SIEMENS

Data sheet

6ES7647-8BA12-0AA3

SIMATIC IPC227E (Nanobox PC); 1x display port; 2x 10/100/1000 Mbit/s Ethernet RJ45; 1 x USB3.0, 3 x USB2.0; CFast slot; 24 V DC industrial power supply Celeron N2807 (2C/2T) 2 GB RAM; Box: Basis with COM 1/2 without operating system without mass storage, with CFast slot without SIMATIC software Vertical mounting

Installation type/mounting	
Mounting	DIN rail, wall mounting, portrait mounting
Design	Box PC, built-in unit
Supply voltage	
Type of supply voltage	24 V DC
Mains buffering	
 Mains/voltage failure stored energy time 	20 ms
Processor	
Processor type	Intel Celeron N2807 / N2930, Intel Atom E3845
Chipset	SoC
Graphic	
Graphics controller	Integrated
Drives	
Hard disk	2.5" SATA ≥ 320 GB
SSD	Yes; 256 Eco / 240 / 480 GB
Memory	
Type of memory	DDR3L SO-DIMM
Main memory	2/4/8 GB
Capacity of main memory, max.	8 Gbyte
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	512 kbyte; 128 KB can be stored in the buffer time; optional
Hardware configuration	
Slots	
• free slots	1x PCIe (x1) (optional)
 Number of PCI slots 	1; Optional
Number of compact flash slots	1; CFast
Interfaces	
Number of industrial Ethernet interfaces	2; 2x Ethernet (RJ45)
USB port	1x USB 3.0 / 3x USB 2.0
Connection for keyboard/mouse	USB / USB
serial interface	Without / 2x COM (RS 232 / 422 / 485), selectable in the BIOS
Video interfaces	
Graphics interface	1x DisplayPort
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	1x power, 3x user
• Fan	No
Monitoring function via network	Optional
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 fi	
incherence initiality against high-frequency electromagnetic ti	

Uniterference immunity in castle-borne interference Interference immunity on supply cables Interference immunity on signal cables > 30m Interference immunity operation interference Interference immunity operation interference Interference immunity in originate fields Interference immunity int	Interference immunity against high frequency radiation	10 V/m for 80 - 1 000 MHz and 1.4 - 2 GHz, 80% AM acc. to IEC 61000-4-3; 3
Interference immunity on supply cables 22 kM acc. to IEC 61000-4-5, burst ± 14 W acc. to IEC 61000-4-5, surge symmetric 24 W acc. to IEC 61000-4-5, surge symmetric 24 W acc. to IEC 61000-4-5, surge symmetric 24 W acc. to IEC 61000-4-6, burst length > 3 m at W acc. to IEC 61000-4-2 burst length > 3 m at W acc. to IEC 61000-4-2 burst length > 3 m at W acc. to IEC 61000-4-2 burst length > 3 m at W acc. to IEC 61000-4-2 burst length > 3 m at W acc. to IEC 61000-4-2 burst length > 3 m at W acc. to IEC 61000-4-2 burst length > 3 m at W acc. to IEC 61000-4-2 burst length > 3 m at W acc. to IEC 61000-4-2 burst length > 3 m at W acc. to IEC 61000-4-2 burst length > 3 m at W acc. to IEC 61000-4-2 burst length > 3 m at W acc. to IEC 61000-4-2 burst length > 3 m at W acc. to IEC 61000-4-2 burst length > 3 m at W acc.		
