Overview

SIMATIC IPC647D

The SIMATIC IPC647D is a very rugged, high-performance industrial PC in 19" rack design (2 U) with excellent industrial functionality.

It offers:
• Extreme compactness
• Extreme ruggedness
• Intel® Core® i/Xeon technology 4th generation

Technical specifications

Article number	**6AG4112-2....-....**
	SIMATIC IPC647D (Rack PC)
Installation type/mounting	
Mounting	For horizontal installation; prepared for telescopic rails; 19" mounting bracket can be removed externally
Design	Rack PC, 19", 2U
Supply voltage	
Type of supply voltage	100/240 V AC (autorange) 50 / 60 Hz; optional redundant 100 - 240 V AC
Line frequency	
• Rated value 50 Hz	Yes
• Rated value 60 Hz	Yes
Mains buffering	
• Mains/voltage failure stored energy time	20 ms
Processor	
Processor type	Xeon E3-1268L v3 (4C/8T, 2.3 (3.3) GHz, 8 MB cache); Core i5-4570TE (2C/4T, 2.7 (3.3) GHz, 4 MB cache); Core i3-4330TE (2C/4T, 2.4 GHz, 4 MB cache)
Chipset	Intel DH82C226 PCH
Graphic	
Graphics controller	Onboard graphics controller Intel HD 4600 Graphics integrated into the processor / PCI-Express graphics card (Dual Head: 2x VGA or 2x DVI-D) in the PCIe (x16) slot (optional)
Drives	
Optical drives	DVD±R/RW (SlimLine)
Hard disk	500 GB HDD, 1 TB HDD, 2x 1 TB HDD, RAID1 (2x 1 TB HDD, mirror disks); RAID1 (2x 1 TB HDD SAS, mirror disks) with PCIe (x8) RAID controller incl. ZMCP module
SSD	Yes; 240 GB SSD; RAID1 (2x 240 GB SSD, mirror disks)
Slot for drives	Mounted internally on the fixed hard disk support, or mounted internally in vibration/shock-absorbing hard disk support, or mounted at the front in the low-profile removable drive bay (hot-swap in RAID configurations)
Memory	
Main memory	2 GB to 32 GB DDR3 1600 DIMM, ECC optional

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◼ Technical specifications (continued)

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Hardware configuration	
Slots	
• free slots	2x PCIe mech. (x16) (4 lanes) or 4x PCIe mech. (x16) (4 lanes / 8 lanes depending on slot) or 2x PCI, 2x PCIe mech. (x16) (8 lanes); all modules to a length of 312 mm can be used
Interfaces	
Interfaces/bus type	1x COM1, 1x COM2 (optional), 1x LPT (optional), 2x DisplayPort, 1x DVI-I, 2x PS/2, audio (Microphone In, Line Out), 7x USB, 2x Gigabit Ethernet, PROFIBUS or PROFINET optional
PROFIBUS/MPI	Optionally onboard, isolated, max. 12 Mbit/s, no plug-in card necessary, CP 5622-compatible
USB port	2x USB 3.0, 2x USB 2.0 rear, 1x USB 3.0, 1x USB 2.0 front, 1x USB 3.0 internal
Connection for keyboard/mouse	2x PS/2
serial interface	COM1: 1x RS 232, COM2 (optional): 1x RS 232
parallel interface	optional LPT1
Multimedia	
• Audio In/Out	Yes
• Microphone In	Yes
Video interfaces	
• Graphics interface	2x DisplayPort and 1x DVI-I onboard; 1x VGA via DVI-VGA adapter cable (optional); graphics card PCIe (x16), Dual Head (2x VGA or 2x DVI-D), 1 GB graphics memory (optional)
Industrial Ethernet	
• Industrial Ethernet interface	2x Ethernet (RJ45)
- 100 Mbps	Yes
- 1000 Mbps	Yes
Integrated Functions	
Monitoring functions	
• Temperature monitoring	Yes
• Watchdog	Yes
• Status LEDs	POWER, HDD, ETHERNET 1, ETHERNET 2, PROFIBUS / MPI, SF PROFINET, WATCHDOG, TEMP, FAN, HDD0 ALARM, HDD1 ALARM
• Fan	Yes
• Monitoring function via network	Optional

