



February, 2014

SIMATIC IPC847D

Technical Information

SIMATIC IPC847D

Overview front

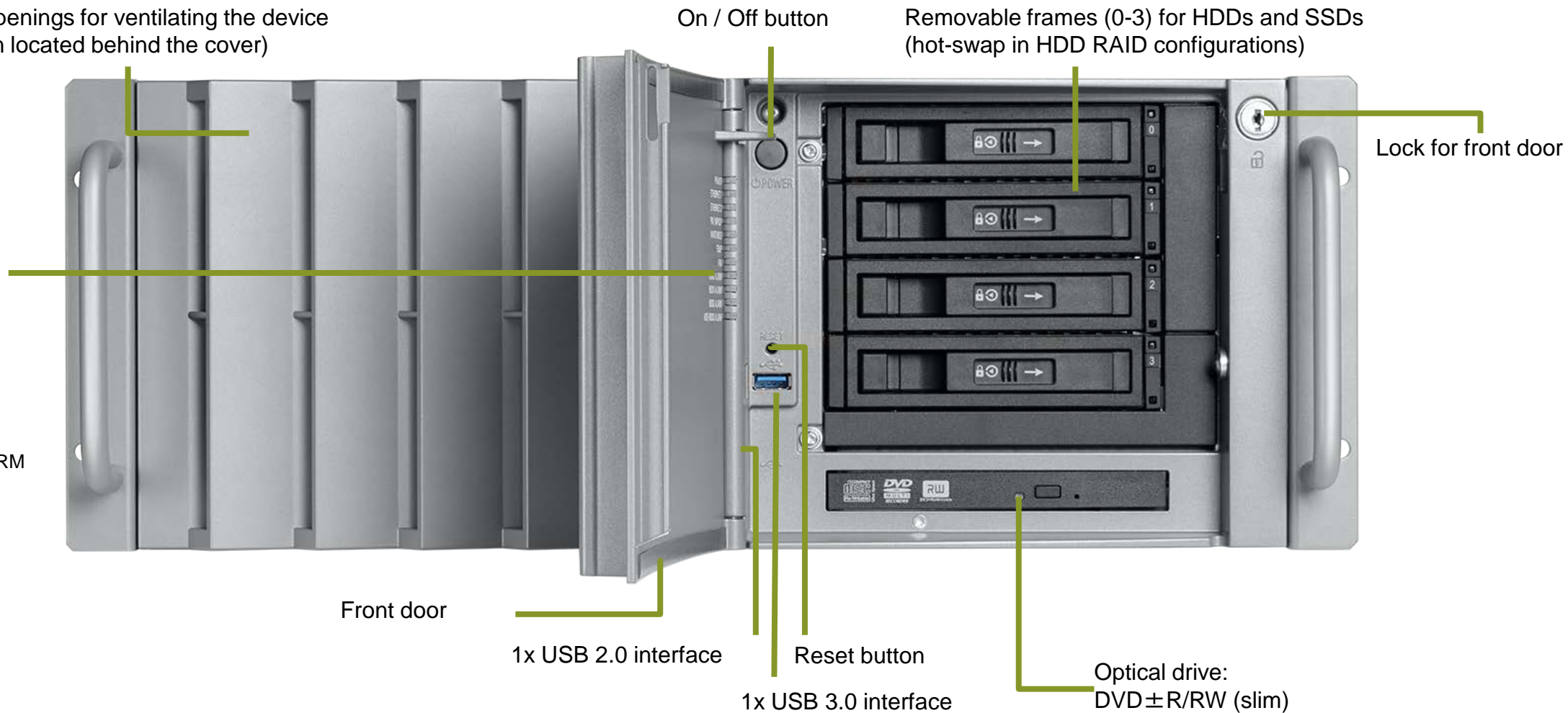
Fan cover with openings for ventilating the device
(filter mat and fan located behind the cover)

On / Off button

Removable frames (0-3) for HDDs and SSDs
(hot-swap in HDD RAID configurations)

Lock for front door

- Front LEDs:
- POWER
 - ETHERNET 1
 - ETHERNET 2
 - PN I MPI/DP
 - WATCHDOG
 - TEMP
 - FAN
 - HDD0 ALARM
 - HDD1 ALARM
 - HDD2 ALARM
 - HDD I HDD3 ALARM



