



SIMATIC DP, IM154-8 PN/DP CPU f. ET200 PRO, 384 KB work memory, Int. PROFINET interface, Int. PROFIBUS DP master/slave interface Degree of protection IP65/67, Micro Memory Card and Connection module required

| General information                                         |                                                                                     |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------|
| HW functional status                                        | 01                                                                                  |
| Firmware version                                            | V3.2                                                                                |
| Product function                                            |                                                                                     |
| • Isochronous mode                                          | Yes; Via PROFIBUS DP or PROFINET interface                                          |
| Engineering with                                            |                                                                                     |
| • Programming package                                       | STEP 7 V5.5 or higher                                                               |
| Supply voltage                                              |                                                                                     |
| Rated value (DC)                                            | 24 V                                                                                |
| external protection for power supply lines (recommendation) | MCB 24 V DC / 16 A with tripping characteristic Type B and C (see ET 200pro manual) |
| Load voltage L+                                             |                                                                                     |
| • Rated value (DC)                                          | 24 V                                                                                |
| • permissible range, lower limit (DC)                       | 20.4 V                                                                              |
| • permissible range, upper limit (DC)                       | 28.8 V                                                                              |
| • Reverse polarity protection                               | Yes                                                                                 |
| Input current                                               |                                                                                     |
| Current consumption, typ.                                   | 350 mA                                                                              |
| Current consumption (in no-load operation), typ.            | 250 mA; Typical, current consumption for CPU in STOP state                          |
| Inrush current, typ.                                        | 2 A                                                                                 |
| I <sup>2</sup> t                                            | 0.25 A <sup>2</sup> -s; Typical                                                     |
| Power loss                                                  |                                                                                     |
| Power loss, typ.                                            | 8.5 W                                                                               |
| Memory                                                      |                                                                                     |
| Work memory                                                 |                                                                                     |
| • integrated                                                | 384 kbyte                                                                           |
| • expandable                                                | No                                                                                  |
| Load memory                                                 |                                                                                     |
| • Plug-in (MMC)                                             | Yes                                                                                 |
| • Plug-in (MMC), max.                                       | 8 Mbyte                                                                             |
| • Data management on MMC (after last programming), min.     | 10 a                                                                                |
| Backup                                                      |                                                                                     |
| • present                                                   | Yes; Guaranteed by MMC (maintenance-free)                                           |
| • without battery                                           | Yes; Program and data                                                               |
| CPU processing times                                        |                                                                                     |
| for bit operations, typ.                                    | 0.05 µs                                                                             |
| for word operations, typ.                                   | 0.09 µs                                                                             |
| for fixed point arithmetic, typ.                            | 0.12 µs                                                                             |
| for floating point arithmetic, typ.                         | 0.45 µs                                                                             |

|                                                           |                                                                                               |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <b>CPU-blocks</b>                                         |                                                                                               |
| Number of blocks (total)                                  | 1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used. |
| <b>DB</b>                                                 |                                                                                               |
| • Number, max.                                            | 1 024; Number range: 1 to 16000                                                               |
| • Size, max.                                              | 64 kbyte                                                                                      |
| <b>FB</b>                                                 |                                                                                               |
| • Number, max.                                            | 1 024; Number range: 0 to 7999                                                                |
| • Size, max.                                              | 64 kbyte                                                                                      |
| <b>FC</b>                                                 |                                                                                               |
| • Number, max.                                            | 1 024; 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 cyclic interrupt OBs                          | 4; OB 32, 33, 34, 35                                                                          |
| • Number of process alarm OBs                             | 1; OB 40                                                                                      |
| • Number of DPV1 alarm OBs                                | 3; OB 55, 56, 57                                                                              |
| • Number of 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 centralized I/O and 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                                                  | 256                                                                                           |
| <b>Retentivity</b>                                        |                                                                                               |
| — adjustable                                              | Yes                                                                                           |
| — preset                                                  | Z 0 to Z 7                                                                                    |
| <b>Counting range</b>                                     |                                                                                               |
| — adjustable                                              | Yes                                                                                           |
| — counting range / of S7 counters / initial value         | 0                                                                                             |
| — counting range / of S7 counters / full-scale value      | 999                                                                                           |
| <b>IEC counter</b>                                        |                                                                                               |
| • present                                                 | Yes                                                                                           |
| • Type                                                    | SFB                                                                                           |
| • Number                                                  | Unlimited (limited only by RAM capacity)                                                      |
| <b>S7 times</b>                                           |                                                                                               |
| • Number                                                  | 256                                                                                           |
| <b>Retentivity</b>                                        |                                                                                               |
| — adjustable                                              | Yes                                                                                           |
| — preset                                                  | No retentivity                                                                                |
| <b>Time range</b>                                         |                                                                                               |
| — time range / of the S7 timers / initial value           | 10 ms                                                                                         |
| — time range / of the S7 timers / full-scale value        | 9 990 s                                                                                       |
| <b>IEC timer</b>                                          |                                                                                               |
| • present                                                 | Yes                                                                                           |
| • Type                                                    | SFB                                                                                           |
| • Number                                                  | Unlimited (limited only by RAM capacity)                                                      |
| <b>Data areas and their retentivity</b>                   |                                                                                               |
| Retentive data area (incl. timers, counters, flags), max. | 128 kbyte                                                                                     |
| <b>Flag</b>                                               |                                                                                               |
| • Size, max.                                              | 2 048 byte                                                                                    |
| • Retentivity available                                   | Yes; MB 0 to MB 2 047                                                                         |
| • Retentivity preset                                      | MB 0 to MB 15                                                                                 |
| • Number of clock memories                                | 8                                                                                             |
| <b>Data blocks</b>                                        |                                                                                               |

