



KODEN

OPERATION MANUAL

Multi Function Display

KSD-1100

KSD-1210

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**Declaration of Conformity**

**We, Koden Electronics Co., Ltd.; 5278 Uenohara Uenohara-Shi, Yamanashi,
409-0112, Japan**

declare as manufacturer under our sole responsibility that the

Marine Multifunction Display KSD-1100

intended for use as a Marine Plotter with GPS/AIS/WiFi/ Bluetooth functions for use aboard non-SOLAS vessels to which this declaration relates conforms to the following standards or other normative documents referring to EU directives and UK regulations

EU

<u>Radio Equipment Directive (RED) 2014/53/EU</u>	<u>SI 2017 No. 1206 Radio Equipment Regulations 2017 as amended</u>
Health & Safety (article 3.1a) IEC 60945 Ed.4.0 2002 EN 62368-1:2020+A11:2020 IEC 60529:1989+AMD1:1999+AMD2:2013 EN 60529:1999+A1:2000+A2:2013 IEC 60068-2-52:2017	Health & Safety (article 6.1a) IEC 60945 Ed.4.0 2002 EN 62368-1:2020+A11:2020 IEC 60529:1989+AMD1:1999+AMD2:2013 EN 60529:1999+A1:2000+A2:2013 IEC 60068-2-52:2017
EMC (article 3.1b) IEC 60945 Ed.4.0 2002 IEC 62287-1:2017 V3.2.4 (2020-09)	EMC (article 6.1b) IEC 60945 Ed.4.0 2002 IEC 62287-1:2017 V3.2.4 (2020-09)
Radio Spectrum (article 3.2) EN 300 328 V2.2.2 (2019-07) IEC 61108-1: 2003	Radio Spectrum (article 6.2) EN 300 328 V2.2.2 (2019-07) IEC 61108-1: 2003

For assessment, see

- EU-type examination (Module B) certificate no: ECM RED 2022-DC46 rev. 0 issued by Ente Certificazione Macchine srl, Italy

RoHS conformity**EU**

<u>RoHS Directive 2011/65/EU as amended by the Commission delegated directive (EU) 2015/863</u>	<u>SI 2012 No. 3032 RoHS Regulations 2012 as amended</u>

UK

Software: KSD-1100 Ver 1.x.xx (x used as wildcard)
KSD-1100 Ver 2.x.xx (x used as wildcard) ; NMEA-2000 function included
Frequency: GNSS: 1575.42MHz ± 1MHz ; 1561.098MHz ± 2MHz ; AIS: 161.975MHz ; 162.025MHz ;
WiFi/Bluetooth: 2.4GHz

Authorized representative: Koden Elektronik GmbH
Am Gewerbepark 15, D-64823 Gross-Umstadt, Germany



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Date: 18 May, 2023

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Jun Harayama

Manager / Quality Assurance Department

This certificate expires if new regulations come
in force or latest at 31 December 2027

Document No. 83-2731U-X001



Declaration of Conformity



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EN 60529:1999+A1:2000+A2:2013
IEC 60068-2-52:2017

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IEC 60945 Ed.4.0 2002
IEC 62287-1:2017 V3.2.4 (2020-09)

Radio Spectrum (article 6.2)

EN 300 328 V2.2.2 (2019-07)
IEC 61108-1: 2003

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KSD-1100/1210 Operation Manual

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2	0093107083-02	2022/11/01	Declaration (KSD-1100), Cover
3	0093107083-03	2023/05/31	Chapter 1, Applicable to Main Application V1.3.68 and former
4	0093107083-04	2023/10/24	KSD-1210 Addition, NMEA2000 Addition, Full revision, Declaration Applicable to Main Application V2.3.00 and after
5	0093107083-05	2024/04/11	System Configuration, Chapter 4, Chapter 5
6	0093107083-06	2025/01/20	Applicable to Main Application KSD-1100: V2.3.17 and after KSD-1210: V1.3.22 and after
7			
8			
9			
10			

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When part of the document needs to be revised, the document has advanced revision number.

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Note: Please scan the QR codes to visit our website for the Advanced operation manual.

<https://www.koden-electronics.co.jp/enopmn>







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For Your Safe Operation





Pictorial used in this Operation Manual

This Operation Manual uses the following pictorials. Understand the meaning of each pictorial and implement the maintenance and inspection.







Symbol	Meaning
 Warning	Mark for warning This symbol denotes that there is a risk of death or serious injury when not dealing with it correctly.
	Mark for danger high voltage This symbol denotes that there is a risk of death or serious injury caused by electric shock when not dealing with it correctly.
 Caution	Mark for caution This symbol denotes that there is a risk of slight injury or damage of device when not dealing with it correctly.
	Mark for prohibition This symbol denotes prohibition of the specified conduct. Description of the prohibition is displayed near the mark.






