------------------------------------------------------------------|
| Hardware clock (real-time clock)                        | Yes                                                                      |
| battery-backed and synchronizable                       | Yes                                                                      |
| Deviation per day, max.                                 | 10 s ; Typ.: 2 s                                                         |
| Backup time                                             | 6 wk ; At 40 °C ambient temperature                                      |
| Behavior of the clock following POWER-ON                | Clock continues running after POWER OFF                                  |
| Behavior of the clock following expiry of backup period | Clock continues to run with the time at which the power failure occurred |
| <b>Operating hours counter</b>                          |                                                                          |
| Number                                                  | 4                                                                        |
| Number/Number range                                     | 0 to 3                                                                   |
| Range of values                                         | 0 to 2 <sup>31</sup> hours (when using SFC 101)                          |
| Granularity                                             | 1 hour                                                                   |
| retentive                                               | Yes ; Must be restarted at each restart                                  |
| <b>Clock synchronization</b>                            |                                                                          |
| supported                                               | Yes                                                                      |
| to MPI, master                                          | Yes                                                                      |
| to MPI, slave                                           | Yes                                                                      |
| to DP, master                                           | Yes ; With DP slave only slave clock                                     |
| to DP, slave                                            | Yes                                                                      |
| in AS, master                                           | Yes                                                                      |
| in AS, slave                                            | Yes                                                                      |
| on Ethernet via NTP                                     | Yes ; as client                                                          |
| <b>Interfaces</b>                                       |                                                                          |
| Number of USB interfaces                                | 0                                                                        |
| Number of parallel interfaces                           | 0                                                                        |
| Number of 20 mA interfaces (TTY)                        | 0                                                                        |
| Number of RS 232 interfaces                             | 0                                                                        |
| Number of RS 422 interfaces                             | 0                                                                        |
| Number of other interfaces                              | 1 ; Ethernet, 2-port switch, 2*RJ45                                      |
| <b>1st interface</b>                                    |                                                                          |
| Type of interface                                       | Integrated RS 485 interface                                              |
| Physics                                                 | RS 485                                                                   |
| Isolated                                                | Yes                                                                      |
| Power supply to interface (15 to 30 V DC), max.         | 150 mA                                                                   |

| Functionality                                                              |                                 |
|----------------------------------------------------------------------------|---------------------------------|
| MPI                                                                        | Yes                             |
| DP master                                                                  | Yes                             |
| DP slave                                                                   | Yes                             |
| Point-to-point connection                                                  | No                              |
| MPI                                                                        |                                 |
| Services                                                                   |                                 |
| PG/OP communication                                                        | Yes                             |
| Routing                                                                    | Yes                             |
| Global data communication                                                  | Yes                             |
| S7 basic communication                                                     | Yes                             |
| S7 communication                                                           | Yes                             |
| S7 communication, as client                                                | No ; but via CP and loadable FB |
| S7 communication, as server                                                | Yes                             |
| Transmission rate, max.                                                    | 12 Mbit/s                       |
| DP master                                                                  |                                 |
| Services                                                                   |                                 |
| PG/OP communication                                                        | Yes                             |
| Routing                                                                    | Yes                             |
| Global data communication                                                  | No                              |
| S7 basic communication                                                     | Yes ; I blocks only             |
| S7 communication                                                           | Yes                             |
| S7 communication, as client                                                | No                              |
| S7 communication, as server                                                | Yes                             |
| Equidistance mode support                                                  | Yes                             |
| Isochronous mode                                                           | No                              |
| SYNC/FREEZE                                                                | Yes                             |
| Activation/deactivation of DP slaves                                       | Yes                             |
| Number of DP slaves that can be simultaneously activated/deactivated, max. | 8                               |
| Direct data exchange (slave-to-slave communication)                        | Yes ; As subscriber             |
| DPV1                                                                       | Yes                             |
| Transmission rate, max.                                                    | 12 Mbit/s                       |

