## **SIEMENS**

## Data sheet

## 6ES7154-8FB01-0AB0

SIMATIC DP, IM154-8F PN/DP CPU f. ET200 PRO, 512 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   |
| Engineering with  |  |
| <ul> <li>Programming package</li> </ul>                 | STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4           |
| Supply voltage  |  |
| Rated value (DC)  | 24 V   |
| external protection for power supply lines              | MCB 24 V DC / 16 A with tripping characteristic Type B and C |
| (recommendation)  | (see ET 200pro manual)                                       |
| Load voltage L+   |  |
| <ul> <li>Rated value (DC)</li> </ul>                    | 24 V   |
| <ul> <li>permissible range, lower limit (DC)</li> </ul> | 20.4 V   |
| <ul> <li>permissible range, upper limit (DC)</li> </ul> | 28.8 V   |
| <ul> <li>Reverse polarity protection</li> </ul>         | 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  |
|   |  |

| l²t  | 0.25 A²·s; Typical   |
|--|--|
| Power loss   |  |
| Power loss, typ.   | 8.5 W  |
| Memory   |  |
| Memory<br>Work memory  |  |
| integrated   | 512 kbyte  |
| • expandable   | No   |
| Load memory  |  |
| Plug-in (MMC)  | Yes  |
| <ul> <li>Plug-in (MMC), max.</li> </ul>  | 8 Mbyte  |
| Data management on MMC (after last   | 10 y   |
| programming), min.   |  |
| 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  |
|  |  |
| CPU-blocks   |  |
| CPU-blocks<br>Number of blocks (total)   | 1 024; (DBs, FCs, FBs); the maximum number of loadable blocks  |
| Number of blocks (total)   | 1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.  |
| Number of blocks (total) DB  | can be reduced by the MMC used.  |
| Number of blocks (total) DB • Number, max.   | can be reduced by the MMC used.<br>1 024; Number range: 1 to 16000   |
| Number of blocks (total) DB • Number, max. • Size, max.  | can be reduced by the MMC used.  |
| Number of blocks (total) DB • Number, max. • Size, max. FB   | can be reduced by the MMC used.<br>1 024; Number range: 1 to 16000<br>64 kbyte   |
| Number of blocks (total) DB Number, max. Size, max. FB Number, max.  | <ul> <li>can be reduced by the MMC used.</li> <li>1 024; Number range: 1 to 16000</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> </ul>   |
| Number of blocks (total) DB Number, max. Size, max. FB Number, max. Size, max.   | can be reduced by the MMC used.<br>1 024; Number range: 1 to 16000<br>64 kbyte   |
| Number of blocks (total) DB Number, max. Size, max. FB Number, max. Size, max. FC  | can be reduced by the MMC used.<br>1 024; Number range: 1 to 16000<br>64 kbyte<br>1 024; Number range: 0 to 7999<br>64 kbyte   |
| Number of blocks (total) DB Number, max. Size, max. FB Number, max. Size, max. FC Number, max.   | <ul> <li>can be reduced by the MMC used.</li> <li>1 024; Number range: 1 to 16000</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> </ul>   |
| Number of blocks (total) DB Number, max. Size, max. FB Number, max. Size, max. FC  | can be reduced by the MMC used.<br>1 024; Number range: 1 to 16000<br>64 kbyte<br>1 024; Number range: 0 to 7999<br>64 kbyte   |
| Number of blocks (total) DB Number, max. Size, max. FB Number, max. Size, max. FC Number, max. Size, max.  | <ul> <li>can be reduced by the MMC used.</li> <li>1 024; Number range: 1 to 16000</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> </ul>   |
| Number of blocks (total)         DB         • Number, max.         • Size, max.         FB         • Number, max.         • Size, max.         FC         • Number, max.         • Size, max.         OB         • Size, max.  | can be reduced by the MMC used.   1 024; Number range: 1 to 16000   64 kbyte   1 024; Number range: 0 to 7999   64 kbyte   1 024; Number range: 0 to 7999   64 kbyte   |
| Number of blocks (total)         DB         • Number, max.         • Size, max.         FB         • Number, max.         • Size, max.         FC         • Number, max.         • Size, max.         OB         • Size, max.         • Number, max.         • Size, max.         • Number, max.         • Size, max.         • Number of free cycle OBs   | <ul> <li>can be reduced by the MMC used.</li> <li>1 024; Number range: 1 to 16000<br/>64 kbyte</li> <li>1 024; Number range: 0 to 7999<br/>64 kbyte</li> <li>1 024; Number range: 0 to 7999<br/>64 kbyte</li> <li>64 kbyte</li> <li>64 kbyte</li> </ul>  |
| Number of blocks (total)         DB         • Number, max.         • Size, max.         FB         • Number, max.         • Size, max.         FC         • Number, max.         • Size, max.         OB         • Size, max.         • Size, max.         • Number of free cycle OBs         • Number of time alarm OBs   | <ul> <li>can be reduced by the MMC used.</li> <li>1 024; Number range: 1 to 16000<br/>64 kbyte</li> <li>1 024; Number range: 0 to 7999<br/>64 kbyte</li> <li>1 024; Number range: 0 to 7999<br/>64 kbyte</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999<br/>64 kbyte</li> </ul>   |
| Number of blocks (total)         DB         • Number, max.         • Size, max.         FB         • Number, max.         • Size, max.         FC         • Number, max.         • Size, max.         OB         • Size, max.         • Size, max.         • Size, max.         • Number of free cycle OBs         • Number of time alarm OBs         • Number of delay alarm OBs  | <ul> <li>can be reduced by the MMC used.</li> <li>1 024; Number range: 1 to 16000</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> </ul>   |
| Number of blocks (total)         DB         • Number, max.         • Size, max.         FB         • Number, max.         • Size, max.         FC         • Number, max.         • Size, max.         OB         • Size, max.         • Size, max.         • Number of free cycle OBs         • Number of time alarm OBs         • Number of cyclic interrupt OBs  | <ul> <li>can be reduced by the MMC used.</li> <li>1 024; Number range: 1 to 16000<br/>64 kbyte</li> <li>1 024; Number range: 0 to 7999<br/>64 kbyte</li> <li>1 024; Number range: 0 to 7999<br/>64 kbyte</li> <li>50 to 7999</li> <li>51 024; Number range: 0 to 7999</li> <li>52 kbyte</li> <li>53 contemport</li> <li>54 kbyte</li> <li>54 kbyte</li> <li>55 contemport</li> <li>56 kbyte</li> <li>56 kbyte</li> <li>56 kbyte</li> <li>57 contemport</li> <li>58 contemport</li> <li>59 contemport</li> <li>59 contemport</li> <li>50 contemport</li> <li></li></ul> |
| Number of blocks (total)         DB         • Number, max.         • Size, max.         FB         • Number, max.         • Size, max.         FC         • Number, max.         • Size, max.         OB         • Size, max.         • Size, max.         • Size, max.         • Number of free cycle OBs         • Number of time alarm OBs         • Number of cyclic interrupt OBs         • Number of process alarm OBs | <ul> <li>can be reduced by the MMC used.</li> <li>1 024; Number range: 1 to 16000</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>64 kbyte</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 024; Number range: 0 to 7999</li> <li>64 kbyte</li> <li>1 08 10</li> <li>1 08 10</li></ul>             |
| Number of blocks (total)         DB         • Number, max.         • Size, max.         FB         • Number, max.         • Size, max.         FC         • Number, max.         • Size, max.         OB         • Size, max.         • Size, max.         • Number of free cycle OBs         • Number of time alarm OBs         • Number of cyclic interrupt OBs  | <ul> <li>can be reduced by the MMC used.</li> <li>1 024; Number range: 1 to 16000<br/>64 kbyte</li> <li>1 024; Number range: 0 to 7999<br/>64 kbyte</li> <li>1 024; Number range: 0 to 7999<br/>64 kbyte</li> <li>50 to 7999</li> <li>51 024; Number range: 0 to 7999</li> <li>52 kbyte</li> <li>53 contemport</li> <li>54 kbyte</li> <li>54 kbyte</li> <li>55 contemport</li> <li>56 kbyte</li> <li>56 kbyte</li> <li>56 kbyte</li> <li>57 contemport</li> <li>58 contemport</li> <li>59 contemport</li> <li>59 contemport</li> <li>50 contemport</li> <li></li></ul> |

