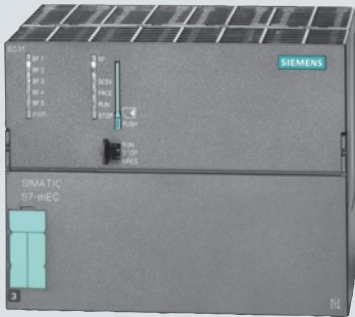


# Embedded controller



<b>7/2</b>	<b>SIMATIC S7-modular embedded controller</b>
7/2	EC31
7/12	Expansion modules
7/13	SIPLUS S7-modular embedded controller
<b>7/14</b>	<b>Embedded Box PC bundles</b>
7/14	SIMATIC IPC427C bundles
<b>7/17</b>	<b>Embedded Panel PC bundles</b>
7/17	SIMATIC HMI IPC477C bundles
<b>7/21</b>	<b>Communication</b>
7/21	CP 5603
7/25	CP 1604

## Brochures

For brochures serving as selection guides for SIMATIC products refer to:

<http://www.siemens.com/simatic/printmaterial>

# Embedded controller

## SIMATIC S7-modular embedded controller

EC31

### Overview



For brochures serving as selection guides for SIMATIC products refer to:

[www.siemens.com/simatic/printmaterial](http://www.siemens.com/simatic/printmaterial)

- Get off to a fast start in automation solutions with embedded PC platforms.
  - Ready-to-use SIMATIC WinAC RTX or WinAC RTX F pre-installed on EC31
  - Prepared for use in a SIMATIC environment with PROFINET and Industrial Ethernet
  - Commissioning by specialist automation personnel as with the S7-300
  - Configuring and programming with SIMATIC STEP 7 over Industrial Ethernet
  - Optional visualization
- Modular expansion capability:
  - Central expansion with
    - S7-300 I/O (SM modules of S7-300)
    - Expansion modules for additional PC interfaces, e.g. DVI-I, USB, Gigabit Ethernet networks and memory card slots, as well as PCI-104
- Rugged operation
  - Hard-disk-free operation based on flash disk and Windows Embedded Standard
  - Fan-free operation
- Flexibility of a PC-based automation environment
  - Free memory space on flash disk can be used for other PC applications
  - Use of WinAC ODK with SIMATIC WinAC RTX and WinAC RTX F (read-only in safety-related program part)
  - Connection option for USB devices
  - Memory capacity expandable using multimedia card
- Data retentivity for WinAC RTX and RTX F without uninterruptible power supply (UPS)

### Technical specifications

	6ES7 677-1DD10-0BA0	6ES7 677-1DD10-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD10-0BF0	6ES7 677-1DD10-0BG0	6ES7 677-1DD10-0BH0
<b>Product type designation</b>	SIMATIC S7-mEC, EC31	S7-mEC, EC31-RTX	S7-mEC, EC31-RTX F	S7-mEC, EC31-HMI/RTX 128PT	S7-mEC, EC31-HMI/RTX 512PT	S7-mEC, EC31-HMI/RTX 2048PT
<b>Product version</b>						
Hardware product version	01	01	04	01	01	01
Firmware version	V2.0	V2.0	V1.3	V2.0	V2.0	V2.0
<b>PC configuration</b>						
Computer platform	SIMATIC S7 modular embedded controller	SIMATIC S7 modular embedded controller	SIMATIC S7 modular embedded controller	SIMATIC S7 modular embedded controller	SIMATIC S7 modular embedded controller	SIMATIC S7 modular embedded controller
Processor selection	Intel Core Duo 1.2 GHz	Intel Core Duo 1.2 GHz	Intel Core Duo 1.2 GHz	Intel Core Duo 1.2 GHz	Intel Core Duo 1.2 GHz	Intel Core Duo 1.2 GHz
Work memory	1 GB RAM	1 GB RAM	1 GB RAM	1 GB RAM	1 GB RAM	1 GB RAM
Flash Disk	4 GB	4 GB	2 GB	4 GB	4 GB	4 GB
Operating systems	Windows Embedded Standard 2009	Windows Embedded Standard 2009	Windows XP embedded SP2 FP2007	Windows Embedded Standard 2009	Windows Embedded Standard 2009	Windows Embedded Standard 2009
<b>Power supply</b>						
Input voltage						
• Rated value, 24 V DC	Yes	Yes	Yes	Yes	Yes	Yes
• Permissible range, lower limit (DC)	20.4 V	20.4 V	20.4 V	20.4 V	20.4 V	20.4 V
• Permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V	28.8 V	28.8 V	28.8 V
Input current						
• Rated value at 24 V DC	without backplane bus and USB power supply	without backplane bus and USB power supply	800 mA; without backplane bus and USB power supply	without backplane bus and USB power supply	without backplane bus and USB power supply	without backplane bus and USB power supply

# Embedded controller

## SIMATIC S7-modular embedded controller

EC31

### Technical specifications (continued)

	6ES7 677-1DD10-0BA0	6ES7 677-1DD10-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD10-0BF0	6ES7 677-1DD10-0BG0	6ES7 677-1DD10-0BH0
<b>Supply voltages</b>						
Mains buffering						
• Mains/voltage failure stored energy time	5 ms	5 ms	5 ms	5 ms	5 ms	5 ms
<b>Power losses</b>						
Power loss, typ.			34 W			
<b>Memory</b>						
Memory type	256 KB non-volatile memory for retentive data	512 KB non-volatile memory for retentive data	512 KB non-volatile memory for retentive data	512 KB non-volatile memory for retentive data	512 KB non-volatile memory for retentive data	512 KB non-volatile memory for retentive data
<b>CPU-blocks</b>						
<b>DB</b>						
• Number, max.		Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each
• Size, max.		64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
<b>FB</b>						
• Number, max.		Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each
• Size, max.		64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
<b>FC</b>						
• Number, max.		Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each
• Size, max.		64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
<b>OB</b>						
• Number, max.		Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each
• Size, max.		64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte
• Number of free cycle OBs		1; OB 1	1; OB 1	1; OB 1	1; OB 1	1; OB 1
• Number of time alarm OBs		1; OB 10	1; OB 10	1; OB 10	1; OB 10	1; OB 10
• Number of delay alarm OBs		1; OB 20	1; OB 20	1; OB 20	1; OB 20	1; OB 20
• Number of time alarm OBs		9; OB 30-38	9; OB 30-38	9; OB 30-38	9; OB 30-38	9; OB 30-38
• Number of process alarm OBs		1; OB 40	1; OB 40	1; OB 40	1; OB 40	1; OB 40
• Number of startup OBs		2; OB 100, 102	2; OB 100, 102	2; OB 100, 102	2; OB 100, 102	2; OB 100, 102
• Number of asynchronous error OBs		7; OB 80, 82-85, 86, 88	7; OB 80, 82-85, 86, 88	7; OB 80, 82-85, 86, 88	7; OB 80, 82-85, 86, 88	7; OB 80, 82-85, 86, 88
• Number of synchronous error OBs		2; OB 121, 122	2; OB 121, 122	2; OB 121, 122	2; OB 121, 122	2; OB 121, 122
<b>Nesting depth</b>						
• per priority class		24	24	24	24	24
• additional within an error OB		24	24	24	24	24

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# Embedded controller

## SIMATIC S7-modular embedded controller

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### Technical specifications (continued)

	6ES7 677-1DD10-0BA0	6ES7 677-1DD10-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD10-0BF0	6ES7 677-1DD10-0BG0	6ES7 677-1DD10-0BH0
<b>CPU processing times</b>						
for bit operations, min.		0.004 µs; typ.	0.004 µs; typ.	0.004 µs; typ.	0.004 µs; typ.	0.004 µs; typ.
for fixed point arithmetic, min.		0.003 µs; typ.	0.003 µs; typ.	0.003 µs; typ.	0.003 µs; typ.	0.003 µs; typ.
for floating point arithmetic, min.		0.004 µs; typ.	0.004 µs; typ.	0.004 µs; typ.	0.004 µs; typ.	0.004 µs; typ.
<b>Counters, timers and their retentivity</b>						
S7 counter						
• Number		2 048	2 048	2 048	2 048	2 048
• Retentivity						
- adjustable		Yes	Yes	Yes	Yes	Yes
- lower limit		0	0	0	0	0
- upper limit		2 047	2 047	2 047	2 047	2 047
- preset		8	8	8	8	8
• Counting range						
- adjustable		Yes	Yes	Yes	Yes	Yes
- lower limit		0	0	0	0	0
- upper limit		999	999	999	999	999
IEC counter						
• present		Yes	Yes	Yes	Yes	Yes
• Type		SFB	SFB	SFB	SFB	SFB
S7 times						
• Number		2 048	2 048	2 048	2 048	2 048
• Retentivity						
- adjustable		Yes	Yes	Yes	Yes	Yes
- lower limit		0	0	0	0	0
- upper limit		2 047	2 047	2 047	2 047	2 047
• Time range						
- lower limit		10 ms	10 ms	10 ms	10 ms	10 ms
- upper limit		9 990 s	9 990 s	9 990 s	9 990 s	9 990 s
IEC timer						
• present		Yes	Yes	Yes	Yes	Yes
• Type		SFB	SFB	SFB	SFB	SFB
<b>Data areas and their retentivity</b>						
retentive data area, total		512 KB	512 KB	512 KB	512 KB	512 KB
Flag						
• Number, max.		16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte
• of which retentive without battery		MB 0 to MB 16383	MB 0 to MB 16383	MB 0 to MB 16383	MB 0 to MB 16383	MB 0 to MB 16383
• Retentivity preset		MB 0 to MB 15	MB 0 to MB 15	MB 0 to MB 15	MB 0 to MB 15	MB 0 to MB 15
• Number of clock memories		8	8	8	8	8
Data blocks						
• Number, max.		Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each	Max. code size and max. data size: 4 MB each
• Size, max.		64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte	64 Kibyte

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### Technical specifications (continued)