|                                                     |                                              |
|-----------------------------------------------------|----------------------------------------------|
| Number of DP slaves, max.                           | 124                                          |
| <b>Address area</b>                                 |                                              |
| Inputs, max.                                        | 8 kbyte                                      |
| Outputs, max.                                       | 8 kbyte                                      |
| <b>User data per DP slave</b>                       |                                              |
| Inputs, max.                                        | 244 byte                                     |
| Outputs, max.                                       | 244 byte                                     |
| <b>DP slave</b>                                     |                                              |
| <b>Services</b>                                     |                                              |
| PG/OP communication                                 | Yes                                          |
| Routing                                             | Yes ; with interface active                  |
| Global data communication                           | No                                           |
| S7 basic communication                              | No                                           |
| S7 communication                                    | Yes                                          |
| S7 communication, as client                         | No                                           |
| S7 communication, as server                         | Yes ; Connection configured on one side only |
| Direct data exchange (slave-to-slave communication) | Yes                                          |
| DPV1                                                | No                                           |
| Transmission rate, max.                             | 12 Mbit/s                                    |
| Automatic baud rate search                          | Yes ; only with passive interface            |
| <b>Transfer memory</b>                              |                                              |
| Inputs                                              | 244 byte                                     |
| Outputs                                             | 244 byte                                     |
| Address area, max.                                  | 32                                           |
| User data per address area, max.                    | 32 byte                                      |
| <b>2nd interface</b>                                |                                              |
| Type of interface                                   | Integrated RS 485 interface                  |
| Physics                                             | RS 485                                       |
| Isolated                                            | Yes                                          |
| Power supply to interface (15 to 30 V DC), max.     | 200 mA                                       |
| <b>Functionality</b>                                |                                              |
| MPI                                                 | No                                           |
| DP master                                           | Yes                                          |

|                                                                            |                                                                                             |
|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| DP slave                                                                   | Yes                                                                                         |
| PROFINET IO Controller                                                     | No                                                                                          |
| PROFINET IO Device                                                         | No                                                                                          |
| PROFINET CBA                                                               | No                                                                                          |
| Open IE communication                                                      | No                                                                                          |
| Web server                                                                 | No                                                                                          |
| DP master                                                                  |                                                                                             |
| Services                                                                   |                                                                                             |
| PG/OP communication                                                        | Yes                                                                                         |
| Routing                                                                    | Yes                                                                                         |
| Global data communication                                                  | No                                                                                          |
| S7 basic communication                                                     | Yes ; I blocks only                                                                         |
| S7 communication                                                           | Yes                                                                                         |
| S7 communication, as client                                                | No                                                                                          |
| S7 communication, as server                                                | Yes ; Connection configured on one side only                                                |
| Equidistance mode support                                                  | Yes                                                                                         |
| Isochronous mode                                                           | Yes ; OB 61 - isochronous mode is possible either on DP or PROFINET IO (not simultaneously) |
| SYNC/FREEZE                                                                | Yes                                                                                         |
| Activation/deactivation of DP slaves                                       | Yes                                                                                         |
| Number of DP slaves that can be simultaneously activated/deactivated, max. | 8                                                                                           |
| Direct data exchange (slave-to-slave communication)                        | Yes ; As subscriber                                                                         |
| DPV1                                                                       | Yes                                                                                         |
| Transmission rate, max.                                                    | 12 Mbit/s                                                                                   |
| Number of DP slaves, max.                                                  | 124                                                                                         |
| Address area                                                               |                                                                                             |
| Inputs, max.                                                               | 8 kbyte                                                                                     |
| Outputs, max.                                                              | 8 kbyte                                                                                     |
| User data per DP slave                                                     |                                                                                             |
| Inputs, max.                                                               | 244 byte                                                                                    |
| Outputs, max.                                                              | 244 byte                                                                                    |
| DP slave                                                                   |                                                                                             |

