PRODUCTS AND DATASHEET

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Vertical Market PPC Marine Series Selection Guide

Model		S12A(SR)	S19A	S24A	S19M	S24M
Display	LCD Size	12.1"	19"	24"	19"	24"
	Max. Resolution	1024 x 768	1280 x 1024	1920 x 1080	1280 x 1024	1920 x 1080
	Brightness (cd/m²)	500 (1300)	300	300	300	300
	Contrast Ratio	500 : 1 (600 : 1)	2000:1	5000:1	2000:1	5000:1
	LCD Color	262K	16.7M	16.7M	16.7M	16.7M
	Pixel Pitch (mm) (HxV)	0.240 (H) x 0.240 (V)	0.294 x 0.294	276.75 x 276.75	0.294 x 0.294	276.75 x 276.75
	Viewing Angle (V/H)	120°/100° (160°/140°)	178° / 178°	178° / 178°	178° / 178°	178° / 178°
	Backlight MTBF (hrs)	50000 (100000)	50000	50000	50000	50000
Touch	Touchscreen	5-wire resistive type with RS-232 interface, 3H	Projected capacitive touch with USB interface, 6H			
	Touch Controller	PENMOUNT 6000	EETI EXC3000			
Motherboard	CPU	Intel® Atom™ N270 1.6GHz CPU	Intel® 22nm 4th Generation Mobile Core™ i5-4400E 2.7GHz processor		-	-
	Chipset	Intel® 945GSE + ICH7M	Intel® QM87	Intel® QM87	-	-
	RAM	Supports one 400/533 MHz DDR2 SO-DIMM (2GB max.)	Two 204-pin 1600/1333 MHz dual-channel DDR3 SDRAM support up to 16GB		-	-
	Ethernet	Realtek RTL8111CP PCIe GbE controller	GbE1: Intel® I217LM with Intel® AMT 9.0 support GbE2: Intel® I210-AT PCIe controller		-	-
	Audio Codec	Realtek ALC892 audio codec	N/A	N/A	-	-
I/O Ports and Switches		1 x 5-pin M12 connector for power adapter 1 x 8-pin M12 connector for two USB 1 x 5-pin M12 connector for CAN-bus and Audio line out 1 x 8-pin M12 connector for UART RS-232/422/485 1 x 8-pin M12 connector for UART RS-232 1 x 8-pin M12 connector for GbE LAN	3 x USB 2.0 2 x USB 3.0 1 x VGA 1 x DVI-D 1 x HDMI 1 x PS/2 (through Y-type cable supporting KB/MS) 2 x CAN-bus 2.0B, 3-pin terminal block (2.5KV isolation protection) 1 x DB-9 RS-232 (non-isolated) , 4 x DB-9 RS-232/422/485 (2.5KV isolation protection) 2 x RJ-45 GbE LAN with teaming support (2KV isolation protection) 1 x Mic-in 1 x Line-out 1 x Line-in 2 x Antenna SMA hole (reserved) 1 x Isolated 9V ~ 36V DC 3-pin terminal block 1 x Power button		• DVI-D Signal Input: 2 x DVI (24-pin, female) • VGA Signal Input: 2 x D-sub (15-pin, female) • VGA Signal Output: 1 x D-sub (15-pin, female) - Clone of VGA IN* • Composite Video Input: 1 x BNC connector (female) Composite Video Output: 1 x BNC connector (female) • RS-232/422/485 for remote control (Non-isolated) • Touchscreen: 1 x USB Type A connector (female) • Ethernet: 1 x RJ-45 connector for remote control • Isolated AC Power Inlet: 100V~240V AC • Isolated DC Terminal Block: 18V~36V DC • 1 x Buzzer	
Drive Bay	HDD Driver Bay	1 x 2.5" SATA HDD bay with anti-shock	N/A	N/A	-	-
	SSD	CF Type II	2 x SSD Bay & 1 x CFast	2 x SSD Bay & 1 x CFast	-	-
Expansion Slot		Built-in 802.11b/g/n wireless LAN module (internal PCIe Mini interface)	2 x PCIe Mini card	2 x PCIe Mini card	-	-
System Cooling		Fanless	Fanless	Fanless	Fanless	Fanless
Environment	Operating Temperature	-10°C ~50°C	-15°C to 55°C (5% to 95% RH)			
	Storage Temperature	-20°C~60°C	-20°C to 60°C			
IP Rating		Full IP 67	Front IP 66 / Rear IP 22			

Marine Series

The maritime field faces critical environmental challenges, making reliable and rugged systems essential. IEI provides maritime professionals and marine-grade panel PCs and monitors and embedded box that use leading technologies and reliable designs which are perfect for applications on the dock, on the open deck, or in the control room or bridge.

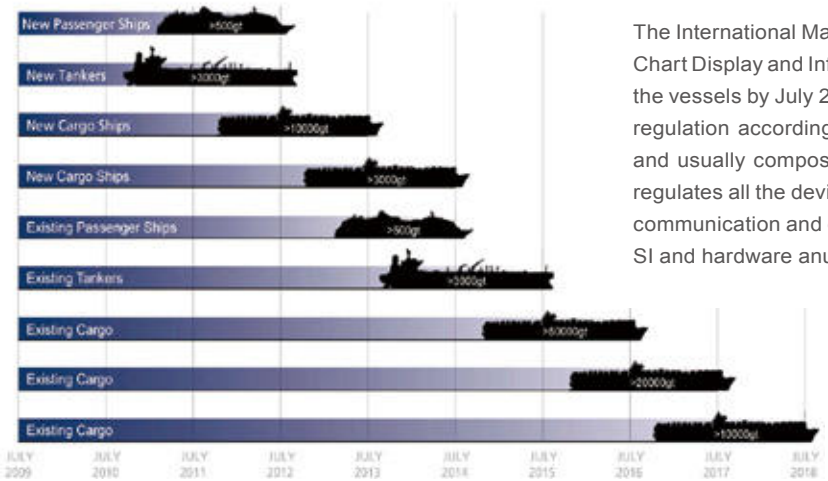
IRIS™ IPMI 2.0 Compliant

DNV

IEC 60945

IACS -E10

ECDIS Implementation Schedule

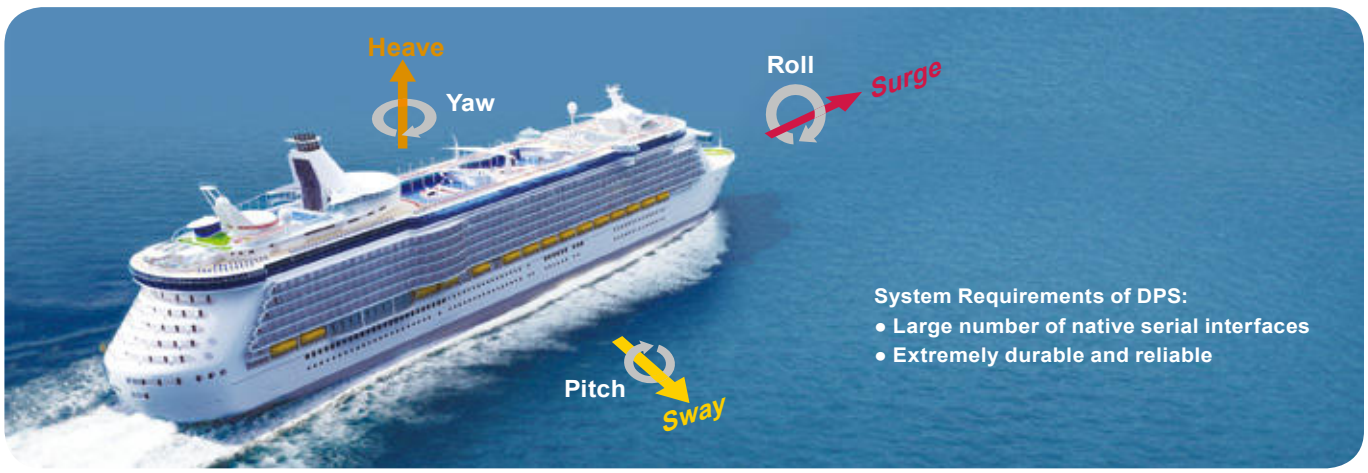


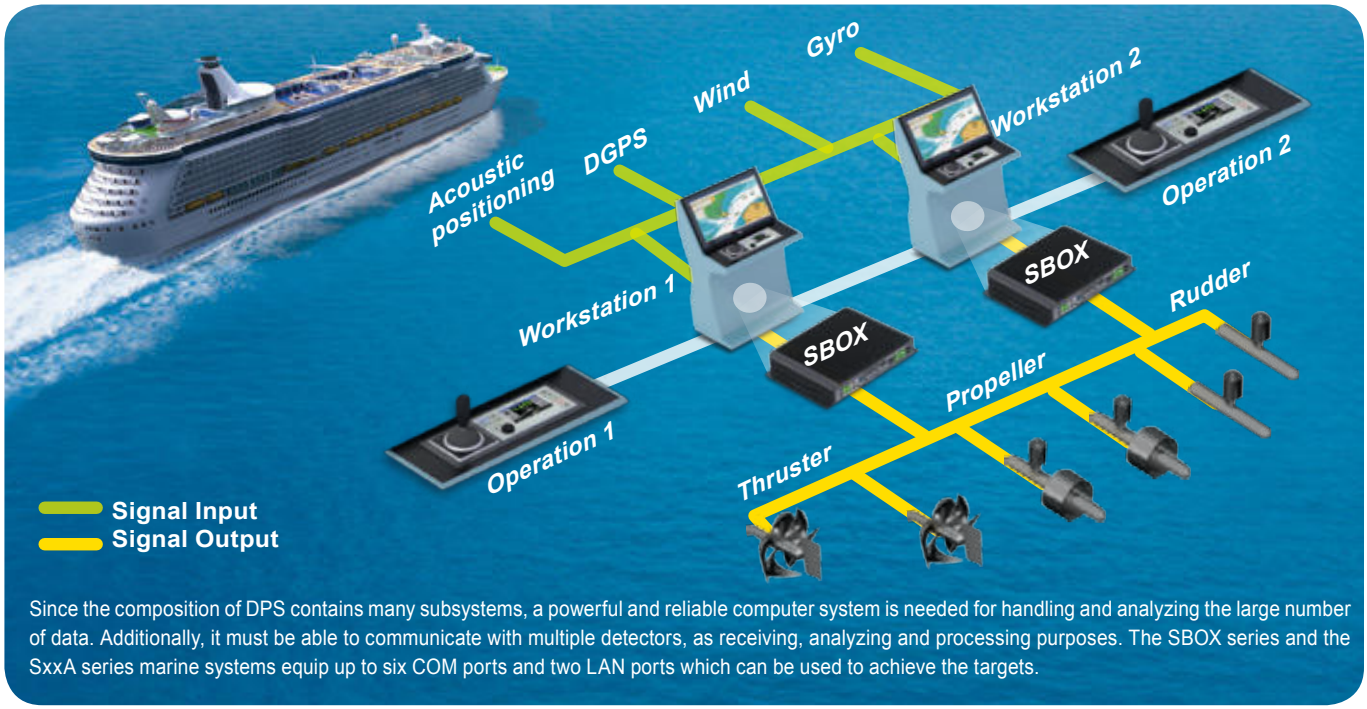
The International Maritime Organization (IMO) has announced that Electronic Chart Display and Information System (ECDIS) should be implemented into all the vessels by July 2018. Both new ships and existing ships should follow this regulation according to the timetable. The bridge systems are complicated and usually composed of multiple sub-systems. ECDIS clearly defines and regulates all the devices and connections, which include data collection, data communication and color calibration. Therefore, this is a huge opportunity for SI and hardware anufacturers.