Caution Item on Equipment

	Be careful of a high voltage inside. A high voltage, which may risk your life, is used. This high voltage remains in the circuit after you have powered off switch. To prevent touching the high voltage circuit inadvertently, the hard cover is provided to the high voltage circuit and the high voltage caution label is affixed. Ensure to power off switch for your safety and discharge the electricity remaining in the capacity before starting to check. An engineer authorized by our company should inspect and maintain
 Warning	Be sure to power off in the boat. If the power switch is inadvertently powered on during work, you will be electrified. To prevent such accident from occurring, ensure to power off in the boat and the power of equipment. Furthermore, it is safer to hang the caution tag described as [Under Work] near the power switch of equipment.
 Warning	Be careful of dust Inhaling dust may cause A respiratory disease. When cleaning the inside of equipment, be careful not to inhale dust. Wearing a safety mask is recommended.

 Caution	Caution on location of equipment Do not install the equipment where it is excessively damp and suffers from excessive water drops.
 Caution	Escaping from static electricity The static electricity may be generated from the carpet on the floor in the cabin or clothes made of synthetic fiber. The static electricity may destroy the electronic parts on the circuit board. Handle the circuit board, taking the measure of static electricity free.
 Caution	Firmly installation of this unit is necessary to avoid damage caused by falling down.
 Caution	Power supply should be grounded to avoid static and lightning. If this unit is not in use, please turn off this unit.

Caution Item on Handling

 Warning	Do not disassemble or modify. It may leads to trouble, fire, smoking or electric shock. In case of trouble, contact our dealer or our company.
 Warning	In case of smoke or fire, boat power off and the power of this unit. It may cause fire, electric shock or damage.
 Warning	Be cautious of remaining high voltage. A high voltage may remain in the capacitor for several minutes after you have powered off. Before inspecting inside, wait at least 5 minutes after powering off or discharge the remaining electricity in an appropriate manner. Then, start the work.
 Caution	The information displayed in this unit is not provided directly for your navigation. For your navigation, be sure to see the specified material.
 Caution	Use the specified fuse. If un-specified fuse is used, it may cause a fire, smoke or damage.
 Caution	Please do not use this unit without original power adapters. Otherwise, the navigator may not work properly or the performance might be affected or even this unit will be damaged because of the circuit designs.

 Caution	If the position data of the device cannot be fixed for a long time, please check the following: whether the antenna is installed properly; the connection; any forms of interference around the antenna. Before starting of this unit, please make sure the antenna cable joints are intact; there is no short-circuit or open circuit; and follow the correct antenna installation procedure. During the start-up stage, please do not arbitrarily remove the antenna in order to avoid damages to this unit.
 Caution	When external temperature is too high, this unit may not function properly. Stop using this unit until the temperature returns to normal and restart this unit.
 Caution	Avoid direct sunlight on the LCD screen. You can adjust the angle of the screen anytime to get the best visual effects.
 Caution	When hardware failure occurs (for example, power lines are burned, machine is damaged or foreign bodies fall into this unit, etc.), please shut down the power and contact with the distributor immediately.
 Caution	Virtually, all data sources might contain some inaccurate or incomplete data. The data is only for your reference and we cannot guarantee any accident, injury or property damage. All legal responsibility and other obligation will not be taken by Koden.

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Introduction

The KSD series products provide an intelligent system and multitask running marine equipment networking solution.

The main features of this unit are as follows:

