## SIEMENS

## Data sheet

## 6ES7317-2FK14-0AB0



SIMATIC S7-300 CPU317F-2 PN/DP, Central processing unit with 1.5 MB work memory, 1st interface MPI/DP 12 Mbit/s, 2nd interface Ethernet PROFINET, with 2-port switch, Micro Memory Card required

General information	
Firmware version	V3.2
Product function	
Isochronous mode	Yes; Via PROFIBUS DP or PROFINET interface
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
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
external protection for power supply lines (recommendation)	2 A min.
Mains buffering	
<ul> <li>Mains/voltage failure stored energy time</li> </ul>	5 ms
Repeat rate, min.	1 s
Input current	
Current consumption (rated value)	750 mA
Current consumption (in no-load operation), typ.	150 mA
Inrush current, typ.	4 A
l²t	1 A <sup>2</sup> ·s
Power loss	
Power loss, typ.	4.65 W
Memory	
Work memory	
<ul> <li>integrated</li> </ul>	1 536 kbyte
expandable	No
Load memory	
• Plug-in (MMC)	Yes
<ul> <li>Plug-in (MMC), max.</li> </ul>	8 Mbyte
<ul> <li>Data management on MMC (after last programming), min.</li> </ul>	10 y
Backup	
• present	Yes; Guaranteed by MMC (maintenance-free)
without battery	Yes; Program and data
CPU processing times	
for bit operations, typ.	0.025 µs
for word operations, typ.	0.03 µs
for fixed point arithmetic, typ.	0.04 µs

for floating point aritmetic, typ. 0.16 µs CPU-blocks Number of blocks (total) DB • Number, max. • Size, max. FB • Number, max. • Size, max. FB • Number, max. • Size, max. FB • Number, max. • Size, max. FC • Number of sec cycle OBs • Size, max. • Size, max	CPU-blocks	
Number of blocks (total)       2 048; (DBs. FCs. FS9; the maximum number of loadable blocks be reduced by the MMC used.         DB       2 048; Number range: 1 to 16000         • Size, max.       2 048; Number range: 0 to 7999         • Size, max.       6 4 kbyte         FB       2 048; Number range: 0 to 7999         • Number, max.       2 048; Number range: 0 to 7999         • Size, max.       6 4 kbyte         FC       • Number, max.         • Size, max.       6 4 kbyte         OB       • Number, max.         • Size, max.       6 4 kbyte         • Size, max.       6 4 kbyte         OB       • Number of free cycle OBs         • Number of free cycle OBs       1; OB 1         • Number of free cycle interrupt OBs       1; OB 10         • Number of loycla interrupt OBs       4; OB 32; 33; 34, 35         • Number of providation OBs       1; OB 40         • Number of sochronous mode OBs       1; OB 10         • Number of sochronous error OBs       1; OB 10         • Number of synchronous error OBs       2; OB 121, 122         Nesting depth       •         • Number of synchronous error OBs       16         • additional within an error OB       4         Counters, tiners and their rotontivity		
be reduced by the MMC used. DB  Number, max. 2 048; Number range: 1 to 16000 5 lize, max. 6 4 kbyte  FB  Number, max. 2 048; Number range: 0 to 7999 Size, max. 6 4 kbyte  FC  Size, max. 6 4 kbyte  OB  Size, max. 6 4 kbyte  COB  Size, max. 6 4 kbyte  Size, max. 6 4 kbyte  Size, max. 6 4 kbyte  COB  Size, max. 6 4 kbyte		2 048; (DBs, FCs, FBs); the maximum number of loadable blocks can
• Number, max.         2 048; Number range: 1 to 18000           • Size, max.         64 kbyte           FB         -           • Number, max.         2 048; Number range: 0 to 7999           • Size, max.         64 kbyte           FC         -           • Number, max.         2 048; Number range: 0 to 7999           • Size, max.         64 kbyte           FO         -           • Number, max.         2 048; Number range: 0 to 7999           • Size, max.         64 kbyte           OB         -           • Number of free cycle OBs         1; OB 1           • Number of free cycle OBs         1; OB 1           • Number of cyclic interrupt OBs         2; OB 20, 21           • Number of process alam OBs         1; OB 61           • Number of process alam OBs         1; OB 61           • Number of synchronous error OBs         3; OB 55; 56; 57           • Number of synchronous error OBs         1; OB 10           • Number of synchronous error OBs         1; OB 10           • Number of synchronous error OBs         1; OB 10           • Number of synchronous error OBs         1; OB 10           • Stroumter         512           • edditional within an eror OB         4		be reduced by the MMC used.
