AUTIC SYSTEM MARINE PC

With Intel N2930 processor

(Bay Trail)

INSTALLATION AND USER MANUAL

Disclaimer

Only qualified personnel can take care of installing and repairing these products. Autic System AS does not take responsibility for products where the seal is broken by the customer. Claims for errors or omissions with the item must be carried out without undue delay. Autic System AS liability is limited to repair or replacement of the products. Autic System AS is not responsible for replacement costs or other consequential damages.

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Revisions

Rev. No.	Date	Description
Rev. 1.0	June 2016	Draft
Rev. 1.1	26. Aug 2016	Final version
Rev. 1.2	28. Nov 2016	Added more detailed description of dimming buttons
Rev. 1.3	30. Jan 2017	Updated info regarding changed default settings of COM port (+5VDC on PIN 9: disabled)

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ABOUT THE AUTIC MARINE PC PRODUCT SERIES

Autic System provides a series of Panel PCs, Box/Mini PC and Monitors approved for use in industrial and marine applications. All products are designed for operation without any moving parts, like ventilation fan and mechanical hard disk drive. We offer Panel PCs with all functions included or Box/Mini PC with external monitor(s). All parts are based on the same base of hardware. DNV GL 2.4 and IEC 60945 approve the products for Marine usage.

1. Touch-screen Panel PCs with screen sizes from 8,4" to 24"

2. Box PC with identical Motherboard as the Panel PC series.

3. Touch-screen Monitor's with screen sizes from 8,4" to 24"

This manual covers the Panel PC, Box/Mini PC and Monitors.

AUTIC PANEL PC

Touch screen

Front bezel

IO and power connectors

Membrane keypad for monitor adjustment
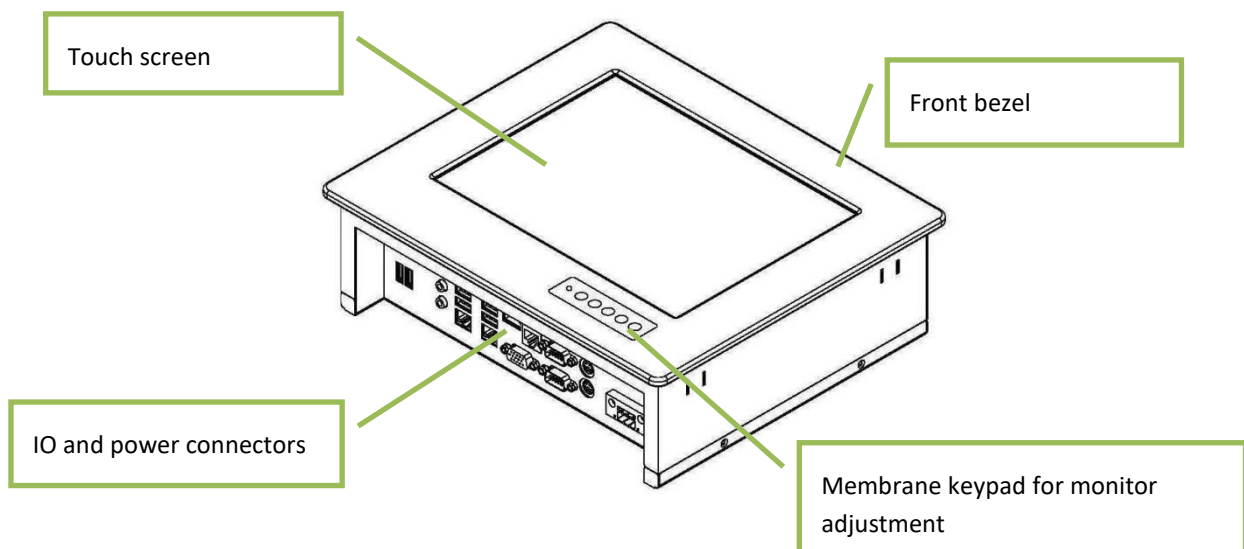
The APPC series is Panel PCs designed for Autic System for optimal solution of HMI functionality to marine and industrial markets. Fanless design with solid aluminium front bezel. Powerful CPU based on Intel Bay Trail N2930 quad Core processor provides maximum performance based on known platform. Intel® Gen7 Intel® Graphics processor for quick screen refresh. The PC provides practical functionality such as easy access to the hard drive and connectors for redundant power supplies.

RANGE OF PANEL PC PRODUCTS

DNV GL 2.4 and IEC60945 approved.

	Screen size	Screen resolution	Display brightness	Colours	RS-232 RS-485 RS-422	Additional RS-232 ports	USB (2.0) USB (3.0)	PCIe x1 slot	Power consumption
Display format 4:3									
APPC-8429T	8.4"	800x600	450 nit LED	262K	3	0	2+ 2	0	30 W
APPC-1029T	9.6"	800x600	300 nit CCFL	262K	3	0	4 + 2	0	30 W
APPC-10429T-XG	10.4"	1024x768	300 nit LED	262K	3	0	4 + 2	0	30 W
APPC-1229T-XG	12"	1024x768	420 nit LED	16.7M	3	2	4 + 2	0	30 W
APPC-1529T	15"	1024x768	250 nit LED	16.7M	3	0	4 + 2	1	50 W
APPC-1729T	17"	1280x1024	250 nit LED	16.7M	3	0	4 + 2	1	40 W
APPC-1929T	19"	1280x1024	300 nit LED	16,7M	3	1	4 + 2	1	40 W
Display format 16:9									
APPC-11629T	11,6"	1366x768	250 nit LED	262K	3	2	4 + 2	0	30 W
APPC-15629T	15,6"	1920x1080	300 nit LED	262K	3	0	4 + 2	1	40 W
APPC-18529T	18,5"	1920x1080	300 nit LED	16.7M	3	1	4 + 2	1	50 W
APPC-2229T	22"	1920x1080	300 nit LED	16.7M	3	1	4 + 2	1	60 W
APPC-2429T	24"	1920x1080	300 nit LED	16.7M	3	2	4 + 2	1	70 W

PRODUCT IDENTIFICATION

Product description: APPC-2429T-MK-8N

APPC	Product family name (Autic Panel PC)
24	Size of display
29	Motherboard Id. (Intel 2930)
T	Touch screen
MK	Membrane keypad for monitor adjustment. Located at the front bezel.
8N/10N	Sun readable. LED backlight (800 / 1000 nit)

Serial number: 1929T-AMK-10N-DC-SSD120G-1604022-C

T	Touch Screen
AMK	Aluminium bezel with membrane keypad
10N	Display brightness. 10N=10 nits, 8N=8 nits, 5N= 5 nits
DC	DC power supply built-in
SSD120G	120GB SSD
1604022	16 = 2016; 04 = April, 022 = 22th unit of this batch
C	Mechanical version C

SPECIFICATIONS PANEL PC

All models are as standard fitted with 4 GB of RAM, 2 Gb LAN ports, PCIe x1 slot*, RS-232/422/485 ports*, resistive touch screen, 120GB SSD drive. Power supplied by 9 to 32 VDC. Adapter 100 – 240 VAC to 12 VDC included in the delivery. HDMI / VGA output for additional monitor.

*PCIe x1 slot and number of serial ports depend on the size of the Panel PC.

Optional equipment

- Membrane keypad in front for backlight dimming and display adjustment
- 2 LAN port (Total 4 ports)
- Sun readable monitor
- Up to 8GB RAM
- LPT printer port
- 2nd SDD/HDD
- Isolated PCIe- IO board for serial ports RS-422/485 and CAN bus. (DNV approved)

TECHNICAL DATA

Front panel protection	IP55
Rear panel protection	IP20
Power supply	+24 VDC (9-32 VDC).
Power adapter (Model according to consumption)	100 – 240 VAC to 12 VDC
Power consumption	30 to 80 W
Ambient temperature. Vertical mounting	0° to +60°C
Ambient temperature. Horizontal mounting	0° to +50°C
Storage temperature	-20°to+80°C
Relative humidity	5-85% non-condensing
Approvals	CE/ FCC/Rohs
Marine certification	DNV 2.4 and IEC60945

SUPPORTED OPERATING SYSTEMS

The CPU supports Windows 7, 8 and 10 operating system. Linux Kubuntu. Ask for other Linux versions.

It does not support Windows XP.

MOTHERBOARD SPECIFICATION

Form Factor	Dimensions	Mini-ITX (6.7-in x 6.7-in)
Processor System	CPU	Intel® TM Bay Trail-M/D Processor Supports Hyper-Threading Technology
	Core Number	4
	Max Speed	2,16GHz
	Cache	2MB
	Chipset	N/A
	BIOS	UEFI
Expansion Slot	PCI	0
	Mini-PCIe	1 (Half Size)
	mSATA	1
	PCIe	1 (x1 slot)
	CFast Card Socket	0
Memory	Technology	Dual Channel DDR3L 1333 MHz SDRAM
	Max.	8GB
	Socket	2 x SO-DIMM
Graphics	Controller	Intel® Gen7 Intel® Graphics DX 11, OGL3.2
	VRAM	Shared Memory
	VGA	Supports max. resolution 1920x1200
	LVDS	Dual Channel 24-bit, max resolution 1920x1200@60Hz
	HDMI	Supports HDMI 1.4a, max resolution 1920x1200
	DVI	No
	DisplayPort	No
	Multi Display	Yes (Dual Display)
Ethernet	Ethernet	10/100/1000 Mbps
	Controller	GbE LAN: 2 x Realtek RTL8111G-CG
	Connector	2 x RJ-45
SATA	Max Data Transfer Rate	SATA2 (3.0Gb/s)
Rear I/O	VGA	1
	DVI	0
	HDMI	1
	DisplayPort	0
	Ethernet	2
	USB	4 (2 x USB 3.0, 2 x USB 2.0)
	Audio	2 (Mic-in, Line-out)
	Serial	3 (RS232/422/485)
	PS/2	2 (1 x keyboard, 1 x mouse)

Internal Connectors	USB	6 (2 x USB 3.0, 4 x USB 2.0)
	LVDS/Inverter	1/1
	VGA	0
	Serial	2 (RS232)
	SATA	2 x SATA2(3.0Gb/s)
	mPCIe	1
	Parallel (LPT)	1
	mSATA	1(shared)
	IrDA	0
	GPIO	8-bit 4 x GPI + 4 x GPO
	SATA PWR Output Con	1
	Speaker Header	1
Watchdog Timer	Output	Output from super I/O to drag RESETCON#
	Interval	256 Segments, 0,1,2…255 Sec/Min
Power Requirements	Input	PWR 9-19V DC-In (4-pin ATX PWR Con)
	Power On	AT/ATX Supported -AT : Directly PWR on as power input ready -ATX : Press button to PWR on after power input ready
Environment	Temperature	0ºC – 60ºC

PANEL PC CONNECTORS

ON/OFF and Reset button

Dual 9-32VDC Power

Remote ON/OFF

PCIe x1 Slot

Ground terminal

I/O Panel

COM port*

2xUSB

*The number of serial ports depend on the size of the Panel PC.

I/O PANEL

1: PS/2 Mouse Port
2: COM Port 1 (COM1)*
3: COM Port 3 (COM3)*
4: LAN RJ-45 Port
5: LAN RJ-45 Port
6: Line out (Green)
7: Microphone (Pink)

8: USB 3.0 Ports (USB3_0_1)
9: USB 2.0 Ports (USB_0_1)
10: VGA Port (VGA1)
11: COM Port 2 (COM2)*
12: PS/2 Keyboard Port
13: HDMI Port (HDMI1)

* This motherboard supports RS232/422/485 on COM ports 1~3. Please refer to below table for the pin definition. In addition, COM1~3 ports (RS232/422/485) can be adjusted in BIOS setup utility > Advanced Screen > Super IO Configuration

COM PORTS

COM1-3 D-sub 9-Pin RS-232/485/422

PIN	RS232	RS422	RS485
1	DCD	TX-	RTX-
2	RXD	RX+	N/A
3	TXD	TX+	RTX+
4	DTR	RX-	N/A
5	GND	GND	GND
6	DSR	N/A	N/A
7	RTS	N/A	N/A
8	CTS	N/A	N/A
9	COM1: +5V/+12V/+5VSB COM2, 3: +5V/+12V	COM1: +5V/+12V/+5VSB COM2, 3: +5V/+12V	COM1: +5V/+12V/+5VSB COM2, 3: +5V/+12V

When setting COM 1~3 to RS-485 in BIOS, also enable Auto Flow Control if applicable.

COM 4 and 6 D-sub 9-Pin RS-232

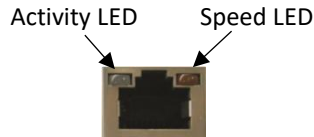| PIN	RS232
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	COM1: +5V/+12V/+5VSB. COM2, 3: +5V/+12V

For units ordered up to and including 2016: The COM ports supplies +5VDC by default, so it could cause reset of the computer if short circuited (i.e. Pin 9 ↔ Shielding). Please do not plug/unplug COM ports when PC is powered ON.

For units ordered in 2017 and later, +5VDC on Pin 9 is disabled by default.

ETHERNET

Activity LED status	Description
Off	No Link
Blinking	Data Activity
On	Link

Activity LED   Speed LED

Speed LED status	Description
Off	10Mbps
Orange	100Mbps
Green	1Gbps

USB

USB Pin Configuration

Pin no	Signal	Signal direction
1	VBUS	–
2	D–	In/Output
3	D+	In/Output
4	GND	–

Host

Frame connected to chassis.

The Panel PC has galvanic isolation against the 24 VDC feed. There is no galvanic isolation between the communication ports for RS-232, RS-422/485 and USB.

INSTALLING THE PANEL PC

### PACKAGE CONTENTS

The Panel PC is shipped in customized dual layer cardboard packaging with polystyrene protection.