Front door

1x USB 2.0 interface

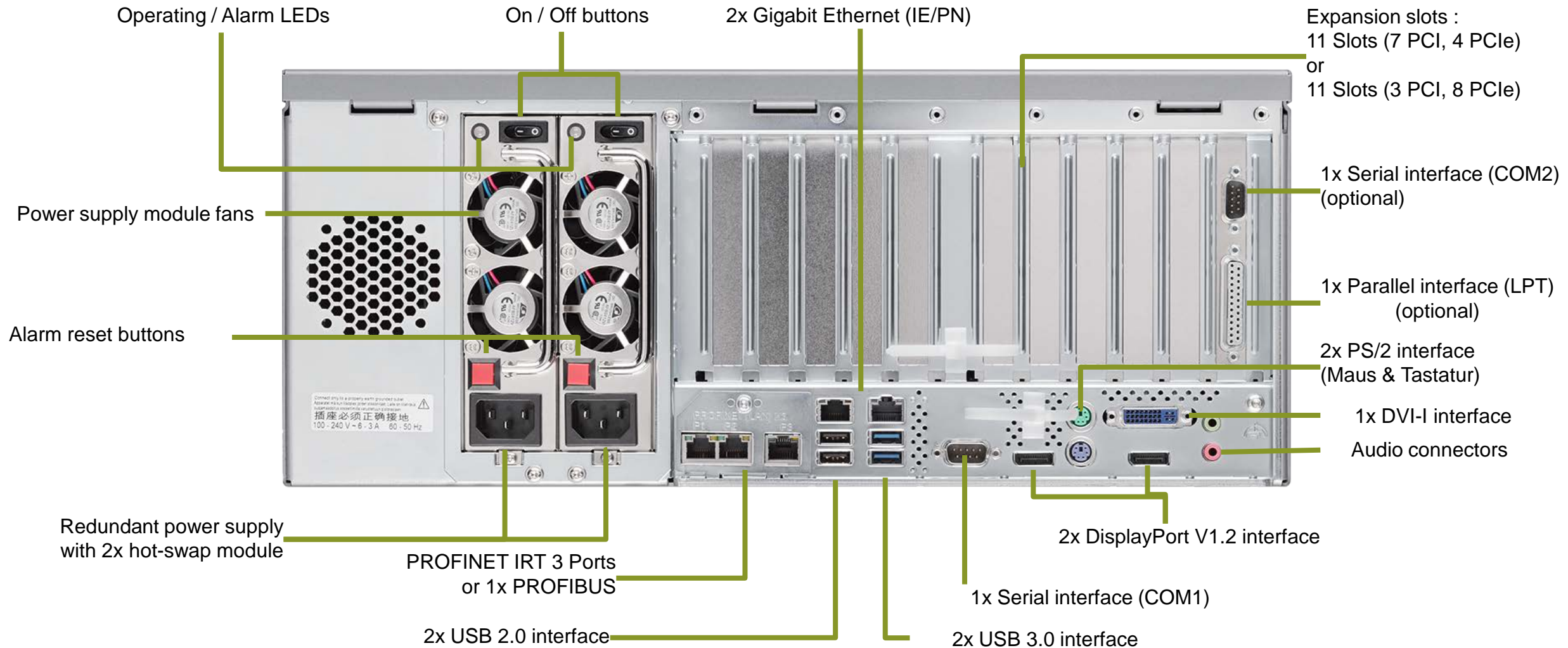
Reset button

1x USB 3.0 interface

Optical drive:
DVD±R/RW (slim)