symmetric, 32 kV acc. to IEC 610004-5, surge asymmetric 12 kV acc. to IEC 610004-6, surge asymmetric 12 kV acc. to IEC 610004-6, surge asymmetric 12 kV acc. to IEC 610004-8, surge asymmetric 12 kV acc. to IEC 610004-6, surge asymmetric 12 kV acc. to IEC 610004-8, surge asymmetric 12 kV acc.	Interference immunity to cable-borne interference	
Interference immunity against voltage surge	Interference immunity on supply cables	
interference immunity against voltage surge asymmetric interference immunity to magnetic fields at 50 Hz Emission of conducted and non-conducted interference asymmetric interference emission via line/AC current cables begins and class of protection IP degree of protection of	 Interference immunity on signal cables >30m 	±2 kV acc. to IEC 61000-4-5, surge, length > 30 m
Literateric interference ±2 kV acc. to IEC 61000-4-5, surge asymmetric symmetric interference ±1 kV acc. to IEC 61000-4-5, surge asymmetric symmetric interference ±1 kV acc. to IEC 61000-4-5, surge asymmetric ±1 kV acc. to IEC 61000-4-5, surge asymmetric ±1 kV acc. to IEC 61000-4-8 ±1 kV acc. to IEC 61000-4-2 (IEC 61	 Interference immunity on signal cables < 30m 	±1 kV acc. to IEC 61000-4-4; burst; length < 3 m; ±2 kV acc. to IEC 61000-4-4;
asymmetric interference symmetric interference interference immunity to magnetic fields at 50 Hz Interference immunity to magnetic fields at 50 Hz Emission of conducted and non-conducted interference interference emission via line/AC current cables En 61000-6-3. En 61000-6-4. CISPR 22 Class B, FCC Class A Degree and class of protection IP degree of protection IP degree of protection Standards, approvals, certificates CE mark Ves UL approval Yes CULUS COS Yes CULUS Class 1200-8-22005 COS Yes		burst; length > 3 m
enterference immunity to magnetic fields	Interference immunity against voltage surge	
Interference immunity to magnetic fields Interference immunity to magnetic fields at 50 Hz Emission of conducted and non conducted interference Interference emission via line/AC current cables En 61000-6-3, EN 61000-6-4, CISPR 22 Class B, FCC Class A Degree and class of protection IP degree of protection IP degree of protection IP degree of protection Standards, approvals, certificates CE mark Ves UL. spproval Ves CC mark Ves CLUS RCM (formetry C-TICK) Ves RCM (formetry C-TICK) Ves FCC Yes ENC CE, EN 61000-6-4-2007, EN 61000-6-2-2005 Data protection Protection against foreign bodies > 1 mm Usas in hazardous areas ATEX Zone 2 ICCS Z	 asymmetric interference 	±2 kV acc. to IEC 61000-4-5, surge asymmetric
Interference immunity to magnetic felds at 50 Hz Emission of conducted and non-conducted interference Interference emission via fina/AC current cables Profession of protection IP40 IP	symmetric interference	±1 kV acc. to IEC 61000-4-5, surge symmetric
Einseson of conducted and non-conducted interference Interference emission via limelAC current cables Ein 61000-6-3, Ein 61000-6-4, CISPR 22 Class B, FCC Class A Degree and class of protection IP degree of protection IV es UL approval Ves UL 508 Ves cUL 508 CUL 508 CV yes CCE mark Ves CCE, Ein 61000-6-4-2007, Ein 61000-6-2-2005 Ein CCC Ein CCC	Interference immunity to magnetic fields	
■ Interference emission via line/AC current cables EN 61000-6-3, EN 61000-6-4, CISPR 22 Class B, FCC Class A	Interference immunity to magnetic fields at 50 Hz	100 A/m; to IEC 61000-4-8
Degree and class of protection	Emission of conducted and non-conducted interference	