| • Number of startup Obs     1: 0B 100       • Number of asynchronous error OBs     6: 0B 80, 82, 83, 85, 66, 87 (OB83 only for centralized I/O and<br>PROFINET IO)       • Number of synchronous error OBs     2: 0B 121, 122       Neating depth     4       • per priority class     16       • additional within an error OB     4       Counters, timers and their retentivity     57 counter       • Number OB     256       Retentivity     7       • adjustable     Ves       - adjustable     Ves       - lower limit     0       - upper primit     255       - preset     2 0 to 2 7       Counting range     7       - lower limit     0       - upper limit     999       - lower limit     0       - upper limit     256       - lower limit     0       - upper limit     257       • Number     258       - lower limit     0       - upper limit     256       • Number     256       • Number     256       • Number     Ves       • Number     256       • Number     256       • upper limit     256       • Number     256       • Number     255       • Nu  |  | 1. OR 100                                  |
|---|--|--|
| PROFINET IO)           • Number of synchronous error OBs         2, OB 121, 122           Nesting depth           • per priority class         16           • additional within an error OB         4           Counters, timers and their retentivity         Social counter           Social counter         256           Retentivity         -           - adjustable         Yes           - lower limit         0           - upper limit         255           - preset         20 to 2 7           Counting range         -           - adjustable         Yes           - preset         20 to 2 7           Counting range         250 to 2 7           - couver limit         99           IEC counting range         Yes           - adjustable         Yes           - present         26           Number         Unlimited (limited only by RAM capacity)           S7 times         255           - lower limit         0           - upper limit         256           Retentivity         -           - adjustable         Yes           - lower limit         0           - upper limit         99 00 s  |  |  |
| • Number of synchronous error OBs     2: OB 121, 122       Nesting depth     16       • additional within an error OB     16       • additional within an error OB     4       Counters: timers and their retentivity     57       S7 counter     256       Retentivity     748       - adjustable     9       - ower limit     0       - upper limit     255       - ower limit     0       - upper limit     255       - preset     20 to 2 7       Counting range     74       - adjustable     Yes       - lower limit     0       - upper limit     993       - upper limit     993       Present     Yes       - squistable     Yes       - upper limit     256       Prosent     Vas       - Type     SFB       Number     256       Retentivity     256       - adjustable     Yes       - adjustable     Vas       - upper limit     256       - Number     256       - number     255       - prosent     No retentivity       Ittime range     10 ms       - lower limit     10 ms       - upper limit     9900 s   <  | <ul> <li>Number of asynchronous error OBs</li> </ul> |  |
| Nesting depth           • per priority class         16           • additional within an error OB         4           Counters, timers and their retentivity         57           S7 counter         256           Retentivity         256           Retentivity         0           - adjustable         Yes           - lower limit         0           - upper limit         255           - preset         20 to 27           Counting range         20 to 27           - adjustable         Yes           - adjustable         Yes           - preset         20 to 27           Counting range         Yes           - upper limit         0           - upper limit         99           IEC counter         Ves           • Number         Unlimited (limited only by RAM capacity)           S7 times         SFB           • Number         256           Retentivity         255           - adjustable         Yes           - lower limit         0           - upper limit         255           - preset         No retentivity           Time range         Io ms   | • Number of synchronous error OPs                    |  |
| • per priority class       16         • additional within an error OB       4         Counters, timers and their retentivity       57         S7 counter       256         Retentivity       -         - adjustable       Yes         - lower limit       0         - upper limit       255         - preset       20 to 2 7         Counter       -         - adjustable       Yes         - adjustable       Yes         - preset       20 to 2 7         Counting range       -         - adjustable       Yes         - lower limit       0         - upper limit       99         EC counter       -         • present       Yes         • Type       SFB         • Number       256         Retentivity       -         - adjustable       Yes         - lower limit       0         - upper limit       255         - preset       No retentivity         - adjustable       Yes         - lower limit       10 ms         - upper limit       9900 s         EC timer       -         - prese   |  | 2, 00 121, 122                             |
| • additional within an error OB       4         Counters. Inners and their retentivity       57         S7 counter       256         Retentivity       7         - adjustable       9         - ouper limit       255         - preset       Z0 to Z 7         Counting range       7         - ouper limit       255         - preset       Z0 to Z 7         Counting range       7         - ouper limit       999         IEC counter       0         - ouper limit       999         IEC counter       999         IEC counter       Ves         - present       Yes         - Number       Unlimited (limited only by RAM capacity)         S7 times       256         Retentivity       Ves         - adjustable       Yes         - lower limit       0         - ouper limit       255         - preset       No retentivity         Time range       Ves         - lower limit       9 990 s         IEC timer       990 s         - preset       No retentivity         Time range       SFB         - upper limit   |  | 16   |
| Counters, timers, and their retentivity           \$7 counter         256           Retentivity         - adjustable           - adjustable         Yes           - lower limit         0           - upper limit         255           - preset         20 to 2 7           Counter limit         0           - upper limit         255           - preset         20 to 2 7           Counting range         -           - adjustable         Yes           - lower limit         0           - upper limit         999           IEC counter         -           • present         Yes           • Type         SFB           • Number         Unlimited (limited only by RAM capacity)           57 times         -           - lower limit         0           - adjustable         Yes           - lower limit         0           - upper limit         256           Retentived Jac         Yes           - lower limit         0           - upper limit         9 990 s           IEC timer         -           - ower limit         9 990 s           IEC timer         Y  |  |  |
| \$7 counter     256       Retentivity     - adjustable     Yes       - lower limit     0       - upper limit     255       - preset     Z 0 to Z 7       Counting range     -       - adjustable     Yes       - lower limit     0       - upper limit     255       - preset     Z 0 to Z 7       Counting range     -       - adjustable     Yes       - lower limit     0       - upper limit     999       IEC counter     -       • Number     Unlimited (limited only by RAM capacity)       \$7 times     -       • Number     256       Retentivity     -       - adjustable     Yes       - lower limit     0       - upper limit     256       Retentivity     -       - lower limit     0       - upper limit     255       - preset     No retentivity       Time range     -       - lower limit     10 ms       - upper limit     9990 s       IEC timer     Yes       - present     Yes       - present     Yes       - lower limit     10 ms       - upper limit     9990 s       IEC ti  | • additional within an error OB                      | 4  |
| • Number256Retentivity- adjustableYes- lower limit0- upper limit255- presetZ 0 to Z 7Counting rangeZ- adjustableYes- lower limit0- upper limit999IEC counterYes- lower limit0- upper limit999IEC counterYesTypeSFBNumberUnlimited (limited only by RAM capacity)S7 times256Retentivity256- adjustableYes- adjustableYes- lower limit0- upper limit255- presetNo retentivity- resetNo retentivityTime range10 ms- upper limit999 sIEC timerYes- presentYes- presentYes- lower limit10 ms- upper limit999 sIEC timerYes- lower limit12 ms- upper limit999 s   | Counters, timers and their retentivity               |  |
| Retentivity         - adjustable       Yes         - lower limit       0         - upper limit       255         - preset       2 to 2 7         Counting range       2 to 2 7         - adjustable       Yes         - adjustable       Yes         - oupper limit       0         - upper limit       999         IEC counter       Yes         - present       Yes         - type       SFB         - Number       Unlimited (limited only by RAM capacity)         S7 times       256         - lower limit       0         - adjustable       Yes         - adjustable       Yes         - lower limit       0         - upper limit       256         Retentivity       Zes         - lower limit       0         - upper limit       255         - preset       No retentivity         Time range       Image: Semineration of the semin | S7 counter   |  |
|   | Number   | 256  |
| - lower limit         0           - upper limit         255           - preset         2 0 to Z 7           Counting range         -           - adjustable         Yes           - lower limit         0           - upper limit         99           IEC counter         Yes           • present         Yes           • Type         SFB           • Number         Unlimited (limited only by RAM capacity)           S7 times         -           - adjustable         Yes           • Number         256           Retentivity         -           - adjustable         Ves           - lower limit         0           - lower limit         255           - preset         No retentivity           Time range         -           - lower limit         0           - upper limit         290 s           Etettimer         -           - present         Yes           - present         Ves           - upper limit         SFB           - lower limit         Unlimited (limited only by RAM capacity)           IEC timer         -           • present   | Retentivity  |  |
|   | — adjustable   | Yes  |
| preset         Z 0 to Z 7           Counting range  | — lower limit  | 0  |
| Counting range       Yes         - adjustable       999         - lower limit       999         IEC counter       Yes         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)         S7 times       256         Retentivity       - adjustable         - adjustable       Yes         - lower limit       0         - upper limit       255         - preset       Nor teentrivity         Time range       -         - lower limit       10 ms         - upper limit       9 990 s         IEC timer       -         - preset       Nor teentrivity         Time range       -         - lower limit       10 ms         - upper limit       9 990 s         IEC timer       -         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)         Data areas and their retentivity       -         Retentive data area (incl. timers, counters, flags), max.       128 kbyte   | — upper limit  | 255  |
| Counting range           - adjustable         Yes           - lower limit         0           - upper limit         999           IEC counter         Yes           • present         Yes           • Type         SFB           • Number         Unlimited (limited only by RAM capacity)           S7 times         256           • Number         256           Retentivity         -           - adjustable         Yes           - lower limit         0           - upper limit         255           - preset         No retentivity           Time range         -           - lower limit         10 ms           - upper limit         9 990 s           IEC timer         -           • present         Yes           - lower limit         10 ms           - upper limit         9 990 s           IEC timer         -           • present         Yes           • Type         SFB           • Number         Unlimited (limited only by RAM capacity)           Data areas and their retentivity         -           Retentive data area (incl. timers, counters, flags), max.         128 kbyte  |  | Z 0 to Z 7                                 |
| - adjustableYes- lower limit0- upper limit999IEC counter• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times• Number256Retentivity- adjustableYes- lower limit0- upper limit255- presetNo retentivityTime rangeVortentivity- lower limit10 ms- upper limit990 sIEC timerYes- lower limit9 son s- lower limit9 son s- lower limit9 son s- lower limit10 ms- upper limit9 son s- lower limit9 son s- lower limit9 son s- lower limit10 ms- upper limit10 ms- lower limit10 ms- upper limit10 ms- lower limit10 ms- upper limit10 ms<   | Counting range                                       |  |
| lower limit0upper limit999IEC counter• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times• Number256Retentivity adjustableYes- lower limit0- upper limit255- presetNo retentivityTime range10 ms- upper limit9 990 sIEC timerYes- lower limit0- upper limit255- presetNo retentivityTime range10 ms- upper limit9 990 sIEC timerSFB• presentYes• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivityTest areas (incl. timers, counters, flags), max.   |  | Yes  |
| upper limit999IEC counter• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)\$7 times256Retentivity- adjustable- adjustableYes- lower limit0- upper limit255- presetNo retentivityTime range10 ms- upper limit990 sIEC timer990 sIEC timerYes• presentYes• presentSFB• TypeSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivitySFBRetentive data area (incl. timers, counters, flags), max.128 kbyte   |  | 0  |
| IEC counter         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)         S7 times       256         • Number       256         Retentivity       -         - adjustable       Yes         - lower limit       0         - upper limit       255         - preset       No retentivity         Time range       -         - lower limit       10 ms         - upper limit       9 990 s         IEC timer       Yes         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)   |  | 999  |
| • presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times256Retentivity256Retentivity- adjustable- adjustableYes- lower limit0- upper limit255- presetNo retentivityTime range lower limit9 990 sIEC timer9 990 sIEC timerYes• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivity128 kbyte   |  |  |
| • TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times256• Number256Retentivity- adjustableYes- lower limit0- upper limit255- presetNo retentivityTime range- lower limit9990 sIEC timer9990 sIEC timerSFB• presentYes• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivity128 kbyte   |  | Yes  |
| • Number       Unlimited (limited only by RAM capacity)         S7 times       256         • Number       256         Retentivity       -         - adjustable       Yes         - lower limit       0         - upper limit       255         - preset       No retentivity         Time range       -         - lower limit       10 ms         - upper limit       9 990 s         IEC timer       Yes         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)  |  | SFB  |
| S7 times       256         Retentivity       - adjustable         - adjustable       Yes         - lower limit       0         - upper limit       255         - preset       No retentivity         Time range       -         - lower limit       10 ms         - upper limit       9 990 s         IEC timer       Yes         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)  |  |  |
| • Number       256         Retentivity       -         - adjustable       Yes         - lower limit       0         - upper limit       255         - preset       No retentivity         Time range       -         - lower limit       10 ms         - upper limit       9 990 s         IEC timer       -         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)   |  |  |
| Retentivity       Yes         - adjustable       9         - lower limit       0         - upper limit       255         - preset       No retentivity         Time range       10 ms         - upper limit       9 990 s         IEC timer       Yes         • present       Yes         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)  |  | 256  |
| adjustableYes lower limit0 upper limit255 presetNo retentivityTime range10 ms lower limit9 990 s upper limit9 990 sIEC timer• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivity128 kbyteRetentive data area (incl. timers, counters, flags),<br>max.128 kbyte   |  |  |
| - lower limit0- upper limit255- presetNo retentivityTime range10 ms- lower limit9 990 s- upper limit9 990 sIEC timer• presentYes• presentSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivityRetentive data area (incl. timers, counters, flags), max.128 kbyte  |  | Yes  |
| - upper limit255- presetNo retentivityTime range10 ms- lower limit9 990 s- upper limit9 990 sIEC timerYes• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivityRetentive data area (incl. timers, counters, flags), max.   | -  |  |
| presetNo retentivityTime range10 ms lower limit9 990 s upper limit9 990 sIEC timerYes• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivity128 kbyteRetentive data area (incl. timers, counters, flags), max.128 kbyte   |  |  |
| Time range       10 ms         - lower limit       9 990 s         - upper limit       9 990 s         IEC timer       Yes         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)   |  |  |
| lower limit10 ms upper limit9 990 sIEC timer• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)Data areas and their retentivityRetentive data area (incl. timers, counters, flags),<br>max.128 kbyte  |  | No recentivity                             |
|   |  | 10 mc                                      |
| IEC timer       Yes         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)         Data areas and their retentivity       Retentive data area (incl. timers, counters, flags), max.   |  |  |
| • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)         Data areas and their retentivity         Retentive data area (incl. timers, counters, flags), max.       128 kbyte   |  | 9 990 \$                                   |
| <ul> <li>Type</li> <li>Number</li> <li>SFB</li> <li>Unlimited (limited only by RAM capacity)</li> </ul> Data areas and their retentivity           Data areas and their retentivity           Retentive data area (incl. timers, counters, flags), max.   |  | Vec  |
| Number Unlimited (limited only by RAM capacity) Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. 128 kbyte  |  |  |
| Data areas and their retentivity       Retentive data area (incl. timers, counters, flags), max.  |  |  |
| Retentive data area (incl. timers, counters, flags),       128 kbyte         max.       128 kbyte   | Number   | Unlimited (limited only by KAIVI capacity) |
| Retentive data area (incl. timers, counters, flags),       128 kbyte         max.       128 kbyte   | Data areas and their retentivity                     |  |
|   | Retentive data area (incl. timers, counters, flags), | 128 kbyte                                  |
| Flag  |  |  |
|   | Flag   |  |