Standard delivery:

- Panel PC
- Power cable with connector
- Power adapter 100 – 240 VAC to 12 VDC
- Gasket for panel mounting
- Quick mounting kit
- CD with drivers
- When specified, Operating System Recovery DVD

MECHANICAL INSTALLATION

Panel PC should be installed in vertical position to prevent overheating.
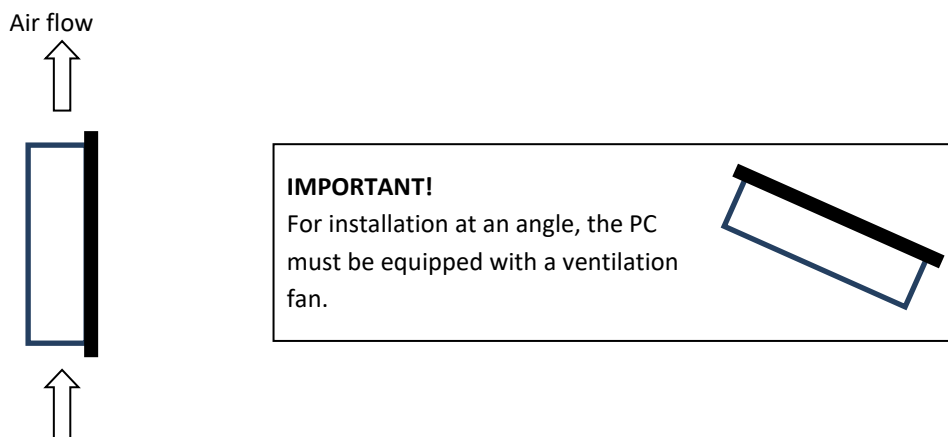
Air flow

IMPORTANT!
For installation at an angle, the PC must be equipped with a ventilation fan.

For product and cutout dimensions, please refer to the chapter Product Dimensions. Make the cutout according cutout dimension for the selected model.

COMPASS SAFETY DISTANCE

The Panel PC is certified according to DNV 2.4 and IEC60945 for bridge installation.

Standard compass safe distance: 95 cm

Steering compass safe distance: 65 cm

INSTALLATION METHODS

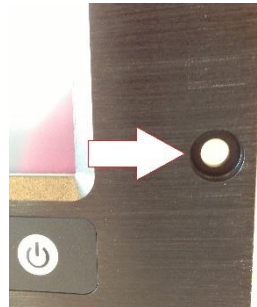There are four methods for installation. Quick mounting is standard.
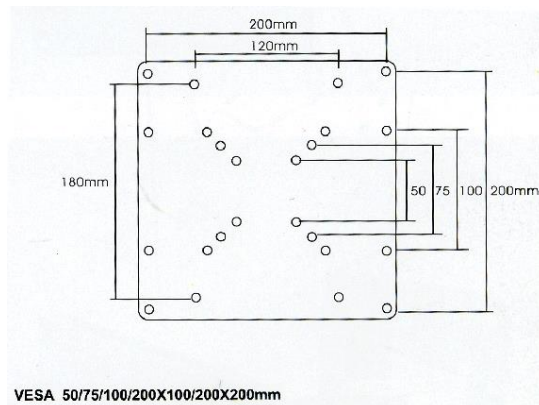
- Quick mounting fittings.

- 10 screws with nuts behind front bezel.

- 4 screws through holes in the front bezel (OPTIONAL). Suitable when there is no access from rear.

- Prepared for VESA standard bracket at rear side.
  Various sizes according to size of Panel PC.

Fastening holes in monitor back plate.

ELECTRICAL INSTALLATION

The Panel PC is certified for the connection to grounded power supply according to EN60950. The panel PC's shall be supplied by the standard power adapter or by another galvanically isolated supply of approved type.

There are two power connectors allowing the use of two individual power sources to obtain redundancy. One power connector can be used for single input. Operating voltage is from 9 to 32 VDC. Be aware of the current consumption for wire dimension when using low supply voltage. Total power consumption can be up to 80 W.

The power input has polarity protection if + and – should be interchanged during installation.

- Data cables connected to the unit should to be of the shield type.
- We recommend that the shield is connected to ground on both sides.
- We recommend using min. 4 mm² grounding wire.
- Isolate PCB ground (0 V) from chassis ground (earth).
- Signal ground (0 V) is isolated from chassis ground.

9-32VDC Power

9-32VDC Power

Ground
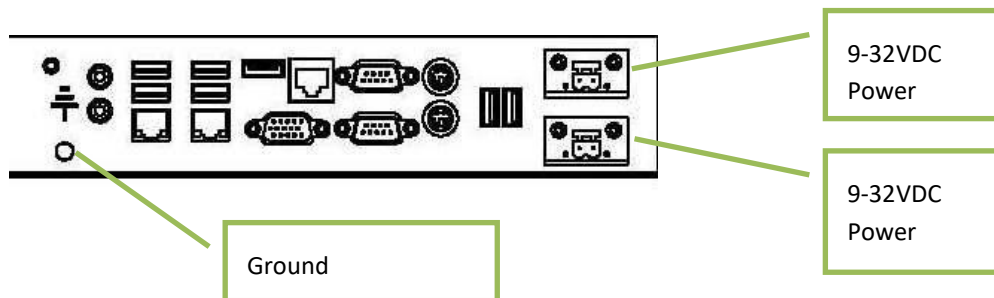
NOTE! Make sure the power is off when connecting and disconnecting the connectors.

VERIFICATION

Please observe the following during installation and startup.

1) Be accurate when mounting the gasket tape between the front bezel and the panel.

2) Cover the ventilation holes with a piece of paper to prevent metal shavings from entering the unit. Remove again after installation to ensure sufficient ventilation.

3) Ground the unit according to installation instruction.

4) Make sure the polarity is correct for power connection before connecting to power outlet.

5) Keep signal cable and high voltage cable separated.

6) After power on, make sure that the system performs a normal startup of the OS.

7) The system may be delivered with a 30 day trial version of Windows OS. Make sure you have a valid OS.

ON-OFF AND RESET BUTTONS

The On-Off button is at the rear side of the Panel PC. This button shuts down the system in a proper way. We strongly recommend to first shut down the system via application software or operating system.

IMPORTANT!
Do not use the Reset button for normal restart! This button makes a hard reset of the system, and may cause abnormal behavior for the operating system.

REMOTE ON-OFF SWITCH

Remote button/switch can control on-off operation of the Box PC. Attach a potential free Switch or relay for operation.
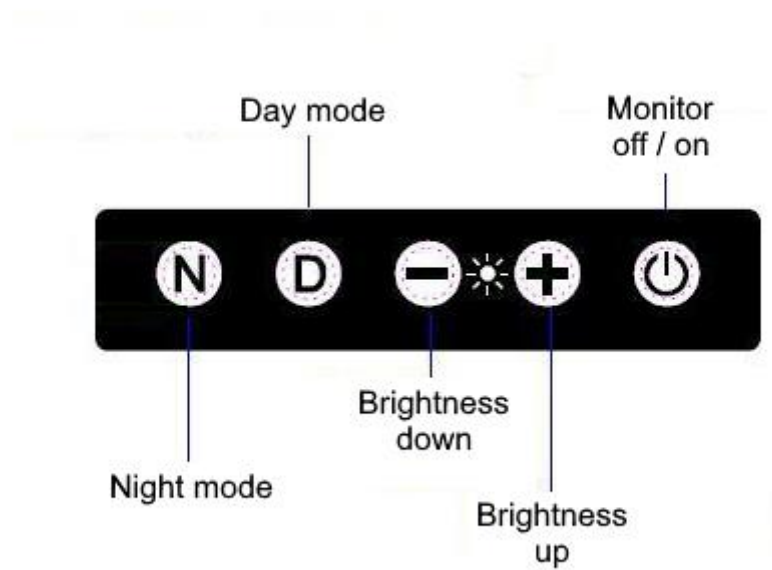
Toggle function.

- When Panel PC is off. Single touch/pulse will start the unit.
- When Panel PC is on. Single touch/pulse will stop the unit.
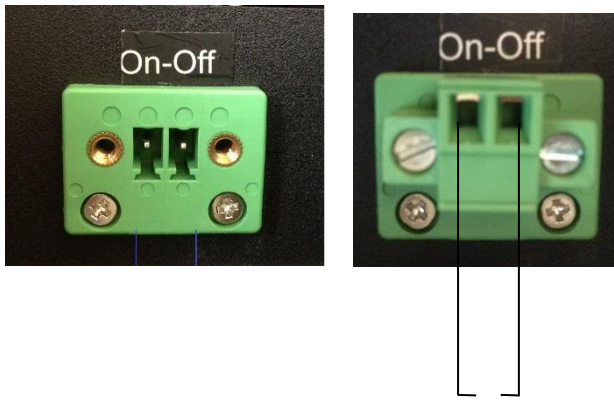
RESTORE ON AC/POWER LOSS

The Restore on AC/Power loss is hard coded to "Power On". Regardless of the value set in BIOS, the PC powers on when the AC/power is restored.

Membrane keypad for Panel PC with High Brightness display (Sun readable, 10N or 8N option)

For bridge solutions with dimming according to IEC 62288, the "Sun Readable" option have to be selected. For operation in other locations on the ship, standard screen brightness is suitable.

Note:

1. The monitor off/on button does **not** switch off the touch functionality.

2. The + or – buttons may appear to react slowly. Try holding the button pressed in for about 3-5 seconds to adjust the brightness. This is due to the number of dimming levels.

3. For models with a serial number prior to 1608004-A (manufactured before Aug 2016):
   - After pushing Fully Dark, use Night Mode, Day Mode or + to bring light back.

The AMPC-2930 is a Box (or Mini) PC intended for marine and industrial use. A powerful CPU based on Intel Bay Trail N2930 quad Core processor provides maximum performance based on known platform. Intel® Gen7 Intel® Graphics DX 11 for quick screen refresh. The PC is delivered with practical functionality such as easy access to the hard drive and redundant power supply connectors.
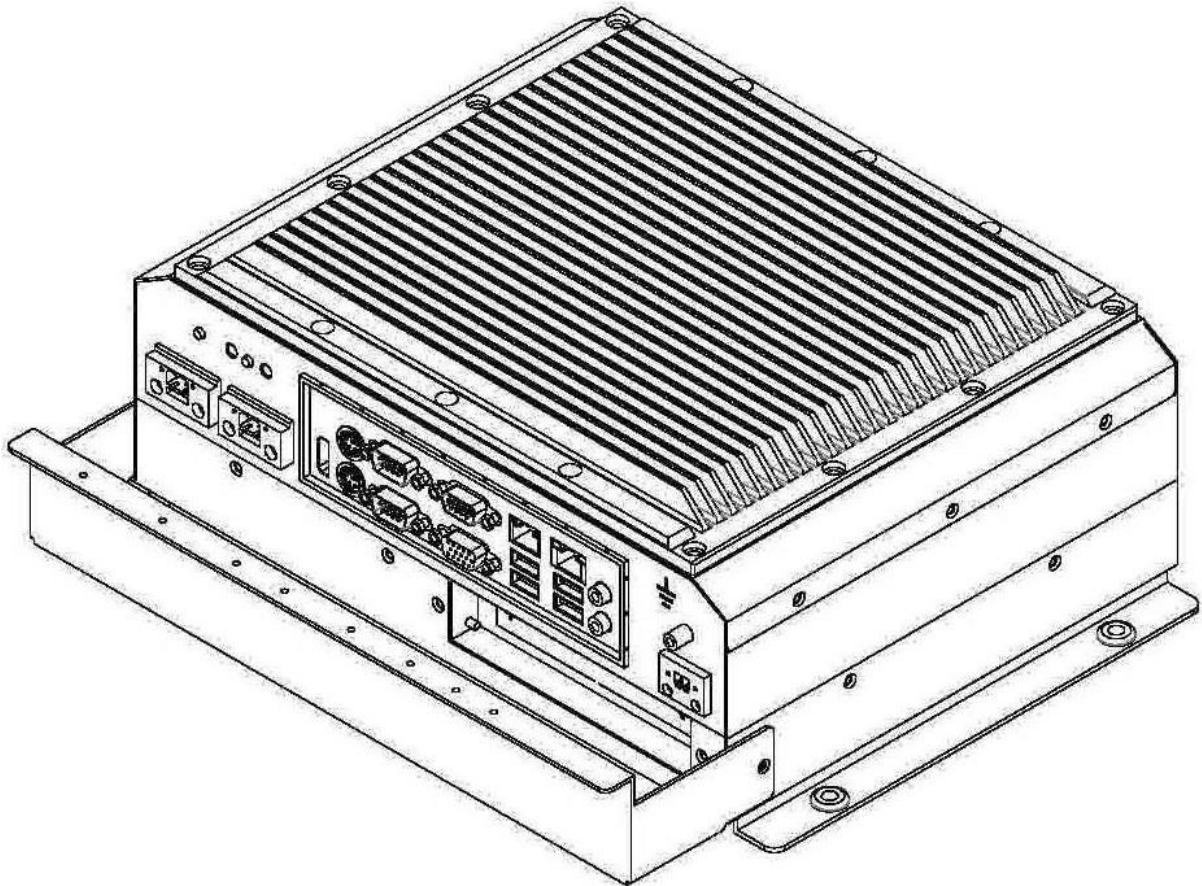
RANGE OF BOX PC PRODUCTS

DNV GL 2.4 and IEC60945 approved.

	LAN	RS-232-C	RS-232, RS-485, RS-422	USB (2.0) (3.0)	Internal Mini PCIe Connector	PCIe x1 slot	Power consumption
AMPC-2930	2	2	3	4 + 2	1	1	25 W

The number of LAN and serial ports can be increased on request.

PRODUCT IDENTIFICATION

Product description: AMPC-2930

AMPC	Product family name (Autic Mini PC)
2930	Motherboard Id. (Intel 2930)

Serial number: A2930-SSD120G-HS-DC-1604022-A

SSD120G	120GB SSD
HS	Heat sink
DC	DC power supply built-in
1604022	16 = 2016, 04 = April, 022 = 22th unit of this batch
A	Mechanical version A

SPECIFICATIONS BOX/MINI PC

The mini/box PC is fitted with 4 GB of RAM, 2 Gb LAN ports, PCIe x1 slot*, RS-232/422/485 ports*, 120GB SSD drive. Power supplied by 9 to 32 VDC. Adapter 100 – 240 VAC to 12 VDC included in the delivery. HDMI / VGA output for dual monitors.