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Overview rear



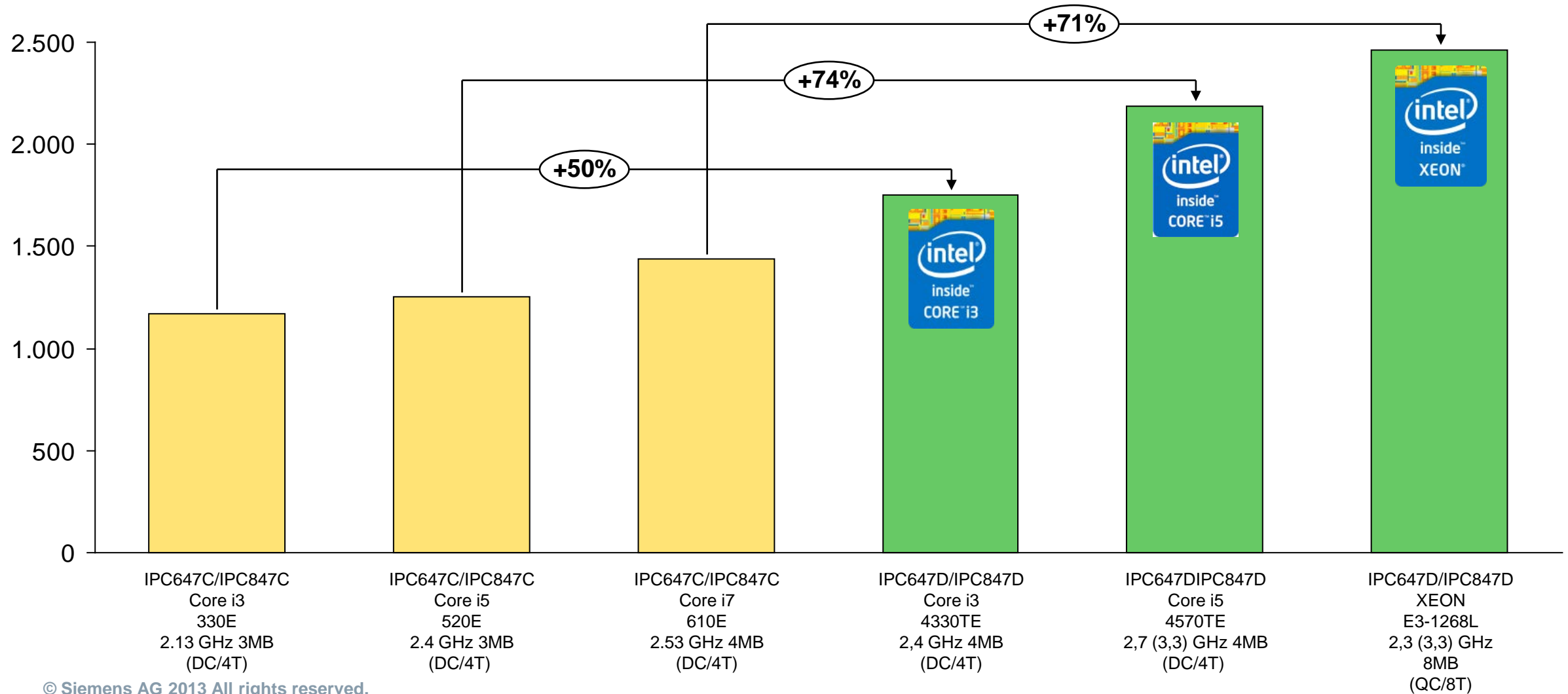
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Processors characteristics

	Processor name	Processor number	Number of physical cores (Cores)	Number of virtual cores (Threads)	Clock rate / Clock rate with Turbo Boost (GHz)	Cache (MByte)	Turbo Boost 2.0	Virtualization (VT-x / VT-d)	64 Bit (EM64T)	iAMT 9.0	ECC
	Xeon	E3-1268L v3	4	8	2,3 / 3,3	8	✓	✓ / ✓	✓	✓	✓(*)
	Core i5	i5-4570TE	2	4	2,7 / 3,3	4	✓	✓ / ✓	✓	✓	✓
	Core i3	i3-4330TE	2	2	2,4 / -	4	-	✓ / -	✓	-	✓

The Intel Xeon E3 offers a optimized performance / watt and supports ECC memory – the comparable Intel Core i7 processors do not

