



	CPU 412-1	CPU 412-2	CPU 414-2	CPU 414-3
<b>Main memory</b> <ul style="list-style-type: none"> <li>integrated</li> <li>in instructions</li> <li>for program</li> <li>for data</li> </ul>	96 Kbyte 32 K 48 Kbyte 48 Kbyte	144 Kbyte 32 K 72 Kbyte 72 Kbyte	256 Kbyte 84 K 128 Kbyte 128 Kbyte	768 Kbyte 84 K 384 Kbyte 384 Kbyte
<b>Load memory</b> <ul style="list-style-type: none"> <li>integrated</li> <li>expandable to</li> </ul>	256 Kbyte RAM 64 Kbyte	256 Kbyte RAM 64 Kbyte	256 Kbyte RAM 64 Kbyte	256 Kbyte RAM 64 Kbyte
<b>Backup</b>	Yes	Yes	Yes	Yes
<b>Number of blocks</b> <ul style="list-style-type: none"> <li>FB</li> <li>FC</li> <li>DB</li> </ul>	256 256 512 (DB 0 reserved)	256 256 512 (DB 0 reserved)	2048 2048 4096 (DB 0 reserved)	2048 2048 4096 (DB 0 reserved)
<b>Program execution</b> <ul style="list-style-type: none"> <li>free cycle</li> <li>timed interrupts</li> <li>delay interrupts</li> <li>time interrupts</li> <li>process interrupts</li> <li>multi-computing interrupt</li> <li>startup</li> </ul>	1 2 2 2 2 1 3	1 2 2 2 2 1 3	1 4 4 4 4 1 3	1 4 4 4 4 1 3
<b>Execution times</b> <ul style="list-style-type: none"> <li>bit operations</li> <li>word operations</li> <li>fixed point arithmetic</li> <li>floating point arithmetic</li> </ul>	2 µs 2 µs 2 µs 3 µs	2 µs 2 µs 2 µs 3 µs	0.1 µs 0.1 µs 0.1 µs 0.6 µs	0.1 µs 0.1 µs 0.1 µs 0.6 µs
<b>Bit memories/timers/counters</b> <ul style="list-style-type: none"> <li>Bit memories</li> <li>S7 timers/S7 counters</li> <li>IEC timers/IEC counters</li> </ul>	4 Kbyte 256/256 SFB/SFB	4 Kbyte 256/256 SFB/SFB	8 Kbyte 256/256 SFB/SFB	8 Kbyte 256/256 SFB/SFB
<b>Design</b> <ul style="list-style-type: none"> <li>Number of expansion units</li> <li>Number of DP masters per CPU</li> <li>Number of FMs</li> <li>Number of CPs</li> </ul>	21 max. 10 limited by number of slots and number of connections  limited by number of slots and number of connections	21 max. 10 limited by number of slots and number of connections  limited by number of slots and number of connections	21 max. 10 limited by number of slots and number of connections  limited by number of slots and number of connections	21 max. 10 limited by number of slots and number of connections  limited by number of slots and number of connections
<b>Programming interface</b> <ul style="list-style-type: none"> <li>Number of stations</li> <li>Transmission speed</li> </ul>	16 max. 12 Mbit/s	16 max. 12 Mbit/s	32 max. 12 Mbit/s	32 max. 12 Mbit/s
<b>DP interface</b> <ul style="list-style-type: none"> <li>Number of stations</li> <li>Transmission speed</li> </ul>	32 max. 12 Mbit/s	32 + 64 max. 12 Mbit/s	32 + 96 max. 12 Mbit/s	32 + 2 x 96 max. 12 Mbit/s
<b>Address ranges</b> <ul style="list-style-type: none"> <li>Total I/O address area</li> <li>I/O process image</li> <li>Total digital channels</li> <li>Total analog channels</li> </ul>	4 Kbyte /4 Kbyte 4 Kbyte /4 Kbyte 32768/32768 2048/2048	4 Kbyte /4 Kbyte 4 Kbyte /4 Kbyte 32768/32768 2048/2048	8 Kbyte /8 Kbyte 8 Kbyte /8 Kbyte 65536/65536 4096/4096	8 Kbyte /8 Kbyte 8 Kbyte /8 Kbyte 65536/65536 4096/4096
<b>MLFB group</b>	6ES7412-1XF..	6ES7412-2XG..	6ES7414-2XG..	6ES7414-3XJ..