| <ul> <li>Number, max.</li> </ul>                      | 2 048 byte  |
|---|---|
| Retentivity available                                 | Yes; MB 0 to MB 2 047   |
| <ul> <li>Retentivity preset</li> </ul>                | MB 0 to MB 15   |
| <ul> <li>Number of clock memories</li> </ul>          | 8   |
| Data blocks   |   |
| <ul> <li>Retentivity adjustable</li> </ul>            | Yes; via non-retain property on DB  |
| <ul> <li>Retentivity preset</li> </ul>                | Yes   |
| Local data  |   |
| <ul> <li>per priority class, max.</li> </ul>          | 32 768 byte; Max. 2048 bytes per block                                    |
| Address area  |   |
| I/O address area                                      |   |
| • Inputs  | 2 048 byte  |
| Outputs   | 2 048 byte  |
| of which distributed                                  |   |
| — Inputs  | 2 048 byte  |
| — Outputs   | 2 048 byte  |
| Process image   |   |
| <ul> <li>Inputs, adjustable</li> </ul>                | 2 048 byte  |
| Outputs, adjustable                                   | 2 048 byte  |
| <ul> <li>Inputs, default</li> </ul>                   | 128 byte  |
| • Outputs, default                                    | 128 byte  |
| Subprocess images                                     |   |
| <ul> <li>Number of subprocess images, max.</li> </ul> | 1; With PROFINET IO, the length of the user data is limited to 1600 bytes |
| Digital channels                                      |   |
| Inputs  | 16 384  |
| — of which central                                    | 128   |
| Outputs   | 16 384  |
| — of which central                                    | 64  |
| Analog channels                                       |   |
| Inputs  | 1 024   |
| — of which central                                    | 64  |
| Outputs   | 1 024   |
| — of which central                                    | 64  |
| Hardware configuration                                |   |
| Integrated power supply                               | No  |
| Number of DP masters                                  |   |
| ● integrated  | 1   |
| Rack  |   |
| <ul> <li>Racks, max.</li> </ul>                       | 1   |
| <ul> <li>Modules per rack, max.</li> </ul>            | 16; Expansion width max. 1 m  |
| 1 / -   |   |