Dynamic Position System (DPS)

Dynamic Positioning System (DPS) is a closed-loop control system. It is driven by the control system of the ship to counteract the environmental forces to the ship, such as wind, waves and ocean currents. This mechanism could make ship remain in the position on the sea. DPS precisely calculates the propellant force by continuously monitoring the ship position deviation and analyzing the natural forces which could affect ship's navigation direction. This process could make the ship remain in the correct position and maintain the right direction.

DPS is commonly used at various marine applications, such as subsea engineering work, underwater salvage, marine resources survey, marine engineering lifting, marine engineering umbilical laying, deep diving support, underwater engineering operations and marine engineering comprehensive test. DPS consists of measurement systems, control systems, power systems and propulsion systems, and other components. DPS possesses many functions which include maintaining the specified location, targeting, automatic searching for the best bow position, turning point tracking, ROV automatic tracking, changing the center of rotation, automatic navigation, parallel movement and other functions.

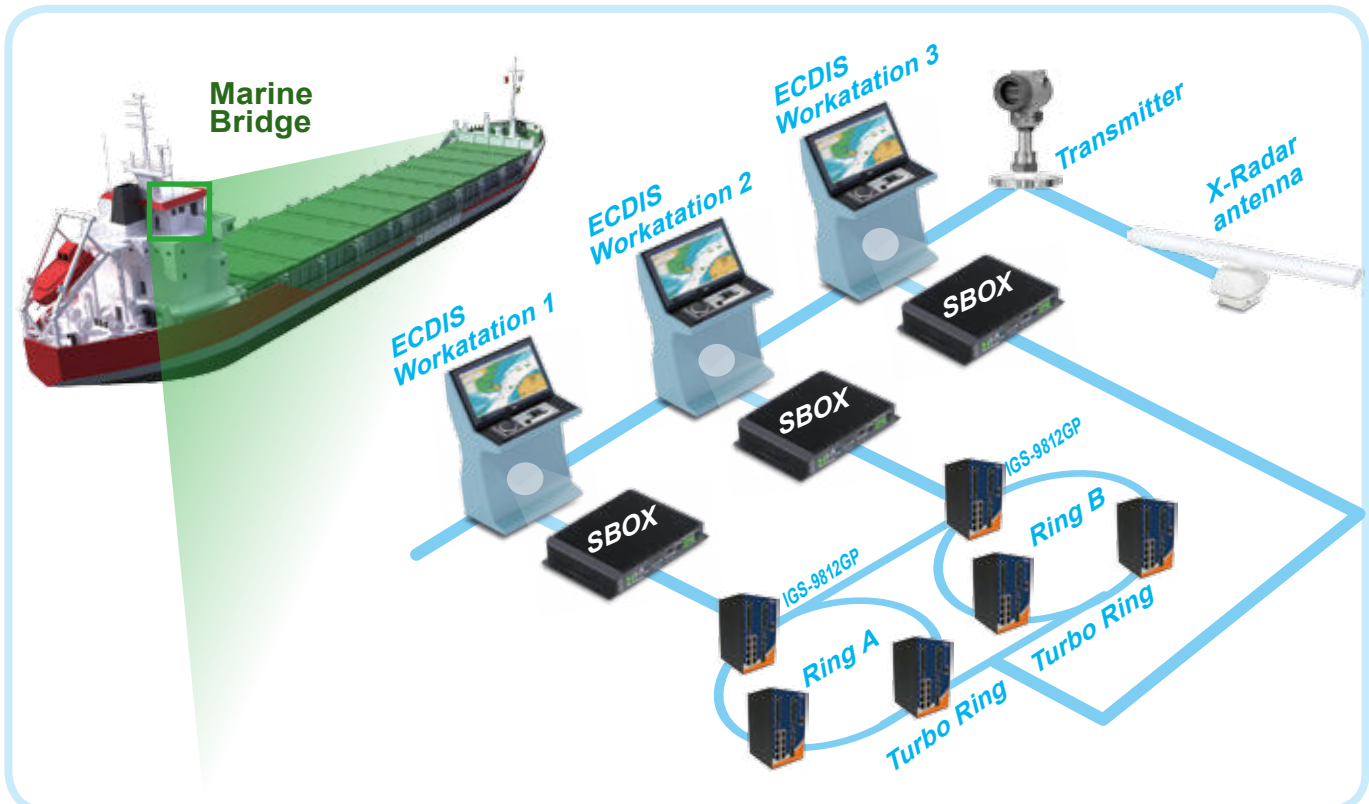




Since the composition of DPS contains many subsystems, a powerful and reliable computer system is needed for handling and analyzing the large number of data. Additionally, it must be able to communicate with multiple detectors, as receiving, analyzing and processing purposes. The SBOX series and the SxxA series marine systems equip up to six COM ports and two LAN ports which can be used to achieve the targets.

Electronic Chart Display and Information System (ECDIS)

The bridge system usually needs to collect and analyze many observation data, including anemometer stations, speed logs, weather stations and GPS signal. In order to precisely observe the changing walruses, the sensors are usually located at the top of ship or in the open deck. Therefore, with the long distance communication, these signals and communication paths should all follow specific regulation such as NEMA 0813. There are large amounts of data received at bridge, and they should be carefully processed and precisely analyzed. A powerful and reliable embedded box or panel PC is necessary for this task. IEI marine embedded box, the SBOX series, equips up to six COM ports which can be used to synchronously handle a large amount of data. The system of ship bridge consists of many sub-systems, which includes navigation system, path control system, radar system, etc. Most of them usually have dual system in order to prevent the failure of primary system. Additionally, dual system could also appear the identical information such as sea chart to the captain and pilot simultaneously. In practical application, dual or more LAN ports are necessary for connecting and controlling multiple monitors. The SBOX series and the S24A/S19A series contain six ports and two LAN ports to fulfill the requirements mentioned above.



DNV Compliance

The DNV regulation is one of the most stringent standards in the maritime industry. It sets the minimum requirements of devices based on where the device is located. IEI marine series complies with DNV regulations and has passed tests for temperature, humidity, vibration, EMC and water- and dust-proof levels.

■ Operating Temperature

The marine series can run in wide temperature environment from -15°C to 55°C.

Temperature	Class A	Class B	Class C	Class D
Location	Machinery spaces, control rooms, accommodation, bridge	Inside cubicles, desks, etc. with temperature rise of 5° C or more	Pump rooms, holds, rooms with no heating	Open deck, masts
Minimum equipment specification	Ambient temperatures: +5°C to +55°C	Ambient temperatures: +5° C to +70°C	Ambient temperatures: -25°C to +55°C	Ambient temperatures: -25°C to +70°C

■ Humidity

The marine series conforms to DNV class A of humidity.

Humidity	Class A	Class B
Location	Locations where special pre-cautions are taken to avoid condensation	All other locations
Minimum equipment specification	Relative humidity up to 96 % at all relevant temperatures.	Relative humidity up to 100 % at all relevant temperatures

■ Vibration

The marine series is subjected to DNV Class A vibration test and can be widely used on bulkheads, beams, deck and bridge.

Vibration	Class A	Class B	Class C
Location	On bulkheads, beams, deck, bridge	On machinery such as internal combustion engines, com-pressors, pumps, including piping on such machinery	Masts
Minimum equipment specification	Frequency range: 3-13.2 Hz, Amplitude: 1.0 mm (peak value) Frequency range: 13.2-100 Hz, Acceleration amplitude: 0.7 g	Frequency range: 3-25 Hz, Amplitude: 1.6 mm (peak value) Frequency range: 25-100 Hz, acceleration amplitude: 4.0 g	Frequency range: 3-13.2 Hz, Amplitude: 3.0 mm (peak value) Frequency range: 13.2-50 Hz, Acceleration amplitude: 2.1 g

■ EMC

Being different to CE and FCC standards, DNV regulations especially emphasize the importance of electromagnetic compatibility. IEI marine series is compliant with strict class B level and can provide a safe operating environment of sailing period.

Vibration	Class B			
Location	All locations including bridge and open deck			
Minimum equipment specification	Immunity			
	Conducted Low Frequency (Test 3.14.4)		Electrical Fast Transient/Burst (Test 3.14.5)	Electrical Slow Transient Surge (Test 3.14.6)
	AC 50/60 Hz Supply Voltage up to 15th harmonics: 10% of UN **15th to 100th harmonics:** decreasing from 10% to 1% of UN **100th to 200th:** harmonics 1% of UN	**DC Supply Voltage Frequency Sweep Range:** 50 Hz to 10 kHz **Signal Level:** 3 V r.m.s. max 2W	Amplitude : 2 kV line on power supply port/earth; 1 kV on I/O data control and communication ports(coupling clamp)	Amplitude: 0.5 kV, differential mode 1 kV, common mode
	Conducted Radio Frequency (Test 3.14.7 – Table 3.20/3.21)		Radiated Electromagnetic Field (Test 3.14.8)	Electrostatic Discharge (Test 3.14.9)
	Frequency range:150 kHz - 80 MHz Voltage level (e.m.f.): 3 V r.m.s. Spot frequencies: 2/3/4/6.2/8.2/12.6/16.5/18.8/22/25 MHz. Voltage level (e.m.f.) :10 V r.m.s.		Frequency range: 80 MHz to 2 GHz Electric field strength: 10 V/m	Output voltage Air: 8 kV Contact: 6 kV
	Emission			
	Radiated (Test 3.14.10 - 11)			
	Enclosure Port	Frequency range	Measuring bandwidth	Limits (quasi-peak)
	EMC B All locations including bridge and open deck	0.15-0.3 MHz	9 kHz	80 - 52 dBµV/m
		0.30-30 MHz	9 kHz	52 - 34 dBµV/m
		30-2000 MHz	120 kHz	54 dBµV/m
		Except: 156-165 MHz	9 kHz	24 dBµV/m
	Conducted (Test 3.14.10 - 12)			
	Power Port	Frequency range	Measuring bandwidth	Limits (quasi-peak)
	EMC B All locations including bridge and open deck	10-150 kHz	200 Hz	96 – 50 dBµV
		150-350 kHz	9 kHz	60 – 50 dBµV
		0.35 - 30 MHz	9 kHz	50 dBµV

■ Enclosure

The marine series is compliant with high waterproof and dustproof level. The front bezel complies with IP66 rating and the rear side complies with IP22.