	6ES7 677-1DD10-0BA0	6ES7 677-1DD10-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD10-0BF0	6ES7 677-1DD10-0BG0	6ES7 677-1DD10-0BH0
<b>Address area</b>						
I/O address area						
• Overall		16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte
• Outputs		16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte
• of which, distributed						
- Inputs			8 Kibyte			
- Outputs			8 Kibyte			
<b>Process image</b>						
• Inputs, adjustable		16 Kibyte	16 Kibyte	8 Kibyte	8 Kibyte	8 Kibyte
• Outputs, adjustable		16 Kibyte	16 Kibyte	8 Kibyte	8 Kibyte	8 Kibyte
• Inputs, default		512 byte	512 byte	512 byte	512 byte	512 byte
• Outputs, default		512 byte	512 byte	512 byte	512 byte	512 byte
<b>Subprocess images</b>						
• Number of subprocess images, max.		15	15	15	15	15
<b>Digital channels</b>						
• Inputs		128 000	128 000	128 000	128 000	128 000
• Outputs		128 000	128 000	128 000	128 000	128 000
<b>Analog channels</b>						
• Inputs		8 000	8 000	8 000	8 000	8 000
• Outputs		8 000	8 000	8 000	8 000	8 000
<b>Time</b>						
<b>Clock</b>						
• Hardware clock (real-time clock)		Yes; Resolution: 1 s	Yes; Resolution: 1 s	Yes; Resolution: 1 s	Yes; Resolution: 1 s	Yes; Resolution: 1 s
<b>Clock synchronization</b>						
• supported		Yes	Yes	Yes	Yes	Yes
• on Ethernet via NTP		Yes	Yes	Yes	Yes	Yes
<b>S7 message functions</b>						
Number of login stations for message functions, max.		62; The alarm functions cannot currently be used for central bus modules	62; The alarm functions cannot currently be used for central bus modules	62; The alarm functions cannot currently be used for central bus modules	62; The alarm functions cannot currently be used for central bus modules	62; The alarm functions cannot currently be used for central bus modules
<b>Process diagnostic messages</b>						
		Yes; Alarm_S	Yes; Alarm_S	Yes; Alarm_S	Yes; Alarm_S	Yes; Alarm_S
<b>Test commissioning functions</b>						
<b>Status/control</b>						
• Status/control variable		Yes	Yes	Yes	Yes	Yes
<b>Forcing</b>						
• Forcing		No	No	No	No	No
<b>Diagnostic buffer</b>						
• present		Yes	Yes	Yes	Yes	Yes
<b>Monitoring functions</b>						
Status LEDs		Yes	Yes	Yes	Yes	Yes

# Embedded controller

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### Technical specifications (continued)

	6ES7 677-1DD10-0BA0	6ES7 677-1DD10-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD10-0BF0	6ES7 677-1DD10-0BG0	6ES7 677-1DD10-0BH0
<b>Communication functions</b>						
PG/OP communication		Yes	Yes	Yes	Yes	Yes
Global data communication						
• supported		No	No	No	No	No
S7 basic communication						
• supported		No	No	No	No	No
S7 communication						
• supported		Yes	Yes	Yes	Yes	Yes
• as server		Yes	Yes	Yes	Yes	Yes
• as client		Yes	Yes	Yes	Yes	Yes
Open IE communication						
• TCP/IP		Yes; Via integrated PROFINET interface (X1) and loadable FBs 32	Yes; Via integrated PROFINET interface and loadable FBs 32	Yes; Via integrated PROFINET interface (X1) and loadable FBs 32	Yes; Via integrated PROFINET interface (X1) and loadable FBs 32	Yes; Via integrated PROFINET interface (X1) and loadable FBs 32
- Number of connections, max.			8 192 byte			
- Data length, max.			No			
• ISO-on-TCP (RFC1006)		Yes; Via integrated PROFINET interface (X1) and loadable FBs 32		Yes; Via integrated PROFINET interface (X1) and loadable FBs 32	Yes; Via integrated PROFINET interface (X1) and loadable FBs 32	Yes; Via integrated PROFINET interface (X1) and loadable FBs 32
- Number of connections, max.						
• UDP		Yes; Via integrated PROFINET interface (X1) and loadable FBs 32	Yes; Via integrated PROFINET interface and loadable FBs 32	Yes; Via integrated PROFINET interface (X1) and loadable FBs 32	Yes; Via integrated PROFINET interface (X1) and loadable FBs 32	Yes; Via integrated PROFINET interface (X1) and loadable FBs 32
- Number of connections, max.						
- Data length, max.			1 472 byte			
Number of connections						
• overall		64	64	64	64	64
• usable for PG communication						
- reserved for PG communication		1	1	1	1	1
• usable for OP communication						
- reserved for OP communication		1	1	1	1	1
<b>1st interface</b>						
Type of interface		PROFINET	PROFINET	PROFINET	PROFINET	PROFINET
Physics		2x RJ45	2x RJ45	2x RJ45	2x RJ45	2x RJ45
automatic detection of transmission speed		Yes	Yes	Yes	Yes	Yes
Autonegotiation		Yes	Yes	Yes	Yes	Yes
Autocrossing		Yes	Yes	Yes	Yes	Yes
Number of connection resources		32	32	32	32	32

**Technical specifications** (continued)

	6ES7 677-1DD10-0BA0	6ES7 677-1DD10-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD10-0BF0	6ES7 677-1DD10-0BG0	6ES7 677-1DD10-0BH0
Functionality <ul style="list-style-type: none"> <li>• MPI</li> <li>• DP master</li> <li>• DP slave</li> <li>• PROFINET IO device</li> <li>• PROFINET IO controller</li> <li>• PROFINET CBA</li> <li>• Open IE communication</li> <li>• Point-to-point connection</li> </ul>		No	No	No	No	No
		Yes	Yes	Yes	Yes	Yes
		Yes	Yes	Yes	Yes	Yes
		Yes	Yes	Yes	Yes	Yes
			No			
PROFINET IO controller <ul style="list-style-type: none"> <li>• Services               <ul style="list-style-type: none"> <li>- PG/OP communication</li> <li>- S7 routing</li> <li>- S7 communication</li> <li>- Isochronous mode</li> </ul> </li> <li>• Number of connectable IO devices, max.</li> <li>• Max. number of connectable IO devices for RT               <ul style="list-style-type: none"> <li>- of which in line, max.</li> </ul> </li> <li>• Number of IO devices with IRT and the option "high flexibility"</li> <li>• IRT, supported</li> <li>• Prioritized startup supported               <ul style="list-style-type: none"> <li>- Number of IO devices, max.</li> </ul> </li> <li>• Activation/deactivation of IO devices               <ul style="list-style-type: none"> <li>- Number of IO devices that can be simultaneously activated/deactivated, max.</li> </ul> </li> <li>• IO devices changing during operation (partner ports), supported               <ul style="list-style-type: none"> <li>- Max. number of IO devices per tool</li> </ul> </li> <li>• Device replacement without swap medium</li> <li>• Send cycles</li> <li>• Updating times</li> </ul>		Yes	Yes	Yes	Yes	Yes
		Yes	Yes	Yes	Yes	Yes
		Yes	Yes	Yes	Yes	Yes
		Yes	No	Yes	Yes	Yes
		256	256	256	256	256
		256		256	256	256
		256	64	256	256	256
		Yes	Yes	Yes	Yes	Yes
		Yes	Yes	Yes	Yes	Yes
			32			
		Yes	Yes	Yes	Yes	Yes
			8			
		Yes	Yes	Yes	Yes	Yes
		8	8	8	8	8
		Yes		Yes	Yes	Yes
		Adjustable: 250 µs, 500 µs and 1 ms	Adjustable: 250 µs, 500 µs and 1 ms	Adjustable: 250 µs, 500 µs and 1 ms	Adjustable: 250 µs, 500 µs and 1 ms	Adjustable: 250 µs, 500 µs and 1 ms
		250 µs - 128 ms (at signal cycle 250 µs); 500 µs - 256 ms (at signal cycle 500 µs); 1 ms - 512 ms (at signal cycle 1 ms)	250 µs - 128 ms (at signal cycle 250 µs); 500 µs - 256 ms (at signal cycle 500 µs); 1 ms - 512 ms (at signal cycle 1 ms)	250 µs - 128 ms (at signal cycle 250 µs); 500 µs - 256 ms (at signal cycle 500 µs); 1 ms - 512 ms (at signal cycle 1 ms)	250 µs - 128 ms (at signal cycle 250 µs); 500 µs - 256 ms (at signal cycle 500 µs); 1 ms - 512 ms (at signal cycle 1 ms)	250 µs - 128 ms (at signal cycle 250 µs); 500 µs - 256 ms (at signal cycle 500 µs); 1 ms - 512 ms (at signal cycle 1 ms)

# Embedded controller

## SIMATIC S7-modular embedded controller

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### Technical specifications (continued)

	6ES7 677-1DD10-0BA0	6ES7 677-1DD10-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD10-0BF0	6ES7 677-1DD10-0BG0	6ES7 677-1DD10-0BH0
PROFINET IO controller <ul style="list-style-type: none"> <li>Address area               <ul style="list-style-type: none"> <li>Inputs, max.</li> <li>Outputs, max.</li> </ul> </li> <li>User data per address area, max.               <ul style="list-style-type: none"> <li>User data consistency, max.</li> </ul> </li> </ul>			16 Kibyte 16 Kibyte 2 Kibyte  256 byte			
PROFINET CBA <ul style="list-style-type: none"> <li>acyclic transmission</li> <li>cyclic transmission</li> </ul>		Yes	Yes	Yes	Yes	Yes
Open IE communication <ul style="list-style-type: none"> <li>Open IE communication, supported</li> <li>Number of connections, max.</li> <li>Local port numbers used at the system end</li> </ul>		Yes	Yes	Yes	Yes	Yes
PROFINET functions <ul style="list-style-type: none"> <li>Detection of accessible nodes, supported</li> <li>Assignment of the IP address, supported</li> <li>Assignment of the device name, supported</li> <li>Topology recognition, supported</li> <li>Extended network diagnostics with Standard MIB II, supported</li> </ul>		Yes; DCP  Yes; DCP  Yes; DCP  Yes; LLDP, LLDP MIB, SNMP Yes; Standard MIB II, SNMP	Yes; DCP  Yes; DCP  Yes; DCP  Yes; LLDP, LLDP MIB, SNMP Yes; Standard MIB II, SNMP	Yes; DCP  Yes; DCP  Yes; DCP  Yes; LLDP, LLDP MIB, SNMP Yes; Standard MIB II, SNMP	Yes; DCP  Yes; DCP  Yes; DCP  Yes; LLDP, LLDP MIB, SNMP Yes; Standard MIB II, SNMP	Yes; DCP  Yes; DCP  Yes; DCP  Yes; LLDP, LLDP MIB, SNMP Yes; Standard MIB II, SNMP
<b>2nd interface</b>						
Type of interface		Integrated Ethernet interface	Integrated Ethernet interface	Integrated Ethernet interface	Integrated Ethernet interface	Integrated Ethernet interface
Physics		Ethernet RJ45	Ethernet RJ45	Ethernet RJ45	Ethernet RJ45	Ethernet RJ45
Automatic detection of transmission speed		Yes	Yes	Yes	Yes	Yes
Autonegotiation		Yes	Yes	Yes	Yes	Yes
Autocrossing		No	No	No	No	No
Number of connection resources		32	32	32	32	32

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# Embedded controller

## SIMATIC S7-modular embedded controller

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### Technical specifications (continued)