IP degree of protection Standards, approvals, certificates CE mark Ves UL approval • UL 508 • UL 508 • UL 508 CUlus RCM (formerly C-TICK) Yes RCM (formerly C-TICK) Yes FCC Yes FMC CE, R 61000-8-4:2007, EN 61000-8-2:2005 Dust protection Protection against foreign bodies > 1 mm Use in hazardous areas • ATEX Zone 2 • ICER Xone 2 • ICER Stone 3 • ATEX Sune 3 • ATEX Sune 3 • ATEX Sune 3 • ICER Xone 4 • ICER Xone 5 • ICER Xone 5 • ICER Xone 6 • ICER Xone 7 • ICER Xone 7 • ICER Xone 8 • ATEX Sune 8 • ICER Xone 9	Interference emission via line/AC current cables	EN 61000-6-3, EN 61000-6-4, CISPR 22 Class B, FCC Class A
Standards, approvals, certificates CE mark Ves UL approval • UL 508 CULus Pes CULUS RCM (formerly C-TICK) Yes RCM (formerly C-TICK) Yes RCM (formerly C-TICK) Yes PCC EMC CE, EN 61000-6-4:2007, EN 61000-6-2:2005 Dust protection Dust protection against foreign bodies > 1 mm Wes in hazardous areas • ATEX Zone 2 • ECCEX Zone 2 • CULUs Class I Zone 2. Division 2 Yes; Optional Marine approval • Germanischer Lloyd (GL) • American Bureau of Shipping (ABS) • Bureau Veritas (BV) • Det Norsek Veritas (DNV) • Corean Register of Shipping (KRS) • Lloyds Register of Shipping (KRS) • Lloyds Register of Shipping (KRS) • Lloyds Register of Shipping (KRS) • Chinese Classification Society (CCS) Ambient conditions Ambient temperature during operation • min. • max. 60 °C Relative humidity • Relative humidity • Relative humidity • Relative humidity • Vibration resistance during operation acc. to IEC 60068-2-6 2-6 Shock teating • Shock load during operation • Tested according to IEC 60068-2-6: 10 Hz to 58 Hz: 0.075 mm, 58 Hz to 200 Hz: 9.8 m/s² (1) g **Coperating systems pre-installed operating system Vibroorating systems Pre-installed operating system Additional Info on operating system Ves; Optional	Degree and class of protection	
CE mark UL approval • UL 508 • UL 508 • UL 508 CULUS RCM (formerly C-TICK) Yes RCM (formerly C-TICK) Yes RCM (formerly C-TICK) Yes FCC Yes EMC CE, EN 61000-6-4:2007, EN 61000-6-2:2005 Dust protection Protection against foreign bodies > 1 mm Use in hazardous areas • ATEX Zone 2 • EECEX Zone 2 • ECULUS Class I Zone 2, Division 2 Yes: Optional Aramican Bureau of Shipping (ABS) • American Bureau of Shipping (ABS) • Bureau Vertias (BV) • Det Norske Vertias (BV) • Norsan Register of Shipping (RS) • Nippon Kaji Kryokai (Class NK) • Chinese Classification Society (CCS) Ambient conditions Ambient temperature during storage/transportation • min. • max. 60 °C Ambient temperature during storage/transportation • min. • max. Relative humidity • Relative humidity • Relative humidity • Shock load during operation acc. to IEC 60068-2-6 2-6 Shock leading system Pre-installed operating system Pre-installed operating system Vibrodors Vibrodors Vibrodors Final May Standard Ship, MU, Windows Embedded Standard 7 E/P, 32-bit /84-bit (Industrial OS) without operating system Vibrodors Final May Standard Ship, MU, Windows Embedded Standard 7 E/P, 32-bit /84-bit (Industrial OS) without operating system Vibrodors Final May Standard Ship, MU, Windows Embedded Standard 7 E/P, 32-bit /84-bit (Industrial OS) without operating system Vibrodors Final May Standard Ship, MU, Windows Embedded Standard 7 E/P, 32-bit /84-bit (Industrial OS) without operating system Vibrodors Final Multi Mindows Final Multi Windows Embedded Standard 7 E/P, 32-bit /84-bit (Industrial OS) without operating system Vibrodors Vibrodors Windows Final May Final Multi Windows Embedded Standard 7 E/P, 32-bit /84-bit (Industrial OS) without operating system Ves Optional	IP degree of protection	IP40
