

## Embedded/ PC-based Automation



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### *Brochures*

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

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

# Embedded/PC-based Automation

## Embedded Automation

### SIMATIC S7 modular embedded controller

#### Overview



- Quick start in automation solutions with embedded PC platforms.
  - SIMATIC WinAC RTX or WinAC RTX F preinstalled on EC31 ready for switch-on
  - Prepared for use in a SIMATIC environment with PROFINET and Industrial Ethernet
  - Commissioning, as for S7-300, by automation specialists
  - 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
  - Operation without a hard disk, based on flash disk and Windows XP embedded
  - Operation without a fan
- 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 677-1DD00-0BA0	6ES7 677-1DD00-0BB0	6ES7 677-1FD00-0FB0	6ES7 677-1DD00-0BF0	6ES7 677-1DD00-0BG0	6ES7 677-1DD00-0BH0
<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	04	04	04	04	04	04
Firmware version	V1.3	V1.3	V1.3	V1.3	V1.3	V1.3
<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
Main memory	1 GB RAM	1 GB RAM	1 GB RAM	1 GB RAM	1 GB RAM	1 GB RAM
Flash Disk	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB
Operating systems	Windows XP embedded SP2 FP2007	Windows XP embedded SP2 FP2007	Windows XP embedded SP2 FP2007	Windows XP embedded SP2 FP2007	Windows XP embedded SP2 FP2007	Windows XP embedded SP2 FP2007
<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	800 mA; without backplane bus and USB power supply	800 mA; without backplane bus and USB power supply	800 mA; without backplane bus and USB power supply	800 mA; without backplane bus and USB power supply	800 mA; without backplane bus and USB power supply	800 mA; without backplane bus and USB power supply

**Technical specifications** (continued)

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<b>Supply voltages</b>						
Mains buffering						
• Mains buffering	5 ms	5 ms	5 ms	5 ms	5 ms	5 ms
<b>Power loss</b>						
Power loss, typ.	34 W	34 W	34 W	34 W	34 W	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>						
DB						
• 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
FB						
• 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
FC						
• 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
OB						
• 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 watchdog interrupts		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
Nesting depth						
• per priority class		24	24	24	24	24
• additional within an error OB		24	24	24	24	24

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## Embedded Automation

### SIMATIC S7 modular embedded controller

#### Technical specifications (continued)

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<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>Times/counters and their retentivity</b>						
S7 counter						
• Number		2 048	2 048	2 048	2 048	2 048
• Retentivity		Yes	Yes	Yes	Yes	Yes
- can be set		0	0	0	0	0
- lower limit		2 047	2 047	2 047	2 047	2 047
- upper limit		8	8	8	8	8
- preset						
• Counting range		Yes	Yes	Yes	Yes	Yes
- can be set		0	0	0	0	0
- lower limit		999	999	999	999	999
- upper limit						
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		Yes	Yes	Yes	Yes	Yes
- can be set		0	0	0	0	0
- lower limit		2 047	2 047	2 047	2 047	2 047
- upper limit						
• Time range		10 ms	10 ms	10 ms	10 ms	10 ms
- lower limit		9 990 s	9 990 s	9 990 s	9 990 s	9 990 s
- upper limit						
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

**Technical specifications** (continued)

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<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	8 Kibyte	8 Kibyte	8 Kibyte	8 Kibyte
- Outputs		8 Kibyte	8 Kibyte	8 Kibyte	8 Kibyte	8 Kibyte
Process image						
• 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
Subprocess images						
• Number of subprocess images, max.		15	15	15	15	15
Digital channels						
• Inputs		128 000	128 000	128 000	128 000	128 000
• Outputs		128 000	128 000	128 000	128 000	128 000
Analog channels						
• Inputs		8 000	8 000	8 000	8 000	8 000
• Outputs		8 000	8 000	8 000	8 000	8 000
<b>Time of day</b>						
Clock						
• 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
Clock synchronization						
• 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
Process diagnostic messages		Yes; Alarm_S	Yes; Alarm_S	Yes; Alarm_S	Yes; Alarm_S	Yes; Alarm_S
<b>Test commissioning functions</b>						
Status/control						
• Status/control variable		Yes	Yes	Yes	Yes	Yes
Forcing						
• Forcing		No	No	No	No	No
Diagnostic buffer						
• present		Yes	Yes	Yes	Yes	Yes
<b>Monitoring functions</b>						
Status LEDs		Yes	Yes	Yes	Yes	Yes
<b>Communication functions</b>						
PG/OP communication		Yes	Yes	Yes	Yes	Yes
Global data communication						
• supported		No	No	No	No	No

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### SIMATIC S7 modular embedded controller

#### Technical specifications (continued)

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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	Yes; Via integrated PROFINET interface and loadable FBs	Yes; Via integrated PROFINET interface (X1) and loadable FBs	Yes; Via integrated PROFINET interface (X1) and loadable FBs	Yes; Via integrated PROFINET interface (X1) and loadable FBs
- Number of connections, max.		32	32	32	32	32
- Data length, max.		8 192 byte		8 192 byte	8 192 byte	8 192 byte
• ISO-on-TCP (RFC1006)		No	No	No	No	No
• UDP		Yes; Via integrated PROFINET interface (X1) and loadable FBs	Yes; Via integrated PROFINET interface and loadable FBs	Yes; Via integrated PROFINET interface (X1) and loadable FBs	Yes; Via integrated PROFINET interface (X1) and loadable FBs	Yes; Via integrated PROFINET interface (X1) and loadable FBs
- Number of connections, max.		32	32	32	32	32
- Data length, max.		1 472 byte		1 472 byte	1 472 byte	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
Functionality						
• MPI		No	No	No	No	No
• DP master		No	No	No	No	No
• DP slave		No	No	No	No	No
• PROFINET IO Device		No	No	No	No	No
• PROFINET IO Controller		Yes	Yes	Yes	Yes	Yes
• PROFINET CBA		Yes	Yes	Yes	Yes	Yes
• Open IE communication		Yes	Yes	Yes	Yes	Yes
• Point-to-point connection		No	No	No	No	No

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### SIMATIC S7 modular embedded controller

#### Technical specifications (continued)

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<b>PROFINET IO Controller</b>						
• Services						
- PG/OP communication		Yes	Yes	Yes	Yes	Yes
- S7 routing		Yes	Yes	Yes	Yes	Yes
- S7 communication		Yes	Yes	Yes	Yes	Yes
- Isochronous mode		No	No	No	No	No
• Total number of connectable IO Devices, max.		256	256	256	256	256
• Number of IO Devices with IRT and the option "high flexibility", max.		64	64	64	64	64
• IRT, supported		Yes	Yes	Yes	Yes	Yes
• Prioritized startup supported		Yes	Yes	Yes	Yes	Yes
- Number of IO Devices, max.		32	32	32	32	32
• Activation/deactivation of IO Devices		Yes	Yes	Yes	Yes	Yes
- Number of IO Devices that can be simultaneously activated/deactivated, max.		8	8	8	8	8
• IO Devices changing during operation (partner ports), supported		Yes	Yes	Yes	Yes	Yes
- Max. number of IO devices per tool		8	8	8	8	8
- Send cycles		Setting options: 250 µs, 500 µs and 1 ms	Setting options: 250 µs, 500 µs and 1 ms	Setting options: 250 µs, 500 µs and 1 ms	Setting options: 250 µs, 500 µs and 1 ms	Setting options: 250 µs, 500 µs and 1 ms
- Refresh times		250 µs ... 128 ms (for 250 µs send cycle); 500 µs ... 256 ms (for 500 µs send cycle); 1 ms ... 512 ms (for 1 ms send cycle);	250 µs ... 128 ms (for 250 µs send cycle); 500 µs ... 256 ms (for 500 µs send cycle); 1 ms ... 512 ms (for 1 ms send cycle);	250 µs ... 128 ms (for 250 µs send cycle); 500 µs ... 256 ms (for 500 µs send cycle); 1 ms ... 512 ms (for 1 ms send cycle);	250 µs ... 128 ms (for 250 µs send cycle); 500 µs ... 256 ms (for 500 µs send cycle); 1 ms ... 512 ms (for 1 ms send cycle);	250 µs ... 128 ms (for 250 µs send cycle); 500 µs ... 256 ms (for 500 µs send cycle); 1 ms ... 512 ms (for 1 ms send cycle);
• Address area						
- Inputs, max.		16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte
- Outputs, max.		16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte	16 Kibyte
• User data per address area, max.		2 Kibyte	2 Kibyte	2 Kibyte	2 Kibyte	2 Kibyte
- User data consistency, max.		256 byte	256 byte	256 byte	256 byte	256 byte
<b>PROFINET CBA</b>						
• acyclic transmission		Yes	Yes	Yes	Yes	Yes
• cyclic transmission		Yes	Yes	Yes	Yes	Yes
<b>Open IE communication</b>						
• Open IE communication, supported		Yes	Yes	Yes	Yes	Yes
• Number of connections, max.		32	32	32	32	32
• Local port numbers used at the system end		0, 20, 21, 23, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535	0, 20, 21, 23, 25, 80, 102, 135, 161, 8 080, 34962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535	0, 20, 21, 23, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535	0, 20, 21, 23, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535	0, 20, 21, 23, 25, 80, 102, 135, 161, 8 080, 34 962, 34 963, 34 964, 65 532, 65 533, 65 534, 65 535