Passmark 7 Rating IPC847C vs. IPC847D



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Technical data

Housing, Chipset, Processors, Main Memory, and Expansion Slots

Housing	<ul style="list-style-type: none"> • 19" Rack, 4U • Rugged all-metal housing, painted outside and coated inside • Lockable front flap for access protection • Prepared for telescopic slides • For horizontal and vertical mounting • Tower arrangement using tower kit (available as accessory) 		
Chipset	<ul style="list-style-type: none"> • Intel DH82C226 PCH (C226) 		
Processors	<ul style="list-style-type: none"> • Intel® Xeon™ E3-1268L v3 4C/8T, 2.3 (3.3) GHz, 8 MByte Cache, Turbo Boost 2.0, Virtualization (VT-x/-d)-Technology, iAMT 9.0 • Intel® Core™ i5-4570TE 2C/4T, 2.7 (3.3) GHz, 4 MByte Cache, Turbo Boost 2.0, Virtualization (VT-x/-d)-Technology, iAMT 9.0 • Intel® Core™ i3-4330TE 2C/4T, 2.4 GHz, 4 MByte Cache, Virtualization (VT-x)-Technology 		
Main Memory	<ul style="list-style-type: none"> • from 2 GByte DDR3-1600 SDRAM, Dual Channel support, Expandable up to 32 GByte¹⁾ • ECC from 8 GByte optional 		
Expansion Slots (all 312 mm)	<p>more PCI-Slots (7 PCI, 4 PCI-Express)</p> <ul style="list-style-type: none"> • 7 x PCI • 1 x PCI-Express x16 (16 Lane) Gen 3 • 3 x PCI-Express x4 (1 Lane) Gen 2 	<p>or</p>	<p>more PCI-Express Slots (8 PCI-Express, 3 PCI)</p> <ul style="list-style-type: none"> • 3 x PCI • 1 x PCI-Express x16 (8 Lane) Gen 3 • 2 x PCI-Express x16 (4 Lane) Gen 3 • 2 x PCI-Express x16 (4 Lane) Gen 2 • 3 x PCI-Express x4 (4 Lane) Gen 2

¹⁾ For configurations up to 4 GByte, the visible memory could be reduced to ca. 3.5 GByte or less (when using 32 bit operating systems).

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Technical data

Installation Slots and Drives

Installation Slots

- Internal: 2x 3.5"
- Front: 3x 5.25" / 4x low-profile removable frame; 1x slim

Hard disks (HDD) SATA 3.5" or Solid-state drive (SSD) SATA 2.5"

- Internal installation on the drive carrier plate
- 1x 500 GByte HDD (up to 3g/0.3g)
 - 1x 240 GByte SSD
- Internal installation in drive holder (shock and vibration-damped) (up to 5g/0.5g)
- 1 x 500 GByte HDD
 - 1 x 1 TByte HDD
 - 2 x 1 TByte HDD
 - RAID1¹⁾, 1 TByte (2x 1 TByte HDD, Mirroring)
 - RAID1¹⁾, 1 TByte (2x 1 TByte HDD, Mirroring) + 1x 240 GByte SSD⁴⁾
- Installation in front drive support in swap frame:
- 1x 500 GByte HDD
 - 1x 1 TByte HDD
 - 2x 1 TByte HDD
 - 1x 240 GByte SSD
 - RAID1¹⁾²⁾, 1 TByte (2x 1 TByte HDD, Mirroring)
 - RAID1¹⁾²⁾, 1 TByte (2x 1 TByte HDD, Mirroring) + 1x 1 TByte HDD³⁾
 - RAID1¹⁾²⁾, 1 TByte (2x 1 TByte HDD, Mirroring) + 1x 240 GByte SSD⁴⁾
 - RAID5¹⁾²⁾, 2 TByte (3x 1 TByte HDD, striping with parity)
 - RAID5¹⁾²⁾, 2 TByte (3x 1 TByte HDD, striping with parity) + 1x 1 TByte HDD³⁾

- 1) RAID controller onboard
2) Hot-swap (if installed in removable frames at the front)
3) Hot spare disk
4) Operating system if ordered is installed on SSD

Optical Drive

- w/o / DVD±R/RW (slim)

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Technical data

Graphics, Power Supplies and Operating Systems

Graphics	<ul style="list-style-type: none"> Onboard Intel HD Graphics 4600 integrated in the processor with Dynamic Video Memory with up to 1.7 GByte VGA, DVI and DisplayPort with up to 3840 x 2160 pixels at 60 Hz image refresh rate and 32 bit colors PCI-Express graphics card in PCIe x16 slot (as an option) NVIDIA NVS 300 graphics controller with 512 MByte graphics memory Dual Head: 2x VGA or 2x DVI-D with up to 2048 x 1536 pixels at 60 Hz image refresh rate and 32 bit colors
Power Supplies	<ul style="list-style-type: none"> AC: 100-240 V, 400 W, wide range AC redundant: 2x 100-240 V, 350 W, wide range (as an option)
Short-time voltage interruption	<ul style="list-style-type: none"> Max. 20 ms
Operating Systems	<ul style="list-style-type: none"> W/o Pre-installed and activated (and enclosed on Restore DVD): Windows 7 Ultimate, MUI¹⁾ (32 / 64 bit), SP 1 Windows Server 2008 R2 incl. 5 clients, MUI¹⁾ (64 bit), SP 1

¹⁾ Multi Language User Interface, 5 languages: English, German, French, Spanish, Italian