	6ES7 677-1DD10-0BA0	6ES7 677-1DD10-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD10-0BF0	6ES7 677-1DD10-0BG0	6ES7 677-1DD10-0BH0
<b>Functionality</b> <ul style="list-style-type: none"> <li>• PROFINET IO controller</li> <li>• PROFINET IO device</li> <li>• PROFINET CBA</li> <li>• PROFINET CBA-SRT</li> </ul>		No	No	No	No	No
<b>PROFINET functions</b> <ul style="list-style-type: none"> <li>• Detection of accessible nodes, supported</li> <li>• Assignment of the IP address, supported</li> <li>• Assignment of the device name, supported</li> <li>• Topology recognition, supported</li> <li>• Extended network diagnostics with Standard MIB II, supported</li> </ul>		Yes; DCP		Yes; DCP	Yes; DCP	Yes; DCP
		Yes; DCP		Yes; DCP	Yes; DCP	Yes; DCP
		Yes; DCP		Yes; DCP	Yes; DCP	Yes; DCP
		Yes; LLDP, LLDP MIB, SNMP		Yes; LLDP, LLDP MIB, SNMP	Yes; LLDP, LLDP MIB, SNMP	Yes; LLDP, LLDP MIB, SNMP
		Yes; Standard MIB II, SNMP		Yes; Standard MIB II, SNMP	Yes; Standard MIB II, SNMP	Yes; Standard MIB II, SNMP
<b>Programming</b> <ul style="list-style-type: none"> <li>• Configuration software</li> <li>• STEP 7</li> </ul>		Yes; As of V5.5 + HW update/iMap V3.0 SP1	Yes; STEP7 V5.4 SP5 or higher + HSP135 as basic requirement for the HSP178 for WinAC RTX F 2009 on Embedded Controller / iMap V3.0 SP1	Yes; As of V5.5 + HW update/iMap V3.0 SP1	Yes; As of V5.5 + HW update/iMap V3.0 SP1	Yes; As of V5.5 + HW update/iMap V3.0 SP1
<b>Programming language</b> <ul style="list-style-type: none"> <li>• STEP 7</li> <li>• LAD</li> <li>• FBD</li> <li>• STL</li> <li>• SCL</li> <li>• CFC</li> <li>• GRAPH</li> <li>• HiGraph®</li> </ul>		Yes	Yes; V5.4 SP5	Yes	Yes	Yes
		Yes	Yes	Yes	Yes	Yes
		Yes	Yes	Yes	Yes	Yes
		Yes	Yes	Yes	Yes	Yes
		Yes	Yes	Yes	Yes	Yes
		Yes	Yes	Yes	Yes	Yes
		Yes	Yes	Yes	Yes	Yes
<b>Installed software</b> <ul style="list-style-type: none"> <li>• Visualization</li> </ul>				WinCC flexible RT 2008 SP2, incl. Sm@rtAccess, recipes, archives options	WinCC flexible RT 2008 SP2, incl. Sm@rtAccess, recipes, archives options	WinCC flexible RT 2008 SP2, incl. Sm@rtAccess, recipes, archives options
<b>Control</b>		SIMATIC WinAC RTX 2010	SIMATIC WinAC RTX F 2009	SIMATIC WinAC RTX 2010	SIMATIC WinAC RTX 2010	SIMATIC WinAC RTX 2010
<b>Communication</b>		Yes	Yes	Yes	Yes	Yes

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# Embedded controller

## SIMATIC S7-modular embedded controller

EC31

### Technical specifications (continued)

	6ES7 677-1DD10-0BA0	6ES7 677-1DD10-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD10-0BF0	6ES7 677-1DD10-0BG0	6ES7 677-1DD10-0BH0
<b>EMC</b>						
Emission of radio interference acc. to EN 55 011						
• Limit value class A, for use in industrial areas	Yes	Yes	Yes	Yes	Yes	Yes
<b>Environmental requirements</b>						
Operating temperature						
• Min.	0 °C	0 °C	0 °C	0 °C	0 °C	0 °C
• Max.	50 °C	50 °C	50 °C	50 °C	50 °C	50 °C
Storage/transport temperature						
• Min.	-40 °C	-40 °C	-40 °C	-40 °C	-40 °C	-40 °C
• Max.	70 °C	70 °C	70 °C	70 °C	70 °C	70 °C
Vibrations						
• Operation, checked according to IEC 60068-2-6	Yes	Yes	Yes	Yes	Yes	Yes
• Transport checked according to IEC 60068-2-6	Yes	Yes	Yes	Yes	Yes	Yes
Shock test						
• checked according to IEC 60068-2-27	Yes	Yes	Yes	Yes	Yes	Yes
• checked according to IEC 60068-2-29	Yes	Yes	Yes	Yes	Yes	Yes
Shock testing						
• Checked according to IEC 60068-2-29	Yes	Yes	Yes	Yes	Yes	Yes
• Operation, checked according to IEC 60068-2-27	Operation, checked according to IEC 60068-2-27	Operation, checked according to IEC 60068-2-27	Operation, checked according to IEC 60068-2-27	Operation, checked according to IEC 60068-2-27	Operation, checked according to IEC 60068-2-27	Operation, checked according to IEC 60068-2-27
• Storage/transport, checked according to IEC 60068-2-29	Yes	Yes	Yes	Yes	Yes	Yes
<b>Degree of protection</b>						
IP20	Yes	Yes	Yes	Yes	Yes	Yes
<b>Standards, approvals, certificates</b>						
CE mark	Yes	Yes	Yes	Yes	Yes	Yes
CSA approval	Yes; included in cULus	Yes; included in cULus	Yes; included in cULus	Yes; included in cULus	Yes; included in cULus	Yes; included in cULus
C-TICK	Yes	Yes	Yes	Yes	Yes	Yes
cULus	Yes	Yes	Yes	Yes	Yes	Yes
FM approval	Yes	Yes	Yes	Yes	Yes	Yes
<b>Dimensions and weight</b>						
Dimensions						
• Width	160 mm	160 mm	160 mm	160 mm	160 mm	160 mm
• Height	125 mm	125 mm	125 mm	125 mm	125 mm	125 mm
• Depth	115 mm	115 mm	115 mm	115 mm	115 mm	115 mm
Weight						
• Weight	1.5 kg; Approx.	1.5 kg; Approx.	1.5 kg; Approx.	1.5 kg; Approx.	1.5 kg; Approx.	1.5 kg; Approx.

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# Embedded controller

## SIMATIC S7-modular embedded controller

EC31

Ordering data	Order No.	Order No.
<b>SIMATIC S7-modular embedded controller</b> <b>EC31</b> C	<b>6ES7 677-1DD10-0BA0</b>	<b>EC31-HMI/RTX</b> Intel CoreDuo 1.2 GHz processor Memory configuration: 1 GB RAM, 4 GB Flash Disk; interfaces: 1 Industrial Ethernet port, 2 PROFINET ports, 2 USB ports, 1 slot for multimedia card; Software: Windows Embedded Standard, WinAC RTX 2010, SIMATIC SOFTNET-S7/V7.0 Lean preins- talled • With WinCC flexible 2008 RT 128 PT C <b>6ES7 677-1DD10-0BF0</b> • With WinCC flexible 2008 RT 512 PT C <b>6ES7 677-1DD10-0BG0</b> • With WinCC flexible 2008 RT 2048 PT C <b>6ES7 677-1DD10-0BH0</b>
<b>EC31-RTX</b> C	<b>6ES7 677-1DD10-0BB0</b>	<b>Accessories</b> <b>EM PCI-104 expansion module</b> I <b>6ES7 677-1DD40-1AA0</b> For fitting up to 3 additional PCI-104 cards <b>EM PC expansion module</b> I <b>6ES7 677-1DD50-2AA0</b> Additional connection options: 2 USB interfaces, 1 Gigabit Ethernet interface, 1 serial interface, 1 slot for CF card, 1 slot for SD card/Micro Memory Card
<b>EC31-RTX F</b> C	<b>6ES7 677-1FD10-0FB0</b>	
Intel CoreDuo 1.2 GHz processor Memory configuration: 1 GB RAM, 4 GB Flash Disk; interfaces: 1 Industrial Ethernet port, 2 PROFINET ports, 2 USB ports, 1 slot for multimedia card; Software: Windows Embedded Standard preinstalled, Software Development Kit (SDK) for creating C/C++ applications with accesses to central I/O modules		
Intel CoreDuo 1.2 GHz processor Memory configuration: 1 GB RAM, 4 GB Flash Disk; interfaces: 1 Industrial Ethernet port, 2 PROFINET ports, 2 USB ports, 1 slot for multimedia card; Software: Windows Embedded Standard and WinAC RTX 2010 preinstalled		
Intel CoreDuo 1.2 GHz processor Memory configuration: 1 GB RAM, 4 GB Flash Disk; interfaces: 1 Industrial Ethernet port, 2 PROFINET ports, 2 USB ports, 1 slot for multimedia card; Software: Windows Embedded Standard and WinAC RTX F 2010 preins- talled		

C: Subject to export regulations AL: N and ECCN: 5D002ENCU

I: Subject to export regulations AL: N and ECCN: EAR99H

# Embedded controller

## SIMATIC S7-modular embedded controller

### Expansion modules

#### Overview



- Expansion modules for SIMATIC S7-modular Embedded Controller EC31
  - EM PCI-104 for additionally accommodating up to 3 PCI-104 cards
  - EM PC with additional PC interfaces and slots for memory media

#### Technical specifications

	6ES7 677-1DD40-1AA0	6ES7 677-1DD50-2AA0
<b>Product type designation</b>	EM PCI-104	EM PC
<b>Product version</b>		
Hardware product version	01	01
<b>Power supply</b>		
Input voltage		
• Rated value, 24 V DC	Yes; Optional: external infeed	
• Permissible range, lower limit (DC)	20.4 V	
• Permissible range, upper limit (DC)	28.8 V	
<b>Current consumption</b>		
from expansion bus	100 mA	580 mA
<b>Power losses</b>		
Power loss, typ.	2.4 W; without inserted PCI-104 cards	9 W
Power loss, max.		14 W
<b>Alarms/diagnostics/status information</b>		
Diagnostics		
• Diagnostic functions	Yes; POWER LED, status LED	Yes; POWER LED, CARD LED for indicating access to SD/MMC
<b>EMC</b>		
Emission of radio interference acc. to EN 55 011		
• Limit value class A, for use in industrial areas	Yes	Yes