	CPU 416-2	CPU 416-3	CPU 417-4
<b>Main memory</b> <ul style="list-style-type: none"> <li>integrated</li> <li>in instructions</li> <li>for program</li> <li>for data</li> </ul>	1.6 Mbyte 530 K 0.8 Mbyte 0.8 Mbyte	3.2 Mbyte 1065 K 1.6 Mbyte 1.6 Mbyte	4 Mbyte 1335 K 2 Mbyte 2 Mbyte
<b>Load memory</b> <ul style="list-style-type: none"> <li>integrated</li> <li>expandable to</li> </ul>	256 Kbyte RAM 64 Kbyte	256 Kbyte RAM 64 Kbyte	256 Kbyte RAM 64 Kbyte
<b>Backup</b>	Yes	Yes	Yes
<b>Number of blocks</b> <ul style="list-style-type: none"> <li>FB</li> <li>FC</li> <li>DB</li> </ul>	2048 2048 4096 (DB 0 reserved)	2048 2048 4096 (DB 0 reserved)	6144 6144 8192 (DB 0 reserved)
<b>Program execution</b> <ul style="list-style-type: none"> <li>free cycle</li> <li>timed interrupts</li> <li>delay interrupts</li> <li>time interrupts</li> <li>process interrupts</li> <li>multi-computing interrupt</li> <li>startup</li> </ul>	1 8 4 9 8 1 3	1 8 4 9 8 1 3	1 8 4 9 8 1 3
<b>Execution times</b> <ul style="list-style-type: none"> <li>bit operations</li> <li>word operations</li> <li>fixed point arithmetic</li> <li>floating point arithmetic</li> </ul>	0.08 $\mu$ s 0.08 $\mu$ s 0.08 $\mu$ s 0.48 $\mu$ s	0.08 $\mu$ s 0.08 $\mu$ s 0.08 $\mu$ s 0.48 $\mu$ s	0.1 $\mu$ s 0.1 $\mu$ s 0.1 $\mu$ s 0.6 $\mu$ s
<b>Bit memories/timers/counters</b> <ul style="list-style-type: none"> <li>Bit memories</li> <li>S7 timers/S7 counters</li> <li>IEC timers/IEC counters</li> </ul>	16 Kbyte 512/512 SFB/SFB	16 Kbyte 512/512 SFB/SFB	16 Kbyte 512/512 SFB/SFB
<b>Design</b> <ul style="list-style-type: none"> <li>Number of expansion units</li> <li>Number of DP masters per CPU</li> <li>Number of FMs</li> <li>Number of CPs</li> </ul>	21 max. 10 limited by number of slots and number of connections limited by number of slots and number of connections	21 max. 10 limited by number of slots and number of connections limited by number of slots and number of connections	21 max. 10 limited by number of slots and number of connections limited by number of slots and number of connections
<b>Programming interface</b> <ul style="list-style-type: none"> <li>Number of stations</li> <li>Transmission speed</li> </ul>	64 max. 12 Mbit/s	64 max. 12 Mbit/s	64 max. 12 Mbit/s
<b>DP interface</b> <ul style="list-style-type: none"> <li>Number of stations</li> <li>Transmission speed</li> </ul>	32 + 125 max. 12 Mbit/s	32 2x 125 max. 12 Mbit/s	32 + 3x 125 max. 12 Mbit/s
<b>Address ranges</b> <ul style="list-style-type: none"> <li>Total I/O address area</li> <li>I/O process image</li> <li>Total digital channels</li> <li>Total analog channels</li> </ul>	16 Kbyte /16 Kbyte 16 Kbyte /16 Kbyte 131072/131072 8192/8192	16 Kbyte /16 Kbyte 16 Kbyte /16 Kbyte 131072/131072 8192/8192	16 Kbyte /16 Kbyte 16 Kbyte /16 Kbyte 131072/131072 8192/8192
<b>MLFB group</b>	6ES7416-2XK..	6ES7416-3XL..	6ES7417-4XL..