| Time of day                                      |  |
|--|--|
| Clock  |  |
| <ul> <li>Hardware clock (real-time)</li> </ul>   | Yes                                    |
| <ul> <li>retentive and synchronizable</li> </ul> | Yes                                    |
| Backup time                                      | 6 wk; At 40 °C ambient temperature     |
| <ul> <li>Deviation per day, max.</li> </ul>      | 10 s; Typ.: 2 s                        |
| Operating hours counter                          |  |
| Number   | 1                                      |
| <ul> <li>Number/Number range</li> </ul>          | 0                                      |
| <ul> <li>Range of values</li> </ul>              | 0 to 2^31 hours (when using SFC 101)   |
| Granularity                                      | 1 h                                    |
| retentive  | Yes; Must be restarted at each restart |
| Clock synchronization                            |  |
| <ul> <li>supported</li> </ul>                    | Yes                                    |
| ● to MPI, master                                 | Yes                                    |
| ● to MPI, slave                                  | Yes                                    |
| • to DP, master                                  | Yes; With DP slave only slave clock    |
| • to DP, slave                                   | Yes                                    |
| <ul> <li>on Ethernet via NTP</li> </ul>          | Yes; As client                         |
| 1. Interface                                     |  |
| Interface type                                   | Integrated RS 485 interface            |