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<b>PROFINET functions</b>						
• Recognition of the accessible stations, supported		Yes; DCP	Yes; DCP	Yes; DCP	Yes; DCP	Yes; DCP
• Assignment of the IP address, supported		Yes; DCP	Yes; DCP	Yes; DCP	Yes; DCP	Yes; DCP
• Assignment of the device name, supported		Yes; DCP	Yes; DCP	Yes; DCP	Yes; DCP	Yes; DCP
• Topology recognition, supported		Yes; LLDP, LLDP MIB, SNMP	Yes; LLDP, LLDP MIB, SNMP	Yes; LLDP, LLDP MIB, SNMP	Yes; LLDP, LLDP MIB, SNMP	Yes; LLDP, LLDP MIB, SNMP
• Extended network diagnostics with Standard MIB II, supported		Yes; Standard MIB II, SNMP	Yes; Standard MIB II, SNMP	Yes; Standard MIB II, SNMP	Yes; Standard MIB II, 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
<b>Functionality</b>						
• PROFINET IO Controller		No	No	No	No	No
• PROFINET IO Device		No	No	No	No	No
• PROFINET CBA		No	No	No	No	No
• PROFINET CBA-SRT		No	No	No	No	No
<b>CPU/ programming</b>						
Configuration software						
• STEP 7		Yes; V5.4 SP4 or higher + 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; V5.4 SP4 or higher + HW update/ iMap V3.0 SP1	Yes; V5.4 SP4 or higher + HW update/ iMap V3.0 SP1	Yes; V5.4 SP4 or higher + HW update/ iMap V3.0 SP1
<b>Programming language</b>						
• STEP 7		Yes	Yes; V5.4 SP5	Yes	Yes	Yes
• LAD		Yes	Yes	Yes	Yes	Yes
• FBD		Yes	Yes	Yes	Yes	Yes
• STL		Yes	Yes	Yes	Yes	Yes
• SCL		Yes	Yes	Yes	Yes	Yes
• CFC		Yes	Yes	Yes	Yes	Yes
• GRAPH		Yes	Yes	Yes	Yes	Yes
• HiGraph®		Yes	Yes	Yes	Yes	Yes
<b>Installed software</b>						
Visualization				WinCC flexible RT 2008	WinCC flexible RT 2008	WinCC flexible RT 2008



**Technical specifications** (continued)

	<b>6ES7 677-1DD00-0BA0</b>	<b>6ES7 677-1DD00-0BB0</b>	<b>6ES7 677-1FD00-0FB0</b>	<b>6ES7 677-1DD00-0BF0</b>	<b>6ES7 677-1DD00-0BG0</b>	<b>6ES7 677-1DD00-0BH0</b>
<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
Control		SIMATIC WinAC RTX 2009	SIMATIC WinAC RTX F 2009	SIMATIC WinAC RTX 2009	SIMATIC WinAC RTX 2009	SIMATIC WinAC RTX 2009
Communication		Yes	Yes	Yes	Yes	Yes
<b>EMC</b>						
Emission of radio interference acc. to EN 55 011						
• Limit class A, for use in industrial environments	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 tested checked 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 60068-2-29	Operation, checked acc. to IEC 60068-2-27	Operation, checked acc. to IEC 60068-2-27	Operation, checked acc. to IEC 60068-2-27	Operation, checked acc. to IEC 60068-2-27	Operation, checked acc. to IEC 60068-2-27	Operation, checked acc. to IEC 60068-2-27
• Storage/transport, checked 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.

# Embedded/PC-based Automation

## Embedded Automation

### SIMATIC S7 modular embedded controller

#### Technical specifications (continued)

	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 loss</b>		
Power loss, max.		14 W
Power loss, typ.	2.4 W; Without inserted PCI-104 cards	9 W
<b>Interrupts/diagnostics/status information</b>		
Diagnoses		
• 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 class A, for use in industrial environments	Yes	Yes
<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 acc. to IEC 60068-2-6	Yes	Yes
• Transport tested checked to IEC 60068-2-6	Yes	Yes

	6ES7 677-1DD40-1AA0	6ES7 677-1DD50-2AA0
<b>Product type designation</b>	EM PCI-104	EM PC
<b>Shock test</b>		
• checked according to IEC 60068-2-27	Yes	Yes
• checked according to IEC 60068-2-29	Yes	Yes
<b>Shock testing</b>		
• checked according to IEC 60068-2-29	Yes	Yes
• Operation, checked acc. to IEC 60068-2-29	Yes	Yes
• Storage/transport, checked 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.	Order No.
<b>SIMATIC S7-modular Embedded Controller</b>		<b>SIMATIC S7-modular Embedded Controller</b>
<b>EC31</b> E	<b>6ES7 677-1DD00-0BA0</b>	<b>EC31-HMI/RTX</b>
Intel CoreDuo 1.2 GHz processor Memory configuration: 1 GB RAM, 2 GB Flash Disk; interfaces: 1 Industrial Ethernet port, 2 PROFINET ports, 2 USB ports, 1 slot for multimedia card; Software: Windows XP embedded pre-installed, 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, 2 GB Flash Disk; interfaces: 1 Industrial Ethernet port, 2 PROFINET ports, 2 USB ports, 1 slot for multimedia card; Software: Windows XP embedded, WinAC RTX 2009, SIMATIC SOFTNET-S7/V7.0 Lean preinstalled
<b>EC31-RTX</b> E	<b>6ES7 677-1DD00-0BB0</b>	• With WinCC flexible 2008 RT 128 PT E <b>6ES7 677-1DD00-0BF0</b>
Intel CoreDuo 1.2 GHz processor Memory configuration: 1 GB RAM, 2 GB Flash Disk; interfaces: 1 Industrial Ethernet port, 2 PROFINET ports, 2 USB ports, 1 slot for multimedia card; Software: Windows XP embedded and WinAC RTX 2009 preinstalled		• With WinCC flexible 2008 RT 512 PT E <b>6ES7 677-1DD00-0BG0</b>
<b>EC31-RTX F</b> E	<b>6ES7 677-1FD00-0FB0</b>	• With WinCC flexible 2008 RT 2048 PT E <b>6ES7 677-1DD00-0BH0</b>
Intel CoreDuo 1.2 GHz processor Memory configuration: 1 GB RAM, 2 GB Flash Disk; interfaces: 1 Industrial Ethernet port, 2 PROFINET ports, 2 USB ports, 1 slot for multimedia card; Software: Windows XP embedded and WinAC RTX F 2009 preinstalled		<b>EM PCI-104 extension module</b> C <b>6ES7 677-1DD40-1AA0</b>
		For fitting up to 3 additional PCI-104 cards
		<b>EM PC extension module</b> C <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

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

E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

# Embedded/PC-based Automation

## Embedded Automation

### SIMATIC IPC427C bundles

#### Overview



- Quick start in automation solutions with embedded PC platforms.
  - SIMATIC WinAC RTX or SIMATIC WinAC RTX F preinstalled on SIMATIC IPC427C ready for switch-on
  - 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 according to IEC 61508/62061 or according to 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 Disk and Windows Embedded Standard
  - Operation without a fan
  - 128 KB 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 part)
  - 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 in exchange, ex stock

#### New

- New hardware basis SIMATIC IPC427C
- Cost-effective variants with PROFINET, based on the standard Ethernet interface
- Current product versions of the pre-installed software:
  - SIMATIC WinAC RTX 2009 or SIMATIC WinAC RTX F
  - SIMATIC WinCC flexible 2008 SP1 (WinAC RTX 2009 only)
  - SIMATIC NET Edition 2008

#### Ordering data

#### Order No.

SIMATIC IPC427C bundles		Order No.
<i>Preferred version with SIMATIC WinAC RTX F 2009</i>		
(Replacement hardware unit available in exchange)		
<b>SIMATIC IPC427C bundle with WinAC RTX F 2009</b>	E	<b>6ES7 675-1DK30-0EP0</b>
Processor Core2Duo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 8 GB CompactFlash		
<i>Preferred versions with SIMATIC WinAC RTX 2009 and WinCC flexible 2008</i>		
(Replacement hardware unit available in exchange)		
<b>SIMATIC IPC427C bundles</b>	E	<b>6ES7 675-1D 0 0 0 0</b>
Processor		A B E F J K
• Celeron M, 1.2 GHz, 2x PROFINET (IE)		A
• Celeron M, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS		B
• Core2Solo, 1.2 GHz, 2x PROFINET (IE)		E
• Core2Solo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS		F
• Core2Duo, 1.2 GHz, 2x PROFINET (IE)		J
• Core2Duo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS		K
Main memory		3
• 2 GB RAM		3
Internal mass storage		0
• Without		0
Externally accessible mass storage		D E
• 4 GB CompactFlash, Windows Embedded 2009 and preinstalled software		D
• 8 GB CompactFlash, Windows Embedded 2009 and preinstalled software		E
Software configurations		B C D E F K L M N
• WinAC RTX		B
• WinCC flexible RT 128 PT		C
• WinCC flexible RT 512 PT		D
• WinCC flexible RT 2048 PT		E
• WinCC flexible RT 4096 PT		F
• WinAC RTX, WinCC flexible RT 128 PT		K
• WinAC RTX, WinCC flexible RT 512 PT		L
• WinAC RTX, WinCC flexible RT 2048 PT		M
• WinAC RTX, WinCC flexible RT 4096 PT		N