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EMC	
Interference immunity against discharge of static electricity	
• Interference immunity against discharge of static electricity	±6 kV contact discharge acc. to IEC 61000-4-2; ±8 kV air discharge acc. to IEC 61000-4-2
Interference immunity against high-frequency electromagnetic fields	
• Interference immunity against high frequency radiation	10 V/m for 80 - 1000 MHz and 1.4 - 2 GHz, 80% AM acc. to IEC 61000-4-3; 3 V/m for 2 - 2.7 GHz, 80% AM acc. to IEC 61000-4-3; 10 V for 10 kHz - 80 MHz, 80% AM acc. to IEC 61000-4-6
Interference immunity to cable-borne interference	
• Interference immunity on supply cables	±2 kV acc. to IEC 61000-4-4, burst; ±1 kV acc. to IEC 61000-4-5, surge symmetric; ±2 kV acc. to IEC 61000-4-5, surge asymmetric
• Interference immunity on signal cables >30 m	±2 kV acc. to IEC 61000-4-4, burst; ±2 kV acc. to IEC 61000-4-5, surge
• Interference immunity on signal cables < 30 m	±1 kV acc. to IEC 61000-4-4, Burst
Interference immunity against voltage surge	
• asymmetric interference	±2 kV acc. to IEC 61000-4-5, surge asymmetric
• symmetric interference	±1 kV acc. to IEC 61000-4-5, surge symmetric
Interference immunity to magnetic fields	
• Interference immunity to magnetic fields at 50 Hz	100 A/m; to IEC 61000-4-8
Emission of conducted and non-conducted interference	
• Interference emission via line/AC current cables	EN 61000-6-3, FCC Class A, EN 61000-6-4, CISPR 22, EN 55022 Class B, EN 61000-3-2 Class D, EN 61000-3-3
Degree and class of protection	
IP (at the front)	IP41
IP (rear)	IP20

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Technical specifications (continued)

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Standards, approvals, certificates	
Approval	CE, cULus 60950, KCC
CE mark	Yes; For use in industrial areas as well as domestic, business and commercial environments (emitted interference: EN 61000-6-3:2007 +A1:2011, noise immunity: EN 61000-6-2:2005)
CSA approval	Yes; Included in cULus
UL approval	Yes
cULus	Yes; UL 60950-1, file number E115352
RCM (formerly C-TICK)	Yes
KC approval	Yes
EAC (formerly Gost-R)	Yes
EMC	CE, EN 61000-6-3:2007 +A1:2011, EN 61000-6-2:2005
Dust protection	With front door closed: G2 EN 779, 99% of particles > 0.5 mm are filtered
Marine approval	
• Germanischer Lloyd (GL)	Yes; Only with SSD
• American Bureau of Shipping (ABS)	Yes; Only with SSD
• Bureau Veritas (BV)	Yes; Only with SSD
• Det Norske Veritas (DNV)	Yes; Only with SSD
• Lloyds Register of Shipping (LRS)	Yes; Only with SSD
Ambient conditions	
Ambient temperature during operation	
• Ambient temperature during operation	0 ... 50 °C no ODD operation, no HDD operation in swap frame, no hardware RAID controller; 0 ... 45 °C no ODD operation, no hardware RAID controller, power loss of expansion cards in total < 55 W; 0 ... 40 °C no hardware RAID controller, power loss of the expansion cards in total < 55 W; 0 ... 35 °C no restrictions
Relative humidity	
• Relative humidity	Tested to IEC 60068-78, DIN IEC 68-2-30: 5% to 80% at 25 °C (no condensation)
Vibrations	
• Vibration resistance during operation acc. to IEC 60068-2-6	Tested according to IEC 60068-2-6: 10 cycles, 10 Hz to 58 Hz: 0.0375 mm, 58 Hz to 500 Hz: 4.9 m/s² (0.5 g)
Shock testing	
• Shock load during operation	Tested according to IEC 60068-2-27, IEC 60068-2-29: half-sine: 50 m/s² (5 g), 30 ms, 100 shocks per axis