Optional equipment

- 2 LAN port (Total 4 ports)

- Up to 8GB RAM

- LPT printer port

- 2nd SDD/HDD

- Isolated PCIe- IO board for serial ports RS-422/485 and CAN bus. (DNV approved)

IP protection	IP20
Power supply	+24 VDC (9-32 VDC).
Power adapter (Model according to consumption)	110 – 240 VAC to 12 VDC
Power consumption	25 W
Ambient temperature. Vertical mounting	0° to +60°C
Ambient temperature. Horizontal mounting	0° to +50°C
Storage temperature	-20° to +80°C
Relative humidity	5-85% non-condensing
Approvals	CE/ FCC/Rohs
Marine certification	DNV 2.4 and IEC60945

SUPPORTED OPERATING SYSTEMS

The CPU supports Windows 7, 8 and 10 operating system. Linux Kubuntu. Ask for other Linux versions.
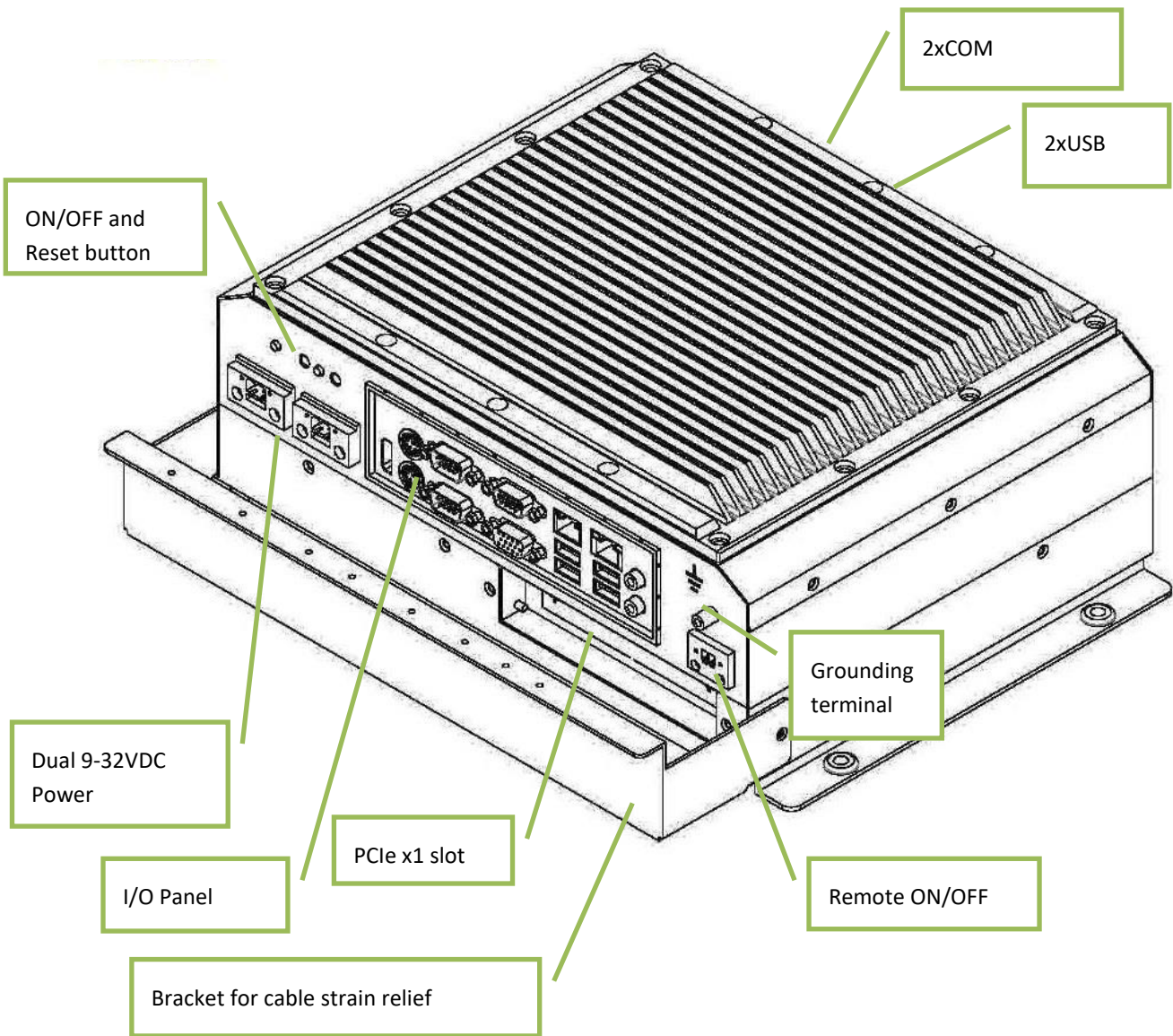
It does not support Windows XP.
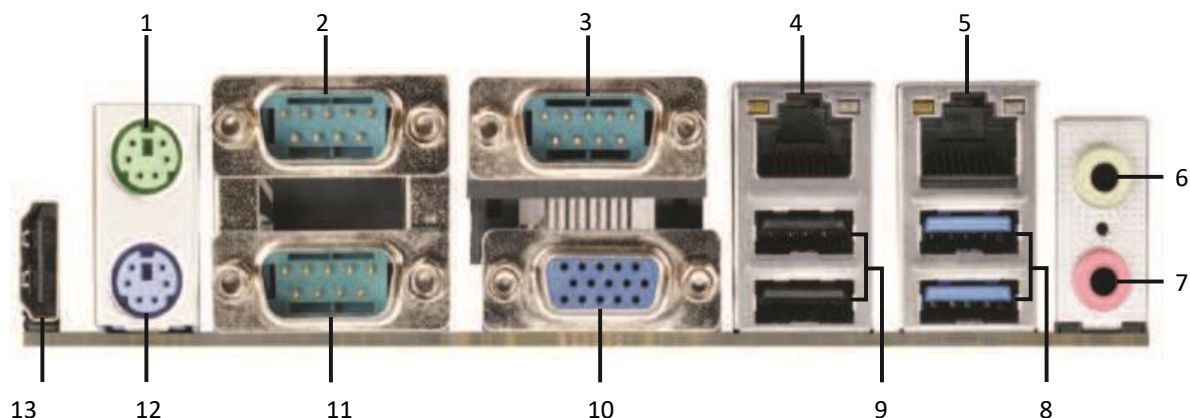
MOTHERBOARD SPECIFICATION

Form Factor	Dimensions	Mini-ITX (6.7-in x 6.7-in)
Processor System	CPU	Intel® TM Bay Trail-M/D Processor Supports Hyper-Threading Technology
	Core Number	4
	Max Speed	2,16GHz
	Cache	2MB
	Chipset	N/A
	BIOS	UEFI
Expansion Slot	PCI	0
	Mini-PCIe	1 (Half Size)
	mSATA	1
	PCIe	1 (x1 slot)
	CFast Card Socket	0
Memory	Technology	Dual Channel DDR3L 1333 MHz SDRAM
	Max.	8GB
	Socket	2 x SO-DIMM
Graphics	Controller	Intel® Gen7 Intel® Graphics DX 11, OGL3.2
	VRAM	Shared Memory
	VGA	Supports max. resolution 1920x1200
	LVDS	Dual Channel 24-bit, max resolution 1920x1200@60Hz
	HDMI	Supports HDMI 1.4a, max resolution 1920x1200
	DVI	No
	DisplayPort	No
	Multi Display	Yes (Dual Display)
Ethernet	Ethernet	10/100/1000 Mbps
	Controller	GbE LAN: 2 x Realtek RTL8111G-CG
	Connector	2 x RJ-45
SATA	Max Data Transfer Rate	SATA2 (3.0Gb/s)
Rear I/O	VGA	1
	DVI	0
	HDMI	1
	DisplayPort	0
	Ethernet	2
	USB	4 (2 x USB 3.0, 2 x USB 2.0)
	Audio	2 (Mic-in, Line-out)
	Serial	3 (RS232/422/485)
	PS/2	2 (1 x keyboard, 1 x mouse)

Internal Connectors	USB	6 (2 x USB 3.0, 4 x USB 2.0)
	LVDS/Inverter	1/1
	VGA	0
	Serial	2 (RS232)
	SATA	2 x SATA2(3.0Gb/s)
	mPCIe	1
	Parallel (LPT)	1
	mSATA	1(shared)
	IrDA	0
	GPIO	8-bit 4 x GPI + 4 x GPO
	SATA PWR Output Con	1
	Speaker Header	1
Watchdog Timer	Output	Output from super I/O to drag RESETCON#
	Interval	256 Segments, 0,1,2…255 Sec/Min
Power Requirements	Input	PWR 9-19V DC-In (4-pin ATX PWR Con)
	Power On	AT/ATX Supported -AT : Directly PWR on as power input ready -ATX : Press button to PWR on after power input ready
Environment	Temperature	0ºC – 60ºC

BOX PC CONNECTORS

2xCOM

2xUSB

ON/OFF and Reset button

Dual 9-32VDC Power

Grounding terminal

PCIe x1 slot

I/O Panel

Remote ON/OFF

Bracket for cable strain relief

I/O PANEL

1: PS/2 Mouse Port	8: USB 3.0 Ports (USB3_0_1)
2: COM Port 1 (COM1)*	9: USB 2.0 Ports (USB_0_1)
3: COM Port 3 (COM3)*	10: VGA Port (VGA1)
4: LAN RJ-45 Port	11: COM Port 2 (COM2)*
5: LAN RJ-45 Port	12: PS/2 Keyboard Port
6: Line out (Green)	13: HDMI Port (HDMI1)
7: Microphone (Pink)	

* This motherboard supports RS232/422/485 on COM ports 1~3. Please refer to below table for the pin definition. In addition, COM1~3 ports (RS232/422/485) can be adjusted in BIOS setup utility > Advanced Screen > Super IO Configuration.

COM PORTS

COM1-3 D-sub 9-Pin RS-232/485/422

PIN	RS232	RS422	RS485
1	DCD	TX-	RTX-
2	RXD	RX+	N/A
3	TXD	TX+	RTX+
4	DTR	RX-	N/A
5	GND	GND	GND
6	DSR	N/A	N/A
7	RTS	N/A	N/A
8	CTS	N/A	N/A
9	COM1: +5V/+12V/+5VSB COM2, 3: +5V/+12V	COM1: +5V/+12V/+5VSB COM2, 3: +5V/+12V	COM1: +5V/+12V/+5VSB COM2, 3: +5V/+12V

When setting COM 1~3 to RS-485 in BIOS, also enable Auto Flow Control if applicable.

COM 4 and 6 D-sub 9-Pin RS-232

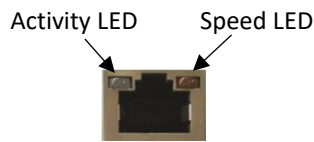| PIN	RS232
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	COM1: +5V/+12V/+5VSB COM2, 3: +5V/+12V

For units ordered up to and including 2016: The COM ports supplies +5VDC by default, so it could cause reset of the computer if short circuited (i.e. Pin 9 ↔ Shielding). Please do not plug/unplug COM ports when PC is powered ON.

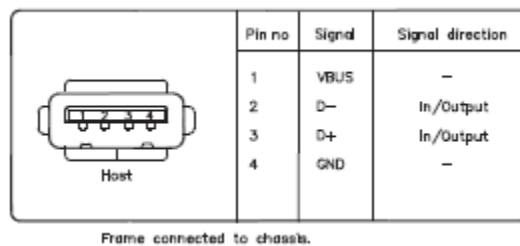For units ordered in 2017 and later, +5VDC on Pin 9 is disabled by default.

ETHERNET

Activity LED status	Description
Off	No Link
Blinking	Data Activity
On	Link

Activity LED   Speed LED

Speed LED status	Description
Off	10Mbps
Orange	100Mbps
Green	1Gbps

USB

USB Pin Configuration

Pin no	Signal	Signal direction
1	VBUS	—
2	D−	In/Output
3	D+	In/Output
4	GND	—

Frame connected to chassis.

The Panel PC has galvanic isolation against the 24 VDC feed. There is no galvanic isolation between the communication ports for RS-232, RS-422/485 and USB.

INSTALLING THE BOX/MINI PC

PACKAGE CONTENTS

The Box/Mini PC is shipped in customized dual layer cardboard packaging with polystyrene protection. Standard delivery includes:

- Box/Mini PC
- Power cable with connector
- Power adapter 100 - 240 VAC to 12 VDC.
- CD with drivers
- When specified, Operating System Recovery DVD

MECHANICAL INSTALLATION

We recommend vertical mounting of the Box/Mini PC for optimal ventilation for the heatsink.
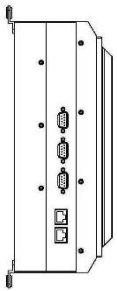
For product and cutout dimensions, please refer to the chapter Product Dimensions.

COMPASS SAFETY DISTANCE

The Box PC is certified according to DNV GL 2.4 and IEC60945 for bridge installation.

Standard compass safe distance: 70 cm

Steering compass safe distance: 45 cm

INSTALLATION OPTIONS

IMPORTANT!
Please observe that by installing any parts not supplied by Autic, such as additional memory modules or HDDs, you will do so at your own risk, and the warranty of the product will no longer be valid.

ELECTRICAL INSTALLATION

The Box/Mini PC is certified for the connection to grounded power supply according to EN60950. The box PC shall be supplied by the standard power adapter, or by another galvanically isolated supply of approved type.

There are two power connectors enabling the use of two separate power sources to obtain redundancy. One power connector can be used for single input. Operation voltage is from 9 to 32 VDC. Be aware of the current consumption for wire dimension when using low supply voltage. Total power consumption can be up to 80 W.

The power input has polarity protection if + and – should be interchanged during installation.

- Data cables connected to the unit should to be of the shield type.
- We recommend that the shield is connected to ground on both sides.
- We recommend using min. 4 mm² grounding wire.
- Isolate PCB ground (0 V) from chassis ground (earth).
- Signal ground (0 V) is isolated from chassis ground.