| Integrated RS 485 interface                        |
|--|
| Yes  |
| May only be used for external terminating resistor |
|  |
| Yes  |
| 2x M12 B-coded                                     |
|  |
| Yes  |
| Yes  |
| Yes  |
| No   |
|  |
| 12 Mbit/s  |
|  |
| Yes  |
| No   |
| Yes  |
|  |

| PROFIBUS DP master  |   |
|---|---|
| • Transmission rate, max.   | 12 Mbit/s   |
| <ul> <li>Number of DP slaves, max.</li> </ul>                             | 124   |
| 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  | Yes   |
| — Isochronous mode  | Yes; OB 61 - isochronous mode is possible either on DP or<br>PROFINET IO (not simultaneously) |
| — SYNC/FREEZE   | Yes   |
| — Activation/deactivation of DP slaves                                    | Yes   |
| <ul> <li>— Direct data exchange (slave-to-slave communication)</li> </ul> | Yes; As subscriber  |
| — DPV1  | Yes   |
| Address area  |   |
| — Inputs, max.  | 2 048 byte  |
| — Outputs, max.   | 2 048 byte  |
| User data per DP slave  |   |
| — Inputs, max.  | 244 byte  |
| — Outputs, max.   | 244 byte  |
| PROFIBUS DP slave   |   |
| • Transmission rate, max.   | 12 Mbit/s   |
| <ul> <li>automatic baud rate search</li> </ul>                            | Yes; only with passive interface  |
| <ul> <li>Address area, max.</li> </ul>                                    | 32  |
| <ul> <li>User data per address area, max.</li> </ul>                      | 32 byte   |
| Services  |   |
| — 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   |
| <ul> <li>— Direct data exchange (slave-to-slave communication)</li> </ul> | Yes   |
| — DPV1  | No  |
| Transfer memory   |   |
| — Inputs  | 244 byte  |
|   |   |