	6ES7 677-1DD40-1AA0	6ES7 677-1DD50-2AA0
<b>Environmental requirements</b>		
Operating temperature		
• Min.	0 °C	0 °C
• Max.	50 °C	50 °C
Storage/transport temperature		
• Min.	-40 °C	-40 °C
• Max.	70 °C	70 °C
Vibrations		
• Operation, checked according to IEC 60068-2-6	Yes	Yes
• Transport, checked according to IEC 60068-2-6	Yes	Yes
Shock test		
• Checked according to IEC 60068-2-27	Yes	Yes
• Checked according to IEC 60068-2-29	Yes	Yes
Shock test		
• Checked according to IEC 60068-2-29	Yes	Yes
• Operation, checked according to IEC 60068-2-29	Yes	Yes
• Storage/transport, checked according to IEC 60068-2-29	Yes	Yes
<b>Degree of protection</b>		
IP20	Yes	Yes
<b>Standards, approvals, certificates</b>		
CE mark	Yes	Yes
CSA approval	Yes	Yes
C-TICK	Yes	Yes
cULus	Yes	Yes
FM approval	Yes	Yes
<b>Dimensions and weight</b>		
Dimensions		
• Width	120 mm; Without bus connector extension bus	80 mm; Without bus connector extension bus
• Height	125 mm; Without external voltage connecting terminal	125 mm
• Depth	115 mm	115 mm
Weight		
• Weight	0.5 kg	0.4 kg

#### Ordering data

#### Order No.

**EM PCI-104 expansion module** | **6ES7 677-1DD40-1AA0**

For fitting up to 3 additional PCI-104 cards

**EM PC expansion module** | **6ES7 677-1DD50-2AA0**

Additional connection options:  
2 USB interfaces, 1 Gigabit Ethernet interface, 1 serial interface, 1 slot for CF card, 1 slot for SD card/Micro Memory Card

I: Subject to export regulations AL: N and ECCN: EAR99H

# Embedded controller

## SIMATIC S7-modular embedded controller

### SIPLUS S7-modular embedded controller

#### Overview



- Get off to a fast start in automation solutions with embedded PC platforms.
  - Ready-to-use SIMATIC WinAC RTX or WinAC RTX F pre-installed on EC31
  - Prepared for use in a SIMATIC environment with PROFINET and Industrial Ethernet
  - Commissioning by specialist automation personnel as with the S7-300
  - Configuring and programming with SIMATIC STEP 7 over Industrial Ethernet
  - Optional visualization
- Modular expansion capability:
  - Central expansion with
  - S7-300 I/O (SM modules of S7-300)
  - Expansion modules for additional PC interfaces, e.g. DVI-I, USB, Gigabit Ethernet networking and memory card slots, as well as PCI-104
- Rugged operation
  - Disk-free operation based on flash disk and Windows XP embedded
  - Fan-free operation
- Flexibility of a PC-based automation environment
  - Free memory space on flash disk can be used for other PC applications
  - Use of WinAC ODK with SIMATIC WinAC RTX and WinAC RTX F (read-only in safety-related program part)
  - Connection option for USB devices
  - Memory capacity expandable using multimedia card
- Data retentivity for WinAC RTX and RTX F without uninterruptible power supply (UPS)

	<b>SIPLUS S7-modular embedded controller EC31</b>
<b>Order No.</b>	<b>6AG1 677-1DD00-4BA0</b>
<b>Order No. based on</b>	<b>6ES7 677-1DD00-0BA0</b>
Ambient temperature range	0 ... +50 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical specifications	The technical data of the standard product applies except for the ambient conditions.

	<b>SIPLUS S7-modular embedded controller EC31-RTX</b>
<b>Order No.</b>	<b>6AG1 677-1DD00-4BB0</b>
<b>Order No. based on</b>	<b>6ES7 677-1DD00-0BB0</b>
Ambient temperature range	0 ... +50 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical specifications	The technical data of the standard product applies except for the ambient conditions.

#### Ambient conditions

Relative humidity	5 ... 100 % Condensation permissible
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500m) derating 10 K 658 ... 540 hPa (+3500 ... +5000m) derating 20 K

#### Ordering data

	<b>Order No.</b>
<b>SIPLUS S7-modular embedded controller</b>	
<b>EC31</b>	<b>6AG1 677-1DD10-4BA0</b>
(medial exposure)	
Intel CoreDuo 1.2 GHz processor Memory: 1 GB RAM, 4 GB flash disk; interfaces: 1 Industrial Ethernet port, 2 PROFINET ports, 2 USB ports, 1 multimedia card slot; software: Windows Embedded Standard pre-installed, Software Development Kit (SDK) for creating C/C++ applications with access to central I/O modules	
<b>EC31-RTX</b>	<b>6AG1 677-1DD00-4BB0</b>
(medial exposure)	
Intel CoreDuo 1.2 GHz processor Memory: 1 GB RAM, 4 GB flash disk; interfaces: 1 Industrial Ethernet port, 2 PROFINET ports, 2 USB ports, 1 multimedia card slot; software: Windows Embedded Standard and WinAC RTX 2010 preinstalled	
<b>Accessories</b>	See SIMATIC S7-modular Embedded Controller, page 7/11

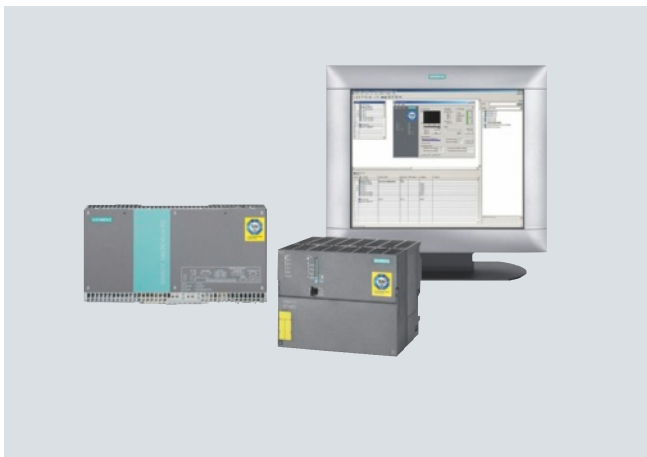
C: Subject to export regulations AL: N and ECCN: 5D002ENCU

# Embedded controller

## Embedded Box PC bundles

### SIMATIC IPC427C bundles

#### Overview



- Get off to a fast start in automation solutions with embedded PC platforms.
  - SIMATIC WinAC RTX or SIMATIC WinAC RTX F preinstalled on SIMATIC IPC427C and ready for use
  - PROFINET, PROFIBUS and Industrial Ethernet prepared for use in a SIMATIC environment
  - Optional WinCC flexible for visualization tasks in parallel with SIMATIC WinAC RTX.
  - Configuration and programming with SIMATIC STEP 7 via Industrial Ethernet, PROFINET, or PROFIBUS
- Safety requirements up to SIL 3 in accordance with IEC 61508/62061 or EN ISO 13849-1 up to PL e can be implemented with WinAC RTX F.
- Rugged operation
  - Operation without a hard disk, based on Compact Flash Card (CF Card) or Solid State Drive and Windows Embedded Standard
  - Fan-free operation
  - 128 KB of retentive data for WinAC RTX, also without uninterruptible power supply (UPS)
- Flexibility of a PC-based automation environment
  - Free memory space on CF Card can be used for other PC applications
  - Use of WinAC ODK with SIMATIC WinAC RTX or SIMATIC WinAC RTX F (read-only for fail-safe program section)
  - Connection option for USB devices, flat panel monitor or screen
  - PCI 104 cards can be plugged in
- High-performance service concept
  - Replacement parts for preferred types available from stock
- New hardware basis SIMATIC IPC427C
- Cost-effective versions with PROFINET, based on the standard Ethernet interface
- Current product versions of the pre-installed software:
  - SIMATIC WinAC RTX 2010 or SIMATIC WinAC RTX F 2010
  - SIMATIC WinCC flexible 2008 SP2
  - SIMATIC NET Edition 2008

#### Ordering data

#### Order No.

#### SIMATIC IPC427C bundles

All versions with SIMATIC WinAC RTX 2010 (F) and WinCC flexible 2008

SIMATIC IPC427C bundles	C	6ES7 675-1D	0	0	0
Processor					
• Celeron M, 1.2 GHz, 2x PROFINET (IE) <sup>1)</sup>			A		
• Celeron M, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS <sup>1)</sup>			B		
• Core2 Solo, 1.2 GHz, 2x PROFINET (IE) <sup>1)</sup>			E		
• Core2 Solo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS <sup>1)</sup>			F		
• Core2 Solo, 1.2 GHz, 1x PROFINET (IE), PROFINET (RT/IRT) 3 ports			G		
• Core2 Duo, 1.2 GHz, 2x PROFINET (IE) <sup>1)</sup>			J		
• Core2 Duo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS <sup>1)</sup>			K		
• Core2 Duo, 1.2 GHz, 1x PROFINET (IE), PROFINET (RT/IRT) 3 ports			L		
Work memory					
• 1 GB RAM				2	
• 2 GB RAM <sup>1)</sup>				3	
• 4 GB RAM				4	
Mass storage, internal					
• Without (can only be ordered with externally accessible mass storage) <sup>1)</sup>					0
• 250 GB HDD SATA, additionally with externally accessible CF					1
• 32 GB Solid State Disk SATA, Windows Embedded 2009 and software pre-installed					2
• 4 GB internal CompactFlash, Windows Embedded 2009 and software pre-installed <sup>1)</sup>					6
• 8 GB internal CompactFlash, Windows Embedded 2009 and software pre-installed <sup>1)</sup>					7
Externally accessible mass storage					
• Without (can only be ordered with internal mass storage) <sup>1)</sup>					A
• 4 GB CompactFlash, Windows Embedded 2009 and software pre-installed <sup>1)</sup>					D
• 8 GB CompactFlash, Windows Embedded 2009 and software pre-installed <sup>1)</sup>					E

<sup>1)</sup> Replacement hardware units available in exchange

C: Subject to export regulations AL: N and ECCN: 5D002ENCU

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# Embedded controller Embedded Box PC bundles