9-32 VDC Power

9-32 VDC Power

Ground
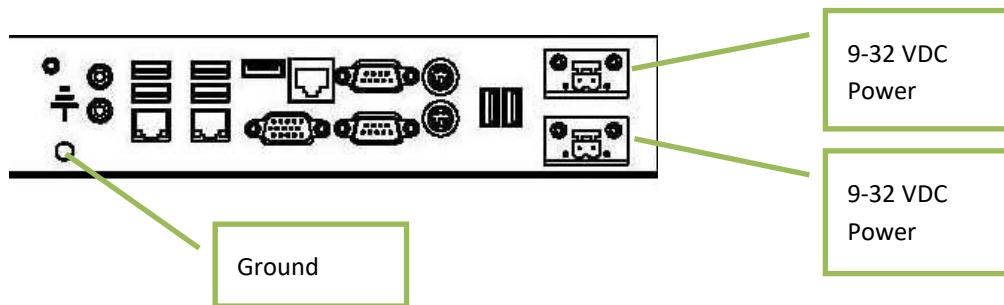
VERIFICATION

Please observe the following during installation and startup.

1) Cover the ventilation holes with a piece of paper to prevent metal shavings from entering the unit. Remove again after installation to ensure good ventilation.

2) Ground the unit according to installation instruction.

3) Make sure the polarity is correct for power connection before connecting to power outlet.

4) Keep signal cable and high voltage cable separated.

5) After power on, make sure that the system performs a normal startup of the OS.

6) The system may be delivered with a 30-day trial version of Windows OS. Make sure you have a valid OS.

ON-OFF AND RESET BUTTONS

The On-Off switch is at the rear side of the Box/Mini PC. This button does shut down the system in a proper way. We recommend strongly to first shut down the system via application software or operating system.

IMPORTANT!
Do not use the Reset button for normal restart! This button makes a hard reset of the system, and may cause abnormal behavior for the operating system.

REMOTE ON-OFF SWITCH

Remote button/switch can control on-off operation of the Box PC. Attach a potential free Switch or relay for operation.
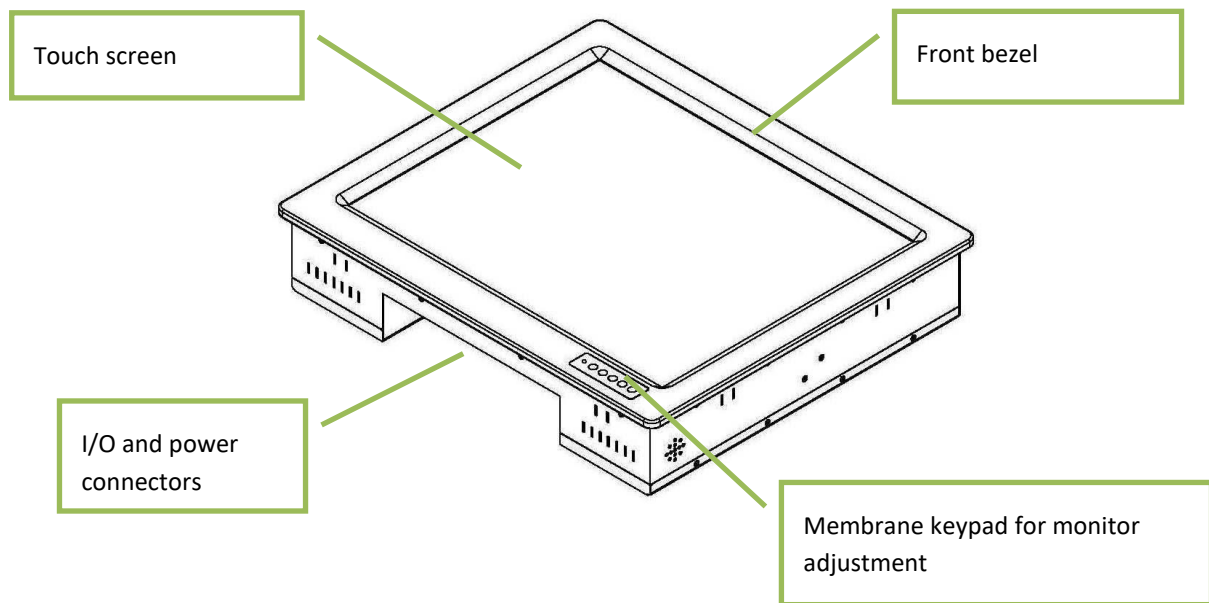
Toggle function.

- When Box PC is off. Single touch/pulse will start the unit.
- When Box PC is on. Single touch/pulse will stop the unit.
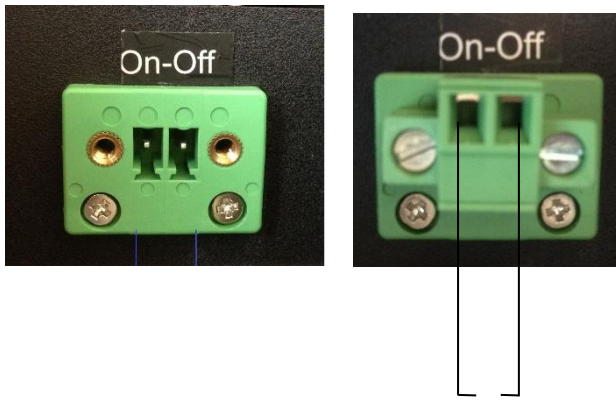
RESTORE ON AC/POWER LOSS

The Restore on AC/Power loss is hard coded to "Power On". Regardless of the value set in BIOS, the PC powers on when the AC/power is restored.

Touch screen

Front bezel

I/O and power connectors

Membrane keypad for monitor adjustment

AMON is a series of monitors designed for Autic System for optimal solution of HMI functionality to marine and industrial markets. Monitors are delivered with practical functionality such as redundant power connections.

RANGE OF PRODUCTS

DNV GL 2.4 and IEC60945 approved.

	Screen size	Screen resolution	Display brightness	Colours	Power Consumption
Display format 4:3					
AMON-84T-AL	8,4"	800x600	450 nit LED	262K	10 W
AMON-104T-AL	10,4 "	800x600	300 nit CCFL	262K	15 W
AMON-104T-AL-XGA	10,4 "	1024x768	300 nit LED	262K	15 W
AMON-120T-AL	12"	800x600	300 nit LED	16.7M	25 W
AMON-120T-AL-XGA	12"	1024x768	420 nit LED	16.7M	25 W
AMON-150T-AL	15"	1024x768	250 nit LED	16.7M	30 W
AMON-170T-AL	17"	1280x1024	250 nit LED	16.7M	30 W
AMON-190T-AL	19"	1280x1024	300 nit LED	16.7M	50 W
Display format 16:9					
AMON-116T-AL	11,6"	1366x768	250 nit LED	262K	25 W
AMON-156T-AL	15,6"	1920x1080	220 nit LED	262K	30 W
AMON-220T-AL	21,5"	1920x1080	300 nit LED	16.7M	50 W
AMON-240T-AL	23,6"	1920x1080	300 nit LED	16.7M	55 W

PRODUCT IDENTIFICATION

Product description: AMON-240T-AL-8N

AMON	Product family name (Autic Monitor)
240	Size of display, (24")
T	Resistive Touch Screen
AL	Aluminium front bezel
8N/10N	Sun Readable. LED backlight (800 / 1000 nit)

Serial number: AM236T-AMK-8N-1604022-C

T	Touch Screen
AMK	Aluminium bezel with membrane keypad
8N	Display brightness. 10N=10 nits, 8N=8 nits, 5N= 5 nits
1604022	16 = 2016; 04 = April, 022 = 22th unit of this batch
C	Mechanical version C

SPECIFICATION MONITORS

All models are equipped as standard with resistive touch screen and membrane keypad for OSD menu and brightness adjustment. Power supplied by 9 to 32 VDC. Adapter 100 – 240 VAC to 12 VDC included in the delivery. DVI and VGA input. USB input for touch screen functionality.

Adjustment of dimming value brighter or darker (16 levels for standard display and 256 level for high brightness).
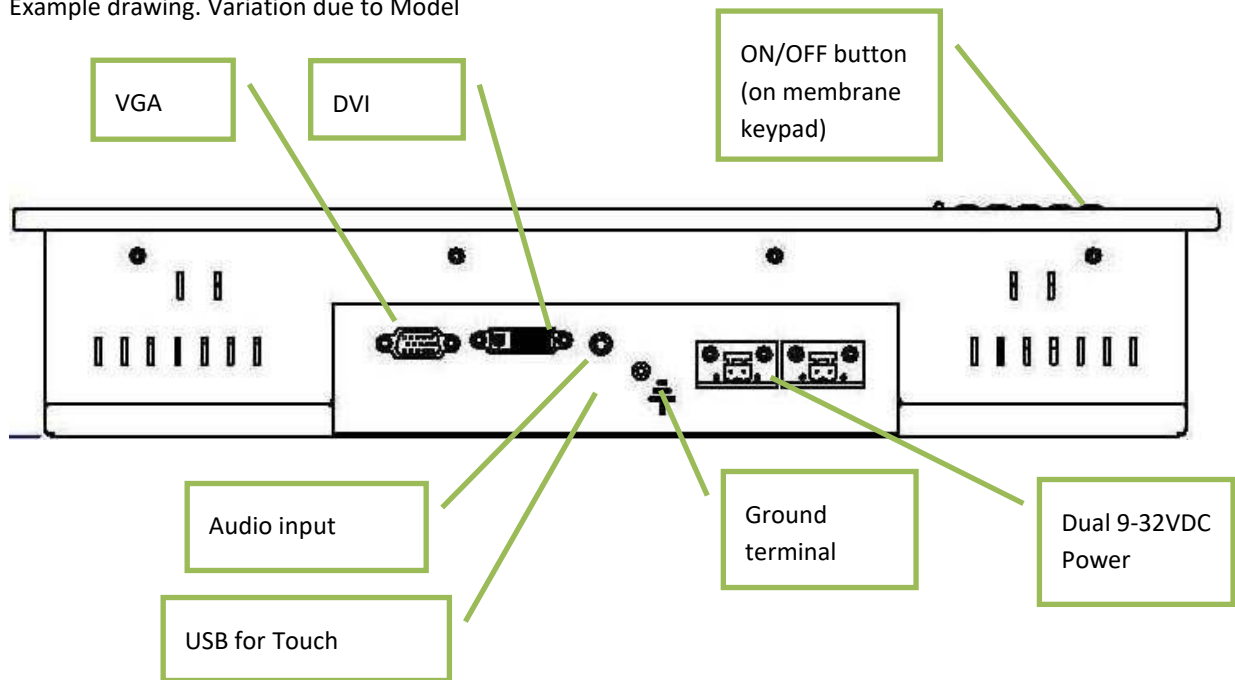
For bridge solutions with dimming according to IEC 62288, Sun readable (8N/10N) option must be selected. For operation in other locations on the ship, standard screen brightness is sufficient.

TECHNICAL DATA

Front panel protection	IP65
Rear panel protection	IP20
Power supply	+24 VDC (9-32VDC).
Power adapter (Model according to consumption)	100 – 240 VAC to 12 VDC
Power consumption	10 to 55 W
Ambient temperature. Vertical mounting	0° to +60°C
Ambient temperature. Horizontal mounting	0° to +50°C
Storage temperature	-20° to +80°C
Relative humidity	5 - 85% non-condensing
Approvals	CE/ FCC/Rohs
Marine certification	DNV 2.4 and IEC60945

Example drawing. Variation due to Model

VGA

DVI

ON/OFF button
(on membrane
keypad)

Audio input

Ground
terminal

Dual 9-32VDC
Power

USB for Touch

USB Pin Configuration

USB

Pin no	Signal	Signal direction
1	VBUS	—
2	D−	In/Output
3	D+	In/Output
4	GND	—

Host

Frame connected to chassis.

INSTALLING THE MONITOR

PACKAGE CONTENTS

The Monitor is shipped in customized dual layer cardboard packaging with polystyrene protection.

Standard delivery:

- Monitor
- VGA cable
- USB cable for touch
- Power cable with connector
- Power adapter 100/200 VAC to 12VDC
- Gasket for panel mounting
- Quick mounting kit
- CD with drivers for touch screen

MECHANICAL INSTALLATION

The monitor can be installed vertically, horizontally or at an angle. If installing horizontally or at an angle, make sure there is sufficient ventilation around the unit!
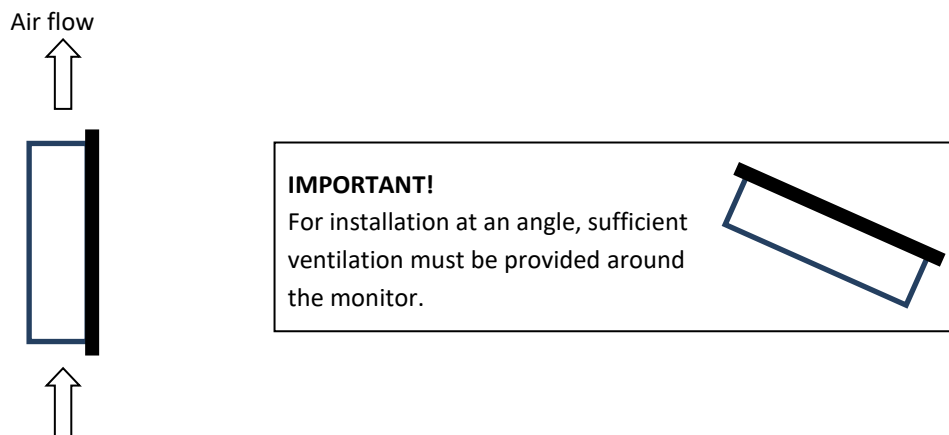
Air flow

IMPORTANT!
For installation at an angle, sufficient ventilation must be provided around the monitor.

For product and cutout dimensions, please refer to the chapter Product Dimensions. Make the cutout according cutout dimension for the selected model.

COMPASS SAFETY DISTANCE

The monitor is certified according to DNV 2.4 and IEC60945 for bridge installation.

Standard compass safe distance: 100 cm

Steering compass safe distance: 70 cm

INSTALLATION METHODS

There are four methods for installation. Quick mounting is the standard method.

- Quick mounting fittings

- 10 screws with nuts behind front bezel.