|                                     |                                                                           |
|-------------------------------------|---------------------------------------------------------------------------|
| • Retentivity adjustable            | Yes; via non-retain property on DB                                        |
| • Retentivity preset                | Yes                                                                       |
| <b>Local data</b>                   |                                                                           |
| • per priority class, max.          | 32 768 byte; Max. 2048 bytes per block                                    |
| <b>Address area</b>                 |                                                                           |
| <b>I/O address area</b>             |                                                                           |
| • Inputs                            | 2 048 byte                                                                |
| • Outputs                           | 2 048 byte                                                                |
| of which distributed                |                                                                           |
| — Inputs                            | 2 048 byte                                                                |
| — Outputs                           | 2 048 byte                                                                |
| <b>Process image</b>                |                                                                           |
| • Inputs, adjustable                | 2 048 byte                                                                |
| • Outputs, adjustable               | 2 048 byte                                                                |
| • Inputs, default                   | 128 byte                                                                  |
| • Outputs, default                  | 128 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                            | 16 384                                                                    |
| — of which central                  | 128                                                                       |
| • Outputs                           | 16 384                                                                    |
| — of which central                  | 64                                                                        |
| <b>Analog channels</b>              |                                                                           |
| • Inputs                            | 1 024                                                                     |
| — of which central                  | 64                                                                        |
| • Outputs                           | 1 024                                                                     |
| — of which central                  | 64                                                                        |
| <b>Hardware configuration</b>       |                                                                           |
| Integrated power supply             | Yes; 24 V DC                                                              |
| <b>Number of DP masters</b>         |                                                                           |
| • integrated                        | 1                                                                         |
| <b>Rack</b>                         |                                                                           |
| • Racks, max.                       | 1                                                                         |
| • Modules per rack, max.            | 16; Expansion width max. 1 m                                              |
| <b>Time of day</b>                  |                                                                           |
| <b>Clock</b>                        |                                                                           |
| • Hardware clock (real-time)        | Yes                                                                       |
| • retentive and synchronizable      | Yes                                                                       |
| • Backup time                       | 6 wk; At 40 °C ambient temperature                                        |
| • Deviation per day, max.           | 10 s; Typ.: 2 s                                                           |
| <b>Operating hours counter</b>      |                                                                           |
| • Number                            | 1                                                                         |
| • Number/Number range               | 0                                                                         |
| • Range of values                   | 0 to 2 <sup>31</sup> hours (when using SFC 101)                           |
| • Granularity                       | 1 h                                                                       |
| • 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                                                                       |
| • on Ethernet via NTP               | Yes; As client                                                            |
| <b>Interfaces</b>                   |                                                                           |
| Interfaces/bus type                 | 1x MPI/PROFIBUS DP, 1x PROFINET (3 ports)                                 |
| <b>1. Interface</b>                 |                                                                           |
| Interface type                      | Integrated RS 485 interface                                               |
| Isolated                            | Yes                                                                       |
| <b>Interface types</b>              |                                                                           |