| 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                         | No                                                                                                                          |
| S7 communication, as server                         | Yes ; Connection configured on one side only                                                                                |
| Direct data exchange (slave-to-slave communication) | Yes                                                                                                                         |
| DPV1                                                | No                                                                                                                          |
| GSD file                                            | The latest GSD file is available at:<br><a href="http://www.siemens.de/profibus-gsd">http://www.siemens.de/profibus-gsd</a> |
| Transmission rate, max.                             | 12 Mbit/s                                                                                                                   |
| Automatic baud rate search                          | Yes ; only with passive interface                                                                                           |
| Transfer memory                                     |                                                                                                                             |
| Inputs                                              | 244 byte                                                                                                                    |
| Outputs                                             | 244 byte                                                                                                                    |
| Address area, max.                                  | 32                                                                                                                          |
| User data per address area, max.                    | 32 byte                                                                                                                     |
| 3rd interface                                       |                                                                                                                             |
| Type of interface                                   | PROFINET                                                                                                                    |
| Physics                                             | Ethernet RJ45                                                                                                               |
| Isolated                                            | Yes                                                                                                                         |
| Integrated switch                                   | Yes                                                                                                                         |
| Number of ports                                     | 2                                                                                                                           |
| Automatic detection of transmission speed           | Yes ; 10/100 Mbit/s                                                                                                         |
| Autonegotiation                                     | Yes                                                                                                                         |
| Autocrossing                                        | Yes                                                                                                                         |
| Media redundancy                                    |                                                                                                                             |
| supported                                           | Yes                                                                                                                         |
| Switchover time on line break, typically            | 200 ms ; PROFINET MRP                                                                                                       |
| Number of stations in the ring, max.                | 50                                                                                                                          |
| Change of IP address at runtime, supported          | Yes                                                                                                                         |

| Functionality                                                         |                                                                                             |
|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| MPI                                                                   | No                                                                                          |
| DP master                                                             | No                                                                                          |
| DP slave                                                              | No                                                                                          |
| PROFINET IO Controller                                                | Yes ; Also simultaneously with I-Device functionality                                       |
| PROFINET IO Device                                                    | Yes ; Also simultaneously with IO Controller functionality                                  |
| PROFINET CBA                                                          | Yes                                                                                         |
| Open IE communication                                                 | Yes ; Via TCP/IP, ISO on TCP, and UDP                                                       |
| Web server                                                            | Yes                                                                                         |
| Number of HTTP clients                                                | 5                                                                                           |
| PROFINET IO Controller                                                |                                                                                             |
| Services                                                              |                                                                                             |
| PG/OP communication                                                   | Yes                                                                                         |
| Routing                                                               | Yes                                                                                         |
| S7 communication                                                      | Yes ; with loadable FBs, max. configurable connections: 16, max. number of instances: 32    |
| Isochronous mode                                                      | Yes ; OB 61 - isochronous mode is possible either on DP or PROFINET IO (not simultaneously) |
| Open IE communication                                                 | Yes ; Via TCP/IP, ISO on TCP, and UDP                                                       |
| Transmission rate, max.                                               | 100 Mbit/s                                                                                  |
| Number of connectable IO devices, max.                                | 256                                                                                         |
| Max. number of connectable IO devices for RT                          | 256                                                                                         |
| of which in line, max.                                                | 256                                                                                         |
| Number of IO devices with IRT and the option "high flexibility"       | 256                                                                                         |
| of which in line, max.                                                | 61                                                                                          |
| Number of IO Devices with IRT and the option "high performance", max. | 64                                                                                          |
| of which in line, max.                                                | 64                                                                                          |
| Shared device, supported                                              | Yes                                                                                         |
| Prioritized startup supported                                         | Yes                                                                                         |
| Number of IO Devices, max.                                            | 32                                                                                          |
| Activation/deactivation of IO Devices                                 | Yes                                                                                         |