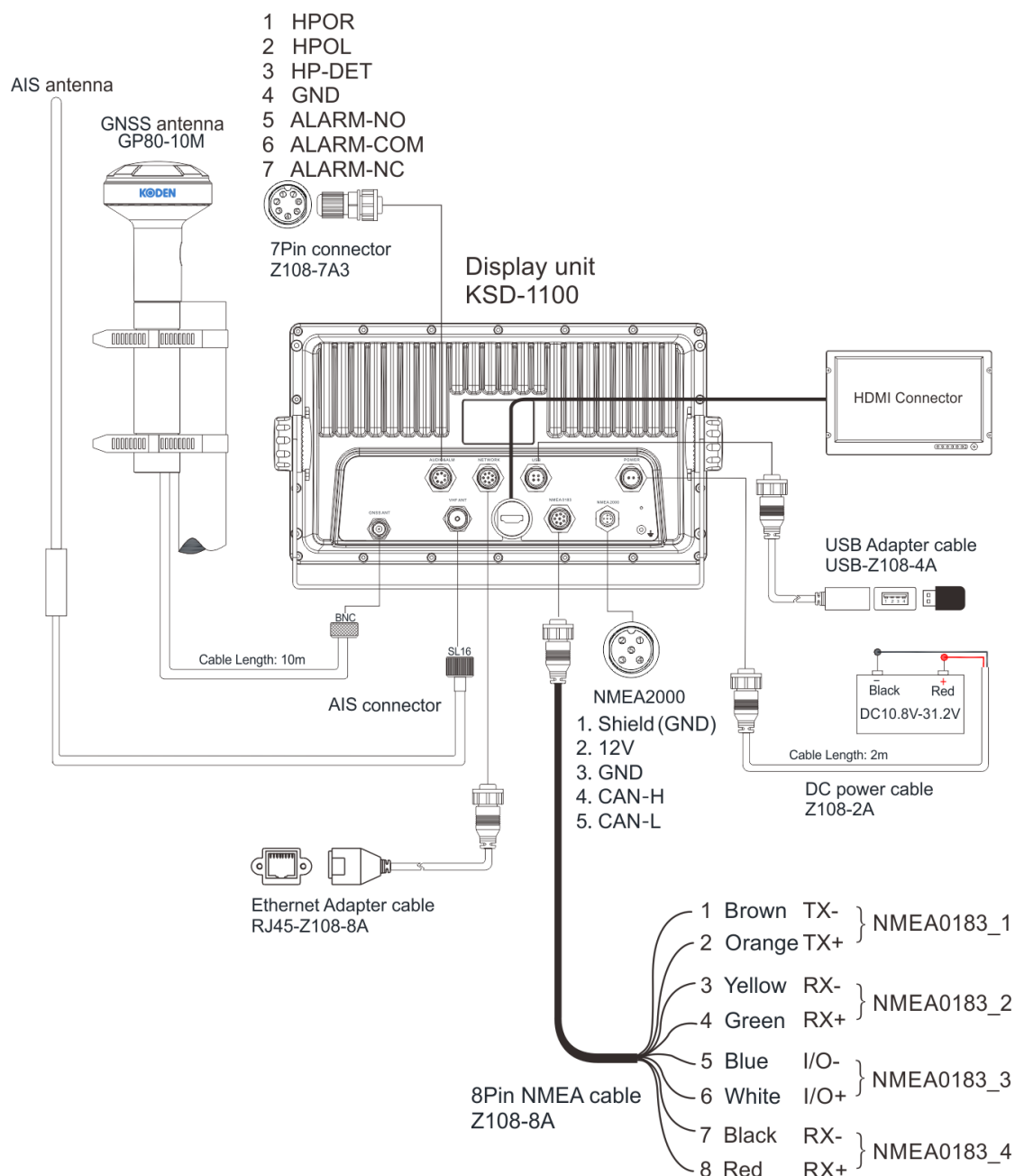
- The touch screen is flexible and easy to use, with clear picture, superior performance, and strong sense of control.
- The system integrates functional modules such as GNSS, chart plotters, Class B AIS, CCTV and realizes cloud services such as online upgrades through multiple networking methods such as Wi-Fi, Ethernet, and Bluetooth.

Notes: The device is not used for navigating directly.

When use the device, please refer to other available navigation sources, including the information from other navigation aids and actual sea conditions, such as: official chart, visual sightings, radar, tides, hydrology, weather and so on.