|                                                       |                                                                                            |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------|
| • RS 485                                              | Yes                                                                                        |
| • Output current of the interface, max.               | May only be used for external terminating resistor                                         |
| • Design of the connection                            | 2x M12 B-coded                                                                             |
| <b>Protocols</b>                                      |                                                                                            |
| • MPI                                                 | Yes                                                                                        |
| • PROFIBUS DP master                                  | Yes                                                                                        |
| • PROFIBUS DP slave                                   | Yes                                                                                        |
| • Point-to-point connection                           | No                                                                                         |
| <b>MPI</b>                                            |                                                                                            |
| • Transmission rate, max.                             | 12 Mbit/s                                                                                  |
| <b>Services</b>                                       |                                                                                            |
| — PG/OP communication                                 | Yes                                                                                        |
| — Routing                                             | Yes                                                                                        |
| — Global data communication                           | Yes                                                                                        |
| — S7 basic communication                              | Yes                                                                                        |
| — S7 communication                                    | Yes                                                                                        |
| — S7 communication, as client                         | No                                                                                         |
| — S7 communication, as server                         | Yes                                                                                        |
| <b>PROFIBUS DP master</b>                             |                                                                                            |
| • Transmission rate, max.                             | 12 Mbit/s                                                                                  |
| • Number of DP slaves, max.                           | 124                                                                                        |
| <b>Services</b>                                       |                                                                                            |
| — 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                                        | 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                                                                                        |
| — Direct data exchange (slave-to-slave communication) | Yes; as subscriber                                                                         |
| — DPV1                                                | Yes                                                                                        |
| <b>Address area</b>                                   |                                                                                            |
| — Inputs, max.                                        | 2 048 byte                                                                                 |
| — Outputs, max.                                       | 2 048 byte                                                                                 |
| <b>User data per DP slave</b>                         |                                                                                            |
| — Inputs, max.                                        | 244 byte                                                                                   |
| — Outputs, max.                                       | 244 byte                                                                                   |
| <b>PROFIBUS DP slave</b>                              |                                                                                            |
| • Transmission rate, max.                             | 12 Mbit/s                                                                                  |
| • automatic baud rate search                          | Yes; only with passive interface                                                           |
| • Address area, max.                                  | 32                                                                                         |
| • User data per address area, max.                    | 32 byte                                                                                    |
| <b>Services</b>                                       |                                                                                            |
| — 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                                                                                         |
| <b>Transfer memory</b>                                |                                                                                            |
| — Inputs                                              | 244 byte                                                                                   |
| — Outputs                                             | 244 byte                                                                                   |