E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

# Embedded/PC-based Automation

## Embedded Automation

### SIMATIC IPC427C bundles

Ordering data	Order No.	Order No.
<b>SIMATIC IPC427C bundles</b>		
<i>All versions with SIMATIC WinAC RTX 2009 and WinCC flexible 2008</i>		
(Hardware: repair only is possible)		
<b>SIMATIC IPC427C bundles</b>	E 6ES7 675-1D	0-0000
Processor		A B E F J K
<ul style="list-style-type: none"> <li>Celeron M, 1.2 GHz, 2x PROFINET (IE)</li> <li>Celeron M, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS</li> <li>Core2Solo, 1.2 GHz, 2x PROFINET (IE)</li> <li>Core2Solo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS</li> <li>Core2Duo, 1.2 GHz, 2x PROFINET (IE)</li> <li>Core2Duo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS</li> </ul>		
Main memory		2 3 4
<ul style="list-style-type: none"> <li>1 GB RAM</li> <li>2 GB RAM</li> <li>4 GB RAM</li> </ul>		
Internal mass storage		0 1 2 6 7
<ul style="list-style-type: none"> <li>None (can only be ordered with externally accessible mass storage)</li> <li>80 GB HDD SATA, also with externally accessible CF</li> <li>32 GB Solid State Disk SATA, Windows Embedded 2009 and preinstalled software</li> <li>4 GB internal CompactFlash, Windows Embedded 2009 and preinstalled software</li> <li>8 GB internal CompactFlash, Windows Embedded 2009 and preinstalled software</li> </ul>		
Extern. accessible mass storage		A D E
<ul style="list-style-type: none"> <li>None (can only be ordered with internal mass storage)</li> <li>4 GB CompactFlash, Windows Embedded 2009 and preinstalled software</li> <li>8 GB CompactFlash, Windows Embedded 2009 and preinstalled software</li> </ul>		
Software configurations		B C D E F K L M N
<ul style="list-style-type: none"> <li>WinAC RTX</li> <li>WinCC flexible RT 128 PT</li> <li>WinCC flexible RT 512 PT</li> <li>WinCC flexible RT 2048 PT</li> <li>WinCC flexible RT 4096 PT</li> <li>WinAC RTX, WinCC flexible RT 128 PT</li> <li>WinAC RTX, WinCC flexible RT 512 PT</li> <li>WinAC RTX, WinCC flexible RT 2048 PT</li> <li>WinAC RTX, WinCC flexible RT 4096 PT</li> </ul>		
<i>Delivery versions (ex stock)</i>		
(Replacement hardware units available in exchange)		
<b>SIMATIC IPC427C bundle with WinAC RTX 2009</b>	E	6ES7 675-1DF30-0DB0
Processor Core2Solo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 4 GB CompactFlash		
<b>SIMATIC IPC427C bundle with WinAC RTX 2009 and WinCC flexible 2008 512 PT</b>	E	6ES7 675-1DK30-0DB0
Processor Core2Duo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 4 GB CompactFlash		
<b>SIMATIC IPC427C bundle with WinAC RTX 2009 and WinCC flexible 2008 512 PT</b>	E	6ES7 675-1DK30-0EP0
Processor Core2Duo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 8 GB CompactFlash		
<b>SIMATIC IPC427C bundle with WinAC RTX 2009 and WinCC flexible 2008 512 PT</b>	E	6ES7 675-1DK30-0DL0
Processor Core2Duo, 1.2 GHz, 2x PROFINET (IE), 1x PROFIBUS, 2 GB RAM, 4 GB CompactFlash		
<i>Accessories</i>		
<b>CP 5603 Microbox Package</b>	C	6GK1 560-3AU00
Package for using the PROFIBUS CP 5603 in Microbox PCs; comprising a CP 5603 module and a Microbox expansion rack		
<b>CP 1604 Microbox Package</b>		6GK1 160-4AU00
Package for using the PROFINET CP 1604 in Microbox PCs; comprising CP 1604, connection board, power supply and expansion rack for Microbox PC; implemented with Development Kit DK-16xx PN IO; NCM P		
<b>Expansion kit PC/104</b>	C	6AG4 070-0BA00-0XA0
Expansion rack incl. mounting hardware; 6 items		
<b>CompactFlash Cards</b>		
4 GB	C	6ES7 648-2BF02-0XG0
8 GB	C	6ES7 648-2BF02-0XH0
<b>SIMATIC PC keyboard</b>		
German/international, USB connection		6ES7 648-0CB00-0YA0
German/International, USB connection, with 4-way USB HUB	C	6ES7 648-0CD00-0YA0
<b>SIMATIC PC USB mouse</b>	C	6ES7 790-0AA01-0XA0
Optical, 3 buttons, with PS/2 adapter		
<b>SIMATIC PC USB flash drive</b>	C	6ES7 648-0DC40-0AA0
2 GB, USB 2.0, incl. SIMATIC PC BIOS manager, bootable, metal enclosure		
<b>Book mounting kit</b>	C	6ES7 648-1AA20-0YB0
Interfaces at the front		

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

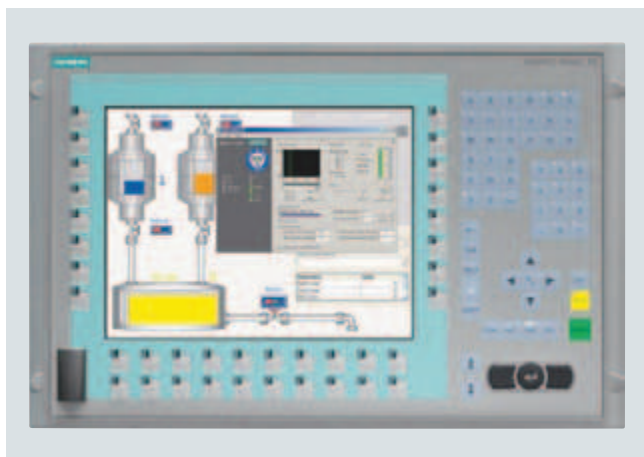
E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

# Embedded/PC-based Automation

## Embedded Automation

### SIMATIC HMI IPC477C embedded

#### 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 the harshest mechanical stress and is extremely reliable in operation
- Compact design (only 61-69 mm mounting depth for 12"-19")
- High degree of investment protection
- Fast integration capability
- Front panel versions:
  - 12" and 15" TFT Touch
  - 12" and 15" TFT Keys
  - 19" Touch

#### Technical specifications

	6AV7 884..	6AV7 883..PRO
<b>General features</b>		
Processors	Intel Celeron M 1.2 GHz, Intel Core2Solo 1.2 GHz or Core2Duo 1.2 GHz	Intel Celeron M 1.2 GHz, Intel Core2Solo 1.2 GHz or Core2Duo 1.2 GHz
Memory type	DDR3-RAM	DDR3-RAM
Main 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 preinstalled bundle software SIMATIC WinCC flexible 2008 SP1 and/or WinAC RTX 2009 SIMATIC WinAC RTX F SIMATIC WinCC as web client or single-user station	Optionally with preinstalled bundle software SIMATIC WinCC flexible 2008 SP1 and/or WinAC RTX 2009 SIMATIC WinAC RTX F
<b>Drives</b>		
Floppy drive	Optional via external USB floppy drive	Optional via external USB floppy drive
Optical drives	Possible as external drive via USB	Possible as external drive via USB
Hard disk/mass storage	Compact Flash drive with 2, 4, or 8 GB and/or SSD (Solid State Disk) with 32 GB	Compact Flash drive with 2, 4, or 8 GB and/or SSD (Solid State Disk) 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 upgradable	Optionally onboard, isolated, max. 12 Mbit/s, no plug-in card required, CP5611-compatible, not upgradable
PROFINET (RT/IRT)	Optional: 3 x RJ45, CP1616-compatible; not upgradable	Optional: 3 x RJ45, CP1616-compatible; not upgradable
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 PROFINET), no plug-in card required	onboard, 2 x 10/100/1000 Mbit (RJ45 with/without PROFIBUS), 1 x 10/100/1000 Mbit (RJ45 with PROFINET), 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
Watchdog	Yes	Yes