<ul> <li>Size, max.</li> <li>Size, max.</li> <li>Number, max.</li> <li>Size, max.</li></ul>		
FB         • Number, max.       2 048; Number range: 0 to 7999         • Size, max.       64 kbyte         FC       2 048; Number range: 0 to 7999         • Size, max.       2 048; Number range: 0 to 7999         • Size, max.       2 048; Number range: 0 to 7999         • Size, max.       64 kbyte         OB       • Size, max.         • Number of free cycle OBs       1; OB 10         • Number of didelay alarn OBs       1; OB 10         • Number of cyclic interrupt OBs       4; OB 32, 33, 34, 35         • Number of of process alarn OBs       1; OB 40         • Number of IDPV1 alarn OBs       3; OB 55, 56, 57         • Number of stochronous mode OBs       1; OB 100         • Number of stochronous error OBs       2; OB 20, 21, 122         Number of synchronous error OBs       2; OB 121, 122         Nesting depth       •         • Per priority class       16         • additional within an error OB       4         Counters, timers and their retentivity       S7         S7 counter       512         • Number       512         Retentivity       - adjustable         • preset       2 0 to 2 7         Counting range       - lower limit       0		-
<ul> <li>Number, max.</li> <li>\$12e, max.</li></ul>		64 kbyte
<ul> <li>Size, max.</li> <li>64 kbyte</li> <li>FC</li> <li>Number, max.</li> <li>Size, max.</li> <li>64 kbyte</li> <li>OB</li> <li>Size, max.</li> <li>64 kbyte</li> <li>OB</li> <li>Number of tree cycle OBs</li> <li>1; OB 1</li> <li>Number of tree cycle OBs</li> <li>1; OB 1</li> <li>Number of tree cycle OBs</li> <li>1; OB 1</li> <li>Number of delay alarn OBs</li> <li>2; OB 20, 21</li> <li>Number of process alarn OBs</li> <li>1; OB 40</li> <li>Number of process alarn OBs</li> <li>1; OB 40</li> <li>Number of system of Sector of Secto</li></ul>		
FC       • Number, max.       2 048; Number range: 0 to 7999         • Size, max.       64 kbyte         • OB       • Size, max.       64 kbyte         • Number of free cycle OBs       1; OB 1         • Number of time alarn OBs       1; OB 10         • Number of delay alarn OBs       2; OB 20, 21         • Number of cyclic interrupt OBs       4; OB 32, 33, 34, 35         • Number of process alarn OBs       1; OB 65, 56, 57         • Number of process alarn OBs       1; OB 10         • Number of sochronous mode OBs       1; OB 10         • Number of sisochronous mode OBs       1; OB 10         • Number of synchronous error OBs       2; OB 121, 122         Number of synchronous error OBs       6; OB 80, 82, 83, 85, 66, 87 (OB83 only for 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       512         Retentivity       — adjustable         • Lower limit       0         - upper limit       511         - preset       Z 0 to Z 7         Counters, timer       999         IEC counter		-
• Number, max.       2 048; Number range: 0 to 7999         • Size, max.       64 kbyte         OB       •         • Size, max.       64 kbyte         • Number of free cycle OBs       1; OB 1         • Number of three darm OBs       1; OB 10         • Number of delay alarm OBs       2; OB 20, 21         • Number of process alarm OBs       1; OB 40         • Number of DPV1 alarm OBs       3; OB 55, 56, 57         • Number of sixchronous mode OBs       1; OB 10 0         • Number of sixchronous mode OBs       1; OB 10 10         • Number of sixchronous error OBs       6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)         • Number of sixpichronous error OBs       2; OB 121, 122         Nesting depth       •         • per priority class       16         • additional within an error OB       4         Counters, timers and their retentivity       512         S7 counter       512         • Number       511         - preset       2 to 12 7         Counters, timers       2 to 2 7         Counter       10 to 2 7         - lower limit       0         - upper limit       511         - preset       2 to 2 7         Counting		64 kbyte
<ul> <li>Size, max.</li> <li>64 kbyte</li> <li>OB</li> <li>Size, max.</li> <li>Number of free cycle OBs</li> <li>1; OB 1</li> <li>Number of time alarm OBs</li> <li>1; OB 1</li> <li>Number of equic interrupt OBs</li> <li>2; OB 20, 21</li> <li>Number of optic interrupt OBs</li> <li>4; OB 32, 33, 34, 35</li> <li>Number of DPV1 alarm OBs</li> <li>3; OB 55, 65, 65</li> <li>Number of synchronous mode OBs</li> <li>1; OB 61 - isochronous mode is possible either on DP or PROFIN (not simultaneously)</li> <li>Number of synchronous error OBs</li> <li>4; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)</li> <li>Number of synchronous error OBs</li> <li>2; OB 121, 122</li> </ul> Nesting depth <ul> <li>optimers and their retentivity</li> </ul> S7 counter <ul> <li>Alumber</li> <li>Alumber</li> <li>Alumber</li> <li>Alumber</li> <li>Strouge</li> <li>Alumber</li> <li>Alumber<td></td><td></td></li></ul>		