System Configuration

Connection Diagram of KSD-1100

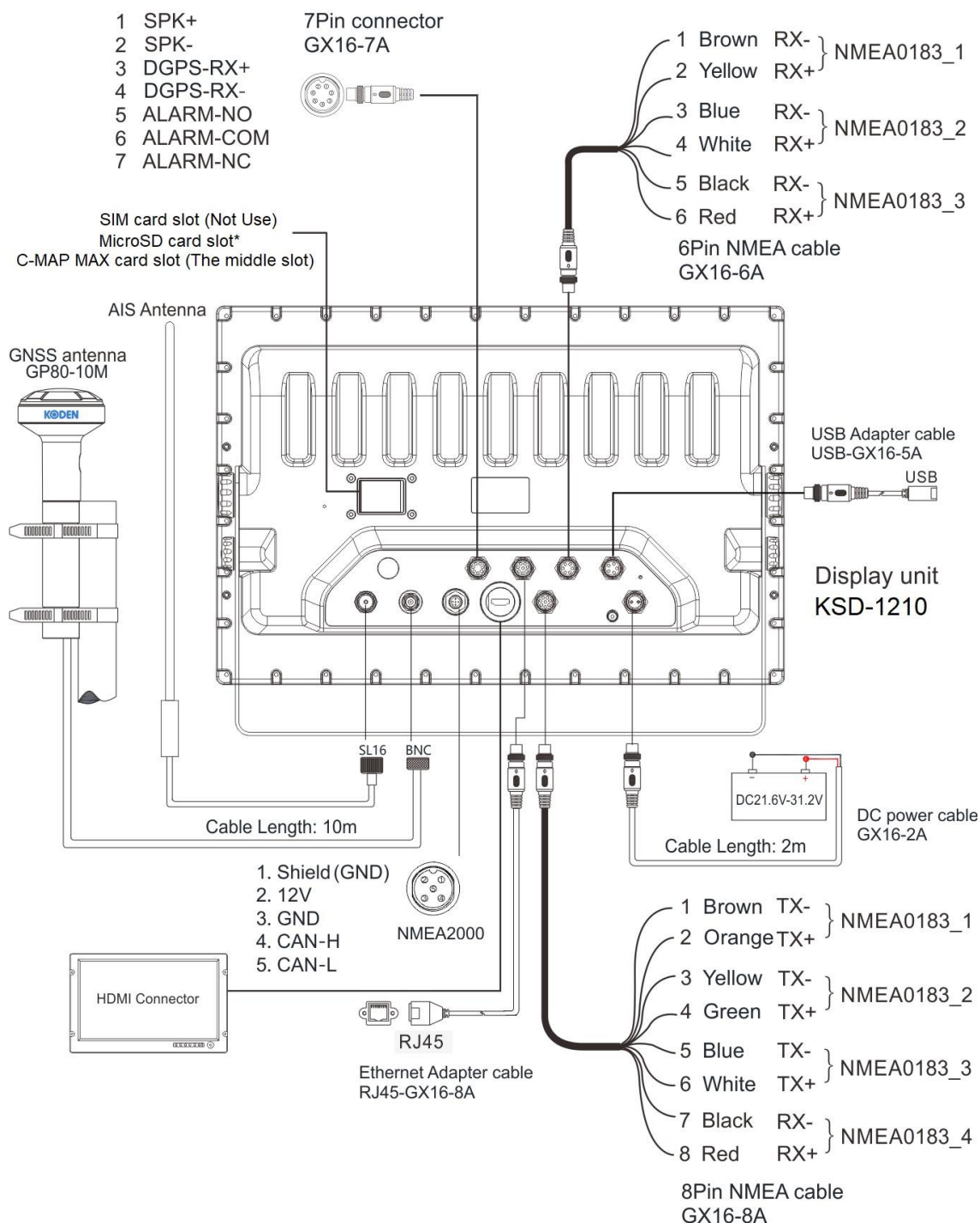


MicroSD card & USB memory & HDMI cable & NMEA2000 cable: Owner supplied

Notice:

- [1] Default values of NMEA0183 output are RMC, GGA, VTG, GLL, ZDA, XTE and APB. They also can be set by "Settings-Advanced settings-NMEA-Output".
- [2] For input data, set the input source port for each data in "Settings - Advanced Settings - Data Source". NMEA2000 is not supported for software version V1.X.XX.
- [3] NMEA0183_3 (I/O) can be set as receive or transmit. It can be set by "Settings-Advanced settings-NMEA- NMEA0183_3 Configuration", default value is AIS output.

Connection Diagram of KSD-1210



MicroSD card & USB memory & HDMI cable & NMEA2000 cable: Owner supplied

*: MicroSD card slot or TF card slot

Notice:

NMEA0183_1: This port can be selected for GNSS sentences output, AIS output or GNSS & AIS output. Baud rate is 38400 bps.

NMEA0183_2: This port can be selected for AIS output or other sentences.

NMEA0183_3: This port is fixed for AIS sentence output.

Configuration of Equipment

Standard Equipment Configuration List of KSD-1100

No.	Name of item	Type	Remark	Weight/ Length	Quantity
1	Display unit	KSD-1100		2.1kg	1
2	Mount Bracket (Standard)	WJ20000011		0.76kg	1
3	Power cable	Z108-2A	2-pin	2 m	1
4	Connecting cable	Z108-8A	With an 8-pin plastic connector and one end plain (cable for NMEA0183)	1.2 m	1
5	Connector	Z108L-7A3	Waterproof plastic 7-pin (Connect to AUDIO&ALM interface of MFD*)	10 g	1
6	Adapter cable for USB connector	USB-Z108-4A	For connection of the external USB Flash Drive	0.35m	1
7	Adapter cable for Ethernet connector	RJ45-Z108-8A	For connection of the Ethernet	0.35m	1
8	GNSS Antenna	GP80-10M		10 m	1
9	GNSS Antenna holder	GP-H-150	For holding the GNSS Antenna	35x150mm	1
10	Sun Cover	GJ10C00000	Protect the display		1
11	Fixed Knob	XN0833AA00	M8 x 33mm (For fixing the bracket and Display unit)		2
12	Rubber Gasket	FC06000019	30 x 8.2 x 2.5mm (For M8 fixing knob)		2
13	Screw	WJ07000032	M4 x 12mm (For flush mount installation)		4
14	Self-tapping screw	WJ06000003	TA 4.8 x 20mm (For desk top installation)		4

15	HDMI connector cap	GJ87000001			1
16	NMEA2000 connector cap	GJ87000002			1
17	AIS connector cap	SJ87V00000			1
18	Operation manual	KSD-1100/1210. OM.E	English		1