**Technical specifications** (continued)

	<b>6AV7 884..</b>	<b>6AV7 883..PRO</b>
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) according to EN 60529 and NEMA4	IP65 all around according to EN 60529 and NEMA4
<b>Ambient conditions</b>		
Vibration load during operation	Tested according to DIN IEC 60068-2-6: 10 ... 58 Hz: 0.075 mm, 58 ... 200 Hz: 9.8 m/s <sup>2</sup> (1 g)	Tested according to DIN IEC 60068-2-6: 10 ... 58 Hz: 0.075 mm, 58 ... 200 Hz: 9.8 m/s <sup>2</sup> (1 g)
Shock loading during operation	Tested according to DIN IEC 60068-2-7: 50 m/s <sup>2</sup> (5 g), 30 ms, 100 shocks	Tested according to DIN IEC 60068-2-7: 50 m/s <sup>2</sup> (5 g), 30 ms, 100 shocks
Relative humidity	Tested according to DIN IEC 60068-78, DIN IEC 60068-2-30: 5% to 80% at 25 °C (no condensation)	Tested according to DIN IEC 60068-78, DIN 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 engineering	CE, cULus(508)
EMC	CE, 55022A, EN 61000-6-4, EN 61000-6-2	CE, 55022A, EN 61000-6-4, EN 61000-6-2

	<b>6AV7 884-0</b>	<b>6AV7 884-1</b>	<b>6AV7 884-2</b>	<b>6AV7 884-3</b>	<b>6AV7 884-5</b>	<b>6AV7 883-6 (PRO)</b>	<b>6AV7 883-7 (PRO)</b>
Front panel	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 backlit display (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 the 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>Weights</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/PC-based Automation

## Embedded Automation

### SIMATIC HMI IPC477C embedded

**Ordering data**

**Order No.**

**Order No.**

*Preferred versions with spare parts in exchange*

("Built to order" with delivery time of max. 15 working days and replacement devices in exchange)

<b>SIMATIC HMI IPC477C embedded</b>	E	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 panels</b>										
• 12" TFT Touch									0	
• 15" TFT Touch									2	
• 19" TFT Touch									5	
<b>Processors and fieldbus</b>										
• Celeron M 1.2 GHz, 2 x PROFINET (IE)							A			
• Celeron M1 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12							B			
• Core2Solo 1.2 GHz, 2 x PROFINET (IE)							D			
• Core2Solo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12							E			
• Core2Duo 1.2 GHz, 2 x PROFINET (IE)							G			
• Core2Duo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12							H			
<b>Main memory (DDR3 RAM), 1 database</b>										
• 2 GB									2	
<b>Second mass storage (installed and formatted)</b>										
• without									0	
• CompactFlash 2 GB									2	
• CompactFlash 4 GB									3	
• CompactFlash 8 GB									4	
• SSD (Solid State Drive) min. 32 GB									6	
<b>First mass storage (with pre-installed SIMATIC software)</b>										
• CompactFlash 2 GB									2	
• CompactFlash 4 GB									3	
• CompactFlash 8 GB									4	
• SSD (Solid State Drive) min. 32 GB									6	
<b>Operating system</b>										
• Windows Embedded 2009, pre-installed									B	
• Windows XP Professional Multi-Language, only with SSD; without SIMATIC software									D A	

<b>SIMATIC HMI IPC477C embedded</b>	E	6AV7 884-	A							0
<b>Software packages, only with CF 4 GB or higher</b>										
• without SIMATIC software										B A
• with operating system and RTX WinAC RTX 2009 pre-installed and configured										B B
• with operating system and HMI WinCC flexible 2008 SP1 RT (incl. archives/recipes) pre-installed and configured										
- Number of tags 128 PT										B C
- Number of tags 512 PT										B D
- Number of tags 2048 PT										B E
- Number of tags 4096 PT										B F
• with operating system and HMI WinCC flexible 2008 SP1 RT (incl. archives/recipes) pre-installed and configured										
- Number of tags 128 PT										B K
- Number of tags 512 PT										B L
- Number of tags 2048 PT										B M
- Number of tags 4096 PT										B N

*Further bundles with SIMATIC HMI IPC477C and WinCC V7.0 SP1*

<b>SIMATIC HMI IPC477C</b>										
without fan 4 x USB 2.0 on rear, 1 x USB 2.0 on front, 2 x 10/100/1000 Mbit/s Ethernet (RJ45); software pre-installed on CF/SSD: Windows Embedded Standard, SIMATIC WinCC V7.0 SP1										
Client Processor Celeron M 1.2 GHz, 1 GB DDR3 RAM, CF Card 8 GB, RT license 128 PT on USB stick	E	6AV7 884-	AA10-4BX0							
• 15" TFT Touch									2	
• 19" TFT Touch									5	
Client and Single Station Processor Core 2 Solo 1.2 GHz, PROFIBUS DP, 2 GB DDR3 RAM, CF Card 8 GB, RT license 128 PT	E	6AV7 884-	AE20-4BX0							
• 15" TFT Touch									2	
• 19" TFT Touch									5	

E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

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# Embedded/PC-based Automation

## Embedded Automation

### SIMATIC HMI IPC477C embedded

Ordering data	Order No.	Order No.
<b>Further bundles with SIMATIC HMI IPC477C and WinCC V7.0 SP1 (continued)</b>		<b>Further HMI IPC477C and IPC477C PRO as "Built to Order" versions</b>
<b>SIMATIC HMI IPC477C (cont.)</b> Single Station E <b>6AV7 884- AH30- B 0</b> Processor Core 2 Duo 1.2 GHz, PROFIBUS DP, 4 GB DDR3 RAM <ul style="list-style-type: none"> <li>• 15" TFT Touch 2</li> <li>• 19" TFT Touch 5</li> <li>• 8 GB CF Card 4</li> <li>• 32 GB SSD 6</li> <li>• Runtime license 128 PT on USB stick X</li> <li>• Runtime license 2048 PT on USB stick W</li> </ul>		<b>SIMATIC HMI IPC477C</b> E <b>6AV7 884- A - - - - 0</b> embedded and without fan 5 x (500 mA), one of which on the front 24 V DC power supply with On/Off switch <b>SIMATIC HMI IPC477C PRO</b> E <b>6AV7 883- A - - - - 0</b> embedded and without fan, fully enclosed according to IP65 5 x (500 mA), one of which on the front 24 V DC power supply with On/Off switch <b>Front panels</b> 12" TFT Touch (not for PRO versions) 0 12" TFT Keys (not for PRO versions) 1 15" TFT Touch (not for PRO versions) 2 15" TFT Keys (not for PRO versions) 3 19" TFT Touch (not for PRO versions) 5 15" TFT Touch (IP65 enclosure; PRO) 6 15" TFT Keys (IP65 enclosure; PRO) 7 <b>Processors and fieldbus</b> <ul style="list-style-type: none"> <li>• Celeron M 1.2 GHz, 2 x PROFINET (IE) A</li> <li>• Celeron M 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP 12 B</li> <li>• Core2Solo 1.2 GHz, 2 x PROFINET (IE) D</li> <li>• Core2Solo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS E</li> <li>• Core2Solo 1.2 GHz, 1 x PROFINET (IE), 1 x PROFINET (3 ports) F</li> <li>• Core2Duo 1.2 GHz, 2 x PROFINET (IE) G</li> <li>• Core2Duo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS H</li> <li>• Core2Duo 1.2 GHz, 1 x PROFINET (IE), 1 x PROFINET (3 ports) J</li> </ul> <b>Main memory (DDR3 RAM), 1 database</b> <ul style="list-style-type: none"> <li>• 1 GB 1</li> <li>• 2 GB 2</li> <li>• 4 GB 3</li> </ul>
<b>SIMATIC HMI IPC477C with WinAC RTX F</b> E <b>6AV7 884- AH20-4BP0</b> Processor Core2Duo 1.2 GHz, 2 x PROFINET (IE), 1 x PROFIBUS DP, 2 GB DDR3 RAM CompactFlashCard plugged in (internal); 8 GB. Software pre-installed on CF Card RTX F: WinAC RTX F 2009 <ul style="list-style-type: none"> <li>• 12" TFT Touch 0</li> <li>• 12" TFT Key 1</li> <li>• 15" TFT Touch 2</li> <li>• 15" TFT Keys 3</li> <li>• 19" TFT Touch 5</li> </ul>		