OB       64 kbyte         • Number of free cycle OBs       1; OB 1         • Number of time alarm OBs       1; OB 10         • Number of cyclic interrupt OBs       4; OB 32, 33, 34, 35         • Number of process alarm OBs       1; OB 40         • Number of process alarm OBs       1; OB 61         • Number of process alarm OBs       1; OB 40         • Number of DPV1 alarm OBs       3; OB 55, 56, 57         • Number of startup OBs       1; OB 10         • Number of synchronous error OBs       6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)         • Number of synchronous error OBs       6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)         • Number of synchronous error OBs       2; OB 121, 122         Nesting depth       • per priority class         • per priority class       16         • additional within an error OB       4         Counters, timers and their retentivity       512         S7 counter       • Number         • lower limit       0         - upper limit       511         - preset       Z to to Z 7         Counting range       Yes         - lower limit       0         - upper limit       99         IEC counter       Yes <t< td=""><td></td><td>-</td></t<>		-
<ul> <li>Size, max.</li> <li>64 kbyte</li> <li>Number of free cycle OBs</li> <li>1; OB 1</li> <li>Number of time alarm OBs</li> <li>1; OB 10</li> <li>Number of clear yalarm OBs</li> <li>2; OB 20, 21</li> <li>Number of process alarm OBs</li> <li>1; OB 40</li> <li>Number of process alarm OBs</li> <li>1; OB 61 - isochronous mode is possible either on DP or PROFIN (not simultaneously)</li> <li>Number of spechronous mode OBs</li> <li>Number of synchronous error OBs</li> <li>Counters, timers and their retentivity</li> <li>S7 counter</li> <li>adjustable</li> <li>- adjustable</li> <li>Yes</li> <li>- adjustable</li> <li>- adjustable</li> <li>- adjustable</li> <li>Yes</li> <li>- adjustable</li> <li>- adjustable</li> <li>Yes</li> <li>- lower limit</li> <li>- gresent</li> <li>- yrpe</li> <li>SFB</li> <li>Number</li> <li>Unimited (limited only by RAM capacity)</li> <li>S7 times</li> </ul>		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 DPV1 alarm OBs       1; OB 40         • Number of isochronous mode OBs       1; OB 61 - isochronous mode is possible either on DP or PROFIN (not simultaneously)         • Number of asynchronous error OBs       1; OB 100         • Number of asynchronous error OBs       6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)         • Number of synchronous error OBs       2; OB 121, 122         Nesting depth       •         • per priority class       16         • additional within an error OB       4         Counters, timers and their retentivity       512         Retentivity       - adjustable         - lower limit       0         - upper limit       511         - preset       Z0 to Z 7         Counter       Yes         - lower limit       0         - upper limit       999         IEC counter       Yes         - present       Yes         - rype       SFB         Number       Unlimited (limited only by RAM capacity)         S7 t		
• Number of time alarm OBs       1; OB 10         • Number of delay alarm OBs       2; OB 20, 21         • Number of process alarm OBs       4; OB 32, 33, 34, 35         • Number of DPV1 alarm OBs       1; OB 40         • Number of isochronous mode OBs       1; OB 61 - isochronous mode is possible either on DP or PROFIN (not simultaneously)         • Number of startup OBs       1; OB 61 - isochronous mode is possible either on DP or PROFIN (not simultaneously)         • Number of synchronous error OBs       6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)         • Number of synchronous error OBs       2; OB 121, 122         Nesting depth       16         • per priority class       16         • additional within an error OB       4         Counters, timers and their retentivity       512         S7 counter       -         • Number       512         Retentivity       -         - adjustable       Yes         - lower limit       0         - preset       20 to Z 7         Counting range       Yes         - lower limit       0         - upper limit       999         IEC counter       Yes         • present       Yes         • Type       SFB         • Numb		
• 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 sicchronous mode OBs       1; OB 61 - isochronous mode is possible either on DP or PROFIN (not simultaneously)         • Number of signet/pronous error OBs       1; OB 100         • Number of synchronous error OBs       6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)         • Number of synchronous error OBs       2; OB 121, 122         Nesting depth       16         • per priority class       16         • additional within an error OB       4         Counters, timers and their retentivity       512         Retentivity       -         - adjustable       Yes         - lower limit       0         - upper limit       511         - preset       Z 0 to Z 7         Counter       -         - lower limit       0         - upper limit       999         IEC counter       Yes         - present       Yes         - lower limit       0         - upper limit       999         IEC counter       Yes	-	