| — Outputs  | 244 byte  |
|--|---|
| 2. Interface   |   |
| Interface type   | PROFINET  |
| Physics  | Ethernet (2x M12 D-coded; 1x RJ45)  |
| 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   |
| Change of IP address at runtime, supported               | Yes   |
| Interface types  |   |
| Number of ports  | 3   |
| <ul> <li>integrated switch</li> </ul>                    | Yes   |
| Media redundancy   |   |
| • supported  | Yes   |
| <ul> <li>Switchover time on line break, typ.</li> </ul>  | 200 ms; PROFINET MRP  |
| <ul> <li>Number of stations in the ring, max.</li> </ul> | 50  |
| 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   |
| 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<br>PROFINET IO (not simultaneously) |
| — Open IE communication                                  | Yes; Via TCP/IP, ISO on TCP, and UDP  |
| — IRT  | Yes   |
| — Prioritized startup                                    | Yes   |
| — Number of IO devices with prioritized                  | 32  |
| startup, max.  |   |
| — 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  | 128  |
| option "high flexibility"  |  |
| — of which in line, max.   | 61   |
| — Number of connectable IO Devices for RT,   | 128  |
| max.   |  |
| — of which in line, max.   | 128  |
| — Activation/deactivation of IO Devices  | Yes  |
| — Number of IO Devices that can be   | 8  |
| simultaneously activated/deactivated, max.   |  |
| <ul> <li>— IO Devices changing during operation<br/>(partner ports), supported</li> </ul>  | Yes  |
| — Number of IO Devices per tool, max.  | 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 μs to 512 ms (depending on the operating mode, see "IM<br>154-8 CPU Interface Module" operating instructions for more<br>details)  |
| Address area   |  |
| — Inputs, max.   | 2 048 byte   |
| — Outputs, max.  | 2 048 byte   |
|  |  |
| — User data consistency, max.  | 1 024 byte   |
|  | 1 024 byte   |
| — User data consistency, max.  | 1 024 byte   |
| — User data consistency, max.<br>PROFINET IO Device  | 1 024 byte<br>Yes  |
| — User data consistency, max.<br>PROFINET IO Device<br>Services  |  |
| <ul> <li>User data consistency, max.</li> <li>PROFINET IO Device</li> <li>Services</li> <li>PG/OP communication</li> </ul>   | Yes  |
| <ul> <li>User data consistency, max.</li> <li>PROFINET IO Device</li> <li>Services</li> <li>PG/OP communication</li> <li>Routing</li> </ul>  | Yes<br>Yes   |
| <ul> <li>User data consistency, max.</li> <li>PROFINET IO Device</li> <li>Services</li> <li>PG/OP communication</li> <li>Routing</li> <li>S7 routing</li> </ul>  | Yes<br>Yes<br>Yes; With loadable FBs, max. configurable connections: 14, max.  |
| <ul> <li>User data consistency, max.</li> <li>PROFINET IO Device</li> <li>Services</li> <li>PG/OP communication</li> <li>Routing</li> <li>S7 routing</li> <li>S7 communication</li> </ul>  | Yes<br>Yes<br>Yes<br>Yes; With loadable FBs, max. configurable connections: 14, max.<br>number of instances: 32  |
| <ul> <li>User data consistency, max.</li> <li>PROFINET IO Device</li> <li>Services</li> <li>PG/OP communication</li> <li>Routing</li> <li>S7 routing</li> <li>S7 communication</li> <li>Isochronous mode</li> </ul>  | Yes<br>Yes<br>Yes; With loadable FBs, max. configurable connections: 14, max.<br>number of instances: 32<br>No   |
| <ul> <li>User data consistency, max.</li> <li>PROFINET IO Device</li> <li>Services</li> <li>PG/OP communication</li> <li>Routing</li> <li>S7 routing</li> <li>S7 routing</li> <li>S7 communication</li> <li>Isochronous mode</li> <li>Open IE communication</li> </ul>   | Yes<br>Yes<br>Yes; With loadable FBs, max. configurable connections: 14, max.<br>number of instances: 32<br>No<br>Yes; Via TCP/IP, ISO on TCP, and UDP   |
| <ul> <li>User data consistency, max.</li> <li>PROFINET IO Device</li> <li>Services</li> <li>PG/OP communication</li> <li>Routing</li> <li>S7 routing</li> <li>S7 routing</li> <li>S7 communication</li> <li>Isochronous mode</li> <li>Open IE communication</li> <li>IRT</li> </ul>  | Yes<br>Yes<br>Yes; With loadable FBs, max. configurable connections: 14, max.<br>number of instances: 32<br>No<br>Yes; Via TCP/IP, ISO on TCP, and UDP<br>Yes<br>Yes; With SFB 73 / 74 prepared for loadable PROFIenergy   |
| <ul> <li>User data consistency, max.</li> <li>PROFINET IO Device</li> <li>Services</li> <li>PG/OP communication</li> <li>Routing</li> <li>S7 routing</li> <li>S7 routing</li> <li>S7 communication</li> <li>Isochronous mode</li> <li>Open IE communication</li> <li>IRT</li> <li>PROFlenergy</li> </ul>   | Yes<br>Yes<br>Yes<br>Yes; With loadable FBs, max. configurable connections: 14, max.<br>number of instances: 32<br>No<br>Yes; Via TCP/IP, ISO on TCP, and UDP<br>Yes<br>Yes; With SFB 73 / 74 prepared for loadable PROFIenergy<br>standard FB for I-Device        |
| <ul> <li>User data consistency, max.</li> <li>PROFINET IO Device</li> <li>Services</li> <li>PG/OP communication</li> <li>Routing</li> <li>S7 routing</li> <li>S7 routing</li> <li>S7 communication</li> <li>Isochronous mode</li> <li>Open IE communication</li> <li>IRT</li> <li>PROFIenergy</li> <li>Shared device</li> <li>Number of IO Controllers with shared</li> </ul>  | Yes<br>Yes<br>Yes<br>Yes; With loadable FBs, max. configurable connections: 14, max.<br>number of instances: 32<br>No<br>Yes; Via TCP/IP, ISO on TCP, and UDP<br>Yes<br>Yes; With SFB 73 / 74 prepared for loadable PROFlenergy<br>standard FB for I-Device<br>Yes |
| <ul> <li>User data consistency, max.</li> <li>PROFINET IO Device</li> <li>Services</li> <li>PG/OP communication</li> <li>Routing</li> <li>S7 routing</li> <li>S7 routing</li> <li>S7 communication</li> <li>Isochronous mode</li> <li>Open IE communication</li> <li>IRT</li> <li>PROFIenergy</li> <li>Shared device</li> <li>Number of IO Controllers with shared device, max.</li> </ul>   | Yes<br>Yes<br>Yes<br>Yes; With loadable FBs, max. configurable connections: 14, max.<br>number of instances: 32<br>No<br>Yes; Via TCP/IP, ISO on TCP, and UDP<br>Yes<br>Yes; With SFB 73 / 74 prepared for loadable PROFIenergy<br>standard FB for I-Device<br>Yes |
| <ul> <li>User data consistency, max.</li> <li>PROFINET IO Device</li> <li>Services <ul> <li>PG/OP communication</li> <li>Routing</li> <li>S7 routing</li> <li>S7 routing</li> <li>S7 communication</li> <li>Isochronous mode</li> <li>Open IE communication</li> <li>IRT</li> <li>PROFIenergy</li> <li>Shared device</li> <li>Number of IO Controllers with shared device, max.</li> </ul> </li> <li>Transfer memory</li> </ul>  | Yes<br>Yes<br>Yes; With loadable FBs, max. configurable connections: 14, max.<br>number of instances: 32<br>No<br>Yes; Via TCP/IP, ISO on TCP, and UDP<br>Yes<br>Yes; With SFB 73 / 74 prepared for loadable PROFIenergy<br>standard FB for I-Device<br>Yes<br>2   |
| <ul> <li>User data consistency, max.</li> <li>PROFINET IO Device</li> <li>Services <ul> <li>PG/OP communication</li> <li>Routing</li> <li>S7 routing</li> <li>S7 routing</li> <li>S7 communication</li> <li>Isochronous mode</li> <li>Open IE communication</li> <li>IRT</li> <li>PROFIenergy</li> <li>Shared device</li> <li>Number of IO Controllers with shared device, max.</li> </ul> </li> <li>Transfer memory <ul> <li>Inputs, max.</li> </ul> </li> </ul>                        | Yes<br>Yes<br>Yes; With loadable FBs, max. configurable connections: 14, max.<br>number of instances: 32<br>No<br>Yes; Via TCP/IP, ISO on TCP, and UDP<br>Yes<br>Yes; With SFB 73 / 74 prepared for loadable PROFlenergy<br>standard FB for I-Device<br>Yes<br>2   |
| <ul> <li>User data consistency, max.</li> <li>PROFINET IO Device</li> <li>Services <ul> <li>PG/OP communication</li> <li>Routing</li> <li>S7 routing</li> <li>S7 routing</li> <li>S7 communication</li> <li>Isochronous mode</li> <li>Open IE communication</li> <li>IRT</li> <li>PROFIenergy</li> <li>Shared device</li> <li>Number of IO Controllers with shared device, max.</li> </ul> </li> <li>Transfer memory <ul> <li>Inputs, max.</li> <li>Outputs, max.</li> </ul> </li> </ul> | Yes<br>Yes<br>Yes; With loadable FBs, max. configurable connections: 14, max.<br>number of instances: 32<br>No<br>Yes; Via TCP/IP, ISO on TCP, and UDP<br>Yes<br>Yes; With SFB 73 / 74 prepared for loadable PROFlenergy<br>standard FB for I-Device<br>Yes<br>2   |