E: Subject to export regulations; AL: N and ECCN: 5D002ENC3

# Embedded/PC-based Automation

## Embedded Automation

### SIMATIC HMI IPC477C embedded

Ordering data	Order No.	Order No.
<p><i>Further HMI IPC477C and IPC477C PRO as "Built to Order" versions</i></p> <p>(max. delivery time is 15 working days and with identified repair).</p>		
<p><b>SIMATIC HMI IPC477C</b> E</p> <p>embedded and without fan 5 x (500 mA), one of which on the front 24 V DC power supply with On/Off switch</p>	<p><b>6AV7 884- A - 0</b></p>	<p><b>SIMATIC HMI IPC477C</b> E</p> <p>embedded and without fan 5 x (500 mA), one of which on the front 24 V DC power supply with On/Off switch</p>
<p><b>SIMATIC HMI IPC477C PRO</b> E</p> <p>embedded and without fan, fully enclosed according to IP65 5 x (500 mA), one of which on the front 24 V DC power supply with On/Off switch</p>	<p><b>6AV7 883- A - 0</b></p>	<p><b>SIMATIC HMI IPC477C PRO</b> E</p> <p>embedded and without fan, fully enclosed according to IP65 5 x (500 mA), one of which on the front 24 V DC power supply with On/Off switch</p>
<p><b>Second mass storage (installed and formatted)</b></p> <ul style="list-style-type: none"> <li>without 0</li> <li>CompactFlash 2 GB 2</li> <li>CompactFlash 4 GB 3</li> <li>CompactFlash 8 GB 4</li> <li>SSD (Solid State Disk), min. 32 GB 6</li> </ul>		<p><b>Software packages with CF 4 GB or higher</b></p> <p>with operating system and RTX Windows XP embedded pre-installed, WinAC RTX 2009 pre-installed and configured for PROFIBUS</p> <p>with operating system and HMI Windows XP embedded pre-installed, WinCC flexible 2008 SP1 RT (incl. archives/recipes) pre-installed and configured</p> <ul style="list-style-type: none"> <li>Number of tags 128 PT B C</li> <li>Number of tags 512 PT B D</li> <li>Number of tags 2048 PT B E</li> <li>Number of tags 4096 PT B F</li> </ul>
<p><b>Mass storage (installed, Windows XP embedded (EN/DE) preinstalled, optionally with SIMATIC software)</b></p> <ul style="list-style-type: none"> <li>CompactFlash 2 GB 2</li> <li>CompactFlash 4 GB 3</li> <li>CompactFlash 8 GB 4</li> <li>SSD (Solid State Disk), min. 32 GB 6</li> </ul>		<p>with operating system and HMI/RTX <sup>1)</sup> Windows XP embedded pre-installed, WinCC flexible 2008 SP1 RT (incl. archives/recipes) and WinAC RTX 2009 pre-installed and configured</p> <ul style="list-style-type: none"> <li>Number of tags 128 PT B K</li> <li>Number of tags 512 PT B L</li> <li>Number of tags 2048 PT B M</li> <li>Number of tags 4096 PT B N</li> </ul>
<p><b>Operating system</b></p> <p>Windows Embedded Standard 2009 pre-installed B A</p> <p>Windows XP Professional Multi-Language, only with SSD; without SIMATIC software D A</p>		

E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

<sup>1)</sup> Not with Celeron M 1.2 GHz processor

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# Embedded/PC-based Automation

## Embedded Automation

### SIMATIC HMI IPC477C embedded

Ordering data	Order No.	Order No.
<b>Accessories</b>		
<b>Protective membrane for Panel PCs 477/577/677</b> For protecting the touch screen against dirt/scratches <ul style="list-style-type: none"> <li>• for 12" Touch</li> <li>• for 15" Touch (not for PRO)</li> <li>• for 19" Touch</li> </ul>	<b>6AV7 671-2BA00-0AA0</b> <b>6AV7 671-4BA00-0AA0</b> <b>6AV7 672-1CE00-0AA0</b>	<b>SIMATIC IPC Image &amp; Partition Creator V3.0</b> A <b>6ES7 648-6AA03-0YA0</b> Software tool for preventive data backup and hard disk partitioning for SIMATIC PCs, incl. manual on CD-ROM (German, English)
<b>Labeling membranes for Panel PCs 477/577/677</b> For labeling soft keys and function keys, blank, supplied in sets of 10	<b>6AV7 672-0DA00-0AA0</b>	<b>SIMATIC IPC USB FlashDrive</b> C <b>6ES7 648-0DC40-0AA0</b> 2 GB, USB 2.0, metal enclosure, bootable
<b>Touch pen</b> C Undetachable pen for operation of the touch devices, mounting of the support on the control cabinet or directly on the PRO unit	<b>6AV7 672-1JB00-0AA0</b>	<b>SIMATIC IPC Service USB FlashDrive</b> B <b>6AV7 672-8JD00-0AA0</b> 2 GB, USB 2.0, metal enclosure, bootable With: Image & Partition Creator ready-installed, incl. CD
<b>Expansion components</b>		<b>3.5" USB disk drive</b> C <b>6FC5 235-0AA05-1AA2</b> with 1 m connecting cable
<b>SIMATIC IPC DiagMonitor V4.1</b> A Software tool for monitoring SIMATIC PCs, incl. manual, on CD-ROM (German/English)	<b>6ES7 648-6CA04-1YX0</b>	<b>Industrial USB Hub 4</b> C <b>6AV6 671-3AH00-0AX0</b> 4 x USB 2.0, IP65 for control cabinet door or DIN rail
		<b>Compact Flash Card</b> <ul style="list-style-type: none"> <li>• 2 GB C <b>6ES7 648-2BF02-0XF0</b></li> <li>• 4 GB C <b>6ES7 648-2BF02-0XG0</b></li> <li>• 8 GB C <b>6ES7 648-2BF02-0XH0</b></li> </ul>

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

B: Subject to export regulations: AL: N and ECCN: EAR99T

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

**Please note:**

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

**Note:**

Further embedded versions based on IPC427C and Embedded Controller (mEC) are listed under SIMATIC PC based Control.

# Embedded/PC-based Automation

## Embedded Automation

### SIMATIC Panel PC 477B Bundles

#### Overview

#### SIMATIC Panel PC 477B-HMI, 477B-RTX and 477B-HMI/RTX



- Quick start in automation solutions with Embedded Automation
  - SIMATIC WinCC flexible RT preinstalled and ready to switch on (Panel PC 477B HMI) or SIMATIC WinCC flexible and SIMATIC WinAC RTX preinstalled and ready to switch on (Panel PC 477B HMI/RTX)
  - PROFIBUS and Industrial Ethernet pre-configured for use in a SIMATIC environment
  - Configuration and programming with SIMATIC WinCC flexible ES and SIMATIC STEP 7 via Industrial Ethernet, PROFINET, or PROFIBUS
- Rugged operation
  - Hard-disk-free operation based on Compact Flash card (from 2 GB CF card) and Windows XP embedded
  - Operation without fan
- Flexibility of a PC-based automation environment
  - Open for additional PC applications
  - Can be expanded with PC/104+ cards
  - Connection option for USB devices, flat panel monitor or screen
  - Use of WinAC ODK with SIMATIC WinAC RTX
- Data retention for WinAC RTX without uninterruptible power supply (UPS)

#### Technical specifications

6ES7 676 and 6AV7 85	
<b>General features</b>	
Processor	Intel Pentium M technology; Intel Celeron M 1.0 GHz, Intel Pentium M 1.4 GHz
Memory type	DDR2-RAM
Main memory	1 GB, 2 GB
Free slots	3 x PC/104 (over spec. expansion frame)
Operating system	Windows XP Embedded
Additional OS information	Language: EN/DE
SIMATIC Software	Optional with pre-installed bundle software SIMATIC WinCC flexible 2008 or WinCC flexible/WinAC RTX 2008

6ES7 676 and 6AV7 85	
<b>Drives</b>	
Floppy drive	Optional via external USB floppy drive
Optical drives	Possible as external drive via USB
Hard disk/mass storage	Compact Flash Drive with 2 GB or 4 GB
<b>Interfaces</b>	
Graphics interface	DVI-I can be used for additional display unit (only VGA via adapter); color depth 32 bits, graphics memory up to 128 MB, resolution as integral display in each case
Connection for keyboard/mouse	USB / USB
Serial interface	COM1: 1 x V.24 (RS232)
PROFIBUS/MPI	Onboard, floating, max. 12 Mbit/s, no plug-in card required, CP5611-compatible, not upgradeable
PROFINET	3 x RJ45, CP1616-compatible; not upgradeable
USB	1x on the front, 4x on rear, USB 2.0 (500mA)
Ethernet	onboard, 2 x 10/100/1000 Mbit (RJ45 with/without PROFIBUS), 1 x 10/100/1000 Mbit (RJ45 with PROFINET, 3 ports), no plug-in card required
Multimedia	No
<b>Supply voltage</b>	
Supply voltage	24 V DC
<b>Monitoring functions</b>	
Temperature	Yes
Watchdog	Yes
Status LEDs	Yes (on rear)
Front side according to EN 60529	IP65 (on the front) according to EN60529 and NEMA4
<b>Ambient conditions</b>	
Vibration load during operation	Tested in accordance with DIN IEC 60068-2-6: 10 ... 58 Hz: 0.075 mm, 58 ... 200 Hz: 9.8 m/s <sup>2</sup> (1 g)
Shock loading during operation	Tested in accordance with DIN IEC 60068-2-7: 50 m/s <sup>2</sup> (5 g), 30 ms, 100 shocks
Relative humidity	Tested in accordance with DIN IEC 60068-78, DIN IEC 68-2-30: 5 ... 80% at 25 °C (no condensation)
Maximum permissible installation angle +/-	30° over vertical
Ambient temperature during operation	+5 °C ... +50 °C in maximum configuration; no fan
<b>Certifications &amp; standards</b>	
Approvals	CE, cULus(508)
EMC	CE, 55022A, EN 61000-6-4, EN 61000-6-2