*: Multi Function Display

Standard Equipment Configuration List of KSD-1210

No.	Name of item	Type	Remark	Weight/ Length	Quantity
1	Display unit	KSD-1210		7.4kg	1
2	Flush Mount Bracket	WJ20000017	For flush mount installation	0.2kg	2
3	Mount Bracket (Standard)	WJ20000016	For desk top installation	2.6kg	1
4	Triangular mounting plate	WJ23000062	For fastening the mount bracket	0.26kg	2
5	Power cable	GX16-2A	2-pin	2 m	1
6	Connecting cable	GX16-6A	With a 6-pin metal connector and one end plain (cable for NMEA0183)	1.2 m	1
7	Connecting cable	GX16-8A	With an 8-pin metal connector and one end plain (cable for NMEA0183)	1.2 m	1
8	Connector	GX16-7A	Metal 7-pin (Connect to AUDIO&ALM interface of MFD*)	10 g	1
9	Adapter cable for USB connector	USB-GX16-5A	For connection of the external USB Flash Drive	0.35m	1
10	Adapter cable for Ethernet connector	RJ45-GX16-8A	For connection of the Ethernet	0.35m	1
11	GNSS Antenna	GP80-10M		10 m	1
12	GNSS Antenna holder	GP-H-150	For holding the GNSS Antenna	35x150mm	1
13	Fixed Knob	XN0633AA00	M6 x 33mm		2
14	Fixed Knob	XN0833AA00	M8 x 33mm		2
15	Rubber Gasket	FC06000018	22.2 x 6.4 x 3.2mm (For M6 fixing knob)		4
16	Rubber Gasket	FC06000019	30 x 8.2 x 2.5mm (For M8 fixing knob)		4
17	Screw	WJ07000024	M6 x 30mm For desk top installation		4

18	Nut	WJ14000009	M6 For desk top installation		4
19	Screw	WJ07000016	M3 x 8mm 8pcs: For fastening the Triangular mounting plate and the mount bracket 4pcs: For desk top installation and for fastening flush mount bracket		12
20	Screw	WJ07000059	M6 x 20mm For flush mount installation		4
21	HDMI connector cap	GJ87000001			1
22	NMEA2000 connector cap	GJ87000002			1
23	AIS connector cap	SJ87V00000			1
24	Operation manual	KSD-1100/1210. OM.E	English		1

*: Multi Function Display

Chapter 1 Basic Operation

1.1 Network Connection

Click the "Settings" APP on the [HOME] page to enter the system settings page. On the left side of the system settings page, you can connect / set up Wi-Fi, Bluetooth, and Ethernet.

Note: Set when connection such as program update is required.

1.2 User Register/Login

Click the "Settings" APP on the [HOME] page to enter the system settings page and click the "Not logged in" button to enter the registration / login page.

Note: This feature requires an internet environment.

If you do not need SMS function using this server, user registration is not required.

Note: Please register using your cell phone number or 11-digit number as your user ID.

1.2.1 Register

Click "Register Now" to go to register, users can input cell phone number, verification code and set password to register.

1.2.2 Login

There are two ways to log in, one is inputting cell phone number and password, the other is inputting cell phone number to get verification code and input verification code to login.

1.2.3 Forget Password

If forget password, users can input cell phone number to get verification code and input code to verify, password can be changed after verification.

1.3 Chart Display

On the [HOME] page, click "Chart" to go to chart page. Click [<] mark of the screen right side to call up the main menu. On the first line of main menu, there are INT-MAP, C-MAP and ENC for selection and switch. (C-MAP MAX card / ENC card: Owner supplied)

Notice: If select C-MAP,

[1] Please make sure the C-MAP card is MAX format.

[2] Please make sure the C-MAP MAX card is inserted on the first card slot of the right side with KSD-1100. (For KSD-1210, the middle card slot.)

1.3.1 Instruction of ENC Chart Installation

A User Permit is required to use the ENC S-63 map.

1.3.1.1 Instruction of S-57 Chart Installation

- a) Prepare a microSD card*, download the S-57 electronic chart data from the website, and put the S-57 data folder in the microSD card* root directory.
- b) Click "Chart" on the [HOME] page to enter the Chart page.
- c) Click [<] mark of the screen right side to call up the main menu or press the [Menu] button to call up the main menu.
- d) Click "ENC" → click "Chart Management" to enter the page of Chart Management.
- e) Click "Chart Update" to pop up the "Local Update" window.
- f) Click "Install" to install the SA certificate.
- g) After the SA certificate is installed, click "Install" again to install unit license.
- h) After the unit license installation is completed, click "Install" again to install the chart.
- i) After the installation is completed, click "Update Log" to view the information of update logs.
- j) In the Chart Unit page, click "View" to jump to the chart page to view the chart details.