UL soproval UL soproval UL so Yes RCM (formerly C-TICK) Yes RCM (formerly C-TICK) Yes FCC Yes EMC CE, EM 61000-6-4:2007, EM 61000-6-2:2005 Dust protection Use in hazardous areas ATEX Zone 2 **(ECEX Zone 2 **(ECEX Zone 2 **(CULus Class I Zone 2, Division 2 Marine approval Germanischer Lloyd (GL) **American Bureau of Shipping (ABS) **Bureau Veritas (BV) **Optional Chroma Register of Shipping (RRS) **De Horske Veritas (DNV) **Norean Register of Shipping (RRS) **L loyds Register of Shipping (RRS) **L loyds Register of Shipping (RS) **L loyds Register of Shipping (LRS) **Onlinese Classification Society (CCS) **Ambitiont conditions Ambitiont conditions Ambitiont conditions Ambition temperature during operation **min.** **max.** **Belative humidity **Relative humidity **Relative humidity **Relative humidity **Relative humidity **Tested according to IEC 60068-2-78. IEC 60068-2-30: Operation: 5 % to 85 % at 25 / 56 °C (no condensation). storage / transport: 5 % to 95 % at 25 / 56 °C (no condensation) **Vibrations **Vibrations **Vibrations **Arbition resistance during operation occ. to IEC 60068-2-6: 10 Hz to 58 Hz: 0.075 mm, 58 Hz to 200 Hz: 9.8 m/s² (1 g) **Shock lead during operation Tested according to IEC 60068-2-6: 10 Hz to 58 Hz: 0.075 mm, 58 Hz to 200 Hz: 9.8 m/s² (1 g) **Shock leating **Shock leating operation Tested according to IEC 60068-2-6: 10 Hz to 58 Hz: 0.075 mm, 58 Hz to 200 Hz: 9.8 m/s² (1 g) **Mindows 7 Ultimate 32-bit / 64-bit, MUI; Windows Embedded Standard 7 E/P, 32-bit / 64-bit in dustrial OS without operating system **Windows 7 Ultimate 32-bit / 64-bit, MUI; Windows Embedded Standard 7 E/P, 32-bit / 64-bit in dustrial OS without operating system **Windows Findal Findal Standard Operating operation operating system **Windows Findal	Standards, approvals, certificates	
Ves	CE mark	Yes
CULLUS RCM (formerly C-TICK) Yes RCM (formerly C-TICK) Yes FCC Yes EMC CE, EN 61000-6-4:2007, EN 61000-6-2:2005 Dust protection Use in hazardous areas • ATEX Zone 2 • (ECEX Zone 2) •	UL approval	Yes
RCM (formerly C-TICK) KC approval KC approval Yes FCC Yes EMC CCE, EN 61000-6-4:2007, EN 61000-6-2:2005 Dust protection Use in hazardous areas • ATEX Zone 2 • IECEx Zone 2 • IECEx Zone 2 • CULus Class I Zone 2, Division 2 Personal Germanischer Lloyd (GL) • American Bureau of Shipping (ABS) • Bureau Veritas (BV) • Cermanischer Lloyd (GL) • American Bureau of Shipping (ABS) • Bureau Veritas (BV) • Det Norske Veritas (DNV) • Korean Register of Shipping (KRS) • Lloyds Register of Shipping (KRS) • Nippon Kaiji Kyokai (Class NK) • Chinese Classification Society (CCS) Ambient temperature during operation • min. • max. Ambient temperature during operation • min. • max. Ambient temperature during storage/transportation • min. • max. Relative humidity • Shock load during operation acc. to IEC 60068-2-6 2-6 Shock Isetting • Windows 7 Ultimate 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUI, Windows Embedded Standard 7 E	• UL 508	Yes
Yes FCC Yes	cULus	Yes