Enclosure	Class A	Class B	Class C	Class D
Location	Control rooms, accommodation, bridge	Engine room	Open deck, masts, below floor plates in engine room	Submerged application, bilges
Minimum equipment specification	IP22	IP44	IP56	IP68

Marine Panel PC Series

S19A-QM87

Intel® Core™ i5 Dual-core Processor New

S24A-QM87

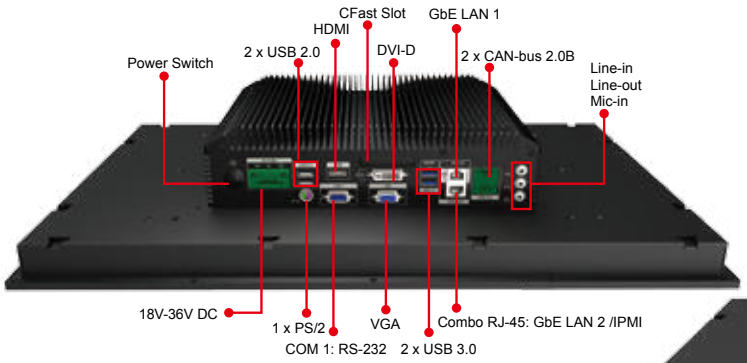
Intel® Core™ i5 Dual-core Processor New

- **19" and 24" Fanless Panel PC with 4th Generation Intel® Core™ i5 Dual-core Processor**
- **-15°C ~ +55°C Wide Temperature and IP66 Protection with Flat-bezel Projected Capacitive Touchscreen**
- **Excellent Visual Performance**
  - Three independent displays
  - Full OSD function configuration
  - 0%~100% full range dimming
  - 178°/178° wide viewing angles
  - Optical bonding improves visibility under bright light (optional)
- **Isolation Protection**
  - RS-232/422/485 isolated serial ports
  - Isolated 18V ~ 36V DC input
  - 2 x Isolated CAN-bus 2.0B
- **iRIS Remote Management Module**

iRIS™ IPMI 2.0 Compliant | DNV | IEC 60945 | IACS-E10 | Fanless | Triple Display | SERIAL ATA SATA 6Gb/s | Gigabit Ethernet Dual GbE

Specifications

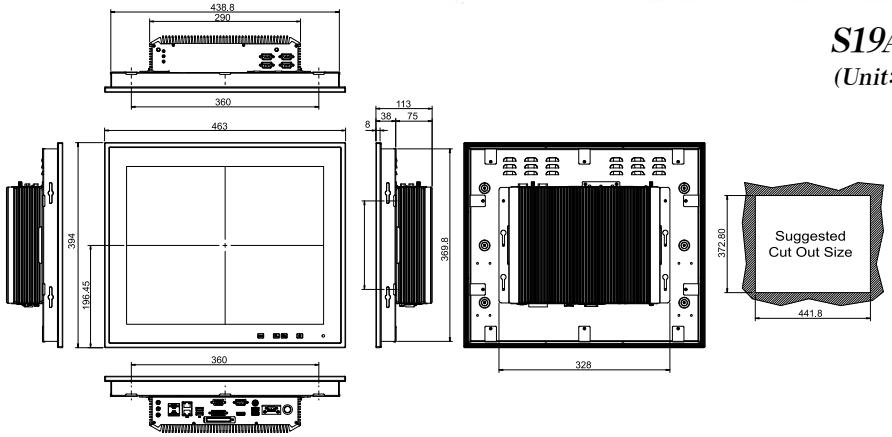
Model		S19A-QM87	S24A-QM87
LCD	LCD Size	19"	24"
	Panel Type	PMVA	AMVA
	Max. Resolution	1280 x 1024 (5:4)	1920 x 1080 (16:9)
	Contrast Ratio	2000 : 1	5000 : 1
	Brightness (cd/m²)	300	300
	LCD Color	16.7M	16.7M
	Pixel Pitch (um)	294 x 294	276.75 x 276.75
	Viewing Angles (H-V)	178° / 178°	178° / 178°
	Backlight MTBF (HRs)	50000	50000
Touchscreen & Controller		EXC7920 (10-point), 6H	EXC7200 (2-point), 6H
System	SBC Model	SMB-QM87-R10	
	Chipset	Intel® QM87	
	CPU	Intel® 22nm 4th generation Mobile Core™ i5-4400E 2.7GHz processor	
	RAM	4GB 1600MHz DDR3 SDRAM (2GB*2) Two 204-pin 1600/1333 MHz dual-channel DDR3 SDRAM support up to 16GB	
Input Interfaces	I/O Ports & Switch	2 x USB 2.0 2 x USB 3.0 1 x VGA 1 x DVI-D 1 x HDMI 1 x Mic-in 1 x Line-out 1 x Line-in 2 x Antenna SMA hole (reserved)	1 x Isolated 18V ~ 36V DC 3-pin terminal block 1 x Power button 1 x PS2 (through Y-type cable supporting KB/MS) 2 x CAN-bus 2.0B, 3-pin terminal block (2.5 kv isolation protection) 1 x DB-9 RS-232 (non-isolated) , 4 x DB-9 RS-232/422/485 (2.5 kv isolation protection) 2 x RJ-45 GbE LAN with teaming support (2KV isolation protection)
	Expansion	2 x Full-size PCIe Mini slot, 1 x iRIS-2400 slot (iRIS remote management module)	
Ethernet Controller		GbE1: Intel® I217LM with Intel® AMT 9.0 support GbE2: Intel® I210-AT PCIe controller	
Sensor		Ambient light sensor (0% ~ 100%)	
OSD		Menu, brightness down, brightness up, LCD on/off by cap-sensor (graphics engine: Genesis STDP6038)	
Storage		2 x 2.5" SSD bay with RAID 0/1 function 1 x Accessible CFast socket	
LED Indicator		Power (power on: green; power off: orange)/storage (red, blinking)/IPMI (blue)	
Power Requirement		Isolated 18V ~ 36V DC, screw-type 3-pin terminal block	
Operating Temperature		-15°C ~ 55°C (5°F ~ 131°F)	
Storage Temperature		-20°C ~ 60°C (-4°F ~ 140°F)	
Humidity		5% to 95% RH	
Thermal Design		Fanless	
Watchdog Timer		Supports 1~255 sec. system reset	
Certifications		EMC: CE, FCC Safety: DNV, IEC 60945 4th, IACS-E10, IEC 61174 IP rating: IP66 compliant front panel and IP22 compliant rear cover	
Housing		Front aluminum sheet metal (Black C)	
Cut-out Dimensions (L x W)		442 mm x 373 mm	576 mm x 358 mm
Dimensions (L x W x H)		463 mm x 394 mm x 113 mm	592 mm x 374 mm x 113 mm
Net Weight (kg)		9.91	13.03
Gross Weight (kg)		13.38	17.19
Vibration and Shock		IEC 60945 / DNV 2.4 compliant / IACS-E10	
Power Supply (DC Input)		DC Input ATX Power Supply - P/N: 041D710-00-101-RS - 150W power supply - Input: 18~36V DC, 8-4A (max.) - Output (max.): 12V @13A	
Power Consumption		112W	117W



Four OSD Keys by Cap-sensor
(Menu, Brightness down, Brightness up, LCD on/off)

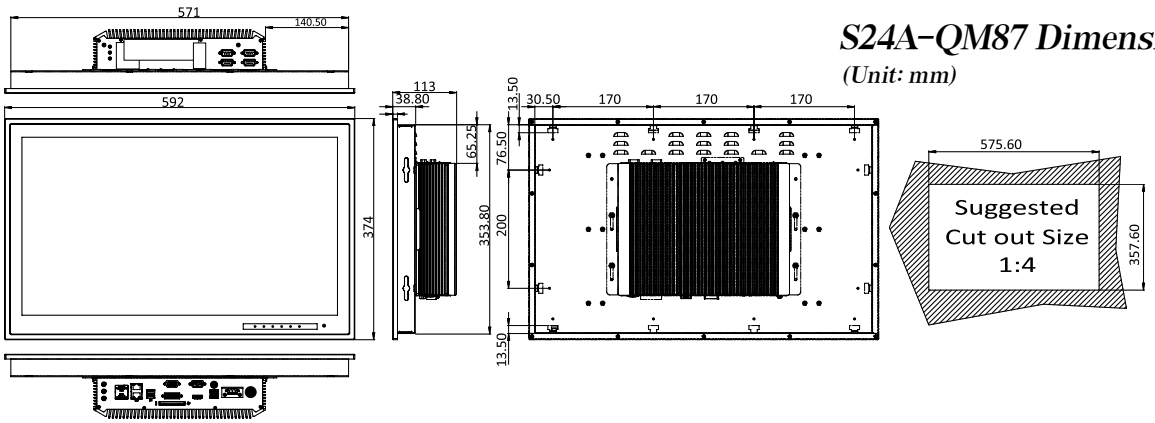
S19A-QM87 Dimensions

(Unit: mm)



S24A-QM87 Dimensions

(Unit: mm)



Packing List

Item	Q'ty	Remark
S19A-QM87 or S24A-QM87	1	
User Manual & Driver CD	1	Drivers and user manual
One Key Recovery CD	1	
Screw Pack	1	Including necessary screws
PS/2 Cable	1	Round cable; PS/2 cable
Wire Strain Band	3	Wire strain band

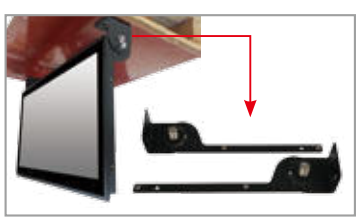
Options

Item	Part No.	Description
Panel Mount Kit	PK-S19A-R10	For S19A
	PK-S24A-R10	For S24A
Desktop Stand	STAND-S24A-R10	For S19A & S24A
Ceiling Mount Kit	CEILMT-S24-R10	For S19A/S24A
HDMI Lockable Kit	HDMI-LK-R10	Universal HDMI Locking Adapter
iRIS Module	iRIS-2400-R10	IPMI 2.0 adapter card with AST2400 BMC chip for DDR3 SO-DIMM socket interface

Ordering Information

P/N	Description
S19A-QM87i-i5/PC/4G-R10	19" 300cd/m² SXGA marine panel PC with Intel® Mobile Core™ i5-4400E 2.7GHz CPU, 2*2GB DDR3 RAM, projected capacitive touchscreen, isolated 18-36V DC, iRIS-2400 supported, R10
S24A-QM87i-i5/PC/4G-R10	24"300cd/m² FHD marine panel PC with Intel® Mobile Core™ i5-4400E 2.7GHz CPU, 2*2GB DDR3 RAM, projected capacitive touchscreen, isolated 18-36V DC, iRIS-2400 supported, R10