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Interfaces	
Ethernet	<ul style="list-style-type: none">• 2x Gigabit Ethernet (IE/PN), RJ 45, teaming capable• Intel Ethernet Controller WGi217LM und WGi210IT• Wake on LAN (WoL) support
PROFIBUS DP/MPI	<ul style="list-style-type: none">• 12 Mbit/s, isolated, compatible with CP 5622, (optional)
PROFINET	<ul style="list-style-type: none">• 10/100 Mbit/s with integral 3-port switch, CP1616-compatible (optional)
DisplayPort	<ul style="list-style-type: none">• 2x (V1.2)
DVI-I	<ul style="list-style-type: none">• 1x
VGA	<ul style="list-style-type: none">• Via cable adapter (as an option)
USB 3.0 (high current)	<ul style="list-style-type: none">• Front: 1x• Rear: 2x• Internal: 1x
USB 2.0 (high current)	<ul style="list-style-type: none">• Front: 1x• Rear: 2x
Serial	<ul style="list-style-type: none">• 1x COM1 (V.24)• 1x COM2 (V.24) (as an option)
Parallel	<ul style="list-style-type: none">• 1x LPT (EPP/ECP) (as an option)
PS/2	<ul style="list-style-type: none">• 2x (Keyboard, Mouse)
Audio	<ul style="list-style-type: none">• 1x Line Out, 1x Micro

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Electromagnetic Compatibility (EMC)

Noise emissions	<ul style="list-style-type: none"> • EN 61000-6-3, EN 61000-6-4 • EN 61000-3-2 Class D; EN 61000-3-3 • CISPR 22 • EN 55022 Class B • FCC Class A
Immunity against conducted interference on the supply lines	<ul style="list-style-type: none"> • ± 2 kV; according to IEC 61000-4-4; Burst • ± 1 kV; according to IEC 61000-4-5; Surge symm. • ± 2 kV; according to IEC 61000-4-5; Surge asymm.
Noise immunity on signal lines	<ul style="list-style-type: none"> • ± 2 kV; according to IEC 61000-4-4; Burst, length > 30 m • ± 1 kV; according to IEC 61000-4-4; Burst, length < 30 m • ± 2 kV; according to IEC 61000-4-5; Surge, length > 30 m
Immunity against discharge of static electricity	<ul style="list-style-type: none"> • ± 6 kV contact discharge; according to IEC 61000-4-2 • ± 8 kV discharge to air; according to IEC 61000-4-2
Immunity against high-frequency radiation	<ul style="list-style-type: none"> • 10 V/m, 80 MHz to 1 GHz, 80% AM; according to IEC 61000-4-3 • 3 V/m, 1.4 to 2 GHz, 80% AM; according to IEC 61000-4-3 • 10 V, 150 kHz to 80 MHz; according to IEC 61000-4-6
Immunity against magnetic fields	<ul style="list-style-type: none"> • 100 A/m, 50/60 Hz; according to IEC 61000-4-8

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Technical data

System-tested SIMATIC Software, Approvals, Dimensions and Weight

SIMATIC Software	<ul style="list-style-type: none"> • STEP 7 • WinAC • WinCC • SOFTNET
Safety regulations	<ul style="list-style-type: none"> • IEC60950-1 • EN60950-1 • UL60950-1 • CSA C22.2 No. 60950-1-07
Approvals	<ul style="list-style-type: none"> • CE • cULus (UL 60950) • KC • C-Tick
CE Mark	<p>Operation in residential, office, and industrial areas</p> <ul style="list-style-type: none"> • Interference emission: EN 61000-6-3:2007 + A1:2011 • Noise immunity: EN 61000-6-2:2005
EU Directives	<ul style="list-style-type: none"> • RoHS
Installation dimensions	430 mm x 177 mm x 444 mm (W x H x D)
Weight	From 16 kg

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Turbo Boost 2.0 (Xeon)

Depending on the CPU core utilization and the temperature levels (TDP and ambient temperature), CPUs which support Turbo Boost technology automatically increase the clock frequency of CPU cores in steps of 133 MHz (bins). Additionally the graphics frequency increases.