FCC EMG CE, EN 61000-6-4:2007, EN 61000-6-2:2005 Dust protection Use in nazardous areas • ATEX Zone 2 • IECEX Zone 2 • CULus Class I Zone 2, Division 2 American Bureau of Shipping (ABS) • Bureau Veritas (BV) • Det Norske Verifas (DNV) • Oet Norske Verifas (DNV) • Norean Register of Shipping (KRS) • Lloyds Register of Shipping (KRS) • Unoyds Register of Shipping (KRS) • Chinese Classification Society (CCS) **Ambient temperature during operation • min. • max. Ambient temperature during storage/transportation • min. • max. • 60 °C Relative humidity • Relative humidity • Relative humidity • Relative humidity • Shock load during operation acc. to IEC 60068- 2-6 Shock testing • Shock load during operation Tested according to IEC 60068-2-27: 150 m/s², 11 ms Operating system Windows 7 Ultimate 32-bit / 64-bit, MUI; Windows Embedded Standard 7 E/P, 32-bit / 64-bit and popular a	RCM (formerly C-TICK)	Yes
EMC Dust protection Protection Protection against foreign bodies > 1 mm Vese in hazardous areas • ATEX Zone 2 Yes; Optional • IECEx Zone 2 Yes; Optional • Cermanischer Lloyd (GL) Yes • Cermanischer Lloyd (GL) Yes • American Bureau of Shipping (ABS) Yes • Bureau Veritas (BV) Yes • Det Norske Veritas (DNV) Yes • Lloyds Register of Shipping (LRS) Yes • Nippon Kajii (Kyokai (Class NK) Yes • Nippon Kajii (Kyoka	KC approval	Yes
Dust protection Use in hazardous areas ATEX Zone 2 (EICEX Zone 2	FCC	Yes
Ves. Optional	EMC	CE, EN 61000-6-4:2007, EN 61000-6-2:2005
ATEX Zone 2 IECEx Zone 2 CULus Class I Zone 2, Division 2 Wes; Optional Yes; Optional Yes; Optional Yes; Optional Amarine approval Germanischer Lloyd (GL) American Bureau of Shipping (ABS) Bureau Veritas (BV) Det Norske Veritas (DNV) Korean Register of Shipping (KRS) Lloyds Register of Shipping (KRS) Lloyds Register of Shipping (KRS) Nippon Kaiji Kyokai (Class NK) Chinese Classification Society (CCS) Ambient conditions Ambient temperature during operation min. max. 60 °C Ambient temperature during storage/transportation min. max. 60 °C Relative humidity Relative humidity Relative humidity Tested according to IEC 60068-2-78, IEC 60068-2-30. Operation: 5 % to 85 % at 30 °C (no condensation), storage / transport: 5 % to 95 % at 25 / 55 °C (no condensation) Vibrations Vibrations Vibration resistance during operation o vicinal standard operation Tested according to IEC 60068-2-78, IE	Dust protection	Protection against foreign bodies > 1 mm
IECEX Zone 2 • cULus Class I Zone 2, Division 2 Yes; Optional Arine approval Germanischer Lloyd (GL) • American Bureau of Shipping (ABS) • Bureau Veritas (BV) • Det Norske Veritas (DNV) • Korean Register of Shipping (KRS) • Lloyds Register of Shipping (KRS) • Nippon Kaiji Kyokai (Class NK) • Chinese Classification Society (CCS) Ambient conditions Ambient temperature during operation • min. • max. • 0° C; -20 °C as option • max. Ambient temperature during storage/transportation • min. • max. • 60 °C Relative humidity • Relative humidity • Relative humidity • Relative numing operation acc. to IEC 60068-2-6 • tested according to IEC 60068-2-78, IEC 60068-2-30: Operation: 5 % to 85 % at 30 °C (no condensation), storage / transport. 5 % to 95 % at 25 / 55 °C (no condensation) • tested according to IEC 60068-2-78, IEC 60068-2-30: Operation: 5 % to 85 % at 30 °C (no condensation) according to IEC 60068-2-78,	Use in hazardous areas	
CULus Class I Zone 2, Division 2 Marine approval Germanischer Lloyd (GL) American Bureau of Shipping (ABS) Bureau Veritas (BV) Det Norske Veritas (DNV) Korean Register of Shipping (KRS) Lloyds Register of Shipping (KRS) Nippon Kajij Kyokai (Class NIK) Chinese Classification Society (CCS) Ambient conditions Ambient temperature during operation min. min. 0 °C; -20 °C as option max. 60 °C Ambient temperature during storage/transportation min. canacter and the second of t	ATEX Zone 2	Yes; Optional
Germanischer Lloyd (GL)	• IECEx Zone 2	Yes; Optional