# Embedded/PC-based Automation

## Embedded Automation

### SIMATIC Panel PC 477B Bundles

#### Technical specifications (continued)

	<b>6ES7 676-1 6AV7 851</b>	<b>6ES7 676-2 6AV7 852</b>	<b>6ES7 676-3 6AV7 853</b>	<b>6ES7 676-4 6AV7 854</b>	<b>6ES7 676-6 6AV7 856</b>
Front panel	12" TFT Touch	12" TFT Key	15" TFT Touch	15" TFT Key	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
MTBF backlit display (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
<b>Type of operation</b>					
Function keys	No	36	No	36	No
Alphanumeric keyboard	No	Yes	No	Yes	No
Touch screen (analog/resistive)	Yes	No	Yes	No	Yes
Mouse on the front	No	Yes	No	Yes	No
<b>Design</b>					
Centralized configuration	Yes	Yes	Yes	Yes	Yes
Distributed configuration	No	No	No	No	No
<b>Dimensions</b>					
Mounting dimensions of the centralized configuration (W x H x D, without optical drive) in mm	368 x 290 x 75	450 x 290 x 75	450 x 290 x 75	450 x 321 x 75	450 x 380 x 88
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)
<b>Weights</b>					
Panel PC in a centralized configuration approx.	7.3 kg	7.7 kg	8.3 kg	8.7 kg	14.3 kg
<b>General features</b>					
Accessories	Touch cover foils	Insertable strips for keyboard	Touch cover foils	Insertable strips for keyboard	Touch cover foils
Power loss in maximum configuration	24 V DC: max. 70 W (contains 3 W per slot)	24 V DC: max. 70 W (contains 3 W per slot)	24 V DC: max. 70 W (contains 3 W per slot)	24 V DC: max. 70 W (contains 3 W per slot)	24 V DC: max. 90 W, (contains 3 W per slot)

# Embedded/PC-based Automation

## Embedded Automation

### SIMATIC Panel PC 477B Bundles

Ordering data	Order No.	Order No.	
<b>Versions for "Embedded Automation", TIA applications</b> (preferred versions from stock)		<b>Further Panel PCs as "built to order" versions</b> (max. delivery time 15 working days)	
<b>SIMATIC Panel PC 477B embedded</b> Celeron M 1.0 GHz processor, main memory 1 GB DDR2 SDRAM, power supply 24 V DC, PROFIBUS DP interface <b>Front panels</b> <ul style="list-style-type: none"> <li>• 12" TFT Touch</li> <li>• 12" TFT Key</li> <li>• 15" TFT Touch</li> <li>• 15" TFT Key</li> <li>• 19" TFT Touch</li> </ul> <b>Mass storage</b> <ul style="list-style-type: none"> <li>• CompactFlash 2 GB</li> <li>• CompactFlash 4 GB</li> <li>• With Windows XP embedded operating system (EN/DE) preinstalled</li> <li>• With operating system and RTX, Windows XP embedded (EN/DE) preinstalled, WinAC RTX 2008 preinstalled and configured for PROFIBUS (DP)</li> <li>• With operating system and HMI (DP/PN), Windows XP embedded pre-installed, WinCC flexible 2008 RT (incl. archives/recipes) preinstalled                             <ul style="list-style-type: none"> <li>- Number of tags 128 PT</li> <li>- Number of tags 512 PT</li> <li>- Number of tags 2048 PT</li> </ul> </li> <li>• With operating system and HMI/RTX (DP) Windows XP embedded preinstalled, WinCC flexible 2008 RT (incl. archives/recipes) preinstalled, WinAC RTX 2008 preinstalled and configured for PROFIBUS                             <ul style="list-style-type: none"> <li>- Number of tags 128 PT</li> <li>- Number of tags 512 PT</li> <li>- Number of tags 2048 PT</li> </ul> </li> </ul>	<b>6ES7 676-BA00-0</b>	<b>SIMATIC Panel 477B embedded</b> 24 V DC power supply <b>Front panels</b> <ul style="list-style-type: none"> <li>• 12" TFT Touch</li> <li>• 12" TFT Key</li> <li>• 15" TFT Touch</li> <li>• 15" TFT Key</li> <li>• 19" TFT Touch</li> </ul> <b>Processor</b> <ul style="list-style-type: none"> <li>• Celeron M 1.0 GHz</li> <li>• Celeron M 1.0 GHz with PROFIBUS DB12</li> <li>• Celeron M 1.0 GHz with PROFINET</li> <li>• Pentium M 1.4 GHz</li> <li>• Pentium M 1.4 GHz with PROFIBUS DB12</li> <li>• Pentium M 1.4 GHz with PROFINET</li> </ul> <b>Main memory</b> <ul style="list-style-type: none"> <li>• 1 GB DDR2 SDRAM</li> <li>• 2 GB DDR2 SDRAM</li> </ul> <b>Second CompactFlash slot fitted (externally accessible)</b> <ul style="list-style-type: none"> <li>- Not fitted</li> <li>- With CF card 2 GB</li> <li>- With CF card 4 GB</li> </ul> <b>Software packages</b> <ul style="list-style-type: none"> <li>With Windows XP embedded operating system (EN/DE) preinstalled                             <ul style="list-style-type: none"> <li>• With CF card 2 GB</li> <li>• With CF card 4 GB</li> </ul> </li> <li>With operating system and RTX Windows XP embedded (EN/DE) preinstalled, WinAC RTX 2008 preinstalled and preconfigured                             <ul style="list-style-type: none"> <li>• With CF card 2 GB</li> <li>• With CF card 4 GB</li> <li>• WinAC RTX (DP) configured for PROFIBUS</li> <li>• WinAC RTX (PN) configured for PROFINET</li> </ul> </li> <li>With operating system and HMI (DP/PN), Windows XP embedded pre-installed, WinCC flexible 2008 RT (incl. archives/recipes) preinstalled                             <ul style="list-style-type: none"> <li>• With CF card 2 GB</li> <li>• With CF card 4 GB</li> <li>• Number of tags 128 PT</li> <li>• Number of tags 512 PT</li> <li>• Number of tags 2048 PT</li> </ul> </li> </ul>	<b>6AV7 85-0 A</b>

E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

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# Embedded/PC-based Automation

## Embedded Automation

### SIMATIC Panel PC 477B Bundles

Ordering data	Order No.
<b>Further Panel PCs as "built to order" versions (continued)</b>	
(max. delivery time 15 working days)	
<b>SIMATIC Panel 477B embedded E</b>	<b>6AV7 85 - 0 A - A 0</b>
24 V DC power supply	
With operating system and HMI/RTX (DP) Windows XP embedded pre-installed, WinCC flexible 2008 RT (incl. archives/recipes) pre-installed, WinAC RTX 2008 pre-installed and configured for PROFIBUS	
<ul style="list-style-type: none"> <li>• With CF card 2 GB</li> <li>• With CF card 4 GB</li> <li>• Number of tags 128 PT</li> <li>• Number of tags 512 PT</li> <li>• Number of tags 2048 PT</li> </ul>	3 4 G H J
With operating system and HMI/RTX (PN) Windows XP embedded pre-installed, WinCC flexible 2008 RT (incl. archives/recipes) pre-installed, WinAC RTX 2008 pre-installed and configured for PROFINET	
<ul style="list-style-type: none"> <li>• With CF card 2 GB</li> <li>• With CF card 4 GB</li> <li>• Number of tags 128 PT</li> <li>• Number of tags 512 PT</li> <li>• Number of tags 2048 PT</li> </ul>	3 4 L M N
<b>Accessories</b>	
<b>Protective membrane for Panel PCs 477/577/677/877</b>	
For protecting the touch screen against dirt/scratches	
<ul style="list-style-type: none"> <li>• for 12" Touch</li> <li>• for 15" Touch</li> <li>• for 19" Touch</li> </ul>	<b>6AV7 671-2BA00-0AA0</b> <b>6AV7 671-4BA00-0AA0</b> <b>6AV7 672-1CE00-0AA0</b>
<b>Labeling membranes for Panel PCs 477/577/677/877</b>	<b>6AV7 672-0DA00-0AA0</b>
For labeling soft keys and function keys, blank, supplied in sets of 10	

A: Subject to export regulations: AL: N and ECCN: EAR99S  
 B: Subject to export regulations: AL: N and ECCN: EAR99T  
 C: Subject to export regulations: AL: N and ECCN: EAR99H  
 E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