STAND-S24A-R10



CEILMT-S24-R10

Marine Embedded Box Series

SBOX-100-QM87

Intel® Core™ i5 Dual-core Processor

New

Features

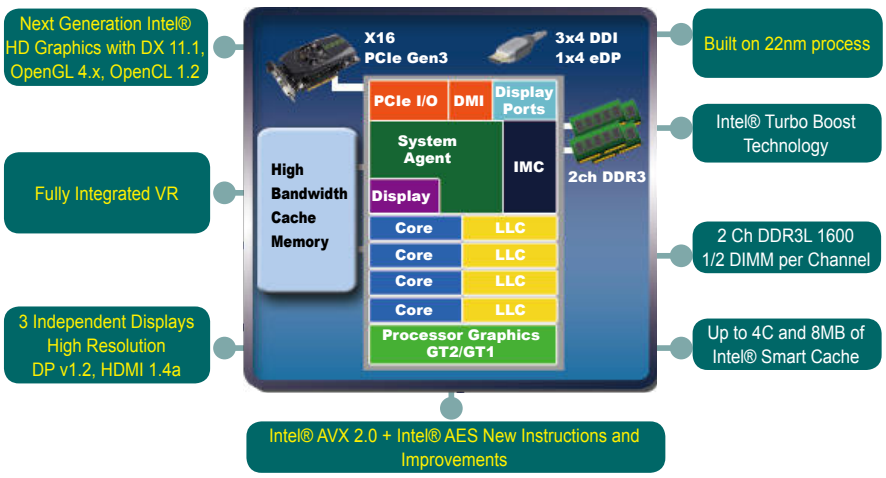
- **Fanless marine computer with 4th generation Intel® Core™ i5 dual-core processor**
- **-15°C ~ +55°C wide temperature**
- **Isolation protection**
  - 4 x RS-232/422/485 isolated serial ports
  - Isolated 18 V~36 V DC input
  - 2 x Isolated CAN-bus 2.0B
- **2 x 2.5" SSD bay with RAID 0/1 function**
- **Supports IEI iRIS-2400 (IPMI 2.0 compliant)**

IPMI 2.0 Compliant | DNV | IEC 60945 | IACS -E10 | Fanless | Triple Display | SATA 6Gb/s | Dual GbE

Intel® Core™ i5 High Performance Computing Power in a Fanless Design

IEI's high performance marine solutions are built with the powerful Intel® Core™ i5 CPU within a fanless system architecture. No matter your applications are general marine system management, monitoring or conning systems, radar systems, or ECDIS navigation, IEI's marine computers will give you the most stability than ever.

- Improved CPU performance with Intel® 22nm 4th generation mobile Core™ i5-4400E 2.7 GHz processor
- Two 204-pin 1600/1333 MHz dual-channel DDR3 SDRAM support up to 16 GB

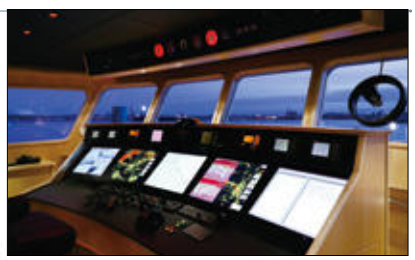


With IEI's fanless solutions, your vessels can avoid the bothersome of replacement of fan, increasing safety and efficiency for the crew and the entire ship.

Three independent aluminum heat sinks help the heat dissipate averagely, and help the system efficiently achieve wide operating temperature range between -15°C~55°C.

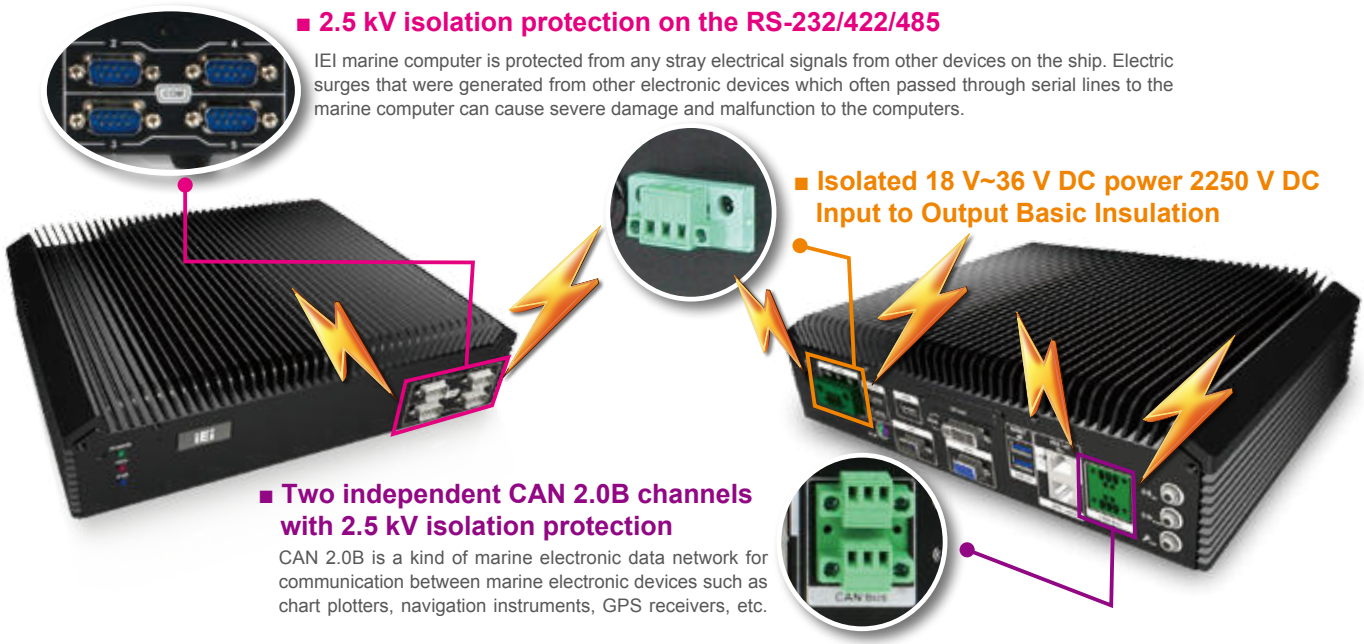
3 Independent Displays: HDMI, DVI and VGA

The three simultaneously independent displays are supported via the on-board video output combinations of VGA, DVI and HDMI. This versatile combination of display output options makes the marine system ideal for multi-monitor required applications in the bridge room.



Multiple Isolated Ports for Comprehensive Protection against Electrical Surges

Ground loop and electric surges are common in the marine applications of electronic products due to the dense placement of devices. These stray electrical signals can cause equipment damage or malfunction.



■ 2.5 kV isolation protection on the RS-232/422/485

IEI marine computer is protected from any stray electrical signals from other devices on the ship. Electric surges that were generated from other electronic devices which often passed through serial lines to the marine computer can cause severe damage and malfunction to the computers.

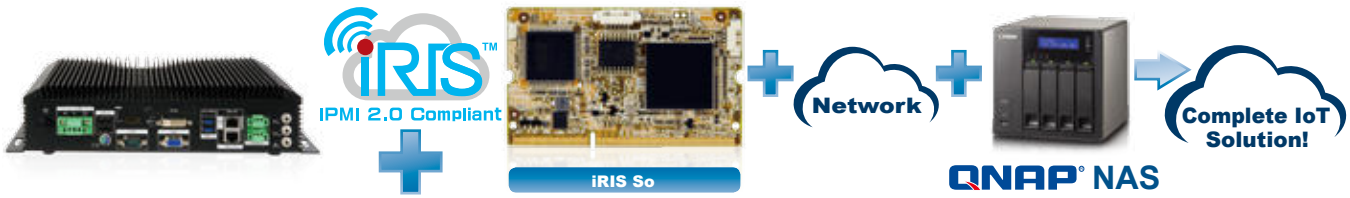
■ Isolated 18 V~36 V DC power 2250 V DC Input to Output Basic Insulation

■ Two independent CAN 2.0B channels with 2.5 kV isolation protection

CAN 2.0B is a kind of marine electronic data network for communication between marine electronic devices such as chart plotters, navigation instruments, GPS receivers, etc.

IEI Remote Intelligent Management System

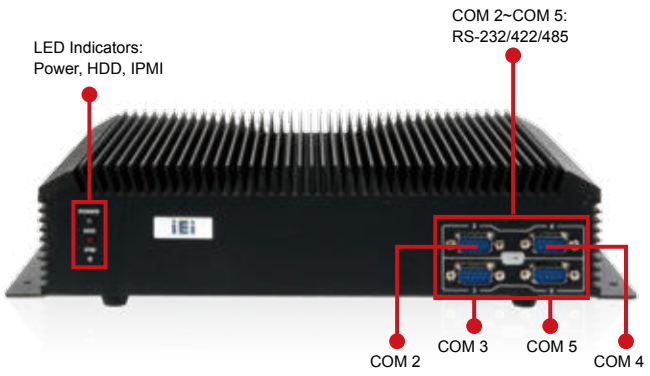
The marine computer supports IEI iRIS remote management solution which helps users to manage multiple devices through single management interface and elevates work efficiency. The iRIS solution only requires a module and Internet connection!



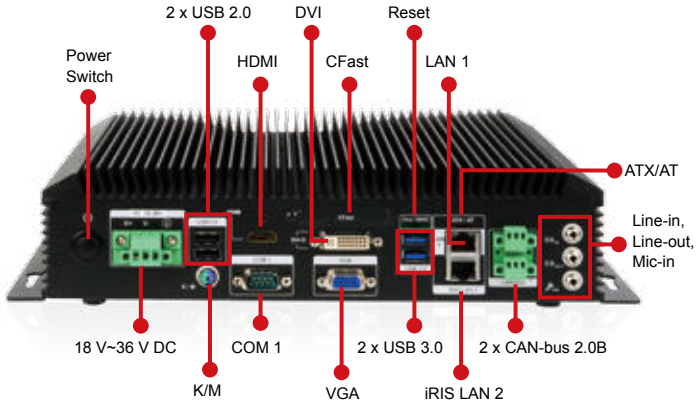
iRIS Key Feature	Detailed Functions
System health monitor	• Hardware monitor • Health log • Event log
Remote system maintenance	• Remote BIOS update • Remote OS recovery • Remote KVM + One Key Recovery • Remote out-off-band backup
Active alert & notice	• Send instant system alerts via e-mail • Send instant system alerts via SMS • Send instant system alerts to management server
Remote device control	• Fan control • Remote KVM • Remote setting BIOS

iRIS Key Feature	Detailed Functions
Screen record	• Remote video streaming record • Event Trigger Setting & video record
Remote power control	• Reset Power • Power Off Server – Immediately • Power Off Server – Orderly • Power On Server • Power Cycle Server
Remote troubleshooting	• Remote software update • Remote OS installation & recovery • Remote KVM • Post code display
Diagnose before dispatch	• Health log analysis • Event log analysis
Group control	• Group control