- 4 screws through holes in the front bezel. Suitable when there is no access from rear. This mounting is optional.
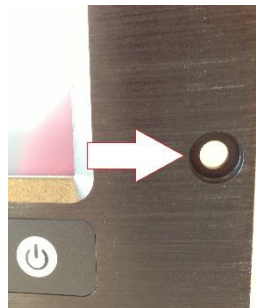
- Prepared for VESA standard bracket at rear side.
 Various sizes according to size of monitor.
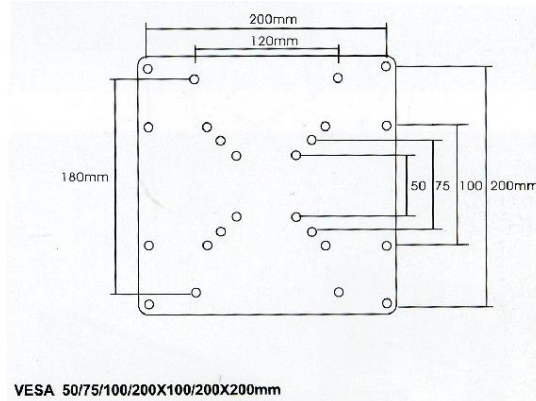
ELECTRICAL INSTALLATION

The Monitor is certified for the connection to grounded power supply according to EN60950. There are two power connectors to be able to use of two individual power sources to obtain redundancy. 1 power connector can be used for single input. Operation Voltage is from 9 to 32 VDC. Be aware of the current consumption for wire dimension when using low supply voltage. Total power consumption can be up to 80 watt.

The power input has polarity protection if + and – should be interchanged during installation.

- Data cables connected to the unit should to be of the shield type.
- We recommend that the shield is connected to ground on both sides.
- We recommend using min. 4 mm² grounding wire.
- Isolate PCB ground (0 V) from chassis ground (earth).
- Signal ground (0 V) is isolated from chassis ground.
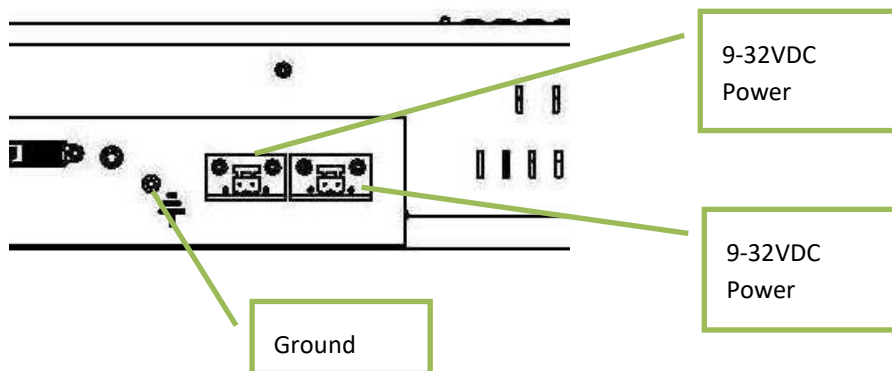
VERIFICATION

Please observe the following during installation and startup.

1) Be accurate when mounting the gasket tape between the front bezel and the panel.

2) Cover the ventilation holes with a piece of paper to prevent metal shavings from entering the unit. Remove again after installation to ensure good ventilation.

3) Ground the unit according to installation instruction.

4) Make sure the polarity is correct for power connection before connecting to power outlet.

5) Keep signal cable and high voltage cable separated.

MONITOR ADJUSTMENTS

Membrane keypad on monitors

MENU

1) Press menu key once, you will see the menu with options on the screen.

2) Under menu, press menu key again, you will be able to select brightness, contrast, and volume, etc.

UP & DOWN

1) Under menu, you can use these 2 keys to increase and decrease setting.

2) These buttons are directly dedicated to control the display brightness.
Adjustment of dimming value brighter or darker.
(256 levels for Sun readable display)

AUTO

1) Press AUTO key to auto adjust/centralize the picture on the display.

2) Under menu, AUTO key functions as "exit" to leave the menu.

ON/OFF

Switch the monitor off/on.

Note that the monitor ON/OFF function can be disabled from factory. This must be specified when ordering the monitor.

MONITOR ADJUSTMENTS (OLD VERSION)

Membrane keypad for monitors with standard display (for use in engine room or similar).

These buttons adjust the speaker volume.

These buttons control the display brightness.

Adjustment of dimming value brighter or darker.

(16 levels for standard display)

Brightness for this display is not dimmable down to 1 nit as specified in IEC 60945 for use on bridge.

Switch off the standard-brightness monitor.

Note that the monitor ON/OFF function can be disabled from factory. This must be specified when ordering the monitor.

PRODUCT DIMENSIONS

PANEL PC DIMENSIONS
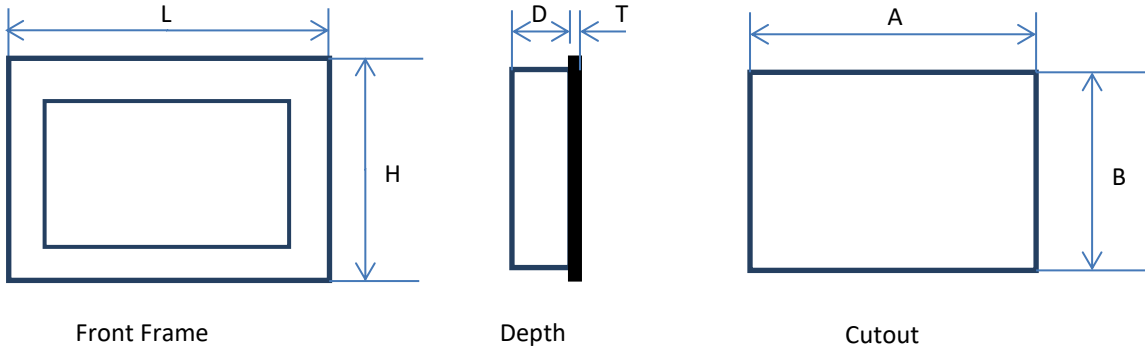
Front Frame   Depth   Cutout

(Cutout dimension are product dimensions plus 3 mm.)

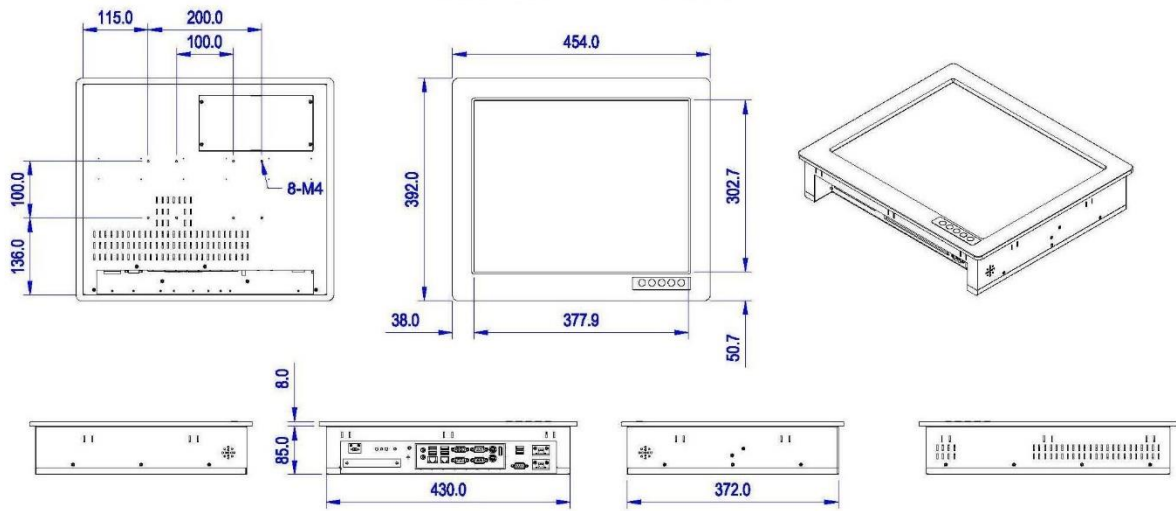| Product dimensions in mm						Cutout	
	L	H	D	T	Weight	A	B
4:3 models							
APPC-8429T	255	224	105	6	3 kg	237	207
APPC-1029T	275	245	100	6	4 kg	256	226
APPC-10429T-XGA	305	260	97	6	4 kg	287	243
APPC-1229T	333	285	97	6	5 kg	316	268
APPC-1229T	333	285	89	6	5 kg	316	268
APPC-1529PT	395	325	83	6	6 kg	378	309
APPC-1729PT	418	368	79	8	7 kg	401	351
APPC-1929PT	454	392	85	8	8 kg	433	375
16:9 models							
APPC-11629T	345	252	100	6	5 kg	328	235
APPC-15629T	415	280	71	6	6 kg	398	263
APPC-18529T	485	322	79	6	9 kg	467	305
APPC-2229T	550	360	83	8	9 kg	533	343
APPC-2429T	600	380	80	8	10 kg	582	363