*: microSD card or TF card

Note: Unless to be functioned, click [Skip] to proceed.

1.3.1.2 Instruction of S-63 Chart Installation

- a) Click "Settings" on the [HOME] page and click "Ethernet". Turn on "Ethernet" and set the Ethernet mode to "dhcp" or "static" (requires IP address configuration). Connect your device to the internet.

Or click "WIFI". Turn on "WIFI" and connect the device to the Internet.

- b) Click "Settings" on the [HOME] page, then click "Hardware Information" under "General" in the settings menu.
- c) Click "REFRESH" on the top right of the hardware information screen to get "User Permit".
- d) Use this "User Permit" to purchase ENC S-63 maps.
- e) After purchasing the ENC map, prepare a microSD card* and copy all the S-63 data files to the root directory of the microSD card*.
- f) Click "Chart" on the [HOME] page to enter the Chart page.
- g) Click [<] mark of the screen right side to call up the main menu or press the [Menu] button to call up the main menu.
- h) Click "ENC" → click "Chart Management" to enter the page of Chart Management.
- i) Click "Chart Update" to pop up the "Local Update" window.
- j) Click "Install" to install the SA Certificate.
- k) After the SA certificate is installed, click "Install" again to install unit license.
- l) After the unit license installation is completed, click "Install" again to install the chart.
- m) After the installation is completed, click "Update Log" to view the information of update logs.
- n) In the Chart Unit page, click "View" to jump to the chart page to view the chart details.

*: microSD card or TF card

Note: Unless to be functioned, click [Skip] to proceed.

1.3.2 Display setting

Click "Display Setting" to enter the display settings page, you can choose the mode, such as mode selection, Chart Display, Ownship Display, AIS Target Display, AIS information window, My Data, Window button and Advanced settings.

1.3.2.1 Mode selection

Display the main menu of the chart page. Click "Display Setting" → "Mode selection" to set the chart display mode. Choose DAY, NIGHT, DUSK and other modes.

1.3.2.2 Chart display

1.3.2.2.1 INT map is selected

Click "Chart Display" to enter the display setting page of the chart screen.

[1] Chart direction: Set the chart direction to North up, Heading/Course up, and Route up.

[2] Tidal Station Display: Provide on / off selection for setting, if set to on, the tide station can be displayed on the chart.

[3] Water depth mark: Provide on / off selection for setting. If set to on, the water depth line will be displayed on the chart.

[4] Fishing area: Provide on / off selection for setting. If set to on, the fishing area will be displayed on the chart.

[5] Latitude-longitude grid display: Provide on / off selection for setting. If set to on, the latitude and longitude grid lines are displayed on the chart.

[6] Compass overlay: Provide on / off options for setting. If set to on, overlay compass is displayed on the chart.

[7] Text size of place names: Set the font size of the place names displayed on the chart, small, medium, and large are available.

[8] Hazard display: Hazard display switch, the display level can be set, Close / 2nm / 1.25nm / 1nm / 0.75nm / 0.5nm.

[9] Subsea obstruction: Subsea obstruction display switch, the display level can be set, Close / 2nm / 1.25nm / 1nm / 0.75nm / 0.5nm.

[10] 10m depth contour: 10m depth contour display switch, display level can be set, Close / 2nm / 1.25nm / 1nm / 0.75nm / 0.5nm.

[11] 20m depth contour: 20m depth contour display switch, display level can be set, Close / 2nm / 1.25nm / 1nm / 0.75nm / 0.5nm.

[12] Miscellaneous line display: Miscellaneous line display switch, the display level can be set, Close / 2nm / 1.25nm / 1nm / 0.75nm / 0.5nm.

[13] The line aids to navigation: Navigation indicator line display switch, the display level can be set, Close / 2nm / 1.25nm / 1nm / 0.75nm / 0.5nm.

[14] Boundary: Boundary display switch, display level can be set, Close / 2nm / 1.25nm / 1nm / 0.75nm / 0.5nm.

[15] Cable: Cable display switch, display level can be set, Close / 2nm / 1.25nm / 1nm / 0.75nm / 0.5nm.

[16] Oil and gas pipeline: Oil and gas pipeline display switch, the display level can be set, Close / 2nm / 1.25nm / 1nm / 0.75nm / 0.5nm.

[17] Yangtze lane: Channel display switch, display level can be set, Close / 2nm / 1.25nm / 1nm / 0.75nm / 0.5nm.

[18] Color filled between the depth contour: The display content of the water depth area can be set, Low water line, 2.5 depth contour, 5 depth contour.

[19] Color filled between the depth contour display: Water depth area display switch, display level can be set, Close / 2nm / 1.25nm / 1nm / 0.75nm / 0.5nm.

1.3.2.2.2 C-MAP is selected

Click "Chart Display" to enter the display setting page of the chart screen.