Front view



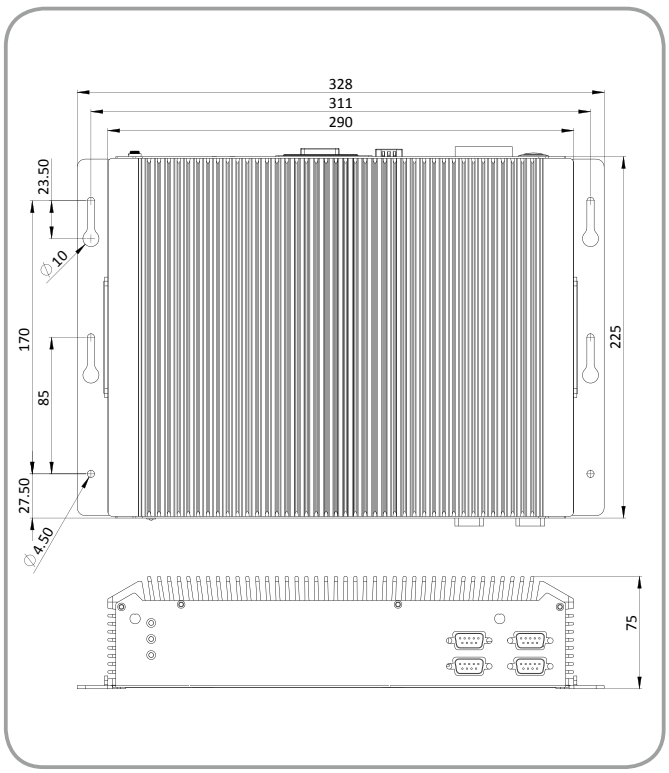
Rear view



Specifications

Model Name		SBOX-100-QM87
Chassis	Color	Black
	Dimensions (WxHxD) (mm)	290 x 225 x 75
	System Fan	Fanless
	Chassis Construction	Extruded aluminum alloy
Motherboard	CPU	Intel® mobile Core™ i5-4400E (2.7 GHz, 37W)
	Chipset	Intel® QM87
	System Memory	2 x 204-pin DDR3 SO-DIMM slot (system max. 16 GB) Pre-installed 4 GB DDR3 SO-DIMM
IPMI	iRIS Solution	iRIS-2400
Storage	Hard Drive	2 x 2.5" SATA 6Gb/s SSD bay with RAID 0/1 function
	CFast	1
I/O Interfaces	PS2 (KB/MS)	1
	USB 3.0	2
	USB 2.0	2
	Ethernet	2 x RJ-45 with teaming support 1 x PCIe GbE by Intel® I217LM 1 x PCIe GbE by Intel® I210-AT (2 with 2 kV isolation)
	RS-232/422/485	1 x DB-9 (non-isolated) 4 x RS-232/422/485 (with 2.5 kV isolation)
	CAN-bus/OBD-II	2 x CAN-bus (with 2.5 kV isolation)
	Display	1 x VGA, 1 x DVI-D, 1 x HDMI
	Resolution	VGA: Up to 1920 x 1200 @ 60 Hz HDMI: Up to 2500 x 1600 @ 60 Hz DVI-D: Up to 2500 x 1600 @ 60 Hz
	Audio	1 x Line-out, 1 x Line-in, 1 x Mic-in
	Wireless	2 x Antenna SMA hole (reserved)
Expansions	PCIe Mini	2 x Full size
LED Indicator & Button	Indicator	Power (power on: green, power off: orange), storage (red, blinking), IPMI (blue)
Power	Power Input	Terminal block: 18 V~36 V DC with isolation
	Consumption	100 W (Intel® mobile Core™ i5-4400E with 4 GB DDR3 memory)
Reliability	Mounting	Wall mount
	Operating Temperature	-15°C ~ 55°C (5°F ~131°F) with air flow (SSD)
	Storage Temperature	-20°C ~ 60°C (-4°F ~140°F)
	Humidity	5% ~ 95%, non-condensing
	Operating Shock	IEC 60945 and DNV 2.4 IASC-E10 compliant
	Operating Vibration	
	Weight (Net/Gross)	4.08 kg / 6.03 kg
	Safety/EMC	EMC/CE/FCC/DVN, IEC 60945 4th, IACS-E10, IEC 61174 compliant IP rating: IP22 compliant rear cover
OS	Supported OS	Microsoft® Windows® Embedded 8, Microsoft® Windows® Embedded Standard 7 E

Dimensions *(Unit: mm)*



Ordering Information

Part No.	Description
SBOX-100-QM87i-i5/4G-R10	Fanless marine computer with Intel® mobile Core™ i5-4400E 2.7 GHz processor, 4 GB DDR3 memory, iRIS-2400 supported, isolated 18 V~36 V DC, R10

Packing List

Item	P/N	Qty	Description
User Manual & Driver CD		1	Drivers and user manual
PS/2 Cable	32006-000300-100-RS	1	PS/2 cable
Rubber Pad & Screw Pack		1	Rubber pad & screw pack

Options

Item	Part No.	Description
HDMI Lockable Kit	HDMI-LK-R10	Universal HDMI Locking Adapter

Marine Monitor Series New

The marine monitor series possesses many sophisticated features that fit with practical marine environment, including front panel IP 66 dust- and water-proof level, wide-rang operating temperatures, multi-point capacitive touch, wide viewing angles and OSD control. Especially, optical bonding is a good choice for the use of high brightness environments. Versatile mounting ways offer customers flexible methods in accordance with different operating environments.

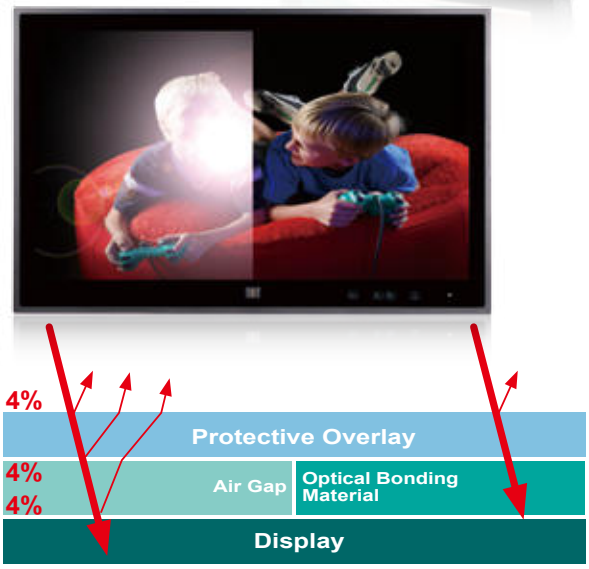
■ Optical Bonding Enhance Visibility (optional)

The lightness is a crucial factor to sailing safety. IEI provides an option for optical bonding between touchscreen and LCD panel. The light transmitting between various medias could produce reflection. Traditionally, there is an air gap between touchscreen and LCD panel, which could reflect light seriously. It could affect the sailing security tremendously. Adding optical bonding material between touchscreen and LCD panel can improve reflection effectively and increase brightness by 10%. Furthermore, it not only increases hardness of touchscreen but also reduces power consumption.

Improving the viewing experience
- Increase contrast ratio by 400% in sunlight
- Increase brightness by 10%

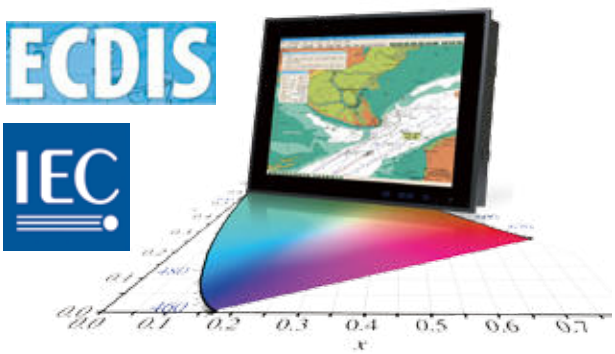
Increasing the display ruggedness
- Increase the falling ball impact resistance by up to 3 times

Reduced power consumption
- By reducing the light loss due to reflection



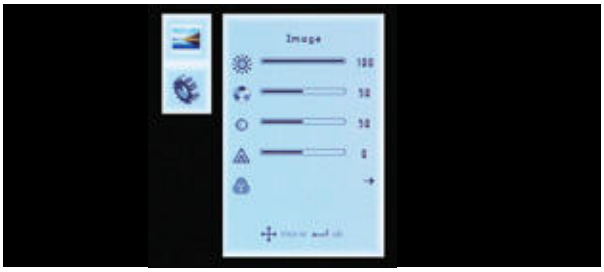
■ ECDIS (optional)

For industrial and commercial applications, color rendering accuracy and consistency are absolutely essential. The human eye is generally likely to be impacted by environment and misled presentation of colors in the brain. The maritime environment is much more ruggedized compared with general industrial environment. The requirements for the degree of light and dark and color of accuracy are more stringent. Color calibration technology ensures that monitor would effectively show the largest accuracy and minimum deviation of artificial color. IEI marine monitors and panel PCs follow the IEC 61174 ECDIS regulation. It is performed by monitoring up to N checkpoints and measuring the color and brightness of the display. After precisely calculating and highly reliable calibrating, the profile matrix will be stored in the firmware of monitor. The monitors (PPCs) compliant with ECDIS specifications will provide a more safe and secure maritime environment.



■ Adjustable LCD Brightness and Auto-Dimming Available

The auto-dimming function could slightly modify LCD brightness according to ambient light. To consider the safety of navigation and operators' eye comfort, both LCD brightness and OSD brightness are designed to be programmable.



■ OSD Control on Front Panel

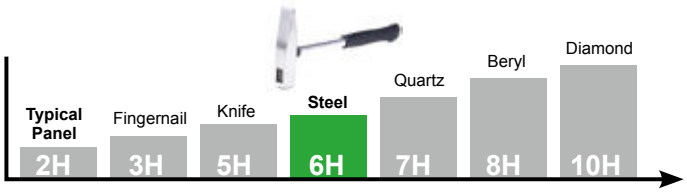
On Screen Display (OSD) offers customers a quick way to modify the LCD brightness. In contrary to traditional tuner, the full flat OSD design not only features beautiful outward appearance but also improves the shortcoming of dust accumulation in physical button.

■ Lockable HDMI Cable Support (optional)

The lockable HDMI cable design not only increase reliability but also reduces the possibilities of accidental human errors. Therefore, important information could be displayed continuously.

■ 6H Multiple Projected Capacitive Touchscreen

The IEI marine products provide capacitive multi-touch up to 10 points (2-point on 24" model). In practical applications, 10-point touch can simulate engine button and pump switch so that there will be less real buttons. This can enhance the reliability of marine infrastructure.