• 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 - isochronous mode is possible either on DP or PROFIN (not simultaneously))         • Number of asynchronous error OBs       6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)         • Number of asynchronous error OBs       6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)         • Number of synchronous error OBs       2; OB 121, 122         Nesting depth       -         • per priority class       16         • additional within an error OB       4         Counters, timers and their retentivity       512         Retentivity       -         - adjustable       Yes         - lower limit       0         - upper limit       511         - preset       Z to to Z 7         Counter       -         - adjustable       Yes         - lower limit       0         - upper limit       511         - preset       Z to to Z 7         Counter       -         - lower limit       999         IEC counter       Yes         - Type		
• Number of process alarn OBs       1; OB 40         • Number of DPV1 alarn OBs       3; OB 55, 56, 57         • Number of isochronous mode OBs       1; OB 61 - isochronous mode is possible either on DP or PROFIN (not simultaneously)         • Number of startup OBs       1; OB 100         • Number of asynchronous error OBs       6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)         • Number of synchronous error OBs       2; OB 121, 122         Nesting depth       16         • per priority class       16         • additional within an error OB       4         Counters, timers and their retentivity       512         Retentivity       -         - adjustable       Yes         - lower limit       0         - upper limit       511         - preset       Z 0 to Z 7         Counter       - adjustable         - adjustable       Yes         - adjustable       999         - experimit       51         - preset       Z 0 to Z 7         Counter       Yes         - lower limit       0         - upper limit       999         IEC counter       Yes         • present       Yes         Type       Unimited (limited only by	-	
• Number of DPV1 alarm OBs       3; OB 55, 56, 57         • Number of isochronous mode OBs       1; OB 61 - isochronous mode is possible either on DP or PROFIN (not simultaneously)         • Number of startup OBs       1; OB 00         • Number of asynchronous error OBs       6; OB 80, 82, 83, 85, 86, 87 (OBB3 only for PROFINET IO)         • Number of synchronous error OBs       2; OB 121, 122         Nesting depth       16         • per priority class       16         • additional within an error OB       4         Counters, timers and their retentivity       57 counter         • Number       512         Retentivity		
• Number of isochronous mode OBs       1; OB 61 - isochronous mode is possible either on DP or PROFIN (not simultaneously)         • Number of startup OBs       1; OB 100         • Number of asynchronous error OBs       6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)         • Number of synchronous error OBs       2; OB 121, 122         Nesting depth       16         • per priority class       16         • additional within an error OB       4         Counters, timers and their retentivity         S7 counter         • Number       512         Retentivity         - adjustable       Yes         - lower limit       0         - upper limit       511         - preset       Z to Z 7         Counter       - adjustable         Yes       - lower limit         - upper limit       511         - upper limit       999         IEC counter       Yes         • Type       SFB         • Number       SFB         • Number       SFB         • Number       Yes		
(not simultaneously)• Number of startup OBs1; OB 100• Number of asynchronous error OBs6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)• Number of synchronous error OBs2; OB 121, 122Nesting depth• per priority class16• additional within an error OB4Counters, timers and their retentivityS7 counter512• Number512Retentivity- adjustableYes- lower limit0- upper limit511- presetZ 0 to Z 7Counting range- adjustableYes- adjustableYes- adjustableYes- presetZ 0 to Z 7Counting range- present99- presentSFB• NumberSFB• NumberSFB• NumberUnlimited (limited only by RAM capacity)		
• Number of asynchronous error OBs       6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)         • Number of synchronous error OBs       2; OB 121, 122         Nesting depth       16         • per priority class       16         • additional within an error OB       4         Counters, timers and their retentivity         S7 counter       512         Retentivity       -         - adjustable       Yes         - lower limit       0         - upper limit       511         - preset       Z 0 to Z 7         Counting range       -         - adjustable       Yes         - adjustable       Yes         - preset       Z 0 to Z 7         Counting range       -         - upper limit       0         - upper limit       999         IEC counter       -         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)		(not simultaneously)