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Operating systems	
Operating system	Windows 7 Ultimate, multi-language (32-bit/64-bit), Windows 10 Enterprise 2015 LTSB, multi-language (64-bit), Windows 10 Enterprise 2016 LTSB, multi-language (64-bit), Windows Server 2008 R2 Standard Edition incl. 5 clients, multi-language (64-bit); Windows Server 2012 R2 Standard Edition incl. 5 clients, multi-language (64-bit); Windows Server 2016 Standard Edition incl. 5 clients, multi-language (64-bit)
pre-installed operating system	Yes
Additional info on operating system	Multi-Language User Interface (MUI): 5 languages (English, German, French, Spanish, Italian)
without operating system	Yes
Software	
SIMATIC Software	Optionally in package with SIMATIC WinCC or WinCC flexible
Dimensions	
Width	430 mm
Height	88 mm; 2U
Depth	444 mm

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■ **Ordering data**

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Interfaces: RACK PC, 19", 2 U
Interfaces: 2 x GBIT LAN (RJ45);
1 x DVI-I; 2 x DisplayPort;
1 x COM; 2 x PS/2; audio;
2 x USB 3.0, 2 x USB 2.0 at rear;
1 x USB 3.0, 1 x USB 2.0 at front,
1 x USB 3.0 internal; temperature
and fan monitoring, watchdog,
card retainer

Processor/main board
- Core i3-4330TE
  (2C/4T, 2.4 GHz, 4 MB cache);
  mainboard without fieldbus → **D**
- Core i3-4330TE
  (2C/4T, 2.4 GHz, 4 MB, VT-x);
  mainboard with PROFIBUS/MPI
  (CP 5622-compatible) → **E**
- Core i3-4330TE
  (2C/4T, 2.4 GHz, 4 MB cache);
  mainboard with PROFINET
  (3 x RJ45, CP 1616-compatible) → **F**
- Core i5-4570TE
  (2C/4T, 2.7 (3.3) GHz,
  4 MB cache, TB, VT-d, AMT);
  mainboard without fieldbus → **G**
- Core i5-4570TE
  (2C/4T, 2.7 (3.3) GHz,
  4 MB cache, TB, VT-x, VT-d, AMT);
  mainboard with PROFIBUS/MPI
  (CP 5622-compatible) → **H**
- Core i5-4570TE
  (2C/4T, 2.7 (3.3) GHz,
  4 MB cache, TB, VT-d, AMT);
  mainboard with PROFINET
  (3 x RJ45, CP 1616-compatible) → **J**
- Xeon E3-1268L v3
  (4C/8T, 2.3 (3.3) GHz,
  8 MB cache, TB, VT-d, AMT);
  mainboard without fieldbus → **K**
- Xeon E3-1268L v3
  (4C/8T, 2.3 (3.3) GHz,
  8 MB cache, TB, VT-x, VT-d, AMT);
  mainboard with PROFIBUS/MPI
  (CP 5622-compatible) → **L**
- Xeon E3-1268L v3
  (4C/8T, 2.3 (3.3) GHz,
  8 MB cache, TB, VT-d, AMT);
  mainboard with PROFINET
  (3 x RJ45, CP 1616-compatible) → **M**