## SIMATIC IPC427C bundles

Ordering data	Order No.	Order No.
<b>SIMATIC IPC427C bundles</b>		
All versions with SIMATIC WinAC RTX 2010 (F) and WinCC flexible 2008		
<b>SIMATIC IPC427C bundles</b> C <b>6ES7 675-1D ■■ 0- ■■ ■ 0</b> Software configurations <sup>1)</sup> <ul style="list-style-type: none"> <li>WinAC RTX <b>B</b></li> <li>WinCC flexible RT 128 PT <b>C</b></li> <li>WinCC flexible RT 512 PT <b>D</b></li> <li>WinCC flexible RT 2048 PT <b>E</b></li> <li>WinCC flexible RT 4096 PT <b>F</b></li> <li>WinAC RTX, WinCC flexible RT 128 PT <b>K</b></li> <li>WinAC RTX, WinCC flexible RT 512 PT <b>L</b></li> <li>WinAC RTX, WinCC flexible RT 2048 PT <b>M</b></li> <li>WinAC RTX, WinCC flexible RT 4096 PT <b>N</b></li> <li>WinAC RTX F <b>P</b></li> <li>WinAC RTX F, WinCC flexible RT 128 PT <b>R</b></li> <li>WinAC RTX F, WinCC flexible RT 512 PT <b>S</b></li> <li>WinAC RTX F, WinCC flexible RT 2048 PT <b>T</b></li> <li>WinAC RTX F, WinCC flexible RT 4096 PT <b>U</b></li> </ul>		<b>SIMATIC IPC427C Bundles with SIMATIC WinCC RT, V7.0 SP2 incl. Update 1</b> <b>SIMATIC IPC427C bundles</b> Fan-free, 4 x USB 2.0 (500 mA), 1 x COM (RS 232), 24 V DC power supply with On/Off switch, 2 x PROFINET (IE), Windows Embedded 2009 pre-installed, SIMATIC WinCC V7.0 SP2 incl. Update1 Runtime pre-installed <b>Client configurations</b> Processor Celeron M 1.2 GHz, 1 GB SDRAM-DDR3, 4 GB CF Card, runtime license 128 PT C <b>6ES7 675-1DA20-6AX0</b> <b>Client and single-user station configurations</b> Processor Core2 Solo 1.2 GHz, 2 GB SDRAM-DDR3, 8 GB CF Card, runtime license 128 PT C <b>6ES7 675-1DE30-7AX0</b> Processor Core2 Solo 1.2 GHz, PROFIBUS DP, 2 GB SDRAM-DDR3, 8 GB CF Card, runtime license 128 PT C <b>6ES7 675-1DF30-7AX0</b> <b>Single-user station configurations</b> C <b>6ES7 675-1DK40- ■■ A ■ 0</b> Core2 Duo processor 1.2 GHz, PROFIBUS DP, 4 GB SDRAM-DDR3 <ul style="list-style-type: none"> <li>8 GB CF Card <b>7</b></li> <li>32 GB SSD <b>2</b></li> <li>Runtime license 128 PT <b>X</b></li> <li>Runtime license 2048 PT <b>W</b></li> </ul>
<b>Delivery versions (from stock)</b>		
Replacement hardware units available in exchange		
<b>SIMATIC IPC427C bundle with WinAC RTX 2010</b> Core2 Solo processor, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 4 GB CompactFlash C <b>6ES7 675-1DF30-0DB0</b> Core2 Duo processor, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 4 GB CompactFlash C <b>6ES7 675-1DK30-0DB0</b> Core2 Duo processor, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 8 GB CompactFlash C <b>6ES7 675-1DK30-0EP0</b>		
<b>SIMATIC IPC427C bundle with WinAC RTX 2010 and WinCC flexible 2008 512 PT</b> Core2 Duo processor, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 4 GB CompactFlash C <b>6ES7 675-1DK30-0DL0</b>		

<sup>1)</sup> Replacement hardware units available in exchange

C: Subject to export regulations AL: N and ECCN: 5D002ENCU



# Embedded controller

## Embedded Box PC bundles

### SIMATIC IPC427C bundles

#### Ordering data

#### Order No.

##### Accessories

##### CP 5603 Microbox Package

**6GK1 560-3AU00**

Package for using the PROFIBUS CP 5603 in Microbox PCs; comprising a CP 5603 module and a Microbox expansion frame

##### CP 1604 Microbox Package

**6GK1 160-4AU00**

Package for using the PROFINET CP 1604 in Microbox PCs; comprising CP 1604, connection board, power supply and expansion frame for Microbox PC; implemented with Development Kit DK-16xx PN IO; NCM P

##### Expansion kit PC/104

**6AG4 070-0BA00-0XA0**

Expansion frame incl. mounting hardware; 6 units

##### CompactFlash Cards

4 GB

**6ES7 648-2BF02-0XG0**

8 GB

**6ES7 648-2BF02-0XH0**

##### SIMATIC PC keyboard

German/international, USB connection

**6ES7 648-0CB00-0YA0**

German/international, USB connection, with 4-way USB HUB

**6ES7 648-0CD00-0YA0**

##### SIMATIC PC USB mouse

Optical, 3 buttons, with PS/2 adapter

**6ES7 790-0AA01-0XA0**

##### SIMATIC IPC USB FlashDrive

8 GB (SLC), USB 2.0, incl. SIMATIC IPC BIOS manager, bootable, metal housing

**6ES7 648-0DC50-0AA0**

##### SIMATIC IPC Service USB FlashDrive

8 GB (SLC), USB 2.0, incl. SIMATIC IPC Image & Partition Creator and SIMATIC IPC BIOS manager (pre-installed), bootable, metal enclosure

**6AV7 672-8JD01-0AA0**

##### Portrait assembly kit

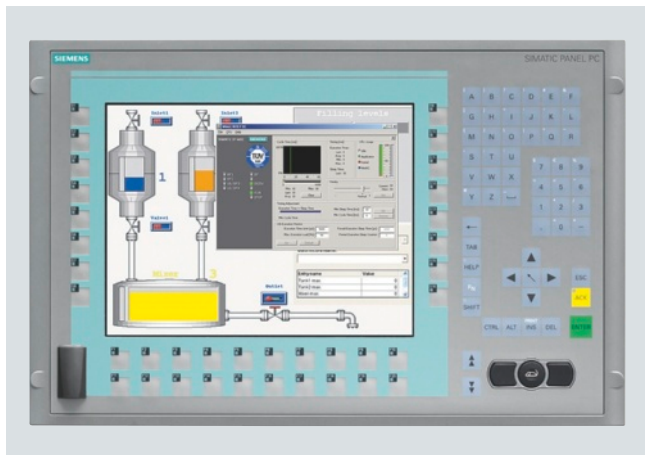
Interfaces to the front

**6ES7 648-1AA20-0YB0**

I: Subject to export regulations AL: N and ECCN: EAR99H



### Overview



Embedded PC platform with extremely high industrial compatibility for demanding tasks in the field of PC-based automation

- Maintenance-free (no rotating components such as fan and hard disk)
- Rugged construction: The PC is resistant to even the harshest mechanical stress and is extremely reliable in operation
- Battery-backed retentive memory onboard
- Compact design (only 61-69 mm installation depth for 12"-19")
- High investment protection
- Fast integration capability

The following versions are available:

- Built-in versions
  - 12" and 15" TFT Touch
  - 12" and 15" TFT Key
  - 19" Touch
- Support arm versions
  - PRO 15" and 19" Touch
 Fully-enclosed device to IP65 degree of protection for mounting on a support arm/stand.

### Technical specifications

	6AV7 884..	6AV7 883..PRO
<b>General features</b>		
Processors	Intel Celeron M 1.2 GHz, Intel Core2 Solo 1.2 GHz or Core2 Duo 1.2 GHz	Intel Celeron M 1.2 GHz, Intel Core2 Solo 1.2 GHz or Core2 Duo 1.2 GHz
Memory type	DDR3-RAM	DDR3-RAM
Work memory	1 GB, 2 GB or 4 GB	1 GB, 2 GB or 4 GB
Free slots	1 x CF card slot (externally accessible)	1 x CF card slot (externally accessible)
Operating system	Windows Embedded Standard 2009 (EN/DE) or Windows XP Professional Multi-Language	Windows Embedded Standard 2009 (EN/DE) or Windows XP Professional Multi-Language
Additional OS information	Language: EN/DE	Language: EN/DE
SIMATIC Software	Optionally with pre-installed bundle software SIMATIC WinCC flexible 2008 SP2 and/or WinAC RTX 2010 SIMATIC WinAC RTX F 2010 SIMATIC WinCC as Web Client or single-user station	Optionally with pre-installed bundle software SIMATIC WinCC flexible 2008 SP2 and/or WinAC RTX 2010 SIMATIC WinAC RTX F 2010 SIMATIC WinCC as Web Client or single-user station
<b>Drives</b>		
Disk drive	Optionally via external USB floppy disk drive	Optionally via external USB floppy disk drive
Optical drives	Possible as external drive via USB	Possible as external drive via USB
Hard drive/mass storage	CompactFlash drive with 2, 4 or 8 GB and/or SSD (Solid State Drive) with 32 GB	CompactFlash drive with 2, 4 or 8 GB and/or SSD (Solid State Drive) with 32 GB
<b>Interfaces</b>		
Graphics interface	DVI-I for additional display unit: Color depth 32 bits	DVI-I for additional display unit: Color depth 32 bits
Connection for keyboard/mouse	USB / USB	USB / USB
Serial interface	COM1: 1 x V.24 (RS232)	COM1: 1 x V.24 (RS232)
PROFIBUS/MPI	Optionally onboard, isolated, max. 12 Mbit/s, no plug-in card required, CP5611-compatible, not upgradeable	Optionally onboard, isolated, max. 12 Mbit/s, no plug-in card required, CP5611-compatible, not upgradeable
PROFINET (RT/IRT)	Optional: 3 x RJ45, CP1616-compatible; not upgradeable	Optional: 3 x RJ45, CP1616-compatible; not upgradeable
USB	1 x on front, 4 x on rear, USB 2.0 (500 mA)	1 x on front, 4 x on rear, USB 2.0 (500 mA)
PROFINET (IE), Ethernet	onboard, 2 x 10/100/1000 Mbit (RJ45 with/without PROFIBUS), 1 x 10/100/1000 Mbit (RJ45 with PROFIBUS), no plug-in card required	onboard, 2 x 10/100/1000 Mbit (RJ45 with/without PROFIBUS), 1 x 10/100/1000 Mbit (RJ45 with PROFIBUS), no plug-in card required
Multimedia	No	No
<b>Supply voltage</b>		
Supply voltage	24 V DC	24 V DC
<b>Monitoring functions</b>		
Temperature	Yes	Yes

# Embedded controller

## Embedded Panel PC bundles

### SIMATIC HMI IPC477C bundles

#### Technical specifications (continued)

	6AV7 884..	6AV7 883..PRO
Watchdog	Yes	Yes
DiagBit (similar to S.M.A.R.T.)	Yes (for CF cards and SSD)	Yes (for CF cards and SSD)
Status LEDs	Yes (on rear)	Yes
Front side according to EN 60529	IP65 (on the front) acc. to EN 60529 and NEMA4	IP65 all around according to EN 60529 and NEMA4
<b>Ambient conditions</b>		
Vibration load during operation	Checked in accordance with IEC 60068-2-6: 10 - 58 Hz: 0.075 mm, 58 to 200 Hz: 9.8 m/s <sup>2</sup> (1 g)	Checked in accordance with IEC 60068-2-6: 10 - 58 Hz: 0.075 mm, 58 to 200 Hz: 9.8 m/s <sup>2</sup> (1 g)
Shock load during operation	Checked in accordance with IEC 60068-2-7: 50 m/s <sup>2</sup> (5 g), 30 ms, 100 shocks	Checked in accordance with IEC 60068-2-7: 50 m/s <sup>2</sup> (5 g), 30 ms, 100 shocks
Relative humidity	Checked in accordance with IEC 60068-78, IEC 60068-2-30: 5% to 80% at 25 °C (no condensation)	Checked in accordance with IEC 60068-78, IEC 60068-2-30: 5% to 80% at 25 °C (no condensation)
Maximum permissible installation angle +/-	30° over vertical	45° over vertical
Ambient temperature during operation	0 °C ... +50 °C in maximum configuration; no fan	15": 0 °C ... +45 °C in maximum configuration; no fan 19": 0 °C ... +40 °C in maximum configuration; no fan
<b>Certifications &amp; standards</b>		
Approvals	CE, cULus(508), Marine	CE, cULus(508)
EMC	CE, 55022A, EN 61000-6-4, EN 61000-6-2	CE, 55022A, EN 61000-6-4, EN 61000-6-2