|                                                                                  |                                                                                                                                    |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Maximum number of IO devices that can be activated/deactivated at the same time. | 8                                                                                                                                  |
| IO Devices changing during operation (partner ports), supported                  | Yes                                                                                                                                |
| Max. number of IO devices per tool                                               | 8                                                                                                                                  |
| Device replacement without swap medium                                           | Yes                                                                                                                                |
| Send cycles                                                                      | 250 $\mu$ s, 500 $\mu$ s, 1 ms; 2 ms, 4 ms (not in the case of IRT with "high flexibility" option)                                 |
| Updating time                                                                    | 250 $\mu$ s to 512 ms (depending on the operating mode, see Manual "S7-300 CPU 31xC and CPU 31x, Technical Data" for more details) |
| <b>Address area</b>                                                              |                                                                                                                                    |
| Inputs, max.                                                                     | 8 kbyte                                                                                                                            |
| Outputs, max.                                                                    | 8 kbyte                                                                                                                            |
| User data per address area, max.                                                 |                                                                                                                                    |
| User data consistency, max.                                                      | 1024 byte                                                                                                                          |
| <b>PROFINET IO Device</b>                                                        |                                                                                                                                    |
| <b>Services</b>                                                                  |                                                                                                                                    |
| PG/OP communication                                                              | Yes                                                                                                                                |
| Routing                                                                          | Yes                                                                                                                                |
| S7 communication                                                                 | Yes ; with loadable FBs, max. configurable connections: 16, max. number of instances: 32                                           |
| Isochronous mode                                                                 | No                                                                                                                                 |
| Open IE communication                                                            | Yes ; Via TCP/IP, ISO on TCP, and UDP                                                                                              |
| IRT, supported                                                                   | Yes                                                                                                                                |
| PROFInergy, supported                                                            | Yes ; With SFB 73 / 74 prepared for loadable PROFInergy standard FB for I-Device                                                   |
| Shared device, supported                                                         | Yes                                                                                                                                |
| Number of IO controllers with shared device, max.                                | 2                                                                                                                                  |
| <b>Transfer memory</b>                                                           |                                                                                                                                    |
| Inputs, max.                                                                     | 1440 byte ; Per IO Controller with shared device                                                                                   |
| Outputs, max.                                                                    | 1440 byte ; Per IO Controller with shared device                                                                                   |
| <b>Submodules</b>                                                                |                                                                                                                                    |
| Number, max.                                                                     | 64                                                                                                                                 |

|                                                                 |                                                                                                  |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| User data per submodule, max.                                   | 1024 byte                                                                                        |
| <b>PROFINET CBA</b>                                             |                                                                                                  |
| acyclic transmission                                            | Yes                                                                                              |
| Cyclic transmission                                             | Yes                                                                                              |
| <b>Open IE communication</b>                                    |                                                                                                  |
| Open IE communication, supported                                | Yes                                                                                              |
| Number of connections, max.                                     | 32                                                                                               |
| Local port numbers used at the system end                       | 0, 20, 21, 23, 25, 80, 102, 135, 161, 443, 8080, 34962, 34963, 34964, 65532, 65533, 65534, 65535 |
| Keep-alive function, supported                                  | Yes                                                                                              |
| <b>Isochronous mode</b>                                         |                                                                                                  |
| Isochronous operation (application synchronized up to terminal) | Yes ; Via 2nd PROFIBUS DP or PROFINET interface                                                  |
| <b>Communication functions</b>                                  |                                                                                                  |
| PG/OP communication                                             | Yes                                                                                              |
| Data record routing                                             | Yes                                                                                              |
| <b>Global data communication</b>                                |                                                                                                  |
| supported                                                       | Yes                                                                                              |
| Number of GD loops, max.                                        | 8                                                                                                |
| Number of GD packets, max.                                      | 8                                                                                                |
| Number of GD packets, transmitter, max.                         | 8                                                                                                |
| Number of GD packets, receiver, max.                            | 8                                                                                                |
| Size of GD packets, max.                                        | 22 byte                                                                                          |
| Size of GD packet (of which consistent), max.                   | 22 byte                                                                                          |
| <b>S7 basic communication</b>                                   |                                                                                                  |
| supported                                                       | Yes                                                                                              |
| User data per job, max.                                         | 76 byte                                                                                          |
| 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 as server)              |
| <b>S7 communication</b>                                         |                                                                                                  |
| supported                                                       | Yes                                                                                              |
| as server                                                       | Yes                                                                                              |
| as client                                                       | Yes ; via integrated PROFINET interface and loadable FB or via CP and loadable FB                |