<b>Touch pen</b>	C	<b>6AV7 672-1JB00-0AA0</b>
Captive pen for operation of the touch devices, mounting of the support on the control cabinet		
<b>Expansion components</b>		
<b>SIMATIC IPC DiagMonitor V4.0</b>	A	<b>6ES7 648-6CA04-0YX0</b>
Software tool for monitoring SIMATIC PCs, incl. manual, on CD-ROM (German/English)		
<b>SIMATIC IPC Image &amp; Partition Creator V3.0</b>	A	<b>6ES7 648-6AA03-0YA0</b>
Software tool for preventive data backup and hard disk partitioning for SIMATIC PCs, incl. manual on CD-ROM (German, English)		
<b>SIMATIC IPC USB FlashDrive</b>	C	<b>6ES7 648-0DC40-0AA0</b>
2 GB, USB 2.0, metal enclosure, bootable		
<b>SIMATIC IPC Service USB FlashDrive</b>	B	<b>6AV7 672-8JD00-0AA0</b>
2 GB, USB 2.0, metal enclosure, bootable		
Image & Partition Creator ready-installed, incl. CD		
<b>3.5" USB disk drive</b>	C	<b>6FC5 235-0AA05-1AA2</b>
With 1 m connecting cable		
<b>Industrial USB Hub 4</b>	C	<b>6AV6 671-3AH00-0AX0</b>
4 x USB 2.0, IP65 for control cabinet door or DIN rail		
<b>Compact Flash Card</b>		
<ul style="list-style-type: none"> <li>• 2 GB</li> <li>• 4 GB</li> </ul>	C	<b>6ES7 648-2BF01-0XF0</b> <b>6ES7 648-2BF01-0XG0</b>
<b>Expansion kit PC/104</b>	C	<b>6AG4 070-0BA00-0XA0</b>
For integration of PC/104 modules (packing unit contains 6 expansion frames)		

Please note:

The scope of supply of the Panel PC 477B mainly comprises the Panel PC and a software pack that contains the CompactFlash card with preinstalled and configured software as well as all the necessary license keys. After the CompactFlash card has been inserted in the (internal) slot provided, the unit is ready for switching on.

Note:

Other complete turnkey solutions (the software is already installed and configured) on Microbox PC basis can be found under SIMATIC PC based Control.

# Embedded/PC-based Automation

## Embedded Automation

### SIMATIC WinAC MP

#### Overview



- WinAC MP, the software PLC based on Windows CE
- An optimized version is available for all current MP platforms
- The economical solution for all applications in combination with a rugged hardware platform
- Ideal for tasks on the machine level, saves space and costs
- Best service concept, backup/restore of all data on a standard SD card, standard Multi Media Card or standard USB stick

#### Technical specifications

	6ES7 671-4EE00-0YA0	6ES7 671-5EF01-0YA0	6ES7 671-7EG01-0YA0
<b>Product type designation</b>	WinAC MP 177	WinAC MP 277	WinAC MP 377
<b>Memory</b>			
Work memory			
• integrated	128 Kibyte	256 Kibyte	512 Kibyte
• expandable	No	No	No
Load memory			
• integrated RAM, max.	8 Mbyte	8 Mbyte	8 Mbyte
<b>CPU/ blocks</b>			
DB			
• Number, max.	512; FBs+FCs+ DBs=512	1 024; FBs+FCs+ DBs=1024	2 048; FBs+FCs+ DBs=2048
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
FB			
• Number, max.	512; FBs+FCs+ DBs=512	1 024; FBs+FCs+ DBs=1024	2 048; FBs+FCs+ DBs=2048
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
FC			
• Number, max.	512; FBs+FCs+ DBs=512	1 024; FBs+FCs+ DBs=1024	2 048; FBs+FCs+ DBs=2048
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
OB			
• Number, max.	18	18	18
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
Nesting depth			
• per priority class	8	8	16
• additional within an error OB	2	2	2
<b>Times/counters and their retentivity</b>			
S7 counter			
• Number	128	256	512

	6ES7 671-4EE00-0YA0	6ES7 671-5EF01-0YA0	6ES7 671-7EG01-0YA0
<b>Product type designation</b>	WinAC MP 177	WinAC MP 277	WinAC MP 377
S7 counter			
• of which retentive without battery			
- can be set	Yes	Yes	Yes
- lower limit	0	0	0
- upper limit	127	255	511
• Retentivity			
- can be set	Yes	Yes	Yes
- preset	8	8	8
• Counting range			
- lower limit	0	0	0
- upper limit	999	999	999
IEC counter			
• present	Yes; SFB0, SFB1, SFB2	Yes; SFB0, SFB1, SFB2	Yes; SFB0, SFB1, SFB2
S7 times			
• Number	128	256	512
• of which retentive without battery			
- can be set	Yes	Yes	Yes
- lower limit	0	0	0
- upper limit	127	255	511
• Retentivity			
- can be set	Yes	Yes	Yes
- preset	0	0	0
• Time range			
- lower limit	10 ms	10 ms	10 ms
- upper limit	9 990 s	9 990 s	9 990 s
IEC timer			
• present	Yes; SFB3, SFB4, SFB5	Yes; SFB3, SFB4, SFB5	Yes; SFB3, SFB4, SFB5
<b>Data areas and their retentivity</b>			
retentive data area in total (incl. times, counters, flags), max.	64 Kibyte	128 Kibyte	256 Kibyte



### Technical specifications (continued)

	6ES7 671-4EE00-0YA0	6ES7 671-5EF01-0YA0	6ES7 671-7EG01-0YA0
<b>Product type designation</b>	WinAC MP 177	WinAC MP 277	WinAC MP 377
Flag			
• Number, max.	2 Kibyte	2 Kibyte	4 Kibyte
• Retentivity available	Yes	Yes	Yes
Data blocks			
• Number, max.	512	1 024	2 048
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
Local data			
• per priority class, max.	16 384 byte; for all priority classes	16 384 byte; for all priority classes	16 384 byte; for all priority classes
<b>Address area</b>			
I/O address area			
• overall	2 Kibyte	4 Kibyte	8 Kibyte
• Outputs	2 Kibyte	4 Kibyte	8 Kibyte
Process image			
• Inputs	1 Kibyte	2 Kibyte	2 Kibyte
• Outputs	1 Kibyte	2 Kibyte	2 Kibyte
• Inputs, adjustable	1 Kibyte	2 Kibyte	2 Kibyte
• Outputs, adjustable	1 Kibyte	2 Kibyte	2 Kibyte
• Inputs, default	512 byte	512 byte	512 byte
• Outputs, default	512 byte	512 byte	512 byte
• consistent data, max.	32 byte	32 byte	32 byte
<b>Hardware configuration</b>			
Number of DP masters			
• integrated	1	1	1
<b>Time of day</b>			
Runtime meter			
• Number	8	8	8
• Number/Number range	0 to 7	0 to 7	0 to 7
<b>S7 message functions</b>			
Process diagnostic messages	Yes	Yes	Yes
<b>Test commissioning functions</b>			
Status/control			
• Status/control variable	Yes; Status blocks, single step, break-point	Yes; Status blocks, single step, break-point	Yes; Status blocks, single step, break-point
Forcing			
• Forcing	No	No	No
Diagnostic buffer			
• present	Yes	Yes	Yes
• Number of entries, max. - can be set	1 000; preset 120 Yes	1 000; preset 120 Yes	1 000; preset 120 Yes

	6ES7 671-4EE00-0YA0	6ES7 671-5EF01-0YA0	6ES7 671-7EG01-0YA0
<b>Product type designation</b>	WinAC MP 177	WinAC MP 277	WinAC MP 377
<b>Communication functions</b>			
Number of logical connections (also in network), max.	8	16	32
PG/OP communication	Yes	Yes	Yes
Routing	Yes	Yes	Yes
Global data communication			
• supported	No	No	No
S7 basic communication			
• supported	No	No	No
S7 communication			
• supported	Yes; PUT/GET, BSEND/BRCV, USEND/URCV	Yes; PUT/GET, BSEND/BRCV, USEND/URCV	Yes; PUT/GET, BSEND/BRCV, USEND/URCV
• as server	Yes	Yes	Yes
• as client	Yes	Yes	Yes
• User data per job, max.	480 byte	480 byte	480 byte
Number of connections			
• overall	8; (max. 8 DP, rest PROFINET)	16; (max. 8 DP, rest PROFINET)	32; (max. 8 DP, rest PROFINET)
• usable for PG communication - reserved for PG communication	1	1	1
• usable for OP communication - reserved for OP communication	1	1	1
• usable for routing	6	14	30
<b>1st interface</b>			
DP master			
• Number of connections, max.	4	8	8
• Services			
- PG/OP communication	Yes	Yes	Yes
- Routing	Yes	Yes	Yes
- Global data communication	No	No	No
- S7 basic communication	No	No	No
- S7 communication	Yes	Yes	Yes
- Equidistance mode support	No	No	No
- SYNC/FREEZE	Yes	Yes	Yes
- Activation/deactivation of DP slaves	Yes	Yes	Yes
- DPV1	Yes	Yes	Yes
• Transmission speeds, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s