	6AV7 884-0	6AV7 884-1	6AV7 884-2	6AV7 884-3	6AV7 884-5	6AV7 883-6 (PRO)	6AV7 883-7 (PRO)
Front plate	12" TFT Touch	12" TFT Key	15" TFT Touch	15" TFT Key	19" TFT Touch	15" TFT Touch	19" TFT Touch
<b>Display</b>							
Resolution (W x H in pixels)	800 x 600	800 x 600	1024 x 768	1024 x 768	1280 x 1024	1024 x 768	1280 x 1024
MTBF of backlighting (at 25 °C)	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent	50000 h at 24 h continuous operation, temperature-dependent
<b>Type of operation</b>							
Function keys	No	36	No	36	No	No	No
Alphanumeric keyboard	No	Yes	No	Yes	No	No	No
Touch screen (analog/resistive)	Yes	No	Yes	No	Yes	Yes	Yes
Mouse on front	No	Yes	No	Yes	No	No	No
<b>Design</b>							
Centralized configuration	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Distributed configuration	No	No	No	No	No	No	No
<b>Dimensions</b>							
Mounting dimensions in centralized configuration (W x H x D, without optical drive) in mm	368 x 290 x 61	450 x 290 x 61	450 x 290 x 64	450 x 321 x 59	450 x 380 x 71	400 x 310 x 98	483 x 400 x 115
Operator control unit (W x H) in mm	400 x 310 (7 HU)	483 x 310 (19", 7 HU)	483 x 310 (19", 7 HU)	483 x 355 (19", 8 HU)	483 x 400 (19", 9 HU)	483 x 400 (19", 9 HU)	483 x 400 (19", 9 HU)
<b>Weight</b>	6.1 kg	6.6 kg	7.0 kg	6.6 kg	7.2 kg	7.4 kg	10.9 kg
<b>General features</b>							
Accessories	Touch protective membranes	Insertable strips for keyboard	Touch protective membranes	Insertable strips for keyboard	Touch protective membranes	Touch protective membranes	Touch protective membranes
Power loss in maximum configuration	24 V DC: max. 45 W	24 V DC: max. 45 W	24 V DC: max. 55 W	24 V DC: max. 55 W	24 V DC: max. 60 W	24 V DC: max. 55 W	24 V DC: max. 55 W

# Embedded controller Embedded Panel PC bundles

## SIMATIC HMI IPC477C bundles

Ordering data	Order No.	Order No.
<b>Bundles with WinAC RTX 2010 and WinCC flexible 2008 SP2</b>		
(Built-to-order version, delivery time max. 15 business days and with identified repair, if not preferred type)		
<b>SIMATIC HMI IPC477C PRO</b>	C 6AV7 883- A - 0	C 6AV7 883- A - 0
Embedded and fan-free with fully enclosed IP65 enclosure 4 x USB (500 mA), 24 V DC power supply with On/Off switch		
<b>SIMATIC HMI IPC477C</b>	C 6AV7 884- A - 0	C 6AV7 884- A - 0
Without fan 5 x USB 2.0 (500 mA), one of which on the front 1 x COM (RS232) 24 V DC power supply with On/Off switch		
<b>Front Plate</b>		
• 12" TFT Touch <sup>1)</sup>	0	
• 12" TFT Key	1	
• 15" TFT Touch <sup>1)</sup>	2	
• 15" TFT Key	3	
• 19" TFT Touch <sup>1)</sup>	5	
• 15" TFT Touch (IP65 enclosure; PRO)	6	
• 19" TFT Touch (IP65 enclosure; PRO)	7	
<b>Processors and fieldbus</b>		
• Celeron M 1.2 GHz 2 x PROFINET (IE) <sup>1)</sup>	A	
• Celeron M1 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12 <sup>1)</sup>	B	
• Core2 Solo 1.2 GHz, 2 x PROFINET (IE) <sup>1)</sup>	D	
• Core2 Solo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12 <sup>1)</sup>	E	
• Core2 Solo 1.2 GHz, 1 x PROFINET (IE), 1 x PROFINET (3 ports) <sup>1)</sup>	F	
• Core2 Duo 1.2 GHz, 2 x PROFINET (IE) <sup>1)</sup>	G	
• Core2 Duo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12 <sup>1)</sup>	H	
• Core2 Duo 1.2 GHz, 1 x PROFINET (IE), 1 x PROFINET (3 ports) <sup>1)</sup>	J	
<b>Work memory (DDR3 RAM), 1 bank</b>		
• 1 GB	1	
• 2 GB <sup>1)</sup>	2	
• 4 GB	3	
<b>Second mass storage (installed and formatted)</b>		
• Without <sup>1)</sup>	0	
• CompactFlash 2 GB (only with Windows Embedded Standard 2009) <sup>1)</sup>	2	
• CompactFlash 4 GB <sup>1)</sup>	3	
• CompactFlash 8 GB <sup>1)</sup>	4	
• SSD (Solid State Drive) min. 32 GB	6	
<b>Mass storage (installed, Windows Embedded Standard 2009 (EN/DE) pre-installed, optionally with SIMATIC software)</b>		
• CompactFlash 2 GB <sup>1)</sup>	2	
• CompactFlash 4 GB <sup>1)</sup>	3	
• CompactFlash 8 GB <sup>1)</sup>	4	
• SSD (Solid State Drive) min. 32 GB	6	
<b>Operating system</b>		
• Windows Embedded 2009, pre-installed <sup>1)</sup>		BA
• Windows XP Professional Multi Language, only with SSD; without SIMATIC software		DA
<b>Software packages, only with CF 4 GB or higher <sup>1)</sup></b>		
• with operating system and RTX WinAC RTX 2010 pre-installed and configured		BB
• with operating system and HMI WinCC flexible 2008 SP2 RT (incl. archives/recipes) pre-installed and configured		BC
- Number of tags 128 PT		BD
- Number of tags 512 PT		BE
- Number of tags 2048 PT		BF
- Number of tags 4096 PT		
• with operating system and HMI/RTX WinCC flexible 2008 SP2 RT (incl. archives/recipes) and WinAC RTX 2010 pre-installed and configured		BK
- Number of tags 128 PT		BL
- Number of tags 512 PT		BM
- Number of tags 2048 PT		BN
- Number of tags 4096 PT		
• with operating system and RTX F WinAC RTX 2010 pre-installed and configured		BP
• with operating system and HMI/RTX F WinCC flexible 2008 SP2 RT (incl. archives/recipes) and WinAC RTX F 2010 pre-installed and configured		BR
- Number of tags 128 PT		BS
- Number of tags 512 PT		BT
- Number of tags 2048 PT		BU
- Number of tags 4096 PT		

<sup>1)</sup> Preferred versions with repaired replacement device from stock  
C: Subject to export regulations AL: N and ECCN: 5D002ENCU

# Embedded controller

## Embedded Panel PC bundles

### SIMATIC HMI IPC477C bundles

#### Ordering data

#### Order No.

#### Order No.

#### Bundles with WinCC V7.0 SP2, incl. Update 1

("Built to order" with delivery time of max. 14 business days, for hardware only repairs are possible)

<b>SIMATIC HMI IPC477C</b> Without fan 4 x USB 2.0 on rear, 1 x USB 2.0 on front, 1 x COM (RS232), 2 x 10/100/1000 Mbit/s Ethernet (RJ45); software pre-installed on CF/SSD: Windows Embedded Standard, SIMATIC WinCC V7.0 SP1	C	6AV7 884-	A	A	0	-	B	0	
<b>SIMATIC HMI IPC477C PRO</b> Fan-free, 4 x USB 2.0 (500 mA), 1 x USB 2.0 on front (not on PRO), 1 x COM (RS 232), 24 V DC power supply with On/Off switch, 2 x PROFINET (IE), Windows Embedded 2009 pre-installed SIMATIC WinCC V7.0 SP2 incl. Update 1 Runtime pre-installed	C	6AV7 883-	A	A	0	-	B	0	
<b>Front plate</b> • 15" TFT Touch • 19" TFT Touch • 15" TFT Touch PRO • 19" TFT Touch PRO	C	6AV7 884- 2							
	C	6AV7 884- 5							
	C	6AV7 883- 6							
	C	6AV7 883- 7							
<b>Client configurations</b> Processor Celeron M 1.2 GHz, 1 GB DDR3 RAM, 4 GB CF Card, runtime license 128 PT				A 1			3	X	
<b>Client and single-user station configurations</b> Processor Core2 Solo 1.2 GHz, 2 GB SDRAM-DDR3, 8 GB CF Card, runtime license 128 PT				D 2			4	X	
Processor Core2 Solo 1.2 GHz, PROFIBUS DP, 2 GB SDRAM-DDR3, 8 GB CF Card, runtime license 128 PT				E 2			4	X	
<b>Single-user station configurations</b> <b>SIMATIC HMI IPC477C</b> <b>SIMATIC HMI IPC477C PRO</b> Core2 Duo processor 1.2 GHz, PROFIBUS DP, 4 GB SDRAM-DDR3 • 8 GB CF Card • 32 GB SSD • Runtime license 128 PT • Runtime license 2048 PT	C	6AV7 884-	A	H	3	0	-	B	0
	C	6AV7 883-	A	H	3	0	-	B	0
							4		
							6		
								X	
								W	

#### Note:

Other ready-to-use SIMATIC HMI IPC477Cs can be found in the catalog ST 80/ST, Panel PC chapter under HMI IPC477C.