| 2. Interface                                                                  |                                                                                                                                 |
|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Interface type                                                                | PROFINET                                                                                                                        |
| Isolated                                                                      | Yes; Galvanic isolation for P3 is implemented in IM154-8, for P1 and P2 in CM                                                   |
| automatic detection of transmission rate                                      | Yes; 10/100 Mbit/s                                                                                                              |
| Autonegotiation                                                               | Yes                                                                                                                             |
| Autocrossing                                                                  | Yes                                                                                                                             |
| product function / at the 2nd interface / change of the IP address at runtime | Yes                                                                                                                             |
| Interface types                                                               |                                                                                                                                 |
| • Number of ports                                                             | 3                                                                                                                               |
| • integrated switch                                                           | Yes                                                                                                                             |
| • Design of the connection                                                    | Ethernet (2x M12 D-coded; 1x RJ45)                                                                                              |
| Protocols                                                                     |                                                                                                                                 |
| • MPI                                                                         | No                                                                                                                              |
| • PROFINET IO Controller                                                      | Yes; Also simultaneously with IO-Device functionality                                                                           |
| • PROFINET IO Device                                                          | Yes; Also simultaneously with IO Controller functionality                                                                       |
| • PROFINET CBA                                                                | Yes                                                                                                                             |
| • PROFIBUS DP master                                                          | No                                                                                                                              |
| • PROFIBUS DP slave                                                           | No                                                                                                                              |
| • Open IE communication                                                       | Yes; Via TCP/IP, ISO on TCP, and UDP                                                                                            |
| • Web server                                                                  | Yes                                                                                                                             |
| • Media redundancy                                                            | Yes                                                                                                                             |
| PROFINET IO Controller                                                        |                                                                                                                                 |
| • Transmission rate, max.                                                     | 100 Mbit/s                                                                                                                      |
| Services                                                                      |                                                                                                                                 |
| — PG/OP communication                                                         | Yes                                                                                                                             |
| — Routing                                                                     | Yes                                                                                                                             |
| — S7 communication                                                            | Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32                                         |
| — Isochronous mode                                                            | Yes; OB 61 - isochronous mode is possible either on DP or PROFINET IO (not simultaneously)                                      |
| — IRT                                                                         | Yes                                                                                                                             |
| — Shared device                                                               | Yes                                                                                                                             |
| — Prioritized startup                                                         | Yes                                                                                                                             |
| — Number of IO devices with prioritized startup, max.                         | 32                                                                                                                              |
| — Number of connectable IO Devices, max.                                      | 128                                                                                                                             |
| — 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"             | 128                                                                                                                             |
| — of which in line, max.                                                      | 61                                                                                                                              |
| — Number of connectable IO Devices for RT, max.                               | 128                                                                                                                             |
| — of which in line, max.                                                      | 128                                                                                                                             |
| — 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                                                                                                                               |
| — Device replacement without swap medium                                      | Yes                                                                                                                             |
| — Send cycles                                                                 | 250 µs, 500 µs, 1 ms; 2 ms, 4 ms (not in the case of IRT with "high flexibility" option)                                        |
| — Updating time                                                               | 250 µs to 512 ms (depending on the operating mode, see "IM 154-8 CPU Interface Module" operating instructions for more details) |
| Address area                                                                  |                                                                                                                                 |
| — Inputs, max.                                                                | 2 048 byte                                                                                                                      |
| — Outputs, max.                                                               | 2 048 byte                                                                                                                      |
| — User data consistency, max.                                                 | 1 024 byte                                                                                                                      |
| PROFINET IO Device                                                            |                                                                                                                                 |
| Services                                                                      |                                                                                                                                 |
| — PG/OP communication                                                         | Yes                                                                                                                             |
| — Routing                                                                     | Yes                                                                                                                             |
| — S7 communication                                                            | Yes; With loadable FBs, max. configurable connections: 14, max. number of                                                       |

|                                                                                                    |                                                                                                  |
|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| — Isochronous mode                                                                                 | instances: 32                                                                                    |
| — IRT                                                                                              | No                                                                                               |
| — PROFINergy                                                                                       | Yes                                                                                              |
| — Shared device                                                                                    | Yes; With SFB 73 / 74 prepared for loadable PROFINergy standard FB for I-Device                  |
| — Number of IO Controllers with shared device, max.                                                | Yes                                                                                              |
|                                                                                                    | 2                                                                                                |
| <b>Transfer memory</b>                                                                             |                                                                                                  |
| — Inputs, max.                                                                                     | 1 440 byte; Per IO Controller with shared device                                                 |
| — Outputs, max.                                                                                    | 1 440 byte; Per IO Controller with shared device                                                 |
| <b>Submodules</b>                                                                                  |                                                                                                  |
| — number of submodules / at the 2nd interface / as PROFINET IO device / maximum                    | 64                                                                                               |
| — data volume / at the 2nd interface / as net data per submodule / as PROFINET IO device / maximum | 1 024 byte                                                                                       |
| <b>PROFINET CBA</b>                                                                                |                                                                                                  |
| • acyclic transmission                                                                             | Yes                                                                                              |
| • cyclic transmission                                                                              | Yes                                                                                              |
| <b>Open IE communication</b>                                                                       |                                                                                                  |
| • Number of connections, max.                                                                      | 8                                                                                                |
| • 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>Protocols</b>                                                                                   |                                                                                                  |
| <b>Redundancy mode</b>                                                                             |                                                                                                  |
| <b>Media redundancy</b>                                                                            |                                                                                                  |
| — Switchover time on line break, typ.                                                              | 200 ms; PROFINET MRP                                                                             |
| — Number of stations in the ring, max.                                                             | 50                                                                                               |
| <b>SIMATIC communication</b>                                                                       |                                                                                                  |
| • S7 routing                                                                                       | Yes                                                                                              |
| <b>Open IE communication</b>                                                                       |                                                                                                  |
| • TCP/IP                                                                                           | Yes; via integrated PROFINET interface and loadable FBs                                          |
| — Number of connections, max.                                                                      | 8                                                                                                |
| — Data length, max.                                                                                | 32 768 byte; 1 460 bytes with connection type 01H; 32 768 bytes with connection type 11H         |
| — several passive connections per port, supported                                                  | Yes                                                                                              |
| • ISO-on-TCP (RFC1006)                                                                             | Yes                                                                                              |
| — Number of connections, max.                                                                      | 8                                                                                                |
| — Data length, max.                                                                                | 32 768 byte                                                                                      |
| • UDP                                                                                              | Yes                                                                                              |
| — Number of connections, max.                                                                      | 8                                                                                                |
| — Data length, max.                                                                                | 1 472 byte                                                                                       |
| <b>Web server</b>                                                                                  |                                                                                                  |
| • supported                                                                                        | Yes                                                                                              |
| • User-defined websites                                                                            | Yes                                                                                              |
| • Number of HTTP clients                                                                           | 5                                                                                                |
| <b>communication functions / header</b>                                                            |                                                                                                  |
| PG/OP communication                                                                                | 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>                                                                      |                                                                                                  |
| • communication function / S7 basic communication                                                  | 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 FBs                                               |
| • 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) |