[1] Chart direction: Set the chart direction to North up, Heading/Course up, and Route up.

[2] Tidal Station Display: Provide on / off selection for setting. If set to on, the tide station can be displayed on the chart.

[3] Latitude-longitude grid display: Provide on / off selection for setting. If set to on, the latitude and longitude grid lines are displayed on the chart.

[4] Road: Provide on / off options for setting. If set to on, roads are displayed on land.

[5] Satellite Image Overlay: Provide on / off options for setting. If set to on, satellite images are superimposed on the chart.

[6] Object Info Window

Provide on / off options for setting. If set to on, object info window is displayed on the chart.

[6] Compass overlay: Provide on / off options for setting. If set to on, overlay compass is displayed on the chart.

[7] Text size of place names: Set the font size of the place names displayed on the chart, small, medium, and large are available.

1.3.2.2.3 ENC is selected

Click "Chart Display" to enter the display setting page of the chart screen.

[1] Chart direction: Set the chart direction to North up, Heading/Course up, and Route up.

[2] Tidal Station Display: Provide on / off selection for setting. If set to on, the tide station can be displayed on the chart.

[3] Latitude-longitude grid display: Provide on / off selection for setting. If set to on, the latitude and longitude grid lines are displayed on the chart.

[4] Compass overlay: Provide on / off options for setting. If set to on, overlay compass is displayed on the chart.

- [5] Solid line length of beacon sector: Provide on / off options for setting. If set to on, a long irradiation range line is displayed. If set to off, the irradiation range line is displayed short.
- [6] Highlight in shallow water: Provide on / off options for setting. If set to on, areas of shallow water on the chart are highlighted. Dangerous areas for vessels with deep drafts can be avoided.
- [7] Location Quality: Provide on / off options for setting. If set to on, indicates the quality or reliability of location information.
- [8] Small scale filtering: Provide on / off options for setting. If set to off, detailed information of the land on the chart is displayed.
- [9] Point symbol: Provide Simplified / Paper chart options for setting. If set to Simplified, the symbol is displayed in simpler shapes. If set to Paper chart, the symbol will be displayed in the shape shown on the chart.
- [10] Area boundary symbol: Provide Plain / Symbolized options for setting. If set to Symbolized, boundaries of specific areas such as port or marine parks are emphasized.
- [11] Depth shade: Provide Two colors / Four colors options for setting. If set to Four colors, the color tone of depth is expressed in four colors. If set to Two colors, the color tone of depth is expressed in two colors.
- [12] Deep water contour: This function is to displays the deep depths than the water depth contours on the chart close to the set value in white in day mode and in black in other modes. This function is effective when Depth shade is Four colors.
- [13] Shallow water contour: This function is to displays shallower depths in blue than water depth contours on the chart that are close to the set value. However, if it is set deeper than the safe contour line, it will not be displayed. This function is effective when Depth shade is Four colors.
- [14] Safety Contour: This function is to displays the water depth contours on the chart that are close to the set value as thick lines, while shallow water depth areas are highlighted in light blue. This is useful when navigating vessels with deep drafts.
- [15] Safe depth line: This function is to highlights shallows by filling in light blue circles around areas with depth values shallower than the set value. This is useful when navigating vessels with deep drafts.

1.3.2.3 Layer Management

Click "ENC" → click "Layer Management" to enter the Layer Management setting page.

[1] Display mode

Provide Base Display / Normal Display / Other Display options for setting. If set to Base Display, only the basic minimum display is selected on. If set to Normal Display, the display that is selected for base display and general display items. If set to Other Display, display will turn on all items.

[2] Individual settings (Each display item)

After selecting a display mode, this is to turn the display on or off individually as needed.

1.3.2.4 Own ship Display

Click "Ownship Display" to enter the ownship display setting page.

[1] Ownship Symbol

This is to select the display shape of the ownship symbol.

[2] Heading line

This is to select how to display the own ship's heading line.

[3] Course line

This is to select how to display the own ship's course line.

[4] Position tracking

Provide on / off options for setting. If set to on, the screen is rewritten according to the setting of the "Refresh position" according to the movement of the own ship.

[5] Refresh position

If set to on above "Position tracking", the selection becomes available.

This is to select the screen update position for automatic scrolling at the "center" of the screen or "1/3 from the edge" of the screen.

1.3.2.5 AIS Target Display

Click "AIS target display" to enter the AIS target display setting page

[1] Heading line

This is to select how to display the AIS target symbol heading line.

[2] Course line

This is to select how to display the AIS target symbol course line.

[3] CPA line

This is to turn on/off the CPA line display between own ship and the AIS target.

[4] AIS Target Track Display

This is to select the type of AIS target to be displayed in the AIS target track.

[5] AIS Target Track Length

This is to select the display time of the displayed AIS target track.