C: Subject to export regulations AL: N and ECCN: 5D002ENCU

D: Subject to export regulations AL: N and ECCN: 5D992

I: Subject to export regulations AL: N and ECCN: EAR99H

J: Subject to export regulations AL: N and ECCN: EAR99S

#### Accessories

#### Protective film for Panel PCs 477/577/677

For protecting the touch screen against dirt/scratches

- for 12" Touch
- for 15" Touch (not for PRO)
- for 19" Touch

6AV7 671-2BA00-0AA0

6AV7 671-4BA00-0AA0

6AV7 672-1CE00-0AA0

#### Labeling membranes for Panel PCs 477/577/677

For labeling soft keys and function keys, blank, supplied in 10 units

6AV7 672-0DA00-0AA0

#### Touch pen

Captive pen for operation of the touch devices, mounting of the support on the control cabinet or direct on the PRO unit

6AV7 672-1JB00-0AA0

#### Expansion components

#### SIMATIC IPC DiagMonitor V4.2

Software tool for monitoring SIMATIC PCs, incl. manual, on CD-ROM (German/English)

6ES7 648-6CA04-2YX0

#### SIMATIC IPC Image & Partition Creator V3.1

Software tool for preventive data backup and hard disk partitioning for SIMATIC PCs, incl. manual on CD-ROM (German, English)

6ES7 648-6AA03-1YA0

#### SIMATIC IPC USB FlashDrive

8 GB, USB 2.0, metal enclosure, bootable

6ES7 648-0DC50-0AA0

#### SIMATIC IPC Service USB FlashDrive

8 GB, USB 2.0, metal enclosure, bootable

6AV7 672-8JD01-0AA0

With: BIOS Manager, Image & Partition Creator pre-installed, incl. CD

#### USB disk drive 3.5"

with 1 m connecting cable

6FC5 235-0AA05-1AA2

#### Industrial USB Hub 4

4 x USB 2.0, IP65 for control cabinet door or DIN rail

6AV6 671-3AH00-0AX0

#### CompactFlash Card

- 2 GB
- 4 GB
- 8 GB

6ES7 648-2BF02-0XF0

6ES7 648-2BF02-0XG0

6ES7 648-2BF02-0XH0

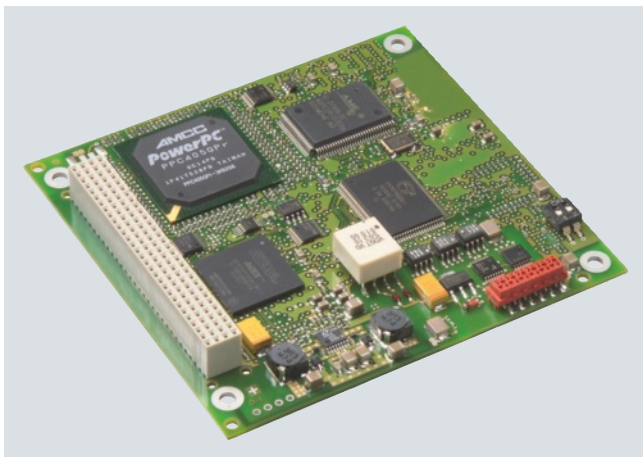
#### Please be sure to note:

The HMI IPC477C is delivered as standard with an inserted CF card. The licenses are located on the supplied USB flash drive.

#### Note:

Further complete turnkey solutions (software pre-installed and configured) based on the Microbox PC can be found under SIMATIC PC based Control.

### Overview



DP-M	DP-S	FMS	OPC	PG/OP	S7/S5
●	●	●	●	●	●

- PCI-104 interface card with own microprocessor for connecting embedded systems with PCI-104 interface to PROFIBUS at up to 12 Mbit/s
- Function compatible with CP 5613 A2
- Communication services:
  - PROFIBUS DP master Class 1 and 2 or DP slave according to IEC 61158/61784
  - PG/OP communication with STEP 5 and STEP 7
  - S7 communication with S7-5613 software package HARDNET S7
  - Open communication (SEND/RECEIVE) based on the FDL interface
  - PROFIBUS FMS according to IEC 61158/61784 with FMS-613 software package
- Extensive diagnostics options for installation, commissioning and operation of the module
- Event and filter mechanism for reducing the load on the host CPU
- Multiprotocol operation and parallel operation of up to three CPs
- The appropriate OPC server and configuration tools are included in the scope of delivery of the respective communication software
- Linux-based development kit with driver sources for integration into "non-Windows" environments

Note:

FMS-5613 supports up to two CP 5603/CP 5613 A2/5614 A2/CP 5623/CP 5624 processors

### Technical specifications

<b>Order No.</b>	<b>6GK1 560-3AA00</b>
<b>Product type designation</b>	<b>CP 5603</b>
<b>Data transmission rate</b>	
Transmission rate at interface 1 in accordance with PROFIBUS	9.6 Kbit/s ... 12 Mbit/s
<b>Interfaces</b>	
Number of electrical connections at interface 1 in accordance with PROFIBUS	1

<b>Order No.</b>	<b>6GK1 560-3AA00</b>
<b>Product type designation</b>	<b>CP 5603</b>
<b>Design of electrical connection</b>	
• at interface 1 in accordance with PROFIBUS	9-pin D-sub socket (RS 485)
• of the backplane bus	PCI-104 (32 bit)
<b>Supply voltage, current consumption, power loss</b>	
Type of power supply	DC
Supply voltage 1 from backplane bus	5 V
Relative symmetric tolerance at 5 V DC	5 %
Current consumption 1 from backplane bus with DC, maximum	0.66 A
Effective power loss	3.3 W
<b>Permitted ambient conditions</b>	
Ambient temperature	
• During operating phase	0 ... 70 °C
• During storage	-40 ... +70 °C
• During transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operating phase, maximum	85 %
IP degree of protection	IP00
<b>Design, dimensions and weights</b>	
Module format	PCI -104
Width	90 mm
Height	21 mm
Depth	96 mm
Net weight	80 g
Type of mounting	Screw mounting
<b>Product properties, functions, components in general</b>	
Number of plug-in cards of same design which can be inserted per PC station	3
Number of modules - Note	FMS-5613 supports a maximum of two CP 5603 / CP 5613 A2 / CP 5614 A2 / CP 5623 / CP 5624 processors
<b>Performance data</b>	
<u>Performance data</u> <u>Open communication</u>	
Software required for open communication by means of SEND/RECEIVE	FDL driver included in scope of delivery of CP
Number of possible connections for open communication by means of SEND/RECEIVE, maximum	80

# Embedded controller Communication

CP 5603

## Technical specifications (continued)

Order No.	6GK1 560-3AA00
Product type designation	CP 5603
<u>Performance data for PROFIBUS DP master</u>	
Software required for DP master function	No
Service as DP master	
• DPV0	Yes
• DPV1	Yes
• DPV2	Yes
Number of DP slaves operable on DP master	124
Data volume	
• of address area of inputs as DP master, total	30 256 byte
• of address area of outputs as DP master, total	30 256 byte
• of address area of inputs per DP slave	244 byte
• of address area of outputs per DP slave	244 byte
• of address area of diagnostics data per DP slave	244 byte
<u>Performance data for PROFIBUS DP slave</u>	
Software required for DP slave function	No
Service as DP slave	
• DPV0	Yes
• DPV1	Yes
Data volume	
• of address area of inputs as DP slave, total	244 byte
• of address area of outputs as DP slave, total	244 byte
<u>Performance data FMS functions</u>	
Software required for FMS communication	Yes, HARDNET-FMS (FMS-5613)
Number of possible connections with FMS connection, maximum	40

Order No.	6GK1 560-3AA00
Product type designation	CP 5603
<u>Performance data S7 communication</u>	
Software required for S7 communication	Yes, HARDNET-S7 (S7-5613)
Number of possible connections for S7/PG communication, maximum	50
<u>Performance data Multiprotocol operation</u>	
Number of active connections for multiprotocol operation	50
Number of configurable connections per PC station	207
<b>Product functions Management, configuration, programming</b>	
Configuration software required	NCM PC included in scope of delivery
<b>Product functions Diagnostics</b>	
Product function: Port diagnostics	Yes
<b>Standards, specifications, approvals</b>	
Standard	
• For EMC	2004/108/EC
• For CSA and UL safety	CAN/CSA C22.2 & UL 60950-1, UL 508
• For emitted interference	EN 61000-6-3, EN 61000-6-4
• For noise immunity	EN 61000-6-1, EN 61000-6-2
Certificate of suitability	
• CE mark	Yes
• C-Tick	Yes
<b>Accessories</b>	
Accessories	Optional: Expansion frame for SIMATIC Microbox and withdrawable drawer for SIMATIC S7 modular embedded controller

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Ordering data	Order No.	Order No.
<b>CP 5603 communication processor</b> PCI-104 card for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master or DP slave, incl. PG and FDL protocols; single license for 1 installation, runtime software, software and electronic manual on CD-ROM, Class A, for operating system support see SIMATIC NET software; German/English	<b>6GK1 560-3AA00</b>	<b>DP-5613 Edition 2008</b> for 32 bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; English/German <ul style="list-style-type: none"> <li>• Single license for 1 installation</li> <li>• Software Update Service for 1 year, with automatic extension; requirement: Current software version</li> <li>• Upgrade from DP-5613 Edition 2006 or 2007 to DP-5613 Edition 2008 or HARDNET DP V8.1</li> <li>• Upgrade from DP-5613, V6.0, V6.1, V6.2 or V6.3 to DP-5613 Edition 2008 or HARDNET DP V8.1</li> </ul> <b>HARDNET S7</b> Software for S7 communication, incl. PG and FDL protocol, OPC server and NCM PC; runtime software, software and electronic manual on USB flash drive, Class A; for CP 5603, CP 5613 A2, CP 5623, CP 5614 A2, CP 5624;
<b>Software upgrade</b> for CP 5603, CP 5613 A2 and CP 5623 on edition 2008 or V8.1	<b>6GK1 561-3AA01-3AE0</b>	
<b>CP 5603 Microbox Package</b> For use of CP 5603 in Microbox 420/427B/427C; consisting of CP 5603 module and Microbox expansion frame	<b>6GK1 560-3AU00</b>	
<b>CP 5603 expansion frame</b> for use in Microbox 420/427B/427C with mounting material	<b>6GK1 560-3AA00-0AU0</b>	
<b>CP 5603 mEC Package</b> For use of CP 5603 in SIMATIC S7-MEC; consisting of CP 5603 and withdrawable unit for CP 5603 for installation in the EM PCI-104 expansion module of the SIMATIC S7-MEC	<b>6GK1 560-3AE00</b>	
<b>CP 5603 insert plate</b> Metal plate with RS485 cutout for inserting for the S7 modular embedded controller	<b>6GK1 560-3AA00-0AE0</b>	
<b>HARDNET-PB DP development kit</b> Software HARDNET-PB DP Development kit for CP 5603, CP 5613, CP 5613 A2, CP 5623, CP 5613 FO, CP 5614, CP 5614 A2, CP 5624; for integration into other operating system environments on systems with a PCI slot	See <a href="http://www.siemens.com/simatic-net/dk5613">www.siemens.com/simatic-net/dk5613</a>	
<b>HARDNET-PB DP</b> Software for DP, incl. PG and FDL protocol, OPC server and NCM PC; runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A; for CP 5603, CP 5613 A2, CP 5623, CP 5614 A2, CP 5624;		
<b>HARDNET-PB DP V8.1</b> for 32/64 bit; Windows 7 Professional/Ultimate; for 64 bit; Windows 2008 Server R2; English/German <ul style="list-style-type: none"> <li>• Single license for 1 installation D</li> </ul>	<b>6GK1 713-5DB08-1AA0</b>	<b>S7-5613 Edition 2008</b> for 32 bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; English/German <ul style="list-style-type: none"> <li>• Single license for 1 installation</li> <li>• Software Update Service for 1 year, with automatic extension; requirement: Current software version</li> <li>• Upgrade from S7-5613 Edition 2006 or 2007 to S7-5613 Edition 2008 or HARDNET S7 V8.1</li> <li>• Upgrade from S7-5613 V6.0, V6.1, V6.2 or V6.3 to S7-5613 Edition 2008 or HARDNET S7 V8.1</li> </ul>