The Intel Xeon Processor E3-1268L v3 offers these Turbo Boost values

- Processor frequency: 2.3 GHz Max. frequency (Turbo): 3.3 GHz
- Graphics frequency: 350 MHz Max. frequency (Turbo): 1000 MHz
- Burst Mode: Increased over clocking of the cores by utilizing the thermal budget (TDP) of the CPU for a short time



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RAID1 vs. RAID5: Overview

RAID 1: Data mirroring

Process

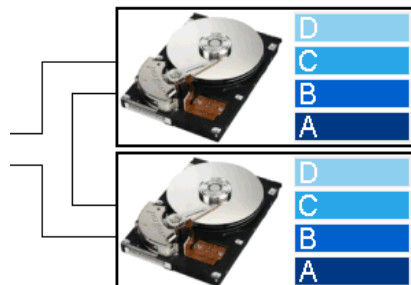
Data is being duplicated and written in parallel on two HDDs

Advantages

- Same data set is secured automatically
- If one HDD fails, the system is still working
→ No data is lost
- Simple data recovery

Disadvantage

- Only the capacity of one HDD can be effectively used



RAID 5: Data striping with parity

Process

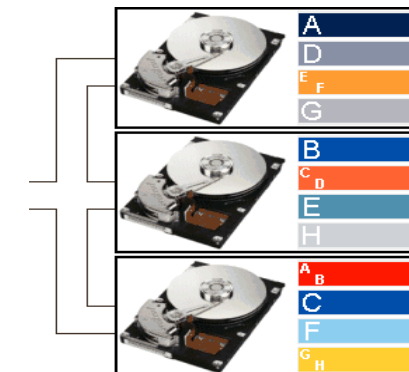
Data is being written block by block (striping) on all HDDs (with check sums on all HDDs)

Advantages

- Very efficient with small data blocks
- High data transfer rates when reading
- If one HDD fails, the system is still working
→ No data is lost
- Cost-effective possibility for redundant data storage on several HDDs with the available memory volume efficiently used

Disadvantages

- At least three HDDs are required
- Slower data transfer rates when writing compared to RAID1 as the error correction data (parity bits) has to be calculated



NEW: Additional HDD as hot spare in RAID configurations

Process

Hot spare disks are preparatory HDDs that are kept on active standby for use when a HDD in a RAID configuration fails

Advantages

- Automatic integration of the hot spare disk into the RAID configuration and start of the rebuild process in case of failure of a contained HDD
- Maximum data availability

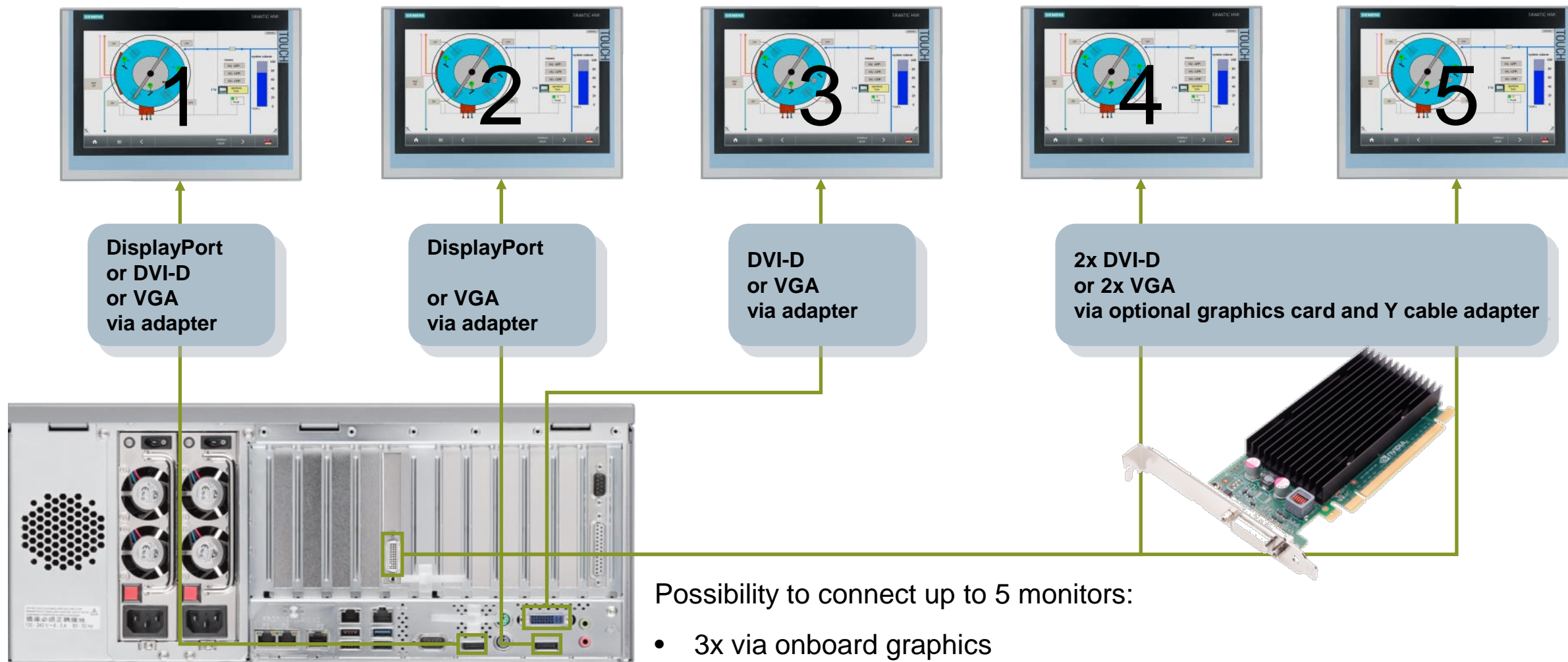
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RAID1 vs. RAID5: Feature comparison