MOH's Hardness Rating

6H 10-point Touch for S19M

6H 2-point Touch for S24M

■ Picture-in-Picture (PIP) Function & Surveillance Application

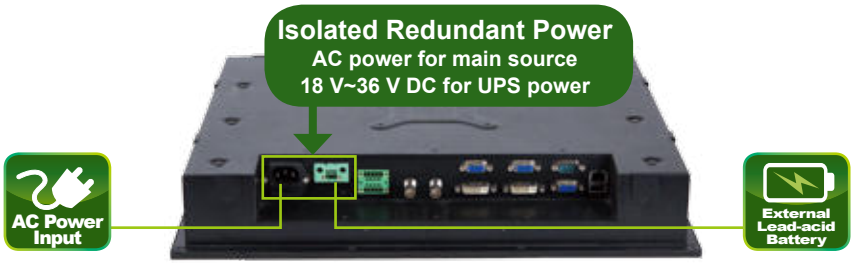
Picture-in-Picture function offers high efficiency to surveillance. You can monitor the radar information and observe surveillance video simultaneously. Simply connect BNC camera to BNC input port and link DVR to BNC output port. Therefore, you can monitor and record at the same time, and the record can be saved for further use.

PIP Matching Table

		Main Channel				
		VGA1	VGA2	DVI1	DVI2	CVBS1
Sub Channel	VGA1	X		X	X	X
	VGA2		X	X	X	X
	DVI1	X	X	X		X
	DVI2	X	X		X	X
	CVBS1	X	X	X	X	X

■ Reliable Power System

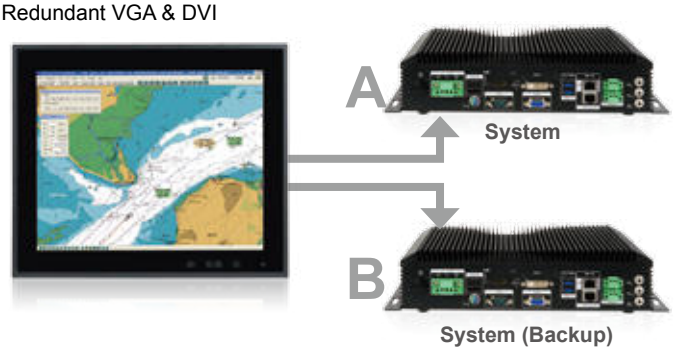
There are usually two systems - one master for use, and one slave for backup. IEI provides isolated redundant power, which means you will have separate power inputs, including AC source and DC source. When AC source is terminated, the DC source will continue to supply power to the device.

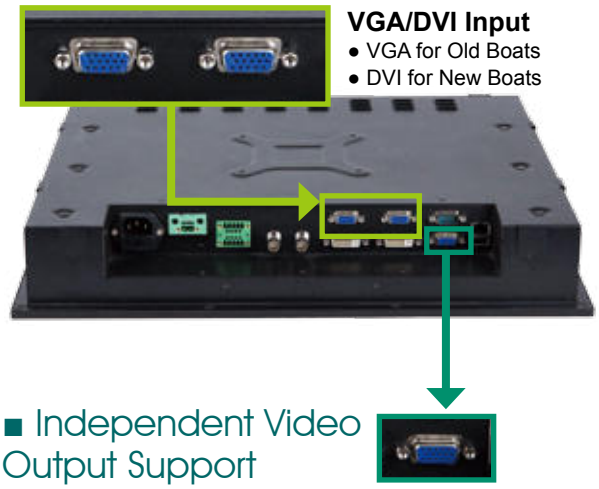


■ Dual Video Input Support

The IEI marine products equips with two VGA inputs and two DVI inputs. VGA is designed for the old ships while DVI is designed for the new ones. Additionally, in order to prevent failure of the main system, dual video input design is provided for much more reliability. Hence, operation will not be terminated due to switching between systems

Dual Video Input Support
Redundant VGA & DVI





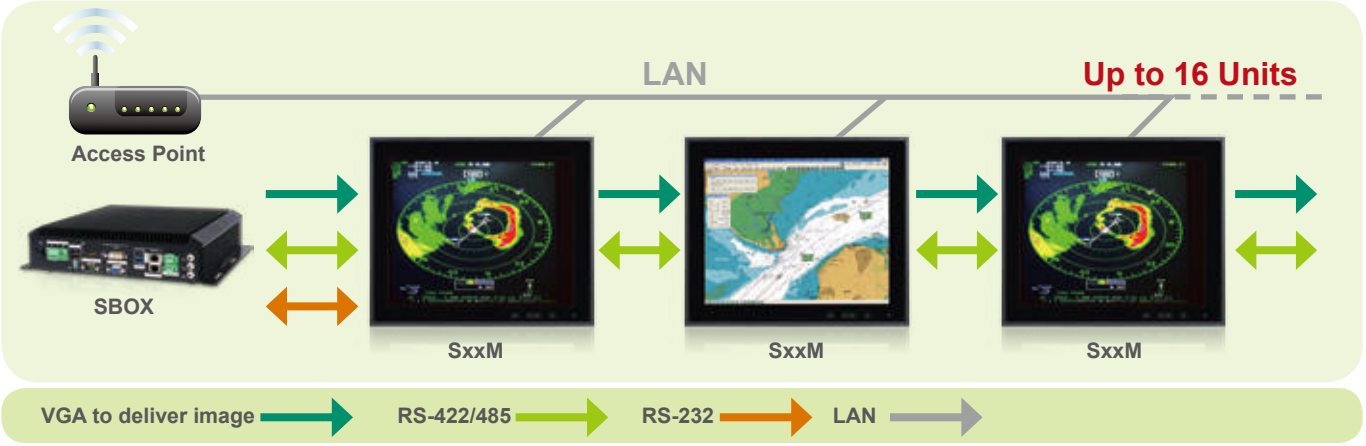
VGA/DVI Input
- VGA for Old Boats
- DVI for New Boats

■ Independent Video Output Support

VGA output port features display cascade function, providing a convenient way to duplicate display signal. This function helps customers to connect devices quickly and easily.

■ Daisy Chain OSD Remote Control

It is essential to show the same displays to captains and pilots through the monitors which are usually cascaded at the ship bridge. The marine monitor equips both VGA input and VGA output. By connecting the VGA-out of the first monitor to the VGA-in of the second monitor, the IEI marine monitors feature group display with maximum up to 16 screens in the group. To comply with the ECDIS regulation, adjusting the brightness and contrast on all monitors at the same time is necessary, and this can be achieved through the Ethernet or serial COM ports. LAN is used to communicate in long distance in the group; as for short distance, COM port is the best choice. The LAN port can also be used for updating firmware and maintaining service.



■ Versatile Mounting Methods (optional)

Versatile mounting methods provide customers a secure way to settle the instrument. We provide three different mounting kits for customers, which include stand, ceiling mount kit and panel mount kit.


Stand Alone


Ceiling Mount


Panel Mount

Marine Monitor Series

S19M

19” IP66 Marine Monitors New

S24M

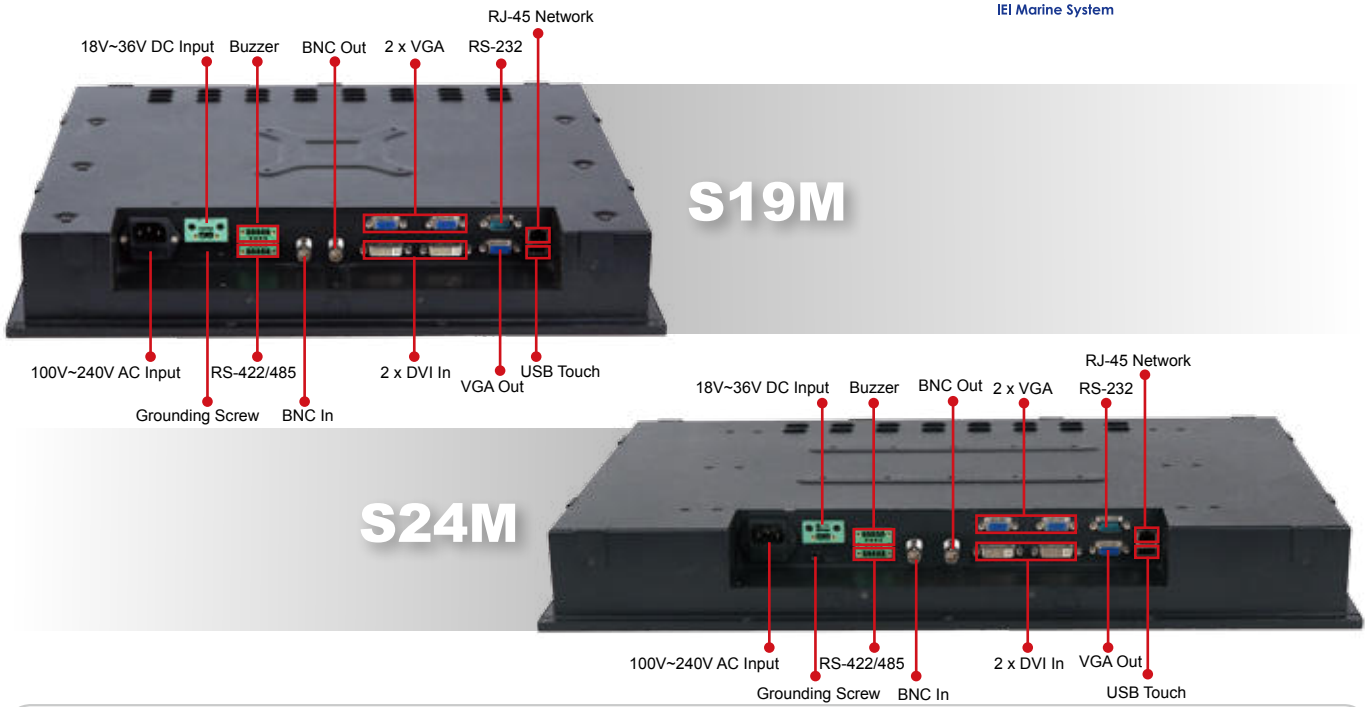
24” IP66 Marine Monitors New

Features

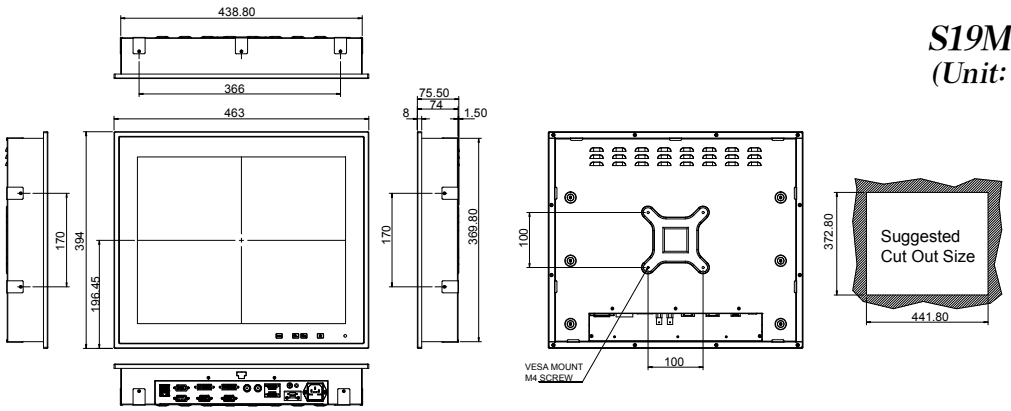
- **IP66 Front / IP22 Rear**
- **-15°C ~ +55°C Wide Temperature and Flat-bezel Projected Capacitive Touchscreen**
- **Excellent Visual Performance**
  - Full OSD function configuration
  - 0%~100% full range dimming
  - 178°/178° wide viewing angles
- **Multiple Video Input**
  - Two VGA, two DVI, and one BNC
- **Multiple Video Output**
  - One VGA and one BNC
- **Dual Isolated AC/DC Input with Redundant Power Protection**
- **Remote OSD Settings through LAN, RS-232, RS-422 and RS-485**