|                                                            |                                                                                                       |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| User data per job, max.                                    | See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication) |
| <b>S5-compatible communication</b>                         |                                                                                                       |
| supported                                                  | Yes ; via CP and loadable FC                                                                          |
| <b>Open IE communication</b>                               |                                                                                                       |
| TCP/IP                                                     | Yes ; via integrated PROFINET interface and loadable FBs                                              |
| Number of connections, max.                                | 32                                                                                                    |
| Data length for connection type 01H, max.                  | 1460 byte                                                                                             |
| Data length for connection type 11H, max.                  | 32768 byte                                                                                            |
| Several passive connections per port, supported            | Yes                                                                                                   |
| ISO-on-TCP (RFC1006)                                       | Yes ; via integrated PROFINET interface and loadable FBs                                              |
| Number of connections, max.                                | 32                                                                                                    |
| Data length, max.                                          | 32768 byte                                                                                            |
| UDP                                                        | Yes ; via integrated PROFINET interface and loadable FBs                                              |
| Number of connections, max.                                | 32                                                                                                    |
| Data length, max.                                          | 1472 byte                                                                                             |
| <b>Web server</b>                                          |                                                                                                       |
| supported                                                  | Yes                                                                                                   |
| Number of HTTP clients                                     | 5                                                                                                     |
| User-defined websites                                      | Yes                                                                                                   |
| <b>PROFINET CBA (at set setpoint communication load)</b>   |                                                                                                       |
| Setpoint for the CPU communication load                    | 20 %                                                                                                  |
| Number of remote interconnection partners                  | 32                                                                                                    |
| Number of functions, master/slave                          | 50                                                                                                    |
| Total of all Master/Slave connections                      | 3000                                                                                                  |
| Data length of all incoming connections master/slave, max. | 24000 byte                                                                                            |
| Data length of all outgoing connections master/slave, max. | 24000 byte                                                                                            |
| Number of device-internal and PROFIBUS interconnections    | 1000                                                                                                  |

|                                                                    |                            |
|--------------------------------------------------------------------|----------------------------|
| Data length of device-internal und PROFIBUS interconnections, max. | 8000 byte                  |
| Data length per connection, max.                                   | 1400 byte                  |
| <b>Remote interconnections with acyclic transmission</b>           |                            |
| Sampling frequency: Sampling time, min.                            | 200 ms                     |
| Number of incoming interconnections                                | 100                        |
| Number of outgoing interconnections                                | 100                        |
| Data length of all incoming interconnections, max.                 | 3200 byte                  |
| Data length of all outgoing interconnections, max.                 | 3200 byte                  |
| Data length per connection, max.                                   | 1400 byte                  |
| <b>Remote interconnections with cyclic transmission</b>            |                            |
| Transmission frequency: Transmission interval, min.                | 1 ms                       |
| Number of incoming interconnections                                | 300                        |
| Number of outgoing interconnections                                | 300                        |
| Data length of all incoming interconnections, max.                 | 4800 byte                  |
| Data length of all outgoing interconnections, max.                 | 4800 byte                  |
| Data length per connection, max.                                   | 450 byte                   |
| <b>HMI variables via PROFINET (acyclic)</b>                        |                            |
| Number of stations that can log on for HMI variables (PN OPC/iMap) | 3 ; 2x PN OPC/1x iMap      |
| HMI variable updating                                              | 500 ms                     |
| Number of HMI variables                                            | 600                        |
| Data length of all HMI variables, max.                             | 9600 byte                  |
| <b>PROFIBUS proxy functionality</b>                                |                            |
| supported                                                          | Yes                        |
| Number of linked PROFIBUS devices                                  | 32                         |
| Data length per connection, max.                                   | 240 byte ; Slave-dependent |
| <b>Number of connections</b>                                       |                            |
| overall                                                            | 32                         |
| usable for PG communication                                        | 31                         |