# Embedded/PC-based Automation

## Embedded Automation

### SIMATIC WinAC MP

#### Technical specifications (continued)

	6ES7 671-4EE00-0YA0	6ES7 671-5EF01-0YA0	6ES7 671-7EG01-0YA0
<b>Product type designation</b>	WinAC MP 177	WinAC MP 277	WinAC MP 377
DP master			
• Number of DP slaves, max.	32	32	32
• Address area			
- Inputs, max.	2 Kibyte	4 Kibyte	8 Kibyte
- Outputs, max.	2 Kibyte	4 Kibyte	8 Kibyte
<b>CPU/ programming</b>			
Configuration software			
• STEP 7	Yes; STEP7 V5.4 SP4 or higher	Yes; STEP7 V5.4 SP4 or higher	Yes; STEP7 V5.4 SP4 or higher
• WinCC flexible Compact	Yes; WinCC flexible 2008 SP1	No	No
• WinCC flexible Standard	Yes; WinCC flexible 2008 SP1	Yes; WinCC flexible 2008 SP1	Yes; WinCC flexible 2008 SP1
• WinCC flexible Advanced	Yes; WinCC flexible 2008 SP1	Yes; WinCC flexible 2008 SP1	Yes; WinCC flexible 2008 SP1
Programming language			
• LAD	Yes	Yes	Yes
• FBD	Yes	Yes	Yes
• STL	Yes	Yes	Yes
• SCL	Yes	Yes	Yes
• CFC	Yes	Yes	Yes
Software libraries			
• Process diagnostics	Yes; System error messages	Yes; System error messages, ProAgent (S7-Graph)	Yes; System error messages, ProAgent (S7-Graph)
Cycle time monitoring			
• can be set	Yes	Yes	Yes
• preset	6 000 ms	6 000 ms	6 000 ms
<b>Operating systems</b>			
Operating system			
• Windows CE	Yes; Version 5.0 or higher	Yes; Version 5.0 or higher	Yes; Version 5.0 or higher
<b>Online languages</b>			
Number	1; English	1; English	1; English

#### Ordering data

#### Order No.

<b>WinAC MP, version WinAC MP 177<sup>2)</sup></b>		<b>6ES7 671-4EE00-0YA0</b>
incl. a Single License for MP 177 on USB stick <sup>1)</sup> and electronic documentation		
<b>WinAC MP, version WinAC MP 277<sup>2)</sup></b>		<b>6ES7 671-5EF01-0YA0</b>
incl. a Single License for MP 277 on USB stick <sup>1)</sup> and electronic documentation		
<b>WinAC MP, version WinAC MP 377<sup>2)</sup></b>		<b>6ES7 671-7EG01-0YA0</b>
incl. a Single License for MP 377 on USB stick <sup>1)</sup> and electronic documentation		
<b>Complete pre-assembled packages</b>		
<b>Package MP 177 6" Touch</b>	E	<b>6AV6 652-2JC01-2AA0</b>
• MP 177 6" Touch		
• WinAC MP Version 177		
• Electronic documentation		
• Single License for MP 177 on USB flash drive <sup>1)</sup>		
• Standard SD card 256 MB (empty)		
<b>Package MP 277 8" Touch</b>	E	<b>6AV6 652-3MC01-1AA0</b>
• MP 277 8" Touch		
• WinAC MP Version 277		
• Electronic documentation		
• Single License for MP 277 on USB stick <sup>1)</sup>		
• Standard SD card 256 MB (empty)		
<b>Package MP 277 8" Key</b>	E	<b>6AV6 652-3LC01-1AA0</b>
• MP 277 8" Key		
• WinAC MP Version 277		
• Electronic documentation		
• Single License for MP 277 on USB stick <sup>1)</sup>		
• Standard SD card 256 MB (empty)		
<b>Package MP 277 10" Touch</b>	E	<b>6AV6 652-3PC01-1AA0</b>
• MP 277 10" Touch		
• WinAC MP Version 277		
• Electronic documentation		
• Single License for MP 277 on USB stick <sup>1)</sup>		
• Standard SD card 256 MB (empty)		
<b>Package MP 277 10" Key</b>	E	<b>6AV6 652-3NC01-1AA0</b>
• MP 277 10" Key		
• WinAC MP Version 277		
• Electronic documentation		
• Single License for MP 277 on USB stick <sup>1)</sup>		
• Standard SD card 256 MB (empty)		

<sup>1)</sup> Can only be used for license handling

<sup>2)</sup> UCL version on request

E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

Ordering data	Order No.	Order No.
<b>Package MP 377 12" Touch</b> E <ul style="list-style-type: none"> <li>• MP 377 12" Touch</li> <li>• WinAC MP Version 377</li> <li>• Electronic documentation</li> <li>• Single License for MP 377 on USB stick<sup>1)</sup></li> <li>• Standard SD card 256 MB (empty)</li> </ul>	<b>6AV6 652-4FC01-2AA0</b>	<b>Starter package 635T WinAC MP</b> E <ul style="list-style-type: none"> <li>• SIMATIC MP 177 6" Touch with installation accessories, mounting seal, power supply connector</li> <li>• SIMATIC WinAC MP incl. Single License on USB flash drive and electronic documentation</li> <li>• SD card 256 KB (empty)</li> <li>• ET 200M incl. 32 DI, 16 DO, 8 AI, 2 AO</li> <li>• FM 350-2 8-channel counter</li> <li>• Front connector, bus connector, and mounting rail</li> </ul>
<b>Package MP 377 12" Key</b> E <ul style="list-style-type: none"> <li>• MP 377 12" Key</li> <li>• WinAC MP Version 377</li> <li>• Electronic documentation</li> <li>• Single License for MP 377 on USB stick<sup>1)</sup></li> <li>• Standard SD card 256 MB (empty)</li> </ul>	<b>6AV6 652-4EC01-2AA0</b>	
<b>Package MP 377 15" Touch</b> E <ul style="list-style-type: none"> <li>• MP 377 15" Touch</li> <li>• WinAC MP Version 377</li> <li>• Electronic documentation</li> <li>• Single License for MP 377 on USB stick<sup>1)</sup></li> <li>• Standard SD card 256 MB (empty)</li> </ul>	<b>6AV6 652-4GC01-2AA0</b>	
<b>Package MP 377 19" Touch</b> E <ul style="list-style-type: none"> <li>• MP 377 19" Touch</li> <li>• WinAC MP Version 377</li> <li>• Electronic documentation</li> <li>• Single License for MP 377 on USB stick<sup>1)</sup></li> <li>• Standard SD card 256 MB (empty)</li> </ul>	<b>6AV6 652-4HC01-2AA0</b>	
<b>Starter packages</b> <b>Starter package 613 WinAC MP</b> E <ul style="list-style-type: none"> <li>• SIMATIC MP 177 6" Touch with installation accessories, mounting seal, power supply connector</li> <li>• SIMATIC WinAC MP incl. Single License on USB flash drive and electronic documentation</li> <li>• SD card 256 KB (empty)</li> <li>• ET 200M incl.</li> <li>• 16 DI, 16 DO, 8 AI, 2 AO</li> <li>• FM 350-2 8-channel counter</li> <li>• Front connector, bus connector, and mounting rail</li> </ul>	<b>6AV6 652-2JD01-2AA0</b>	
		<b>Starter package 635K WinAC MP</b> E <ul style="list-style-type: none"> <li>• SIMATIC MP 277 8" Key with installation accessories, mounting seal, power supply connector</li> <li>• SIMATIC WinAC MP incl. Single License on USB flash drive and electronic documentation</li> <li>• SD card 256 KB (empty)</li> <li>• ET 200M incl. 32 DI, 16 DO, 8 AI, 2 AO</li> <li>• FM 350-2 8-channel counter</li> <li>• Front connector, bus connector, and mounting rail</li> </ul>
		<b>Starter package 636K WinAC MP</b> E <ul style="list-style-type: none"> <li>• SIMATIC MP 277 8" Key with installation accessories, mounting seal, power supply connector</li> <li>• SIMATIC WinAC MP incl. Single License on USB flash drive and electronic documentation</li> <li>• SD card 256 KB (empty)</li> <li>• ET 200M incl. 32 DI, 16 DO, 8 AI, 2 AO</li> <li>• Front connector, bus connector, and mounting rail</li> </ul>
		<b>Starter package 636T WinAC MP</b> E <ul style="list-style-type: none"> <li>• SIMATIC MP 277 10" Touch with installation accessories, mounting seal, power supply connector</li> <li>• SIMATIC WinAC MP incl. Single License on USB flash drive and electronic documentation</li> <li>• SD card 256 KB (empty)</li> <li>• ET 200M incl. 32 DI, 16 DO, 8 AI, 2 AO</li> <li>• Front connector, bus connector, and mounting rail</li> </ul>

E: Subject to export regulations: AL: N and ECCN: 5D002ENC3

<sup>1)</sup> Can only be used for license handling