• 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       57 counter         • Number       512         Retentivity       –         - adjustable       Yes         - lower limit       0         - upper limit       511         - preset       2 to to Z 7         Counter       –         - adjustable       Yes         - upper limit       511         - preset       Z to to Z 7         Counting range       –         - adjustable       Yes         - lower limit       0         - upper limit       51         - present       Yes         - lower limit       999         IEC counter       Present         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)         \$7 times       Ves		
Nesting depth       16         • per priority class       16         • additional within an error OB       4         Counters, timers and their retentivity         S7 counter       512         • Number       512         Retentivity       -         - adjustable       Yes         - lower limit       0         - upper limit       511         - preset       Z 0 to Z 7         Counting range       -         - adjustable       Yes         - adjustable       Yes         - preset       Z 0 to Z 7         Counting range       -         - lower limit       0         - upper limit       999         IEC counter       999         IEC counter       Yes         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)         S7 times       -		
• per priority class16• additional within an error OB4Counters, timers and their retentivityS7 counter• Number512Retentivity- adjustable- adjustableYes- lower limit0- upper limit511- presetZ 0 to Z 7Counting range- adjustable- adjustableYes- nupper limit511- presetZ 0 to Z 7Counting range- adjustable- nupper limit999IEC counter999• presentYes• presentYes• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times	· · · · · · · · · · · · · · · · · · ·	2; OB 121, 122
Counters, timers and their retentivity         S7 counter       512         Number       512         Retentivity       - adjustable         - adjustable       Yes         - lower limit       0         - upper limit       511         - preset       Z 0 to Z 7         Counting range       -         - adjustable       Yes         - ower limit       0         - upper limit       999         IEC counter       Yes         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)         S7 times       -		
S7 counter       512         Retentivity       Yes         - adjustable       Yes         - lower limit       0         - upper limit       511         - preset       Z 0 to Z 7         Counting range       Yes         - adjustable       Yes         - adjustable       Yes         - upper limit       0         - upper limit       999         IEC counter       Yes         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)         S7 times       S7 times		4
• Number       512         Retentivity       -         - adjustable       Yes         - lower limit       0         - upper limit       511         - preset       Z 0 to Z 7         Counting range       -         - adjustable       Yes         - lower limit       0         - adjustable       Yes         - lower limit       0         - upper limit       999         IEC counter       Yes         • present       Yes         • present       SFB         • Number       Unlimited (limited only by RAM capacity)         S7 times       -	ounters, timers and their retentivity	
Retentivity       Yes         - adjustable       Yes         - lower limit       0         - upper limit       511         - preset       Z 0 to Z 7         Counting range       -         - adjustable       Yes         - lower limit       0         - upper limit       999         IEC counter       Yes         • present       Yes         • present       SFB         • Number       Unlimited (limited only by RAM capacity)	S7 counter	
adjustableYes lower limit0 upper limit511 presetZ 0 to Z 7Counting range adjustableYes lower limit0 upper limit999IEC counter• presentYes• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times		512
- lower limit0- upper limit511- presetZ 0 to Z 7Counting rangeYes- adjustableYes- lower limit0- upper limit999IEC counterYes• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 timesS7 times		
upper limit511 presetZ 0 to Z 7Counting range adjustableYes lower limit0 upper limit999IEC counter-• presentYes• TypeSFB• NumberUnlimited (limited only by RAM capacity)S7 times	-	
preset     Z 0 to Z 7       Counting range     adjustable       adjustable     Yes       lower limit     0       upper limit     999       IEC counter     Yes       • present     Yes       • Type     SFB       • Number     Unlimited (limited only by RAM capacity)		