APPC-8429T
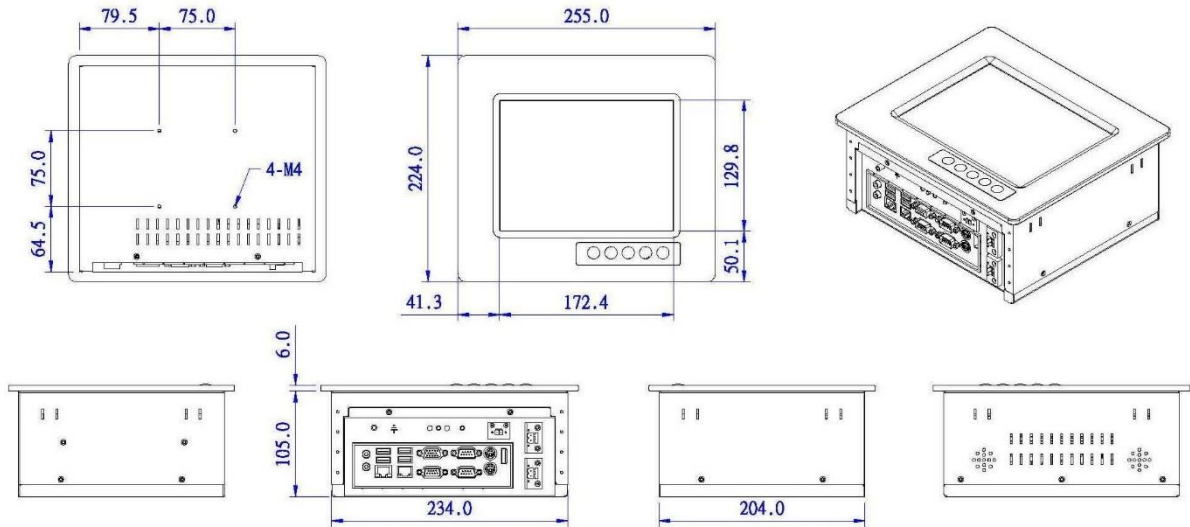
APPC-1029T
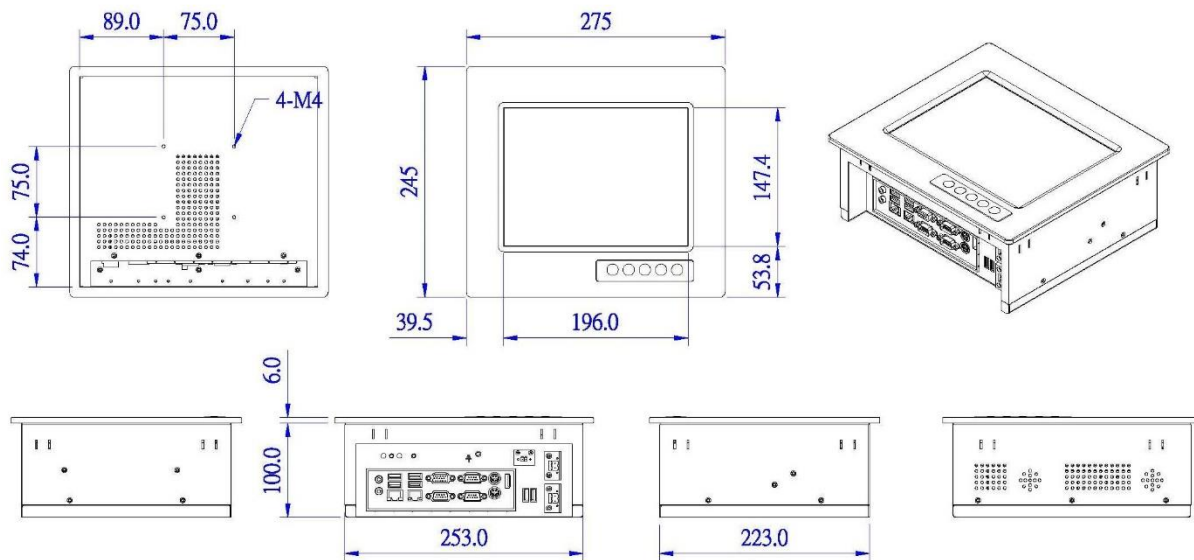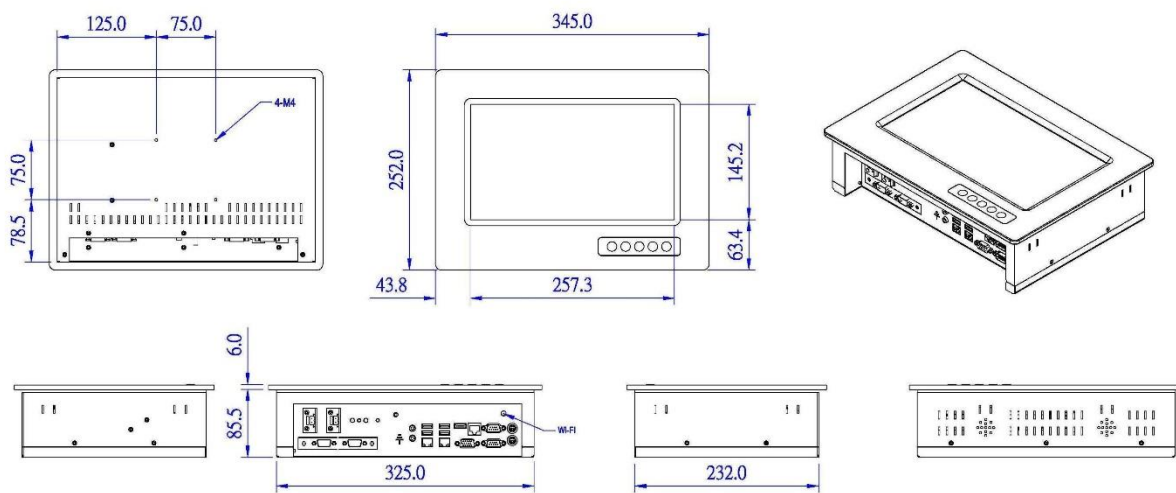
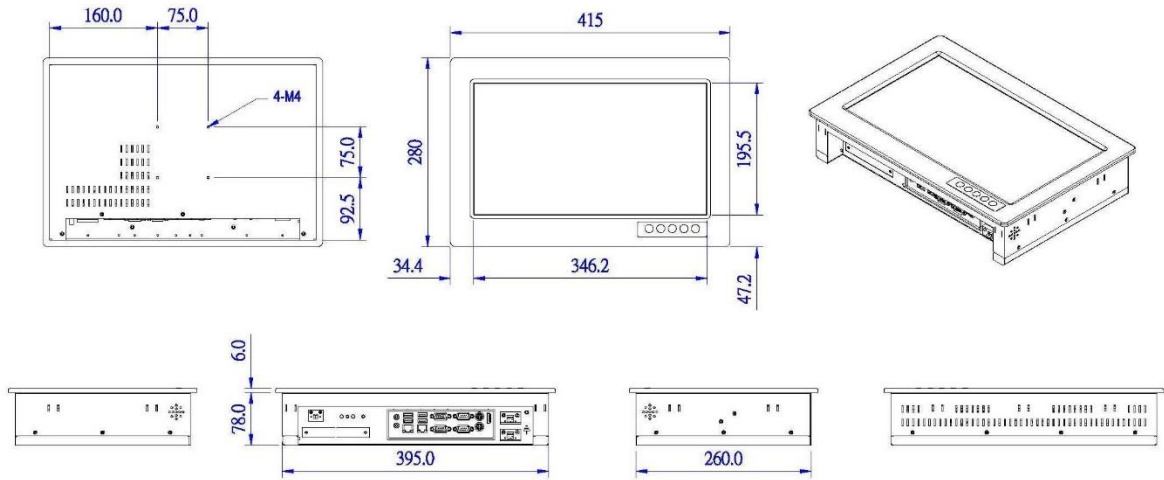APPC-10429T-XGA
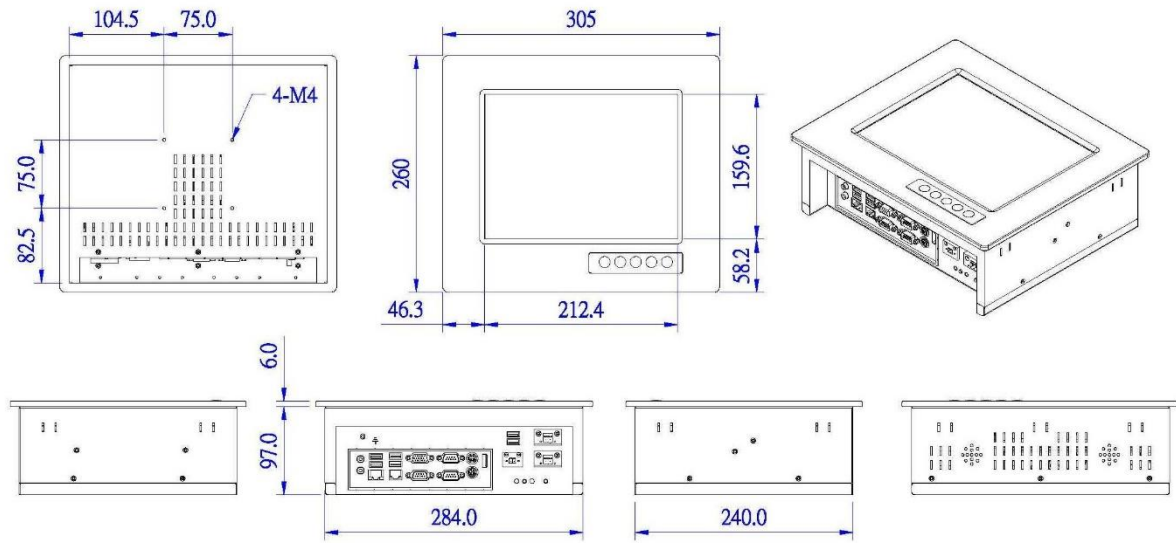
APPC-1229T
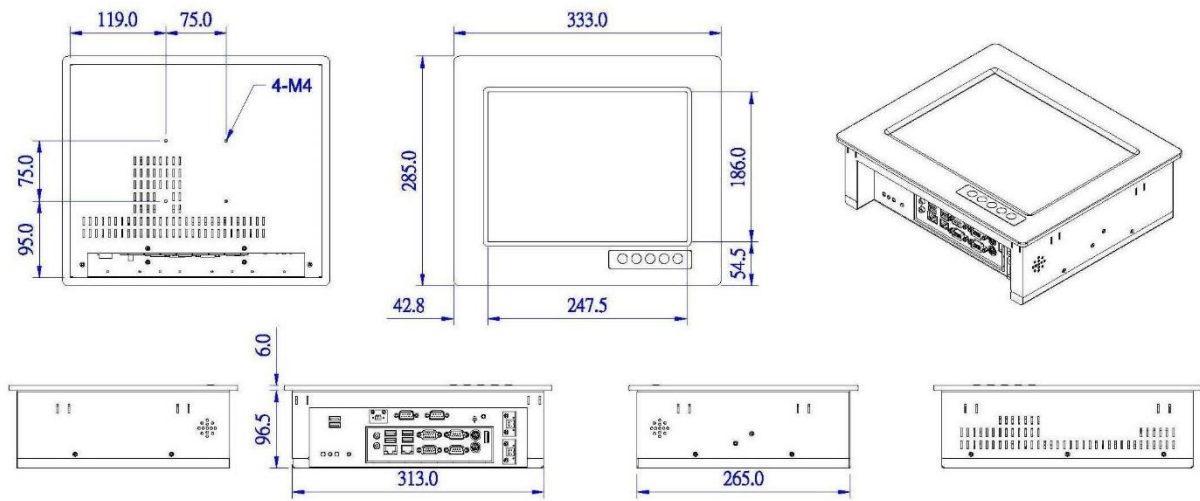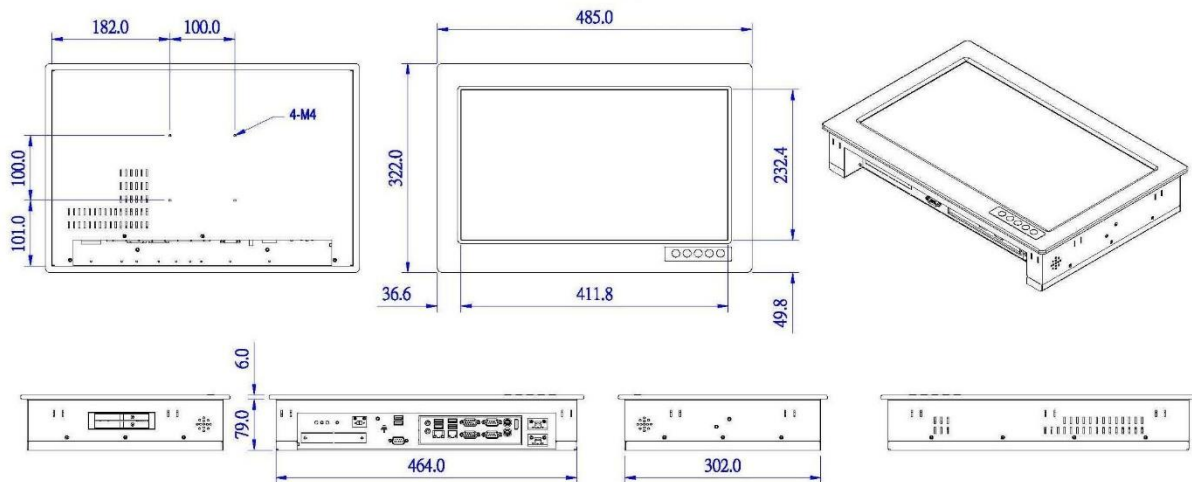
APPC-1529T
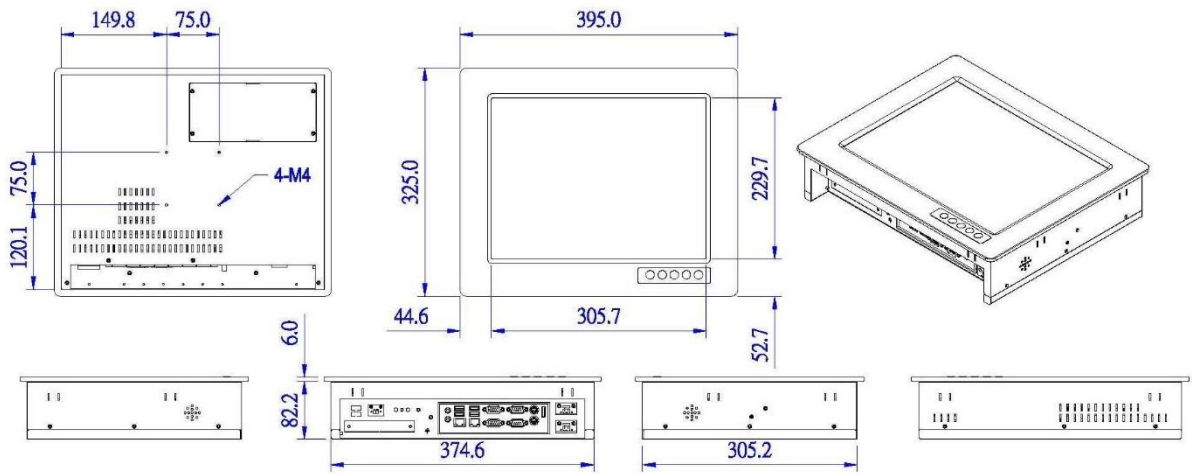
APPC-1727T
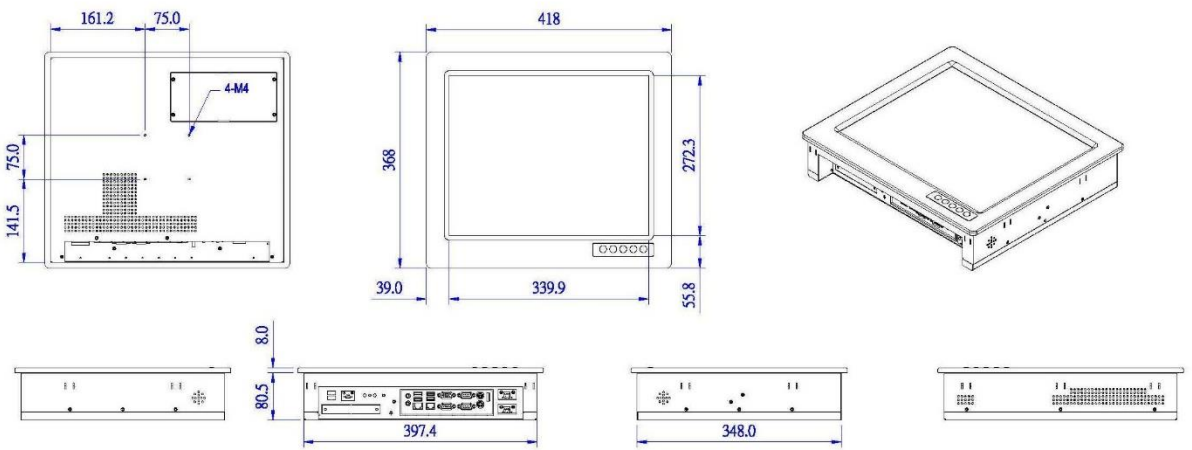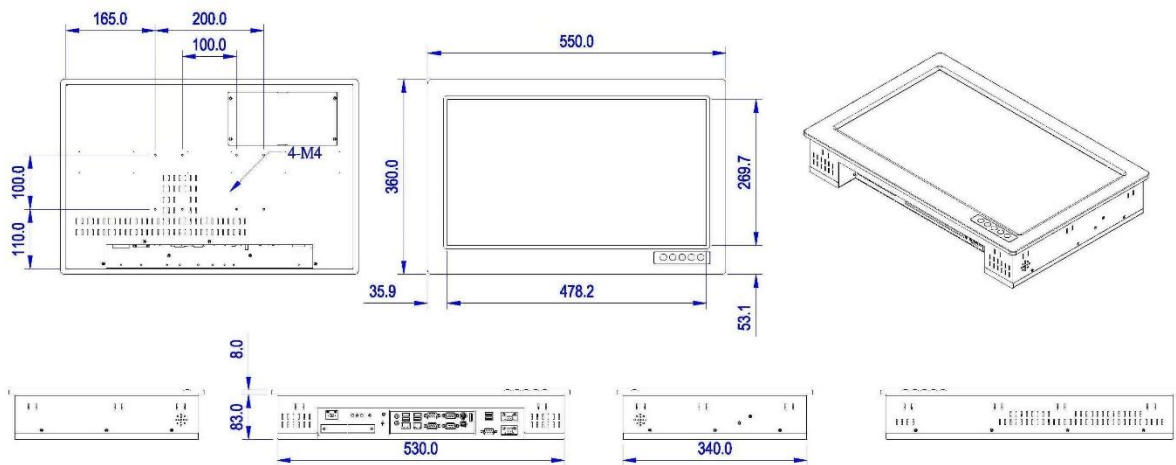
APPC-1929T
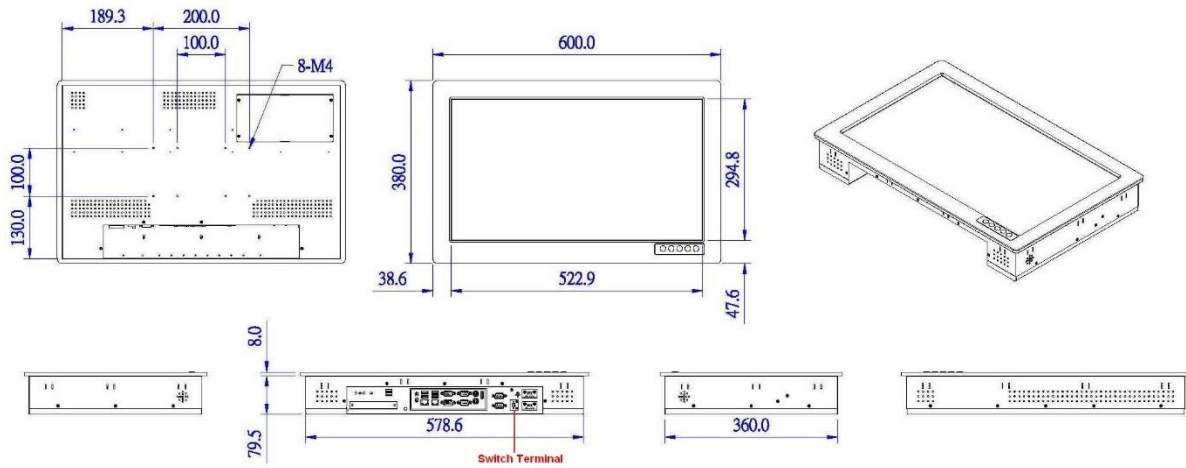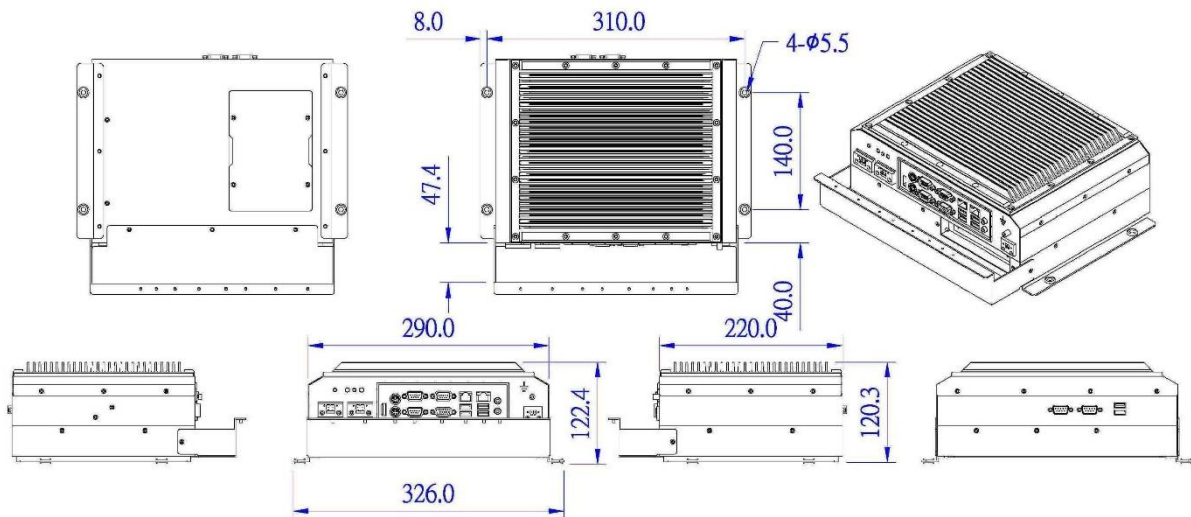