Specifications

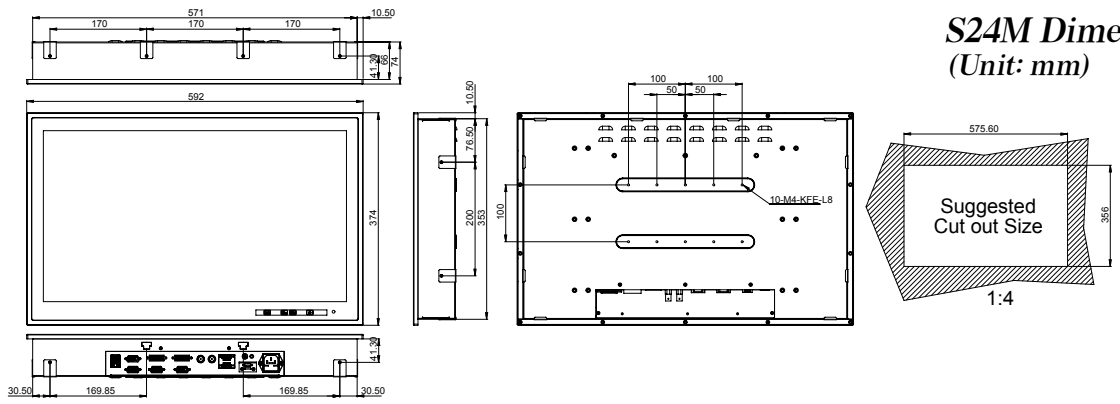
Model		S19M	S24M
LCD	LCD Size	19”	24”
	Panel Type	PMVA	AMVA
	Max. Resolution	1280 x 1024 (5:4)	1920 x 1080 (16:9)
	Contrast Ratio	2000 : 1	5000 : 1
	Brightness (cd/m²)	300	300
	LCD Color	16.7M	16.7M
	Pixel Pitch (um)	294 x 294	276.75 x 276.75
	Viewing Angles (H-V)	178° / 178°	178° / 178°
	Backlight MTBF (HRs)	50000	50000
Touchscreen & Controller		EXC7920 (10-point), 6H	EXC7200 (2-point), 6H
Scalar Chip		STDP8028	
I/O Ports		• DVI-D Signal Input: 2 x DVI (24-pin, female) • VGA Signal Input: 2 x D-sub (15-pin, female) • VGA Signal Output: 1 x D-sub (15-pin, female) - Clone of VGA IN* • Composite Video Input: 1 x BNC connector (female) Composite Video Output: 1 x BNC connector (female) • RS-232/422/485 for Remote control (non-isolated) • Touchscreen: 1 x USB Type A connector (female) • Ethernet: 1 x RJ-45 connector for remote control • Isolated AC Power Inlet: 100V~240V AC • Isolated DC Terminal Block: 18V~36V DC • 1 x Buzzer	
PIP		Yes	
OSD Button		P-CAP button (LCD on/off, Menu, Auto, Up, Down, Left, Right)	
LED/Sensor		Ambient light sensor (0%~100%)	
Power Requirement		Multi-power Supply: Isolated AC Power: 100-240V, 2-1A, 50-60Hz Isolated DC Power: 18-36V, 8-4A	
Operating Temperature		-15°C ~ 55°C	
Storage Temperature		-20°C ~ 60°C	
Humidity		5% to 95% RH	
Thermal Design		Fanless	
Housing		Aluminum front , sheet metal back (Black C)	
Cut-out Dimensions (L x W)		442 mm x 373 mm	576 mm x 358 mm
Dimensions (L x W x D)		463 mm x 394 mm x 113 mm	592 mm x 374 mm x 113 mm
Mounting		VESA 100mm x 100mm	VESA 100mm x 100mm
Net Weight (kg)		7.74	11.48
Gross Weight (kg)		11.54	15.97
Approvals		EMC: CE, FCC	
		Safety: DNV, IEC 60945 4th, IACS-E10	
		IP Rating: IP66 front, IP22 rear	



S19M Dimensions (Unit: mm)



S24M Dimensions (Unit: mm)



Options

Item	Part No.	Description
Panel Mount Kit	PK-S19M-R10	For S19M
	PK-S24M-R10	For S24M
Desktop Stand	STAND-A21-R10	For S19M & S24M

Packing List

Item	Q'ty	Remark
User Manual & Driver CD	1	Drivers and user manual
VGA	1	VGA signal cable
DVI	1	DVI signal cable
USB	1	USB touchscreen cable
Power Cord	1	Power cord
S19M or S24M	1	

Ordering Information

PN	Description
S19M-AD/PC-R10	19" SXGA 300cd/m² marine display with AC and DC redundant power, PCAP touchscreen, R10
S24M-AD/PC-R10	24" FHD 300cd/m² marine display with AC and DC redundant power, PCAP touchscreen, R10

Marine Panel PC Series

S12A

Intel® Atom™ N270 1.6GHz CPU

Full IP 67
Up to 1 meter of submersion

Features

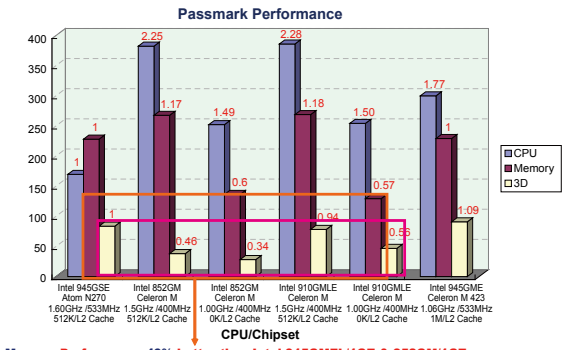
- 12.1" 1300 nits super high brightness LED available
- IP 67 (NEMA 6) fully-enclosed aluminum die cast enclosure and IP 67 waterproof lockable I/O
- Fanless system integrated with Intel® Atom™ N270 1.6GB processor for ultra low voltage
- Supports one 2.0 GB (max.) 400/533 MHz DDR2 SO-DIMM
- Built-in internal Wi-Fi antenna supports 802.11b/g/n high standard
- CAN-bus interface for automotive applications
- Ambient light sensor detects ambient light for automated screen adjustments to optimize viewing
  (Advanced Deep Dimming to Black for sunlight readable model)
- Standard VESA 75/100 compliant

DNV | BC AWARD | COMPUTEX TAIPEI 2009 BEST CHOICE | F3 One Key Recovery iEi symantec. | Wireless 802.11 b/g/n | IP67 | Fanless | High Brightness | CAN-Bus

Rugged Panel PC with Fanless Intel® Atom™ Processor

The fanless intelligent display computer, S12A, uses a 45 nm Intel® Atom™ processor with up to 1.6 GHz frequency and can be used in harsh and safety-critical applications in transport, avionics, engineering or industrial automation.
Better graphics performance is excellent for kiosk, self-service terminal, and digital signage applications.

Evaluating 3D mark performance with different generation CPU and chipset combination, Intel® Atom™ processor is the best solution for low power consumption and better graphics performance choice.



Memory Performance 40% better than Intel 915GMEL/1GZ & 852GM/1GZ
Graphic Performance 40% better than Intel 910GMLE/1GZ, 65% better than 852GM/1GZ

Sunlight Readable

■ Super High Brightness

S12ASR (Sunlight Readable Model) has greatly improved luminance through edge lighting to achieve super high brightness (up to 1300 cd/m²).

■ Low Reflection through AR (Anti-Reflection) Technology

Outdoor applications in daylight or other bright environments require technology that can suppress surface reflection. S12ASR sunlight readable model offers special AR (anti-reflection) surface treatment to prevent reflection, which ensures excellent visibility in daylight conditions.

Super High Brightness: 1300 nits
High Contrast: 700:1
Wide Viewing Angle: 60/60 (R/L), 45/75 (U/D)

IP 67 Fully-Enclosed Design

The S12A is front sealed and tested in the certified house chamber under UL's Witnessed Test Data Program (TDP). IEI follows IP 67 standard testing procedures. This full IP 67 touch monitor provides full IP 67 protection including connectors, cables and screen.

[IP 67] Dust-Tight

First Digit — The first digit indicates the level of protection that the enclosure provides against access to hazardous parts

Level		Effective Against
6		No ingress of dust; complete protection against contact

[IP 67] Temporary immersion under water 1m

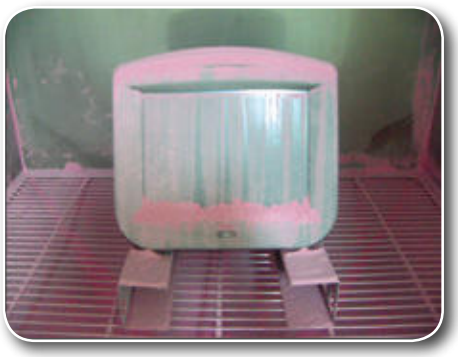
Second Digit — Protection of the equipment inside the enclosure against harmful ingress of water

Level		Effective Against
7		Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1mof submersion)

Sealing enclosure with all sides of IP 67 !

■ IP6X Test

• Test for protection against dust



■ IPX7 Test

• Test for protection against water

Protected against the effects of temporary immersion between 15 cm and 1m. Duration of test is 30 minutes

• Air Flow Test

Air pressure measurement is used as the IP 67 test method, the air flow tester is capable of detecting leaks in product and evaluates the pass/fail status of the watertight system.

Uninterrupted Wireless Connection

The S12A series features high speed Wi-Fi IEEE 802.n protocol which builds on previous 802 standards by adding multiple-input multiple-output (MIMO) and 40 MHz operation to the physical (PHY) layer. MIMO uses multiple transmitter and receiver antennas to improve system performance.

802.11 b/g/n ready with invisible antenna

Benefits

* Half the size of Mini-PCI
* Higher bandwidth interface
* Rigid mechanical spec.