| — User data per submodule, max.   | 1 024 byte  |
|---|---|
| PROFINET CBA  |   |
| acyclic transmission  | Yes   |
| • cyclic transmission   | Yes   |
| Open IE communication   |   |
| <ul> <li>Number of connections, max.</li> </ul>                           | 8   |
| <ul> <li>Local port numbers used at the system end</li> </ul>             | 0, 20, 21, 23, 25, 80, 102, 135, 161, 443, 8080, 34962, 34963,<br>34964, 65532, 65533, 65534, 65535 |
| <ul> <li>Keep-alive function, supported</li> </ul>                        | Yes   |
| Protocols   |   |
| Open IE communication   |   |
| • TCP/IP  | Yes; via integrated PROFINET interface and loadable FBs   |
| - Number of connections, max.   | 8   |
| — Data length, max.   | 32 768 byte; 1460 bytes with connection type 01H; 32768 bytes with connection type 11H              |
| <ul> <li>— several passive connections per port,<br/>supported</li> </ul> | 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  |
| Web server  |   |
| • supported   | Yes   |
| <ul> <li>User-defined websites</li> </ul>                                 | Yes   |
| <ul> <li>Number of HTTP clients</li> </ul>                                | 5   |
| Isochronous mode  |   |
| Isochronous operation (application synchronized up to terminal)           | Yes; Via PROFIBUS DP or PROFINET interface  |
| Communication functions   |   |
| PG/OP communication   | Yes   |
| Global data communication   |   |
| <ul> <li>supported</li> </ul>   | Yes   |
| <ul> <li>Number of GD loops, max.</li> </ul>                              | 8   |
| <ul> <li>Number of GD packets, max.</li> </ul>                            | 8   |
| <ul> <li>Number of GD packets, transmitter, max.</li> </ul>               | 8   |
| <ul> <li>Number of GD packets, receiver, max.</li> </ul>                  | 8   |
| <ul> <li>Size of GD packets, max.</li> </ul>                              | 22 byte   |
| • Size of GD packet (of which consistent), max.                           | 22 byte   |
| S7 basic communication  |   |