|                                                      |                                                                                                                                                                     |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| reserved for PG communication                        | 1                                                                                                                                                                   |
| Adjustable for PG communication, min.                | 1                                                                                                                                                                   |
| Adjustable for PG communication, max.                | 31                                                                                                                                                                  |
| usable for OP communication                          | 31                                                                                                                                                                  |
| reserved for OP communication                        | 1                                                                                                                                                                   |
| adjustable for OP communication, min.                | 1                                                                                                                                                                   |
| adjustable for OP communication, max.                | 31                                                                                                                                                                  |
| usable for S7 basic communication                    | 30                                                                                                                                                                  |
| Reserved for S7 basic communication                  | 0                                                                                                                                                                   |
| adjustable for S7 basic communication, min.          | 0                                                                                                                                                                   |
| adjustable for S7 basic communication, max.          | 30                                                                                                                                                                  |
| usable for S7 communication                          | 16                                                                                                                                                                  |
| reserved for S7 communication                        | 0                                                                                                                                                                   |
| Adjustable for S7 communication, min.                | 0                                                                                                                                                                   |
| Adjustable for S7 communication, max.                | 16                                                                                                                                                                  |
| Max. total number of instances                       | 32                                                                                                                                                                  |
| usable for routing                                   | X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as DP master: max. 24; X2 as DP slave (active): max. 14; X3 as PROFINET: 48 max. |
| <b>S7 message functions</b>                          |                                                                                                                                                                     |
| Number of login stations for message functions, max. | 32 ; Depending on the configured connections for PG/OP and S7 basic communication                                                                                   |
| Process diagnostic messages                          | Yes                                                                                                                                                                 |
| simultaneously active Alarm-S blocks, max.           | 300                                                                                                                                                                 |
| <b>Test commissioning functions</b>                  |                                                                                                                                                                     |
| <b>Status/control</b>                                |                                                                                                                                                                     |
| 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                                                                                                                                                                  |
| <b>Forcing</b>                                       |                                                                                                                                                                     |
| Forcing                                              | Yes                                                                                                                                                                 |

|                                         |                              |
|-----------------------------------------|------------------------------|
| Force, variables                        | Inputs, outputs              |
| Number of variables, max.               | 10                           |
| Status block                            | Yes ; Up to 2 simultaneously |
| Single step                             | Yes                          |
| Number of breakpoints                   | 4                            |
| Diagnostic buffer                       |                              |
| present                                 | Yes                          |
| Number of entries, max.                 | 500                          |
| adjustable                              | No                           |
| Of which powerfail-proof                | 100                          |
| Number of entries readable in RUN, max. | 499                          |
| adjustable                              | Yes ; From 10 to 499         |
| preset                                  | 10                           |
| Service data                            |                              |
| Can be read out                         | Yes                          |
| Ambient conditions                      |                              |
| Operating temperature                   |                              |
| Min.                                    | 0 °C                         |
| max.                                    | 60 °C                        |
| Configuration                           |                              |
| Configuration software                  |                              |
| STEP 7                                  | Yes ; V5.5 or higher         |
| programming                             |                              |
| Programming language                    |                              |
| LAD                                     | Yes                          |
| FBD                                     | Yes                          |
| STL                                     | Yes                          |
| SCL                                     | Yes                          |
| CFC                                     | Yes                          |
| GRAPH                                   | Yes                          |
| HiGraph®                                | Yes                          |
| Command set                             | see instruction list         |
| Nesting levels                          | 8                            |

|                                             |                             |
|---------------------------------------------|-----------------------------|
| Software libraries                          |                             |
| System functions (SFC)                      | see instruction list        |
| System function blocks (SFB)                | see instruction list        |
| 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                      |
| Weight                                      |                             |
| Weight, approx.                             | 1250 g                      |
| Status                                      | Jul 13, 2012                |