#### communication functions / PROFINET CBA (with set target communication load) / header

|                                                                      |            |
|----------------------------------------------------------------------|------------|
| • Setpoint for the CPU communication load                            | 50 %       |
| • Number of remote interconnection partners                          | 32         |
| • Number of functions, master/slave                                  | 30         |
| • Total of all master/slave connections                              | 1 000      |
| • Data length of all incoming connections master/slave, max.         | 4 000 byte |
| • Data length of all outgoing connections master/slave, max.         | 4 000 byte |
| • Number of device-internal and PROFIBUS interconnections            | 500        |
| • Data length of device-internal und PROFIBUS interconnections, max. | 4 000 byte |
| • Data length per connection, max.                                   | 1 400 byte |

#### performance data / PROFINET CBA / remote interconnection / with acyclic transfer / header

|                                                                                                                                               |            |
|-----------------------------------------------------------------------------------------------------------------------------------------------|------------|
| — Sampling interval, min.                                                                                                                     | 500 ms     |
| — Number of incoming interconnections                                                                                                         | 100        |
| — Number of outgoing interconnections                                                                                                         | 100        |
| — Data length of all incoming interconnections, max.                                                                                          | 2 000 byte |
| — Data length of all outgoing interconnections, max.                                                                                          | 2 000 byte |
| — data volume / as user data for remote interconnections / in the case of acyclic transmission / with PROFINET CBA / per connection / maximum | 1 400 byte |

#### performance data / PROFINET CBA / remote interconnection / with cyclic transfer / header

|                                                                                                                                       |            |
|---------------------------------------------------------------------------------------------------------------------------------------|------------|
| — Transmission frequency: Transmission interval, min.                                                                                 | 1 ms       |
| — number of remote connections to input variables / with PROFINET CBA / with cyclic transfer / maximum                                | 200        |
| — number of remote connections to output variables / with cyclical transfer / with PROFINET CBA / maximum                             | 200        |
| — data volume / as user data for remote interconnections with input variables / with cyclical transfer / with PROFINET CBA / maximum  | 2 000 byte |
| — data volume / as user data for remote interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum | 2 000 byte |
| — data volume / as user data for remote interconnections / with cyclical transfer / with PROFINET CBA / per connection / maximum      | 450 byte   |

#### performance data / PROFINET CBA / HMI variables via PROFINET / acyclic / header

|                                                                      |                      |
|----------------------------------------------------------------------|----------------------|
| — 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                                            | 200                  |
| — Data length of all HMI variables, max.                             | 2 000 byte           |

#### performance data / PROFINET CBA / PROFIBUS proxy functionality / header

|                                     |                           |
|-------------------------------------|---------------------------|
| — supported                         | Yes                       |
| — Number of linked PROFIBUS devices | 16                        |
| — Data length per connection, max.  | 240 byte; Slave-dependent |