RAID features	RAID1 (Mirroring)	RAID5 (Striping with parity)
Minimum amount of HDDs	2 (2x 1 TByte)	3 (3x 1 TByte)
Data security	Failure of one HDD	Failure of one HDD
Read performance	Medium	High
Write performance	Medium	Low
Capacity utilization of HDDs	50% (1 TByte)	67% - 94% (2 TByte)
Benefits	High data availability in case of a single HDD failure	Optimal utilization of the used HDD capacity with high fault tolerance
Typical applications	Real-time critical applications, e.g. databases	Storage of large data volumes, e.g. archiving

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Multi-Monitoring (Intel Hybrid Multi-Monitor Support)



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Graphics card

NVIDIA Quadro NVS 300 graphics card

NVIDIA Quadro graphics processor:	16 CUDA parallel computing cores ¹⁾
Overall frame buffer:	512 MByte
Width of the memory interface:	64 bit
Memory bandwidth:	12.6 Gbit/s
Max. digital monitor resolution at 60 Hz:	2560 x 1600
Graphics slot:	PCI-Express x16
Form factor:	69.37 mm x 167.64 mm (ATX bracket, 1 slot)
Interfaces:	2x DVI-D or 2x VGA
Max. power:	17 W
Cooling:	Fanless
Scope of supply in configurator:	DMS-59 to DVI-D adapter or DVI to VGA adapter
API:	OpenGL 3.3 DirectX 10.1 Shader Model 4.1



¹⁾ CUDA, the parallel calculation architecture from NVIDIA, enables a significant increase in computing performance, using the performance of the graphics processor.

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Migration C→D

IPC847C



IPC847D

Installation compatibility

Housing measures

No changes

Housing design

No major changes

Interface compatibility

Number of expansion slots

No changes

Type of expansion slots

1x PCIe x16 Gen 3 instead of 1x PCIe x16 Gen 2

Installation slots front

- 3x 5.25" / 4x low-profile removable frame instead of 2x 5.25" / 3x low-profile removable frame
- 1x 5.25" (slim) for DVD±R/RW instead of 1x 5.25" for DVD-ROM / DVD±R/RW & 1x 3.5"



External interfaces

- 2x DisplayPort V1.2 and DVI-I instead of 1x DVI-I
- 4x USB 3.0 & 3x USB 2.0 instead of 7x USB 2.0
- COM2 & LPT as Slot (option) instead of COM2 & LPT onboard



Software compatibility

Software

Applications can still be used; maybe new drivers need to be loaded



Operating system support

- Windows XP 7 / Windows Server 2003 R2 (32 bit) / Windows Server 2008 (32 bit) not available anymore



Miscellaneous compatibility

Image

New chipset, therefore not image compatible

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Order information



Body-MLFB

6AG4114-2....-....

Ordering system

- A&D Mall: <http://www.siemens.de/automation/mall>
- Online configurator: <http://www.siemens.com/ipc-configurator>
- Excel configurator: <http://intra1.nbgm.siemens.de/pccconfig>

Support

- Presales: presales-ipc.i-ia@siemens.com
- Aftersales: <http://www.siemens.com/asis>
<http://www.siemens.com/automation/support-request>