Germanischer Lloyd (GL) American Bureau of Shipping (ABS) Bureau Veritas (BV) Det Norske Veritas (DNV) Korean Register of Shipping (KRS) Lloyds Register of Shipping (LRS) Albient conditions Ambient conditions Ambient temperature during operation min. max. Mine max. Mine Max. Mine Relative humidity Relative humidity Relative humidity Relative humidity Relative numidity Ves (Noraen Register of Shipping (LRS)) Tested according to IEC 60068-2-6: 10 Hz to 58 Hz: 0.075 mm, 58 Hz to 200 Hz: 9.8 m/s² (1 g) Norae Relative Diving operation Vibrations At Vibration resistance during operation Norae Relative furning operation Norae Relative furning operation Norae Relative furning operation Norae Relative furning operation acc. to IEC 60068-2-8 furning operation operati	• cULus Class I Zone 2, Division 2	Yes; Optional
American Bureau of Shipping (ABS) Bureau Veritas (BV) Det Norske Veritas (DNV) Ves Det Norske Veritas (DNV) Korean Register of Shipping (KRS) Lloyds Register of Shipping (LRS) Nippon Kaiji Kyokai (Class NK) Chinese Classification Society (CCS) Ambient conditions Ambient temperature during operation min. o °C; -20 °C as option min. max. 60 °C Ambient temperature during storage/transportation min. o °C; -20 °C Manual Company min. o °C Relative humidity Relative humidity Tested according to IEC 60068-2-78, IEC 60068-2-30: Operation: 5 % to 85 % at 30 °C (no condensation), storage / transport: 5 % to 95 % at 25 / 55 °C (no condensation) Vibrations Vibration resistance during operation acc. to IEC 60068-2-6 Shock testing Shock load during operation Tested according to IEC 60068-2-6: 10 Hz to 58 Hz: 0.075 mm, 58 Hz to 200 Hz: 9.8 m/s² (1 g) Shock load during operation Tested according to IEC 60068-2-27: 150 m/s², 11 ms Operating systems pre-installed operating system Windows 7 Ultimate 32-bit / 64-bit, MUl; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUl; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUl; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUl; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUl; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUl; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, MUl; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, Mul; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, Mult; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, Mult; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, Mult; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, Mult; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, Mult; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, Mult; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, Mult; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, Mult; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, Mult; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, Mult; Windows Embedded Standard 7 E/P, 32-bit / 64-bit, Mult; Windows Embedd	Marine approval	
Bureau Veritas (BV) Det Norske Veritas (DNV) Korean Register of Shipping (KRS) Lloyds Register of Shipping (LRS) Lloyds Register of Shipping (LRS) Nippon Kajij Kyokai (Class NK) Chinese Classification Society (CCS) Ambient conditions Ambient temperature during operation min. O °C; -20 °C as option max. 60 °C Ambient temperature during storage/transportation min. C 20 °C max. C 60 °C Relative humidity Relative humidity Tested according to IEC 60068-2-78, IEC 60068-2-30. Operation: 5 % to 85 % at 30 °C (no condensation), storage / transport: 5 % to 95 % at 25 / 55 °C (no condensation) Vibrations Vibration resistance during operation Vibration resistance during operation Tested according to IEC 60068-2-6: 10 Hz to 58 Hz: 0.075 mm, 58 Hz to 200 Hz: 9.8 m/s² (1 g) Shock testing Shock load during operation Tested according to IEC 60068-2-7: 150 m/s², 11 ms Operating systems pre-installed operating system Windows 7 Ultimate 32-bit / 64-bit, MUI; Windows Embedded Standard 7 E/P, 32-bit / 64-bit Additional info on operating system Ves; Optional	 Germanischer Lloyd (GL) 	Yes