Counting range       Yes         - adjustable       Yes         - lower limit       0         - upper limit       999         IEC counter       Yes         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)         S7 times       S7 times		
adjustable     Yes       lower limit     0       upper limit     999       IEC counter     999       • present     Yes       • Type     SFB       • Number     Unlimited (limited only by RAM capacity)       S7 times     S7 times	•	Z 0 to Z 7
lower limit     0       upper limit     999       IEC counter     999       • present     Yes       • Type     SFB       • Number     Unlimited (limited only by RAM capacity)       S7 times     S7 times		
	-	
IEC counter         • present       Yes         • Type       SFB         • Number       Unlimited (limited only by RAM capacity)         S7 times       S7 times		
• present     Yes       • Type     SFB       • Number     Unlimited (limited only by RAM capacity)		999
Type SFB     Number Unlimited (limited only by RAM capacity) S7 times		
Number Unlimited (limited only by RAM capacity) S7 times		
S7 times		
		Unlimited (limited only by RAM capacity)
• Number 512		540
Determinist		512
Retentivity		
- adjustable Yes	-	
– lower limit 0		
— upper limit 511		
— preset No retentivity		NO RECENTIVITY
Time range		40
- lower limit 10 ms		
— upper limit 9 990 s		9 990 S
IEC timer		
• present Yes		
	• Туре	SFB

Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	256 kbyte
Flag	
• Size, max.	4 096 byte
Retentivity available	Yes; From MB 0 to MB 4 095
<ul> <li>Retentivity preset</li> </ul>	MB 0 to MB 15
Number of clock memories	8; 1 memory byte
Data blocks	
<ul> <li>Retentivity adjustable</li> </ul>	Yes; via non-retain property on DB
Retentivity preset	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	8 192 byte
Outputs	8 192 byte
of which distributed	
— Inputs	8 192 byte
— Outputs	8 192 byte
Process image	
• Inputs	8 192 byte
• Outputs	8 192 byte
Inputs, adjustable	8 192 byte
Outputs, adjustable	8 192 byte
Inputs, default	256 byte
Outputs, default	256 byte
Subprocess images	4. With DDOFINET IO, the length of the user data is limited to 4000
<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	65 536
— of which central	1 024
Outputs	65 536
— of which central	1 024
Analog channels	
Inputs	4 096
— of which central	256
Outputs	4 096
— of which central	256
Hardware configuration	
Number of expansion units, max.	3
Number of DP masters	
<ul> <li>integrated</li> </ul>	1
• via CP	4
Number of operable FMs and CPs (recommended)	
• FM	8
• CP, PtP	8
• CP, LAN	10
Rack	
• Racks, max.	4
Modules per rack, max.	8
Time of day	
Clock	
Hardware clock (real-time)	Yes
retentive and synchronizable	Yes
Backup time	6 wk; At 40 °C ambient temperature
<ul> <li>Deviation per day, max.</li> </ul>	10 s; Typ.: 2 s

<ul> <li>Behavior of the clock following POWER-ON</li> </ul>	Clock continues running after POWER OFF
Behavior of the clock following expiry of backup	Clock continues to run with the time at which the power failure occurred
period	
Operating hours counter	
Number	4
Number/Number range	0 to 3
<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	
supported	Yes
<ul> <li>to MPI, master</li> </ul>	Yes
• to MPI, slave	Yes
• to DP, master	Yes; With DP slave only slave clock
• to DP, slave	Yes
• in AS, master	Yes
• in AS, slave	Yes
<ul> <li>on Ethernet via NTP</li> </ul>	Yes; As client
Digital inputs	
Number of digital inputs	0
Digital outputs	
Number of digital outputs	0
Analog inputs	
Number of analog inputs	0
Analog outputs	•
Number of analog outputs	0
	0
Interfaces	
Number of industrial Ethernet interfaces	1
Number of PROFINET interfaces	1
Number of RS 485 interfaces	1
Number of RS 422 interfaces	0
1. Interface	
Interface type	Integrated RS 485 interface
Isolated	Yes
Interface types	N .
• RS 485	Yes
Output current of the interface, max.	200 mA
Protocols	N/
	Yes
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
Point-to-point connection	No
MPI	
Transmission rate, max.	12 Mbit/s
Services	Ver
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	Yes
- S7 basic communication	Yes
- S7 communication	Yes
- S7 communication, as client	No; but via CP and loadable FB
- S7 communication, as server	Yes
PROFIBUS DP master	10 MbW/s
Transmission rate, max.	12 Mbit/s
Number of DP slaves, max.	124
Services	Vec
- PG/OP communication	Yes
— Routing	Yes

<ul> <li>— Global data communication</li> </ul>	No
<ul> <li>— S7 basic communication</li> </ul>	Yes; I blocks only
— S7 communication	Yes
<ul> <li>— S7 communication, as client</li> </ul>	No
<ul> <li>— S7 communication, as server</li> </ul>	Yes
— Equidistance	Yes
— Isochronous mode	Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO
- SYNC/FREEZE	Yes
<ul> <li>Activation/deactivation of DP slaves</li> </ul>	Yes
- Number of DP slaves that can be	8
simultaneously activated/deactivated, max.	