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Hard disks/SSD
- 500 GB HDD SATA, internal
  (0.5 g vibration, 5 g shock) → **A**
- 1 TB HDD SATA, internal
  (0.5 g vibration, 5 g shock) → **B**
- 2 x 1 TB HDD SATA, internal
  (0.5 g vibration, 5 g shock) → **C**
- RAID1, 1 TB (2 x 1 TB HDD SATA,
  mirror disks), internal (0.5 g
  vibration, 5 g shock) → **D**
- 500 GB HDD SATA in removable
  drive bay; front → **H**
- 1 TB HDD SATA in removable
  drive bay; front → **K**
- 2 x 1 TB HDD SATA in removable
  drive bay; front-mounted → **M**
- RAID1, 1 TB (2 x 1 TB HDD SATA,
  mirror disks) in removable drive
  bay, hot-swappable, front → **P**
- 240 GB SSD SATA, internal → **S**
- 240 GB SSD SATA in removable
  drive bay; front → **T**
- RAID1, 1 TB (2 x 1 TB HDD SAS,
  mirror disks) in removable
  drive bay, hot-swappable, front-
  mounted; PCIe x8 RAID controller
  including ZCMP module
  (2 slots occupied) → **U**
- RAID1, 240 GB (2 x 240 GB SSD
  SATA, mirror disks), in removable
  drive bay, hot swap, at the front → **W**

Memory configuration
- 2 GB DDR3 SDRAM (1 x 2 GB),
  single channel → **1**
- 4 GB DDR3 SDRAM (2 x 2 GB),
  dual channel → **2**
- 8 GB DDR3 SDRAM (2 x 4 GB),
  dual channel → **3**
- 16 GB DDR3 SDRAM (2 x 8 GB),
  dual channel → **4**
- 32 GB DDR3 SDRAM (4 x 8 GB),
  dual channel → **5**
- 8 GB DDR3 SDRAM, (2 x 4 GB),
  ECC, dual channel → **6**
- 16 GB DDR3 SDRAM, (2 x 8 GB),
  ECC, dual channel → **7**
- 32 GB DDR3 SDRAM, (4 x 8 GB),
  ECC, dual channel → **8**

Ordering data

SIMATIC IPC647D	Article No. 6AG4112 - 2 ▪ ▪ ▪ ▪ - ▪ ▪ ▪ ▪
Bus module/removable data storage media/SSD:	
• Bus module 2-slot: 2 x PCIe x16; without drives	0
• Bus module 4-slot: 2 x PCI, 2 x PCIe x16; without drives	1
• Bus module 4-slot: 4 x PCIe x16; without drives	2
• Bus module 2-slot: 2 x PCIe x16; DVD±RW (slim)	3
• Bus module 4-slot: 2 x PCI, 2x PCIe x16; DVD±RW (slim)	4
• Bus module 4-slot: 4 x PCIe x16; DVD±RW (slim)	5
• Bus module 2-slot: 2 x PCIe x16/1 x 240 GB SSD (for operating system), internal	6
• Bus module 4-slot: 2 x PCI, 2 x PCIe x16/1 x 240 GB SSD (for operating system), internal	7
• Bus module 4-slot: 4 x PCIe x16/ 1 x 240 GB SSD (for operating system), internal	8
Expansion hardware	
• Without expansions (hardware), onboard graphics;	0
• Without expansions (hardware), onboard graphics, DVI-I adapter cable, VGA-compliant for onboard graphics;	1
• Serial (COM2) + parallel (LPT, 1 slot reserved), onboard graphics;	2
• Serial (COM2) + parallel (LPT, 1 slot reserved), onboard graphics; DVI-I adapter cable, VGA-compliant for onboard graphics;	3
• Serial (COM2) + parallel (LPT, 1 slot reserved) + PCIe x16 Graphics Card (Dual-Head: 2 x VGA or 2 x DVI-D), 1 GB, (1 slot occupied);	4
• PCIe x16 graphics card (dual head: 2 x VGA or 2 x DVI-D), 1 GB, (1 slot occupied)	5