Obet Norske Veritas (DNV) Korean Register of Shipping (KRS) Korean Register of Shipping (LRS) Lloyds Register of Shipping (LRS) Nippon Kalji Kyokai (Class NK) Yes Nippon Kalji Kyokai (Class NK) Yes Chinese Classification Society (CCS) Ambient conditions Ambient temperature during operation min. 0 °C; -20 °C as option max. 60 °C Ambient temperature during storage/transportation min. -20 °C max. 60 °C Relative humidity Relative humidity Relative humidity Tested according to IEC 60068-2-78, IEC 60068-2-30: Operation: 5 % to 85 % at 30 °C (no condensation), storage / transport: 5 % to 95 % at 25 / 55 °C (no condensation) Vibrations Vibration resistance during operation acc. to IEC 60068-2-6: 10 Hz to 58 Hz: 0.075 mm, 58 Hz to 200 Hz: 9.8 m/s² (1 g) Shock testing Shock load during operation Tested according to IEC 60068-2-27: 150 m/s², 11 ms Operating systems pre-installed operating system Windows 7 Ultimate 32-bit / 64-bit, MUI; Windows Embedded Standard 7 E/P, 32-bit / 64-bit Additional info on operating system vestor Optional: SIMATIC Industrial OS without operating system Yes; Optional	 American Bureau of Shipping (ABS) 	Yes
Korean Register of Shipping (KRS) Lloyds Register of Shipping (LRS) Nippon Kaiji Kyokai (Class NK) Chinese Classification Society (CCS) Ambient conditions Ambient temperature during operation min.	Bureau Veritas (BV)	Yes
Lloyds Register of Shipping (LRS) Nippon Kaiji Kyokai (Class NK) Yes Chinese Classification Society (CCS) Ambient conditions Ambient temperature during operation • min. • max. • 60 °C Ambient temperature during storage/transportation • min. • max. • 60 °C Ambient temperature during storage/transportation • min. • 20 °C • max. • 60 °C Relative humidity • Relative humidity • Relative humidity • Vibrations • Vibration resistance during operation acc. to IEC 60068-2-6	 Det Norske Veritas (DNV) 	Yes
 Nippon Kaiji Kyokai (Class NK) Chinese Classification Society (CCS) Yes Ambient conditions Ambient temperature during operation min. max. 60 °C Ambient temperature during storage/transportation min. -20 °C Ambient temperature during storage/transportation min. -20 °C max. 60 °C Relative humidity Relative humidity Tested according to IEC 60068-2-78, IEC 60068-2-30: Operation: 5 % to 85 % at 30 °C (no condensation), storage / transport: 5 % to 95 % at 25 / 55 °C (no condensation) Vibrations Vibration resistance during operation acc. to IEC 60068-2-6: 10 Hz to 58 Hz: 0.075 mm, 58 Hz to 200 Hz: 9.8 m/s² (1 g) Shock lesting Shock load during operation Tested according to IEC 60068-2-27: 150 m/s², 11 ms Operating systems Pre-installed operating system Windows 7 Ultimate 32-bit / 64-bit, MUI; Windows Embedded Standard 7 E/P, 32-bit / 64-bit Additional info on operating system Yes; Optional 	 Korean Register of Shipping (KRS) 	Yes
Chinese Classification Society (CCS) Ambient conditions Ambient temperature during operation ini. ini. ini. ini. ini. ini. ini.	 Lloyds Register of Shipping (LRS) 	Yes