| •  | Yes   |
|--|---|
| • supported  |   |
| • User data per job, max.  | 76 byte   |
| <ul> <li>User data per job (of which consistent), max.</li> </ul>                          | 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)                    |
| S7 communication   |   |
| ● 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) |
| PROFINET CBA (at set setpoint communication load)  |   |
| <ul> <li>Setpoint for the CPU communication load</li> </ul>                                | 50 %  |
| <ul> <li>Number of remote interconnection partners</li> </ul>                              | 32  |
| <ul> <li>Number of functions, master/slave</li> </ul>                                      | 30  |
| <ul> <li>Total of all master/slave connections</li> </ul>                                  | 1 000   |
| <ul> <li>Data length of all incoming connections<br/>master/slave, max.</li> </ul>         | 4 000 byte  |
| <ul> <li>Data length of all outgoing connections<br/>master/slave, max.</li> </ul>         | 4 000 byte  |
| <ul> <li>Number of device-internal and PROFIBUS<br/>interconnections</li> </ul>            | 500   |
| <ul> <li>Data length of device-internal und PROFIBUS<br/>interconnections, max.</li> </ul> | 4 000 byte  |
| <ul> <li>Data length per connection, max.</li> </ul>                                       | 1 400 byte  |
| Remote interconnections with acyclic transmission  |   |
| — Sampling frequency: Sampling time, min.  | 500 ms  |
| <ul> <li>— Number of incoming interconnections</li> </ul>                                  | 100   |
| <ul> <li>— Number of outgoing interconnections</li> </ul>                                  | 100   |
| <ul> <li>— Data length of all incoming<br/>interconnections, max.</li> </ul>               | 2 000 byte  |
| <ul> <li>— Data length of all outgoing<br/>interconnections, max.</li> </ul>               | 2 000 byte  |
| — Data length per connection, max.   | 1 400 byte  |
| Remote interconnections with cyclic transmission   |   |
| — Transmission frequency: Transmission interval, min.                                      | 1 ms  |
| - Number of incoming interconnections  | 200   |
| — Number of outgoing interconnections  | 200   |
| — Data length of all incoming interconnections, max.                                       | 2 000 byte  |
| <ul> <li>— Data length of all outgoing<br/>interconnections, max.</li> </ul>               | 2 000 byte  |
| — Data length per connection, max.   | 450 byte  |

| HMI variables via PROFINET (acyclic)   |   |
|--|---|
| <ul> <li>— Number of stations that can log on for HMI variables (PN OPC/iMap)</li> </ul> | 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  |
| PROFIBUS proxy functionality   |   |
| — supported  | Yes   |
| <ul> <li>— Number of linked PROFIBUS devices</li> </ul>                                  | 16  |
| — Data length per connection, max.   | 240 byte; Slave-dependent   |
| Number of connections  |   |
| • overall  | 16  |
| <ul> <li>usable for PG communication</li> </ul>  | 15  |
| - reserved for PG communication  | 1   |
| — adjustable for PG communication, min.  | 1   |
| — adjustable for PG communication, max.  | 15  |
| <ul> <li>usable for OP communication</li> </ul>  | 15  |
| - reserved for OP communication  | 1   |
| — adjustable for OP communication, min.  | 1   |
| — adjustable for OP communication, max.  | 15  |
| <ul> <li>usable for S7 basic communication</li> </ul>                                    | 14  |
| - reserved for S7 basic communication  | 0   |
| <ul> <li>— adjustable for S7 basic communication,<br/>min.</li> </ul>                    | 0   |
| <ul> <li>— adjustable for S7 basic communication,<br/>max.</li> </ul>                    | 14  |
| <ul> <li>usable for routing</li> </ul>   | 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 |
| <ul> <li>Number of variables, max.</li> </ul> | 30  |
| — of which status variables, max.             | 30  |

| — of which control variables, max.                             | 14  |
|--|---|
| Forcing  |   |
| ● Forcing  | Yes   |
| <ul> <li>Forcing, variables</li> </ul>                         | I/O   |
| <ul> <li>Number of variables, max.</li> </ul>                  | 10  |
| Diagnostic buffer  |   |
| ● present  | Yes   |
| <ul> <li>Number of entries, max.</li> </ul>                    | 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                    | Yes   |
| components<br>between supply and all other circuits            | Yes   |
|  |   |
| Isolation<br>Isolation tested with                             | In general, 707 V DC (type test), Ethernet interface 1 500 V AC |
| isolation tested with  | (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   |
| Highest safety class achievable in safety mode                 |   |
| <ul> <li>Performance level according to ISO 13849-1</li> </ul> | PLe   |
| • SIL acc. to IEC 61508  | SIL 3   |
| Configuration  |   |
| Configuration software   |   |
| • STEP 7   | Yes; V5.5 or higher   |
| Programming  |   |
| Command set  | see instruction list  |
| Nesting levels   | 8   |
| <ul> <li>System functions (SFC)</li> </ul>                     | see instruction list  |
| <ul> <li>System function blocks (SFB)</li> </ul>               | see instruction list  |
| Programming language   |   |
| — LAD  | Yes   |
|  |   |

| — STL   | Yes  |
|---|--|
| — SCL   | Yes  |
| — CFC   | Yes  |
| — GRAPH   | Yes  |
| — HiGraph®  | Yes  |
| Know-how protection   |  |
| <ul> <li>User program protection/password protection</li> </ul> | Yes  |
| <ul> <li>Block encryption</li> </ul>                            | 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  |
| last modified:  | 08/16/2019   |