27 times faster data transfer rate compared to 802.11b

Protocol	Freq.	Thru.	Data	Range indoor	Range outdoor
802.11	(GHz)	(Mbit/s)	(Mbit/s)	(m)	(m)
a	5 GHz	23	54 Mbit/s	~35	~120
b	2.4 GHz	4.3	11 Mbit/s	~38	~140
g	2.4 GHz	19	54 Mbit/s	~38	~140
n	5 GHz and/ or 2.4 GHz	74	300 Mbit/s (2 streams)	~70	~250

802.11b/g Wi-Fi, which gives you up to broadband-speed browsing and connectivity, compared to traditional wired LAN.

The benefits here:

- Simple configuration
- Without hinders worker movement
- Without lessens man-hour productivity
- Without additional purchase of proprietary cables for specific devices
- Without the barrier to space

802.11a	802.11b/g	802.11n
		
Access to email, instant image and the Internet	Streaming music Streaming video	VoIP/Gaming/NAS

Ambient Light Sensor

The S12A built-in ambient light sensor automatically detects the amount of light in the viewing environment and adjusts the brightness of the screen.

Benefits:
- Provides comfortable viewing and prevents eye strain
- Power saving
- Extended lamp life

Day Mode:
Adjust to maximum 1000 nits sunlight readable automatically

Panel brightness auto-adjustment depends on the ambient light amount to save the system power

Night Mode:
Adjust to acceptable brightness automatically in an insufficient light ambient

CAN-bus Automotive Applications

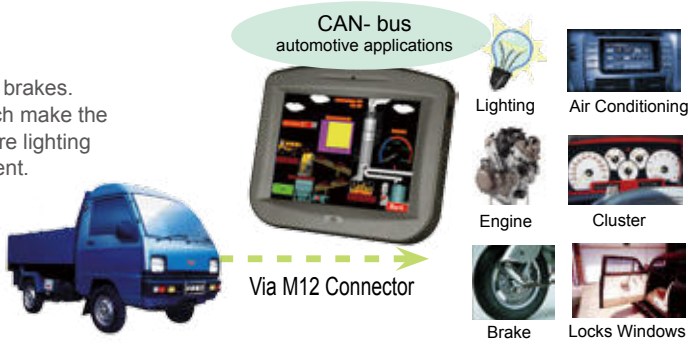
The S12A is equipped with automotive applied CAN-bus interface. The Control Area Network (CAN) is a serial bus system, originally developed by Bosch for use in automobiles, and now is increasingly being used for control in industrial and automotive applications

Controller Area Network

- 1Mb/s data rate
- High reliability bus
- CAN is an open standard with many variants
- Capable of providing real-time communication.

■ CAN in cars and truck engine

• Networking controllers for engine timing, transmission, chassis and brakes.
• Networking components of chassis electronics and electronics which make the vehicle more comfortable. Examples of such multiplex applications are lighting control, air-conditioning, central locking and seat and mirror adjustment.



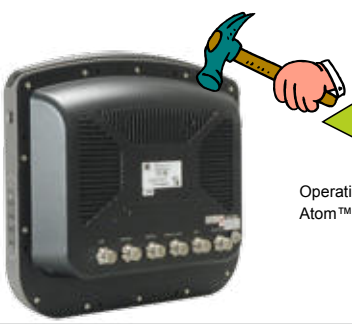
Other Application Fields:

Reliable Die-Cast Aluminum Chassis

These ruggedized LCD products are designed for high reliability, shock and vibration tolerance, survival of high temperature, and corrosive environments. External materials like dust/water can be very destructive to any type of equipment over time.

■ Fanless and Completely Sealed Strong Housing

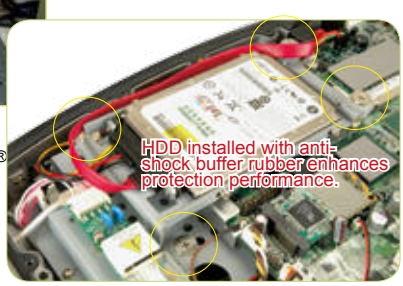
Sealed housing strictly prevents water invasion while the rugged die-cast aluminum enclosure eliminates the need for a fan as a heat dissipation device.



Operating Temperature: -10°C~50°C with on-board Intel® Atom™ N270 1.6GHz processor

■ Rigorous Shock/Vibration Test

Compliant with MIL-STD-810F shock and vibration protection, as well as offering IP 67 water and dust proof front panel protection.



Sunlight Readable

Specifications

Model		S12A-N270	S12ASR-N270
Display	LCD Size	12.1"	
	Max. Resolution	1024 x 768	
	Brightness (cd/m²)	500	1300
	Contrast Ratio	700:1	600:1
	LCD Color	16.2M	16.7M
	Pixel Pitch (mm)	0.3075 (H) x 0.3075 (V)	0.240 (H) x 0.240 (V)
	Viewing Angle (H-V)	160º/160º	160º/160º
	Backlight MTBF (hrs)	50000	100000
Touch	Touchscreen	5-wire resistive type with RS-232 interface	
	Touch Controller	PENMOUNT 6000	
Motherboard	CPU	Intel® Atom™ N270 1.6GHz CPU	
	Chipset	Intel® 945GSE + ICH7M	Intel® 945GSE + ICH7M
	RAM	One 400/533 MHz DDR2 SO-DIMM (max. 2GB)	
	Ethernet	Realtek RTL8111CP PCIe GbE controller	
	Audio Codec	Realtek ALC892 audio codec	
I/O Ports and Switches		1 x 5-pin M12 connector for power adapter	
		1 x 8-pin M12 connector for two USB	
		1 x 5-pin M12 connector for CAN-bus and Audio line out	
		1 x 8-pin M12 connector for UART RS-232/422/485	
		1 x 8-pin M12 connector for UART RS-232	
		1 x 8-pin M12 connector for GbE LAN	
Drive Bay	HDD Driver Bay	1 x 2.5" SATA HDD bay	
	SSD	CF Type II	
Expansion Slot		1 x Wireless LAN Module (802.11 b/g/n) (internal PCIe Mini card interface), Telec certified	
Physical	Front Panel Contruction	Aluminum	
	Chassis Construction	Heavy-duty steel	
	Mounting	Panel, rack, stand and arm (VESA 100mm x 100mm)	
	Front Panel Color	Silver (Pantone 8403C)	
	Dimensions (WxHxD) (mm)	345.3 x 300.4 x 77	
	Net/Gross Weight	4.2 kg/5.3 kg	
Environment	Operating Temperature (°C)	-10°C ~ 50°C	-10°C ~ 50°C
	Storage Temperature (°C)	-20°C ~ 60°C	-20°C ~ 60°C
	Vibration	5~17Hz, 0.1" double amplitude displacement 17~640Hz, 1.5G acceleration peak to peak	
	Shock	10G acceleration part to part (11ms)	
Optional Power Supply		P/N: 63000-CLG60121C-RS - 60W Power Adapter - Input: 90VAC~264VAC, 50/60Hz - Output: 12VDC - M12 waterproof connector 5P	
Power Requirement		9 V~28V DC	
Front Panel Protection		IP 67 compliant	
Power Consumption		33W	51W
Certificate		CE, FCC, DNV	

Fully Integrated I/O

Ordering Information

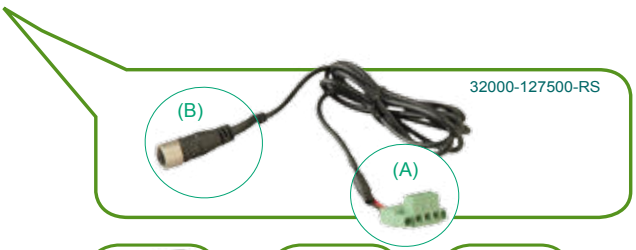
Part No.	Description
S12A/R/1/32-X-R30	12.1" 500 cd/m² IP67 panel PC with Intel® Atom™ N270 CPU 1.6GHz, 802.11b/g/n wireless module, touchscreen,1GB DDR2 553 MHz, M12 connectors and 320GB SATA HDD with Windows XP Embedded operaintg system, R30
S12A/R/1/1-C6-R30	12.1" 500 cd/m² IP67 panel PC with Intel® Atom™ N270, CPU 1.6GHz, 802.11b/g/n wireless module, touchscreen,1GB DDR2 553 MHz, M12 connectors and 1GB compact flash with Windows CE 6.0 operaintg system, R30
S12A/R/1/4-X-R30	12.1" 500 cd/m² IP67 panel PC with Intel® Atom™ N270 CPU 1.6GHz, 802.11b/g/n wireless module, touchscreen,1GB DDR2 553 MHz, M12 connectors and 4GB compact flash with Windows XP Embedded operaintg system, R30
S12ASR/R/1/1-C6-R40	12.1" 1300 cd/m² IP67 panel PC with Intel® Atom™ N270, CPU 1.6GHz, 802.11b/g/n wireless module, touchscreen,1GB DDR2 553 MHz, M12 connectors and 1GB compact flash with Windows CE 6.0 operaintg system, R40
S12ASR/R/1/4-X-R40	12.1" 1300 cd/m² IP67 panel PC with Intel® Atom™ N270 CPU 1.6GHz, 802.11b/g/n wireless module, touchscreen,1GB DDR2 553 MHz, M12 connectors and 4GB compact flash with Windows XP Embedded operaintg system, R40
S12ASR/R/1/32-X-R40	12.1" 1300 cd/m² IP67 panel PC with Intel® Atom™ N270 CPU 1.6GHz, 802.11b/g/n wireless module, touchscreen,1GB DDR2 553 MHz, M12 connectors and 320GB SATA HDD with Windows XP Embedded operaintgsystem, R40

Packing List

Item	Part No.	Description
Panel Mount Screws Pack	44013-030041-RS	
Power Cable	32000-127500-RS	2000mm; 16AWG; (A) terminal block connector; (B) M12 waterproof connector
Utilities CD	7B000-000087-RS	
Touch Pen	XTR104-0002-RS	
One Key Recovery CD		

Options

Item	Part No.
Rack Mounting Kit	SAILORRK-12
Arm	ARM-11-RS / ARM-31-RS
Stand	STAND-A12-RS / STAND-100-RS



Optional cables and adapter

Item	Part No.
USB Cable	CB-M12USB02-R10
RJ-45 LAN Cable	CB-M12RJ45-R10
DB-9 COM Port Cable	CB-M12COM-R20
DB-9 CAN-bus and Audio Line-out Cable	CB-M12ACAN-R20
AUDIO Line-out Cable	CB-M12AUDIO-R10
Water-proof Power Adapter	63000-CLG6012IC-RS


USB cable (CB-M12USB02-R10)


RJ-45 LAN cable (CB-M12RJ45-R10)


DB-9 COM port cable (CB-M12COM-R10)


DB-9 CAN-bus and AUDIO line-out cable (CB-M12ACAN-R10)


AUDIO line-out cable (CB-M12AUDIO-R10)


Water-proof Power Adapter (63000-CLG6012IC-RS)

S12A Dimensions (Unit: mm)