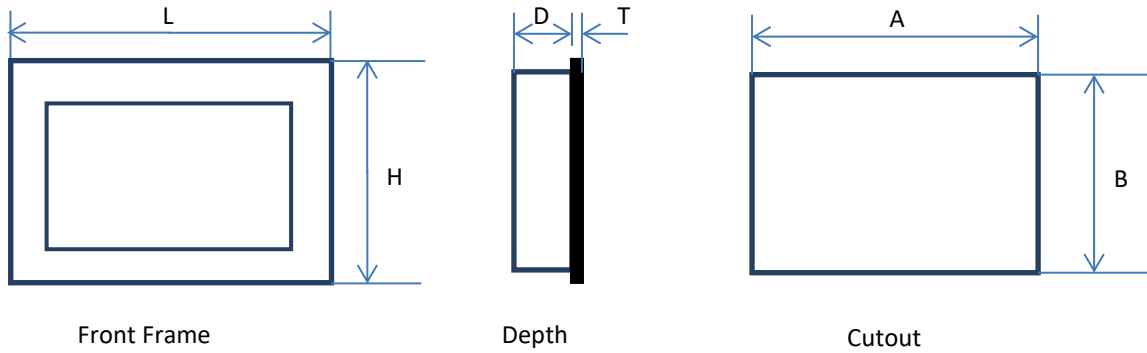## PANEL PC 16:9 MODELS

APPC-11629T

APPC-15629T

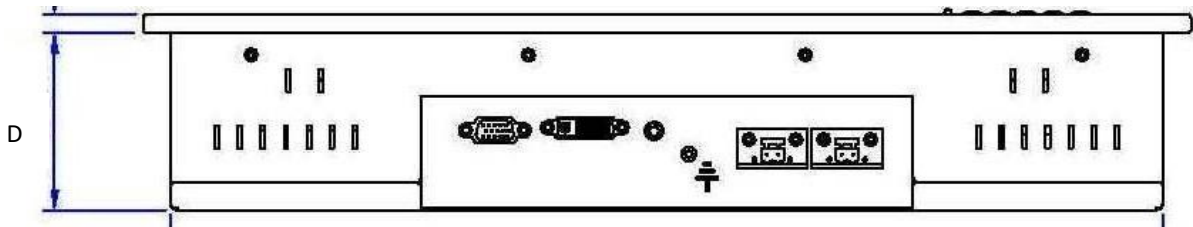APPC-1829T

APPC-2229T

APPC-2429T

BOX/MINI PC DIMENSION

AMPC-2930

Front Frame   Depth   Cutout

Monitors have the same physical dimension as the Panel PC models except the depth (D) of the product.

(Cutout dimension are product dimensions plus 3 mm.)

Product dimensions in mm						Cutout	
	L	H	D	T	Weight	A	B
4:3 models							
AMON-84T-AL	255	217	70	6	2 kg	237	207
AMON-104T-AL-XGA	305	260	73	6	3 kg	287	243
AMON-120T-AL	333	285	72	6	4 kg	316	268
AMON-150T-AL	395	325	76	6	5 kg	378	309
AMON-170T-AL	418	368	77	8	6 kg	401	351
AMON-190T-AL	454	392	78	8	8 kg	433	375
16:9 models							
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AMON-156T-AL	415	280	65	6	6 kg	398	263
AMON-185T-AL	485	322	79	6	8 kg	467	305
AMON-220T-AL	550	360	78	8	8.5 kg	533	343
AMON-240T-AL	600	380	64	8	9.5 kg	582	363

UEFI AND BIOS SETTINGS

INTRODUCTION

This section explains how to use the UEFI SETUP UTILITY to configure your system. The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. You may run the UEFI SETUP UTILITY when you start up the computer. Please press <F2> or <Del> during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY, otherwise, POST will continue with its test routines.

If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

> Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen

> To quickly select another boot media, press F11 during the Power-On-Self-Test (POST) to enter the boot menu.

UEFI MENU BAR

The top of the screen has a menu bar with the following selections:

Main	To set up the system time/date information
Advanced	To set up the advanced UEFI features
H/W Monitor	To display current hardware status
Security	To set up the security features
Boot	To set up the default system device to locate and load the Operating System
Exit	To exit the current screen or the UEFI SETUP UTILITY

Use ← or → to choose among the selections on the menu bar, and then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

NAVIGATION KEYS

Please check the following table for the function description of each navigation key.

←/ → Moves cursor left or right to select Screens

↑/ ↓ Moves cursor up or down to select items

+ / - To change option for the selected items

<Enter>	To bring up the selected screen
<F1>	To display the General Help Screen
<F7>	Discard changes
<F9>	To load optimal default values for all the settings
<F10>	To save changes and exit the UEFI SETUP UTILITY
<F12>	Print screen
<ESC>	To jump to the Exit Screen or exit the current screen

MAIN SCREEN

When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.
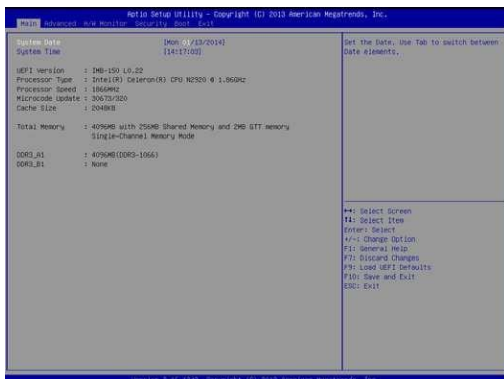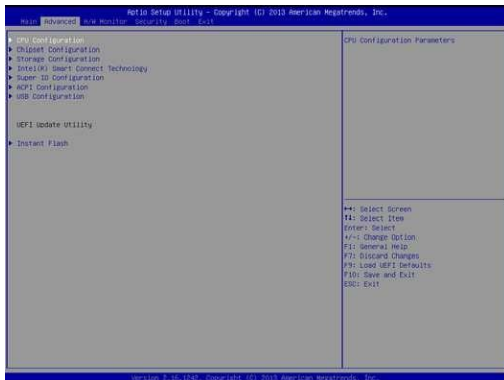
ADVANCED SCREEN

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, Storage Configuration, Intel(R) Smart Connect Technology, Super IO Configuration, ACPI Configuration and USB Configuration.

Setting wrong values in this section may cause the system to malfunction.

INSTANT FLASH

Instant Flash is a UEFI lash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems first like MS-DOS or Windows·. Just launch this tool and save the new UEFI file to your USB lash drive, floppy disk or hard

drive, then you can update your UEFI only in a few clicks without preparing an additional floppy diskette or other complicated lash utility. Please be noted that the USB lash drive or hard drive must use FAT32/16/12 file system. If you execute Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after UEFI update process completes.

CPU CONFIGURATION
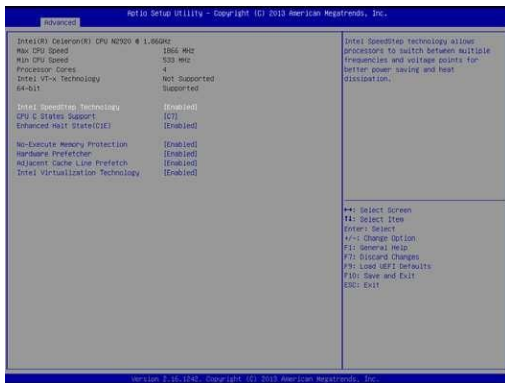
INTEL SPEEDSTEP TECHNOLOGY

Intel SpeedStep technology is Intel's new power saving technology. Processors can switch between multiple frequencies and voltage points to enable power saving. The default value is [Enabled]. Configuration options:

[Enabled] and [Disabled]. If you install Windows® 8 / 8.1 and want to enable this function, please set this item to [Enabled]. This item will be hidden if the current CPU does not support Intel SpeedStep technology.

> Please note that enabling this function may reduce CPU voltage and lead to system stability or compatibility issues with some power supplies. Please set this item to [Disabled] if above issues occur

CPU C STATES SUPPORT

Enable CPU C States Support for power saving. It is recommended to keep C3, C6 and C7 all enabled for better power saving.

Enhanced Halt State (C1E)

Enable Enhanced Halt State (C1E) for lower power consumption.

NO-EXECUTE MEMORY PROTECTION

No-Execution (NX) Memory Protection Technology is an enhancement to the IA-32 Intel Architecture. An IA-32 processor with "No Execute (NX) Memory Protection" can prevent data pages from being used by malicious software to execute codes. This option will be hidden if the current CPU does not support No-Execute Memory Protection.

Hardware Prefetcher: Use this item to turn on/off the MLC streamer prefetcher.

Adjacent Cache Line Prefetch: Use this item to turn on/off prefetching of adjacent cache lines.

INTEL VIRTUALIZATION TECHNOLOGY

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by Vanderpool Technology. This option will be hidden if the installed CPU does not support Intel Virtualization Technology.

CHIPSET CONIGURATION
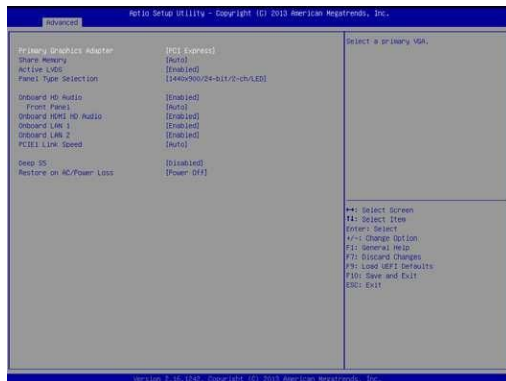
PRIMARY GRAPHICS ADAPTER

This allows you to select [Onboard] or [PCI Express] as the boot graphic adapter priority. The default value is [PCI Express].

SHARE MEMORY

Configure the size of memory that is allocated to the integrated graphics processor when the system boots up.

ACTIVE LVDS

Use this to enable or disable the LVDS. The default value is [Enabled].

PANEL TYPE SELECTION

Use this to select panel type.

ONBOARD HD AUDIO

Select [Auto], [Enabled] or [Disabled] for the onboard HD Audio feature.

FRONT PANEL

Select [Auto] or [Disabled] for the onboard HD Audio Front Panel.

ONBOARD HDMI HD AUDIO

This allows you to enable or disable the onboard HDMI HD Audio feature.

ONBOARD LAN 1

This allows you to enable or disable the onboard LAN 1 feature.

ONBOARD LAN 2

This allows you to enable or disable the onboard LAN 2 feature.

PCIE1 LINK SPEED

Select the link speed for PCIE1.

DEEP S5

Mobile platforms support Deep S5 in DC only and desktop platforms support Deep S5 in AC only. The default value is [Disabled].

RESTORE ON AC/POWER LOSS

The Restore on AC/Power loss is hard coded to "Power On". Regardless of the value set in BIOS, the PC powers on when the AC/power is restored.