#### Number of connections

|                                               |    |
|-----------------------------------------------|----|
| • overall                                     | 16 |
| • usable for PG communication                 | 15 |
| — reserved for PG communication               | 1  |
| — adjustable for PG communication, min.       | 1  |
| — adjustable for PG communication, max.       | 15 |
| • usable for OP communication                 | 15 |
| — reserved for OP communication               | 1  |
| — adjustable for OP communication, min.       | 1  |
| — adjustable for OP communication, max.       | 15 |
| • usable for S7 basic communication           | 14 |
| — reserved for S7 basic communication         | 0  |
| — adjustable for S7 basic communication, min. | 0  |

- adjustable for S7 basic communication, max.
- usable for routing

14  
X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as PROFINET: 24 max.

#### S7 message functions

|                                                      |                                                                                  |
|------------------------------------------------------|----------------------------------------------------------------------------------|
| Number of login stations for message functions, max. | 16; Depending on the configured connections for PG/OP and S7 basic communication |
| Process diagnostic messages                          | Yes                                                                              |
| simultaneously active Alarm-S blocks, max.           | 300                                                                              |

#### Test commissioning functions

|                       |                             |
|-----------------------|-----------------------------|
| Status block          | Yes; Up to 2 simultaneously |
| Single step           | Yes                         |
| Number of breakpoints | 4                           |

|                                    |                                                   |
|------------------------------------|---------------------------------------------------|
| Status/control                     |                                                   |
| • Status/control variable          | Yes                                               |
| • Variables                        | Inputs, outputs, memory bits, DB, times, counters |
| • Number of variables, max.        | 30                                                |
| — of which status variables, max.  | 30                                                |
| — of which control variables, max. | 14                                                |

|                             |     |
|-----------------------------|-----|
| Forcing                     |     |
| • Forcing                   | Yes |
| • Forcing, variables        | I/O |
| • Number of variables, max. | 10  |

|                           |                                                              |
|---------------------------|--------------------------------------------------------------|
| Diagnostic buffer         |                                                              |
| • present                 | Yes                                                          |
| • Number of entries, max. | 500; Only the last 100 entries are retentive at power on/off |
| — adjustable              | No                                                           |
| — preset                  | 10                                                           |

#### Potential separation

|                                                        |     |
|--------------------------------------------------------|-----|
| between backplane bus and electronics                  | No  |
| between backplane bus and all other circuit components | Yes |
| between supply and all other circuits                  | Yes |

#### Isolation

|                       |                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------|
| Isolation tested with | In general, 707 V DC (type test), Ethernet interface 1 500 V AC (for P1 and P2 on CM, for P3 on IM) |
|-----------------------|-----------------------------------------------------------------------------------------------------|

#### Degree and class of protection

|                         |         |
|-------------------------|---------|
| IP degree of protection | IP65/67 |
|-------------------------|---------|

#### Standards, approvals, certificates

|                       |     |
|-----------------------|-----|
| CE mark               | Yes |
| CSA approval          | No  |
| cULus                 | Yes |
| FM approval           | No  |
| RCM (formerly C-TICK) | Yes |

#### configuration / header

|                        |                     |
|------------------------|---------------------|
| Configuration software |                     |
| • STEP 7               | Yes; V5.5 or higher |

|                                      |                      |
|--------------------------------------|----------------------|
| configuration / programming / header |                      |
| • Command set                        | see instruction list |
| • Nesting levels                     | 8                    |
| • System functions (SFC)             | see instruction list |
| • System function blocks (SFB)       | see instruction list |

|                      |     |
|----------------------|-----|
| Programming language |     |
| — LAD                | Yes |
| — FBD                | Yes |
| — STL                | Yes |
| — SCL                | Yes |
| — CFC                | Yes |
| — GRAPH              | Yes |
| — HiGraph®           | Yes |

|                                               |                            |
|-----------------------------------------------|----------------------------|
| Know-how protection                           |                            |
| • User program protection/password protection | Yes                        |
| • Block encryption                            | Yes; With S7 block Privacy |

| Dimensions      |                                                                              |
|-----------------|------------------------------------------------------------------------------|
| Width           | 135 mm                                                                       |
| Height          | 130 mm                                                                       |
| Depth           | 65 mm; 60 mm without cover for RJ45 socket; 65 mm with cover for RJ45 socket |
| Weights         |                                                                              |
| Weight, approx. | 720 g                                                                        |

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