SIMATIC IPC647D	Article No. 6AG4112 - 2 ▪ ▪ ▪ ▪ - ▪ ▪ ▪ ▪
Operating system (pre-installed and activated)	
• Windows 7 Ultimate, 32-bit, SP1, MUI (en, de, fr, it, es)	A
• Windows 7 Ultimate, 64-bit, SP1, MUI (en, de, fr, it, es)	B
• Windows 10 Enterprise 2015, LTSB, multi-language (en, de, fr, it, es), 64-bit	C
• Windows 10 Enterprise 2016, LTSB, multi-language (en, de, fr, it, es), 64-bit (for Core i3/i5)	D
• Windows 10 Enterprise 2016, LTSB, multi-language (en, de, fr, it, es), 64-bit (for Xeon)	E
• Windows Server 2008 R2 Standard Edition, 64-bit SP1 incl. 5 clients, multi-language (en, de, fr, it, es)	F
• Windows Server 2012 R2 Standard Edition incl. 5 clients, MUI (en, de, fr, it, es), 64-bit	G
• Windows Server 2016 Standard Edition incl. 5 clients, MUI (en, de, fr, it, es), 64-bit	H
• Without operating system	X
Expansions (software)/Security	
• SIMATIC IPC DiagMonitor software enclosed	A
• SIMATIC IPC Image Creator software included	B
• SIMATIC IPC DiagMonitor and Image Creator software enclosed	C
• Without software	X
• TPM 1.2 [1] (not for China and Russia)	Y
Power supply, with country-specific cable	
• 110/240 V AC industrial power supply with NAMUR; power cable for Europe	0
• 110/240 V AC industrial power supply with NAMUR; power cable for United Kingdom	1
• 110/240 V AC industrial power supply with NAMUR; power cable for Switzerland	2
• 110/240 V AC industrial power supply with NAMUR; power cable for the USA	3
• 110/240 V AC industrial power supply with NAMUR; power cable for Italy	4
• 110/240 V AC industrial power supply with NAMUR; power cable for China	5
• 2 x 110/240 V AC redund. power supply; without power cable	6
• 110/240 V AC industrial power supply with NAMUR; without power cable	8

[1] TPM = Trusted Platform Module

Note:

Please assemble the required IPC configuration using the TIA Selection Tool or the configurator in the Industry Mall in order to ensure suitability; we do not accept any liability for configurations compiled by users themselves.

For an up-to-date overview, see the SIMATIC IPC online configurator at:
http://www.siemens.com/ipc-configurator

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Ordering data	Article No.
Accessories	
Memory expansions	
• 2 GB DDR3 1600 DIMM	**6ES7648-2AJ50-0MA0**
• 4 GB DDR3 1600 DIMM	**6ES7648-2AJ60-0MA0**
• 8 GB DDR3 1600 DIMM	**6ES7648-2AJ70-0MA0**
• 8 GB DDR3 1600 DIMM, ECC	**6ES7648-2AJ70-1MA0**
Hardware accessories	
Tray for low-profile removable drive bay	**6ES7648-0EG01-1BA0**
For 3.5" hard drive (SATA/SAS) and 2.5" SSD (SATA), without drive	
Filter mats	**A5E02396171**
for SIMATIC IPC647D (packing unit: 10 units)	
Adapter cable	
• Adapter cable DisplayPort to DVI-D for onboard graphics	**6ES7648-3AF00-0XA0**
• Adapter cable DisplayPort to VGA for onboard graphics	**6ES7648-3AG00-0XA0**

	Article No.
Power cable, straight, 3 m long	
• Austria, Belgium, Finland, France, Germany, Netherlands, Spain, Sweden	**6ES7900-0AA00-0XA0**
• United Kingdom	**6ES7900-0BA00-0XA0**
• Switzerland	**6ES7900-0CA00-0XA0**
• USA	**6ES7900-0DA00-0XA0**
• Italy	**6ES7900-0EA00-0XA0**
• China	**6ES7900-0FA00-0XA0**
USB retainer	**6ES7648-1AA00-0XK0**
For interlocking the internal USB port	
Expansion components	See Expansion components
Communication products	See Expansion components

Note:

Software Packages with SIMATIC WinCC flexible, WinCC RT Advanced, SIMATIC WinCC, and SIMATIC WinAC RTX (F) can be ordered together with the SIMATIC IPC at a price advantage. More information under "Embedded Bundles/Packages for industrial PCs".

Additional information is available on the Internet at:

http://www.siemens.com/simatic-pc

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