<ul> <li>— Direct data exchange (slave-to-slave communication)</li> </ul>	Yes; as subscriber
— DPV1	Yes
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
PROFIBUS DP slave	
<ul> <li>Transmission rate, max.</li> </ul>	12 Mbit/s
<ul> <li>automatic baud rate search</li> </ul>	Yes; only with passive interface
<ul> <li>Address area, max.</li> </ul>	32
• User data per address area, max.	32 byte
Services	
— PG/OP communication	Yes
- Routing	Yes; Only with active interface
— Global data communication	No
— S7 basic communication	No
— S7 communication	Yes
	No
— S7 communication, as client	
— 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
	244 Dyle
2. Interface	
Interface type	PROFINET
Isolated	Yes
automatic detection of transmission rate	Yes; 10/100 Mbit/s
Autonegotiation	Yes
Autocrossing	Yes
Change of IP address at runtime, supported	Yes
Interface types	
<ul> <li>RJ 45 (Ethernet)</li> </ul>	Yes
Number of ports	2
<ul> <li>integrated switch</li> </ul>	Yes
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
<ul> <li>PROFIBUS DP master</li> </ul>	No
PROFIBUS DP slave	No
<ul> <li>Open IE communication</li> </ul>	Yes; Via TCP/IP, ISO on TCP, and UDP

Web server	Yes
Media redundancy	Yes
ROFINET IO Controller	
<ul> <li>Transmission rate, max.</li> </ul>	100 Mbit/s
Services	
— PG/OP communication	Yes
— Routing	Yes
— S7 communication	Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32
— Isochronous mode	Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO
— IRT	Yes
— Shared device	Yes
— Prioritized startup	Yes
<ul> <li>— Number of IO devices with prioritized startup, max.</li> </ul>	32
<ul> <li>Number of connectable IO Devices, max.</li> </ul>	128
— Of which IO devices with IRT, max.	64
— of which in line, max.	64
<ul> <li>— Number of IO Devices with IRT and the option "high flexibility"</li> </ul>	128
— of which in line, max.	61
<ul> <li>— Number of connectable IO Devices for RT, max.</li> </ul>	128
— of which in line, max.	128
<ul> <li>Activation/deactivation of IO Devices</li> </ul>	Yes
<ul> <li>— Number of IO Devices that can be simultaneously activated/deactivated, max.</li> </ul>	8
<ul> <li>— IO Devices changing during operation (partner ports), supported</li> </ul>	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 Manual "S7- 300 CPU 31xC and CPU 31x, technical Data" for more details)
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
— User data consistency, max.	1 024 byte
ROFINET IO Device	
Services	
— PG/OP communication	Yes
- Routing	Yes
- S7 communication	Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32
— Isochronous mode	No
— IRT	Yes
— PROFlenergy	Yes; With SFB 73 / 74 prepared for loadable PROFlenergy standard F for I-Device
— Shared device	Yes
— Number of IO Controllers with shared device,	2
max.	2
Transfer memory	1 440 hyto: Por IO Controller with shared device
— Inputs, max.	1 440 byte; Per IO Controller with shared device
— Outputs, max.	1 440 byte; Per IO Controller with shared device
Submodules	
— Number, max.	64
— User data per submodule, max.	1 024 byte

cyclic transmission	Yes
Open IE communication	
<ul> <li>Number of connections, max.</li> </ul>	16
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
<ul> <li>Keep-alive function, supported</li> </ul>	Yes
Protocols	
Redundancy mode	
Media redundancy	
— Switchover time on line break, typ.	200 ms; PROFINET MRP
- Number of stations in the ring, max.	50
Open IE communication	
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
<ul> <li>— Number of connections, max.</li> </ul>	16
<ul> <li>— Data length for connection type 01H, max.</li> </ul>	1 460 byte
<ul> <li>— Data length for connection type 11H, max.</li> </ul>	32 768 byte
<ul> <li>— several passive connections per port, supported</li> </ul>	Yes
<ul> <li>ISO-on-TCP (RFC1006)</li> </ul>	Yes; via integrated PROFINET interface and loadable FBs
<ul> <li>— Number of connections, max.</li> </ul>	16
— Data length, max.	32 768 byte
• UDP	Yes; via integrated PROFINET interface and loadable FBs
<ul> <li>Number of connections, max.</li> </ul>	16
— Data length, max.	1 472 byte
Web server	
supported	Yes
<ul> <li>User-defined websites</li> </ul>	Yes
Number of HTTP clients	5
Communication functions	
PG/OP communication	Yes
Data record routing	Yes
Global data communication	
• 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
S7 basic communication	Yes
<ul><li>supported</li><li>User data per job, max.</li></ul>	
<ul> <li>User data per job, max.</li> <li>User data per job (of which consistent), max.</li> </ul>	76 byte 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or
• Oser data per job (or which consistent), max.	$X_GET$ as server)
S7 communication	
supported	Yes
• as server	Yes
• as client	Yes; via integrated PROFINET interface and loadable FB or via CP and loadable FB
• User data per job, max.	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication)
S5 compatible communication	
supported	Yes; via CP and loadable FC
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</li> </ul>	4 000 byte

master/slave, max.	