If not hard coded, this allows you to set the power state after an unexpected AC/power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers. If [LAST STATE] is selected, the AC/power restores to the last power state when the power recovers.

STORAGE CONFIGURATION
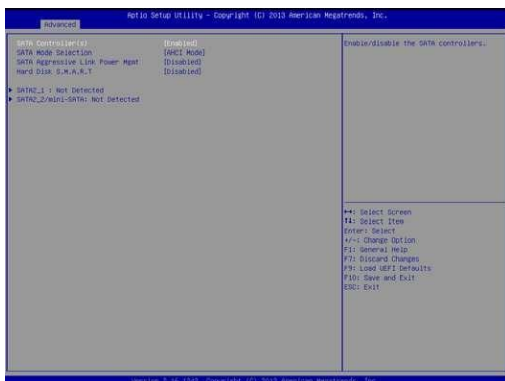
SATA CONTROLLER(S)

Use this item to enable or disable the SATA Controller feature.

SATA MODE SELECTION

Use this to select SATA mode. Configuration options: [IDE Mode], [AHCI Mode] and [Disabled]. The default value is [AHCI Mode].

> AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDE mode does not have these advantages.
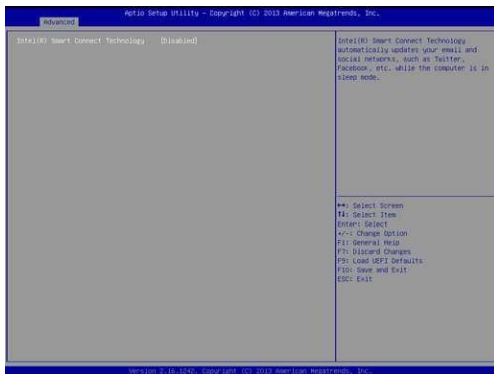
SATA AGGRESSIVE LINK POWER MANAGEMENT

Use this item to configure SATA Aggressive Link Power Management.

HARD DISK S.M.A.R.T.

Use this item to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) feature. Configuration options: [Disabled] and [Enabled].

INTEL® SMART CONNECT TECHNOLOGY

INTEL® SMART CONNECT TECHNOLOGY

Use this item to enable or disable Intel(R) Smart Connect Technology. Intel(R) Smart Connect Technology keeps your e-mail and social networks, such as Twitter, Facebook, etc. updated automatically while the computer is in sleep mode. The default is [Disabled].

SUPER IO CONFIGURATION

COM1 CONFIGURATION

Use this to set parameters of COM1. Select COM1 port type: [RS232], [RS422] or [RS485].

COM2 CONFIGURATION

Use this to set parameters of COM2. Select COM2 port type: [RS232], [RS422] or [RS485].

COM3 CONFIGURATION

Use this to set parameters of COM3. Select COM3 port type: [RS232], [RS422] or [RS485].

COM4 / COM 6 CONFIGURATION

Use this to set parameters of COM4 and COM 6. [Enabled] or [Disabled]

LPT1 PORT CONFIGURATION

Use this set parameters of the onboard parallel port.

WDT TIMEOUT RESET

This allows users to enable/disable the Watch Dog Timer timeout to reset system. The default value is [Disabled].

ACPI CONFIGURATION

SUSPEND TO RAM

Use this item to select whether to auto-detect or disable the Suspend-to RAM feature. Select [Auto] will enable this feature if the OS supports it.

ACPI HPET TABLE

Use this item to enable or disable ACPI HPET Table. The default value is [Enabled]. Please set this option to [Enabled] if you plan to use this motherboard to submit Windows® certification.

PS/2 KEYBOARD POWER ON

Use this item to enable or disable PS/2 keyboard to turn on the system from the power-soft-off mode.

PCIE DEVICES POWER ON

Use this item to enable or disable PCIE devices to turn on the system from the power-soft-off mode.

RTC ALARM POWER ON

Use this item to enable or disable RTC (Real Time Clock) to power on the system.
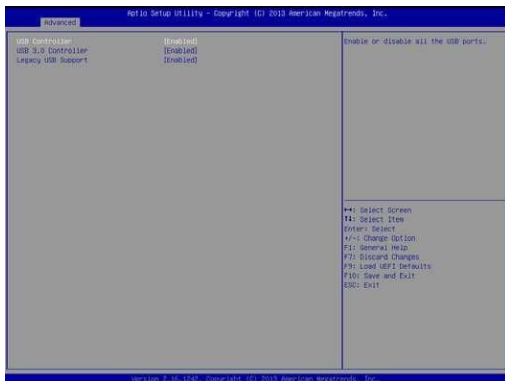
USB KEYBOARD/REMOTE POWER ON

Use this item to enable or disable USB Keyboard/Remote to power on the system.

USB MOUSE POWER ON

Use this item to enable or disable USB Mouse to power on the system.

USB CONIGURATION

USB CONTROLLER

Use this item to enable or disable the use of USB controller.

USB 3.0 CONTROLLER

Use this item to enable or disable the use of USB 3.0 controller.

LEGACY USB SUPPORT

Use this option to select legacy support for USB devices. Configuration options: [Enabled], [Auto] and [UEFI Setup Only]. The default value is [Enabled]. Please refer to below descriptions for the details of these three options:

[Enabled] - Enables support for legacy USB.

[Auto] - Enables legacy support if USB devices are connected.

[UEFI Setup Only] - USB devices are allowed to use only under UEFI setup and Windows / Linux OS.

HARDWARE HEALTH EVENT MONITORING SCREEN

This section allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.
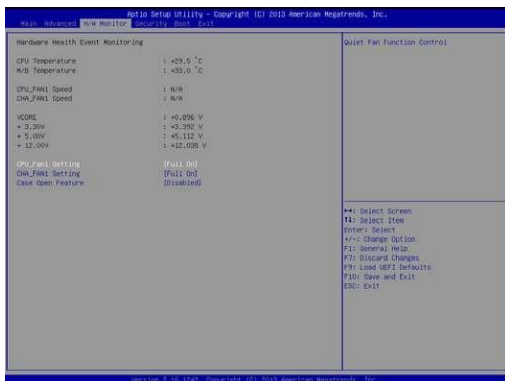
CPU_FAN1 SETTING

This allows you to set CPU_FAN1's speed. Configuration options: [Full On] and [Automatic Mode]. The default value is [Full On].

CHA_FAN1 SETTING

This allows you to set CHA_FAN1's speed. Configuration options: [Full On] and [Automatic Mode]. The default value is [Full On].

CASE OPEN FEATURE

This allows you to enable or disable case open detection feature. The default is value [Disabled].

CLEAR STATUS

This option appears only when the case open state has been detected. Use this option to keep or clear the record of previous chassis intrusion status.

SECURITY SCREEN

In this section, you may set, change or clear the supervisor/user password for the system.
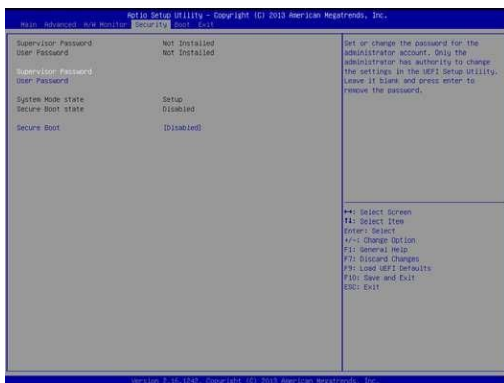
SUPERVISOR PASSWORD

Set or change the password for the administrator account. Only the administrator has authority to change the settings in the UEFI Setup Utility.

Leave it blank and press enter to remove the password.

USER PASSWORD

Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

SECURE BOOT

Enable to support Windows 8 64-bit Secure Boot.

BOOT SCREEN

This section displays the available devices on your system for you to configure the boot settings and the boot priority by setting Boot Option #1, #2 and #3 etc.
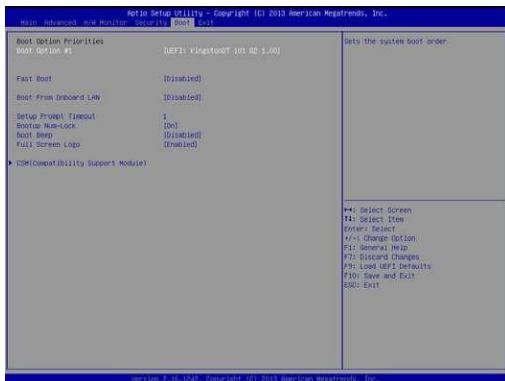
FAST BOOT

Fast Boot minimizes your computer's boot time. There are three configuration options: [Disabled], [Fast] and [Ultra Fast]. The default value is [Disabled]. Please refer to below descriptions for the details of these three options:

[Disabled] - Disable Fast Boot.
[Fast] - The only restriction is you may not boot by using an USB flash drive.
[Ultra Fast] - There are a few restrictions:

- Only supports Windows® 8 64-bit UEFI operating system.
- You will not be able to enter BIOS Setup (Clear CMOS or run utility in Widows® to enter BIOS Setup).
- If you are using an external graphics card, the VBIOS must support UEFI GOP in order to boot.

BOOT FROM ONBOARD LAN

Use this item to enable or disable the Boot from Onboard LAN feature.

SETUP PROMPT TIMEOUT

This shows the number of seconds to wait for setup activation key.

BOOTUP NUM-LOCK

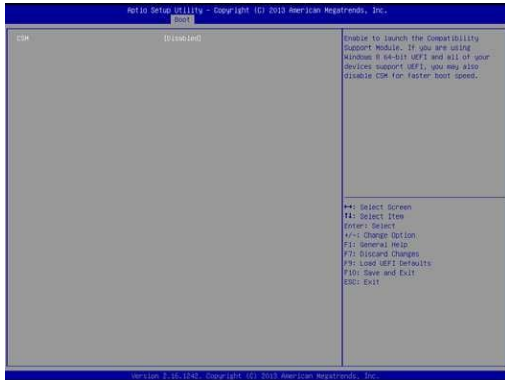If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

BOOT BEEP

Select whether the Boot Beep should be turned on or off when the system boots up. Please note that a buzzer is needed.

FULL SCREEN LOGO

Use this item to enable or disable OEM Logo. The default value is [Enabled].
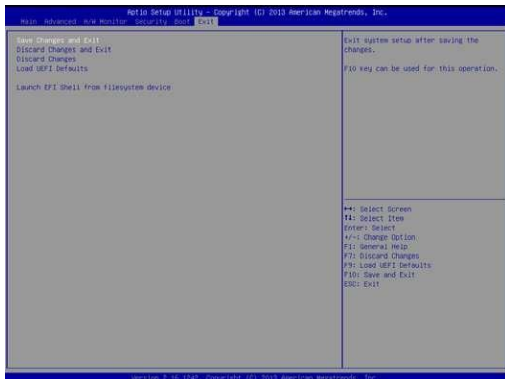
CSM (COMPATIBILITY SUPPORT MODULE)

CSM

Enable to launch the Compatibility Support Module. Please do not disable unless you're running a WHCK test. If you are using Windows® 8 64-bit and all of your devices support UEFI, you may also disable CSM for faster boot speed.

EXIT SCREEN

SAVE CHANGES AND EXIT

When you select this option, it will pop-out the following message, "Save configuration changes and exit setup?" Select [OK] to save the changes and exit the UEFI SETUP UTILITY.

DISCARD CHANGES AND EXIT

When you select this option, it will pop-out the following message, "Discard changes and exit setup?" Select [OK] to exit the UEFI SETUP UTILITY without saving any changes.

DISCARD CHANGES

When you select this option, it will pop-out the following message, "Discard changes?" Select [OK] to discard all changes.

LOAD UEFI DEFAULTS

Load UEFI default values for all the setup questions. F9 key can be used for this operation.

LAUNCH EFI SHELL FROM FILESYSTEM DEVICE

Attempts to Launch EFI Shell application (Shell64.efi) from one of the available filesystem devices.

OPERATING SYSTEM

CUSTOMER SPECIFIED OR TRIAL VERSION

The computer can be delivered with a customer specified operating system installed. Our standard operating systems are Windows 7, Windows 10 or Linux. If no operating system is specified when ordering, a 30-day trial version of Windows 7 is installed.

The system does not support Windows XP.

IMPORTANT!
Please note that the trial version of Windows 7 stops working after 30 days of operation!

SHUTTING DOWN PROPERLY

Shut down the computer in a proper way. If not, the operating system or application software may get interrupted and lose data. Do not switch the power supplies off to shut down the computer, follow the proper shut-down procedure from the operating system.

DECLARATION OF CONFORMITY FOR LCD DISPLAY

Autic System declare that their LCD panels are conformed with the standard

ISO 13406-3 (Class 3).

"The standard lists four classes of devices, where a device of a specified class may

contain a certain maximum number of defective pixels. The table below shows the

maximum number of allowed defects (per type) per 1 million pixels.

Definition of Pixel Fault Classes – Maximum number of faults per *million* pixels

Class	Type 1	Type 2	Type 3	Cluster with more than one type 1 or type 2 faults	Cluster of type 3 faults
I	0	0	0	0	0
II	2	2	5	0	2
III	5	15	50	0	5
IV	50	150	500	5	50

Three distinct types of defective pixels are described as follows:

• type 1 = a hot pixel (always on, being color white),

• type 2 = a dead pixel (always off, meaning black), [and]

• type 3 = a stuck pixel (one or more sub-pixels (red, blue or green) are always on or always off)."

By request, products can be manufactured according to other classes.
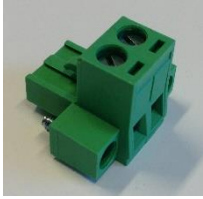
SERVICE

All service for these products must be done by Autic System AS.

RETURN OF PRODUCTS TO AUTIC SYSTEM.

Return equipment for service by registering the products via RMA registration at www.autic.no / Support / Returskjema (Return Form).

ACCESSORIES

Part name	Illustration	Comment
Power Adapter		Specify product Id when ordering.
Quick Mounting Kit		Set of 10 pcs.
Power Connector		Set of 2 pcs..
USB Touch Cable		For monitor to Box/Mini PC
Audio Cable		For monitor to Box/Mini PC