D: Subject to export regulations AL: N and ECCN: 5D992

I: Subject to export regulations AL: N and ECCN: EAR99H

# Embedded controller Communication

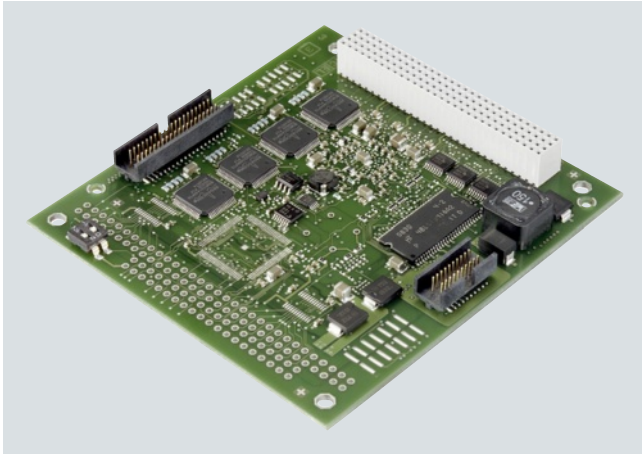
CP 5603

Ordering data	Order No.	Ordering data	Order No.
<b>FMS-5613 Edition 2008</b> Software for FMS protocol incl. PG/OP communication; FDL, FMS-OPC server and NCM PC; runtime software, software and electronic manual on USB stick, Class A, for 32-bit Windows XP Professional SP2/3; Windows 2003 Server R2, SP2; Windows Vista Business/Ultimate SP1; Windows 2008 Server; for CP 5603, CP 5613, CP 5613 A2, CP 5623, CP 5613 FO, CP 5614, CP 5614 A2, CP 5624; German/English <ul style="list-style-type: none"> <li>• Single license for 1 installation</li> <li>• Software Update Service for 1 year, with automatic extension; requirement: Current software version</li> <li>• Upgrade FMS-5613 Edition 2006 or 2007 to FMS-5613 Edition 2008</li> <li>• Upgrade FMS-5613 V6.0, V6.1, V6.2 or V6.3 to FMS-5613 Edition 2008</li> </ul>	<b>6GK1 713-5FB71-3AA0</b> <b>6GK1 713-5FB00-3AL0</b>  <b>6GK1 713-5FB00-3AE0</b>  <b>6GK1 713-5FB00-3AE1</b>	<b>PROFIBUS FC standard cable GP</b> Standard type with special design for quick assembly, 2-core, shielded, sold in meters; delivery unit max. 1000 m, minimum order 20 m	<b>6XV1 830-0EH10</b>
		<b>PROFIBUS FastConnect bus connector RS485 Plug 180</b> With 180° cable outlet, insulation displacement	<b>6GK1 500-0FC10</b>
		<b>12M PROFIBUS bus terminal</b> Bus terminal for connection of PROFIBUS stations up to 12 Mbit/s with plug-in cable 1.5 m long	<b>6GK1 500-0AA10</b>
		<b>PROFIBUS FastConnect stripping tool</b> Preset stripping tool for fast stripping of PROFIBUS FastConnect bus cables	<b>6GK1 905-6AA00</b>

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### Overview



ISO	TCP/ UDP	PN	MRP	OPC	PG/OP	S7/S5	IT
	●	●	●				

- PCI-104 module for connecting PCI-104 systems to PROFINET IO
- Full/half duplex with autonegotiation
- With Ethernet real-time ASIC ERTEC 400
- Integral 4-port real-time switch
- Communication services:
  - PROFINET IO controller and/or PROFINET IO device
  - Support of IRT in motion control applications
- High performance through direct memory access
- Integration in network management systems through the support of SNMP
- Comprehensive diagnostics possibilities for installation, start-up and operation of the module
- Powerful configuration tools are included in the scope of delivery of module

### Technical specifications

Order No.	6GK1 160-4AA00
Product type designation	CP 1604
<b>Transmission rate</b>	
Transmission rate at interface 1	10 ... 100 Mbit/s
<b>Interfaces</b>	
Number of electrical connections	
• at interface 1 in accordance with Industrial Ethernet	4
• for power supply	1
Design of electrical connection	
• at interface 1 in accordance with Industrial Ethernet	RJ45 port via connection board
• of backplane bus	PCI-104 (32 bit)
• for power supply	4-pin terminal block via power supply board

Order No.	6GK1 160-4AA00
Product type designation	CP 1604
<b>Supply voltage, current consumption, power loss</b>	
Type of power supply	DC
Type of power supply: optional external supply	Yes
Power supply	
• 1 from backplane bus	5 V
• External	- ...
Power supply - Note	Optional external supply and external supply voltage alternatively via power supply board (optional accessory)
Relative symmetrical tolerance	
• At 5 V with DC	5 %
• At 24 V with DC	20 %
Current consumed	
• Max. 1 from backplane bus with DC	0.8 A
• Maximum from external power supply with 24 V DC	0.3 A
Effective power loss	4 W
• Maximum with switch mode	4.1 W
<b>Permitted ambient conditions</b>	
Ambient temperature	
• During operating phase	5 ... 55 °C
• During storage	-20 ... +60 °C
• During transport	-20 ... +60 °C
Relative humidity at 25 °C without condensation during operating phase, maximum	95 %
IP degree of protection	IP00
<b>Design, dimensions and weights</b>	
Module format	PCI-104
Width	90 mm
Height	24 mm
Net weight	110 g
<b>Product properties, functions, components</b>	
<b>General</b>	
Number of plug-in cards of same design which can be inserted per PC station	1
Number of modules - Note	-

# Embedded controller Communication

CP 1604

## Technical specifications (continued)

Order No.	6GK1 160-4AA00	Order No.	6GK1 160-4AA00
Product type designation	CP 1604	Product type designation	CP 1604
<b>Performance data</b>		<b>Product functions Management, configuration, programming</b>	
<u>Performance data PROFINET communication as PN IO controller</u>		Product function: MIB support	Yes
Software required for PROFINET IO communication	No	Protocol is supported	Yes
Total number of PN IO devices which can be operated on the PROFINET IO controller	128	• SNMP v1	Yes
Number of PN IO IRT devices which can be operated on the PROFINET IO controller	64	• DCP	Yes
Data volume		• LLDP	Yes
• As user data for input variables as PROFINET IO controller, maximum	8 192 byte	Configuration software required	NCM PC included in scope of delivery
• As user data for output variables as PROFINET IO controller, maximum	8 192 byte	<b>Product functions Diagnostics</b>	
• As user data for input variables per PN IO device as PROFINET IO controller, maximum	1 433 byte	Product function	
• As user data for output variables per PN IO device as PROFINET IO controller, maximum	1 433 byte	• Web-based diagnostics	Yes
<u>Performance data PROFINET communication as PN IO device</u>		• Port diagnostics	Yes
Data volume		<b>Product functions Switch</b>	
• As user data for input variables as PROFINET IO device, maximum	1 433 byte	Product feature: Switch	Yes
• As user data for output variables as PROFINET IO device, maximum	1 433 byte	Product function: Switch-managed	No
• As user data for input variables per submodule as PROFINET IO device	254 byte	Product function with IRT PROFINET IO Switch	Yes
• As user data for output variables per submodule as PROFINET IO device	254 byte	<b>Product functions Redundancy</b>	
• As user data for the consistency area per submodule	254 byte	Product function	
Number of submodules per PROFINET IO device	64	• Ring redundancy	Yes
		• Redundancy manager	Yes
		• Redundancy procedure MRP	Yes
		<b>Standards, specifications, approvals</b>	
		Standard	
		• For EMC	89/336/EEC
		• For CSA and UL safety	CAN/CSA C22.2 & UL 60950-1
		• For emitted interference	EN 61000-6-3, EN 61000-6-4
		• For noise immunity	EN 61000-6-1, EN 61000-6-2
		Certificate of suitability	
		• CE mark	Yes
		• C-Tick	Yes
		<b>Accessories</b>	
		Accessories	Optional: Connection Board for CP 1604, Power Supply Board for CP 1604, Development Kit

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Ordering data	Order No.	Order No.
<b>CP 1604 communication processor</b> PCI-104 card (32-bit) with ASIC ERTEC 400 for connecting PCI-104 systems to PROFINET IO with 4-port real-time switch (RJ45); incl. IO-Base software for PROFINET IO-Controller and NCM PC; single license for one installation, runtime software, software and electronic manual on CD-ROM, Class A, for 32-bit Windows XP Professional; other operating systems by means of DK-16xx PN IO Development Kit German/English	<b>6GK1 160-4AA00</b>	<b>HARDNET-PN IO development kit</b> Software development kit for CP 1616/CP 1604; driver and IO-Base software for CP 1616/CP 1604 as PN IO controller and IO device in source code for transfer to other PC-based operating systems; including executable example code for SUSE Linux 10, Windows XP Professional and Windows 7  <b>IE TP Cord RJ45/RJ45</b> TP cable 4 x 2 with 2 RJ45 connectors <ul style="list-style-type: none"> <li>• 0.5 m</li> <li>• 1 m</li> <li>• 2 m</li> <li>• 6 m</li> <li>• 10 m</li> </ul>
<b>CP 1604 Microbox Package</b> Package for implementing the CP 1604 in the SIMATIC Microbox PC; comprising the CP 1604, connection board, power supply and expansion frames for Microbox PC; for use with Development Kit DK-16xx PN IO; NCM PC	<b>6GK1 160-4AU00</b>	<b>6XV1 870-3QE50</b> <b>6XV1 870-3QH10</b> <b>6XV1 870-3QH20</b> <b>6XV1 870-3QH60</b> <b>6XV1 870-3QN10</b>
<b>Accessories</b> <b>Connection board for CP 1604</b> Connection board for CP 1604 with four RJ45 sockets incl. connecting cable	<b>6GK1 160-4AC00</b>	<b>SCALANCE X204IRT</b> Managed Industrial Ethernet switches; isochronous real time, LED diagnostics, error signaling contact with SET button, redundant power supply 4 x 10/100 Mbit/s RJ45 ports
<b>Power supply for CP 1604</b> Redundant power supply for CP 1604 for operating the integral 4-port switch of the CP 1604 with the PC-104 system switched off; incl. connecting cable	<b>6GK1 160-4AP00</b>	<b>6GK5 204-0BA00-2BA3</b>

I: Subject to export regulations AL: N and ECCN: EAR99H

# Embedded controller



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