<ul> <li>Data length of all outgoing connections master/slave, max.</li> </ul>	4 000 byte
<ul> <li>Number of device-internal and PROFIBUS interconnections</li> </ul>	500
<ul> <li>Data length of device-internal und PROFIBUS 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 interval, 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 interconnections, max.</li> </ul>	2 000 byte
<ul> <li>— Data length of all outgoing interconnections, max.</li> </ul>	2 000 byte
<ul> <li>— Data length per connection, max.</li> </ul>	1 400 byte
Remote interconnections with cyclic transmission	
<ul> <li>Transmission frequency: Transmission interval, min.</li> </ul>	10 ms
<ul> <li>— Number of incoming interconnections</li> </ul>	200
<ul> <li>— Number of outgoing interconnections</li> </ul>	200
<ul> <li>— Data length of all incoming interconnections, max.</li> </ul>	2 000 byte
<ul> <li>— Data length of all outgoing interconnections, max.</li> </ul>	2 000 byte
<ul> <li>Data length per connection, max.</li> </ul>	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
<ul> <li>— Number of HMI variables</li> </ul>	200
<ul> <li>Data length of all HMI variables, max.</li> </ul>	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	32
usable for PG communication	31
— reserved for PG communication	1
— adjustable for PG communication, min.	1
— adjustable for PG communication, max.	31
usable for OP communication	31
— reserved for OP communication	1
— adjustable for OP communication, min.	1
— adjustable for OP communication, max.	31
usable for S7 basic communication	30
<ul> <li>reserved for S7 basic communication</li> <li>adjustable for S7 basic communication</li> </ul>	0
<ul> <li>adjustable for S7 basic communication, min.</li> <li>adjustable for S7 basic communication, max</li> </ul>	0
<ul> <li>— adjustable for S7 basic communication, max.</li> <li>usable for S7 communication</li> </ul>	30 16
usable for S7 communication     — reserved for S7 communication	0
<ul> <li>— reserved for S7 communication</li> <li>— adjustable for S7 communication, min.</li> </ul>	0
— adjustable for S7 communication, min. — adjustable for S7 communication, max.	16
<ul> <li>total number of instances, max.</li> </ul>	32
usable for routing	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.	32; Depending on the configured connections for PG/OP and S7 basic communication

Draccos diagnostis massages	Vee
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	
<ul> <li>Status/control variable</li> </ul>	Yes
Variables	Inputs, outputs, memory bits, DB, times, counters
<ul> <li>Number of variables, max.</li> </ul>	30
— of which status variables, max.	30
<ul> <li>— of which control variables, max.</li> </ul>	14
Forcing	
• Forcing	Yes
<ul> <li>Forcing, variables</li> </ul>	Inputs, outputs
<ul> <li>Number of variables, max.</li> </ul>	10
Diagnostic buffer	
• present	Yes
Number of entries, max.	500
- adjustable	No
-	
— of which powerfail-proof	100; Only the last 100 entries are retained
Number of entries readable in RUN, max.	499
— adjustable	Yes; From 10 to 499
— preset	10
Service data	
• can be read out	Yes
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	60 °C
Configuration	
Configuration software	
• STEP 7	Yes; V5.5 or higher
Programming	
Command set	see instruction list
<ul> <li>Nesting levels</li> </ul>	8
System functions (SFC)	see instruction list
System function blocks (SFB)	see instruction list
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— STL — SCL	Yes
— SCL — CFC	
	Yes
- GRAPH	Yes
— HiGraph®	Yes
Know-how protection	Vec
User program protection/password protection	Yes
Block encryption	Yes; With S7 block Privacy
Dimensions	
Width	40
	40 mm
Height	125 mm
Depth	
	125 mm
Depth	125 mm