Ambient conditions Ambient temperature during operation • min. • max. 60 °C Ambient temperature during storage/transportation • min. • max. 60 °C Ambient temperature during storage/transportation • min. • max. 60 °C Relative humidity • Tested according to IEC 60068-2-78, IEC 60068-2-30: Operation: 5 % to 85 % at 30 °C (no condensation), storage / transport: 5 % to 95 % at 25 / 55 °C (no condensation) Vibrations • Vibration resistance during operation acc. to IEC 60068-2-6: 10 Hz to 58 Hz: 0.075 mm, 58 Hz to 200 Hz: 9.8 m/s² (1 g) Shock testing • Shock load during operation Tested according to IEC 60068-2-27: 150 m/s², 11 ms Operating systems pre-installed operating system Windows 7 Ultimate 32-bit / 64-bit, MUI; Windows Embedded Standard 7 E/P, 32-bit / 64-bit Additional info on operating system ves; Optional	 Nippon Kaiji Kyokai (Class NK) 	Yes
Ambient temperature during operation • min. • max. 60 °C Ambient temperature during storage/transportation • min. • max. 60 °C Relative humidity • Relative humidity • Relative humidity • Relative humidity • Vibrations • Vibration resistance during operation acc. to IEC 60068-2-6: 10 Hz to 58 Hz: 0.075 mm, 58 Hz to 200 Hz: 9.8 m/s² (1 g) Shock testing • Shock load during operation • Windows 7 Ultimate 32-bit / 64-bit, MUI; Windows Embedded Standard 7 E/P, 32-bit / 64-bit and info on operating system Without operating system • Wishalf on operating system Windows 7 Ultimate 32-bit / 64-bit, MUI; Windows Embedded Standard 7 E/P, 32-bit / 64-bit and info on operating system Yes; Optional	Chinese Classification Society (CCS)	Yes
 min. max. 60 °C Ambient temperature during storage/transportation min. -20 °C max. 60 °C Relative humidity Relative humidity Relative humidity Tested according to IEC 60068-2-78, IEC 60068-2-30: Operation: 5 % to 85 % at 30 °C (no condensation), storage / transport: 5 % to 95 % at 25 / 55 °C (no condensation) Vibrations Vibration resistance during operation acc. to IEC 60068-2-6 Shock testing Shock load during operation Tested according to IEC 60068-2-6: 10 Hz to 58 Hz: 0.075 mm, 58 Hz to 200 Hz: 9.8 m/s² (1 g) Shock load during operation Tested according to IEC 60068-2-27: 150 m/s², 11 ms Operating systems Windows 7 Ultimate 32-bit / 64-bit, MUI; Windows Embedded Standard 7 E/P, 32-bit / 64-bit Additional info on operating system Ves; Optional 	Ambient conditions	
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pre-installed operating system Windows 7 Ultimate 32-bit / 64-bit, MUI; Windows Embedded Standard 7 E/P, 32-bit / 64-bit Additional info on operating system optional: SIMATIC Industrial OS without operating system Yes; Optional		Tested according to IEC 60068-2-27: 150 m/s², 11 ms
32-bit / 64-bit Additional info on operating system optional: SIMATIC Industrial OS without operating system Yes; Optional	Operating systems	
without operating system Yes; Optional	pre-installed operating system	
	Additional info on operating system	optional: SIMATIC Industrial OS
pre-installed operating system	without operating system	Yes; Optional
	pre-installed operating system	

Windows 7Windows 10	Yes; Ultimate 32 bit or 64 bit Yes; Windows 10 IoT Enterprise 2016 LTSB, 64bit, MUI
Windows 10 Enterprise	Yes; Windows 10 IoT Enterprise 2019 LTSC, 64 bit, MUI
Software	
SIMATIC Software	Optionally with pre-installed SIMATIC WinCC RT Advanced / Software Controller CPU 1500S software bundle
Dimensions	
Width	191 mm
Height	100 mm
Depth	60 mm

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