[6] Lost time

This is to select the retention time of information updates for the AIS target.

1.3.2.6 AIS information window

[1] AIS Target Display: provide on / off for selection settings. And set to display or hide all AIS ships on the chart.

[2] Display Ownship: provide on / off for selection settings. If set to on, display own ship's AIS information

[3] AIS ship information display target: All off (Close display) / Set to All AIS targets' data view,

Class A targets' data view, Class B targets' data view, Targets' data view that may encounter, Favorite targets' data view.

[4] AIS ship information window style: Bar Display Window and Card Display Window can be set.

[5] AIS ship information display mode: Specific display modes can be selected, including Custom, Auto and Simplified display.

Custom display mode: self-definable display AIS information display content

Auto display: according to the size of the display window adjusted to streamline the display of ship name, course and speed

Simplified display: only display the name and speed of the ship

[6] Information Display Content: The information display content is displayed only when the AIS ship information display mode is set to the custom mode. The display contents can be selected, including MMSI, Ship name, Length and Width, Nationality, National flag, Course, Heading, Bearing, Speed, Distance, DCPA, TCPA, Location Type, and latest update.

1.3.2.7 My Data

Click "My Data" to enter the My Data Settings page. The specific settings are shown below.

[1] NAVI Data Display Scale: Set the navigation data to display the level and switch on the chart.

INT Map and C-MAP setting items: Close / 25nm / 10nm / 5nm / 2nm / 1nm / All.

ENC setting items: Close / 1:160000 / 1:80000 / 1:40000 / 1:20000 / 1:10000 / All

[2] NAVI Data Display contents: Set navigation data to display symbols, names, symbols, and names on the chart. Setting items, Symbol / Symbol & Id / Symbol & Name / Symbol & Id & Name.

[3] Track Display Scale: Set the track display level and master switch on the chart.

INT Map and C-MAP setting items: Close / 25nm / 10nm / 5nm / 2nm / 1nm / All.

ENC setting items: Close / 1:160000 / 1:80000 / 1:40000 / 1:20000 / 1:10000 / All

[4] Track Display contents: Track display content, set the track to display symbols, names, symbols and names on the chart. Setting items, Symbol / Symbol & Id / Symbol & Name / Symbol & Id & Name.

[5] Plot Data Display Scale: Plotting data display level, set the plotting data display level and switch on the chart.

INT Map and C-MAP setting items: Close / 25nm / 10nm / 5nm / 2nm / 1nm / All.

ENC setting items: Close / 1:160000 / 1:80000 / 1:40000 / 1:20000 / 1:10000 / All

[6] Plot Data Display contents: Set the plotting data to display symbols, names, symbols, and names on the chart. Setting items, Symbol / Symbol & ID / Symbol & Name / Symbol & ID & Name.

1.3.2.8 Window button

Open or close the chart page window buttons, including Upper left data information window, Upper right data information window, Lower left data information window, Lower right data information window, Search, Full, Measure, Center, Track and TX/RX signal indicator.

1.3.2.9 Advanced settings

[1] Cursor View Content: Including Data info and operation items and Operation items. When "Data Information and Operation Items" is selected, the selected data number and name and operation item cursor information will be displayed when operating on the chart. When "Operation items" is selected, when operating on the cursor on the chart, only the operation items are displayed, and the number and name are not displayed.

[2] Cursor Auto Hide: The time for automatically hiding the chart cursor can be set, including Never, 10 seconds, 30 seconds, and 60 seconds for setting.

[3] Cursor Line Display: After the cursor line is closed, the connection line between the ship and the cursor will not be displayed.

[4] User Map Display: User map display switch.

[5] User Map Data Setting: User map data can be imported according to user's requirements. User can choose to use map of data which is imported to equipment or use microSD card* map data directly.

Copy the mbtiles format file of the user map to the microSD card*, insert it into the microSD card* slot, click [user map data setting] to select the layer file, and click [Confirm] to display the layer on the chart page.

[6] Chart Marker Map Top: When the user map display is turned on, turn on the nautical chart object map top switch to display the nautical chart object icon on top of the user map.

[7] User Map Data Import: Click "user map data import" to select the map file and click "Confirm" to import the map file into the terminal

[8] Internal User Map Data Uninstall: You can choose to uninstall the user map data imported into the device.

[9] Data Export: The user data can be exported to the storage device, the exported user data can be imported to another Multi Function Display, and the exported user data file is in DB format.

[10] GPX Data Import: User data in GPX format is imported to the terminal.

[11] Data Import (Automatically restart the program after import): Importing user data in DB format exported by other Multi Function Display terminals requires restarting the terminal to take effect.

*: microSD card or TF card

Note: KSD-1210 (21 inch) can use the cursor function by connecting a USB mouse.

1.4 Track Operation

1.4.1 Track Record

1.4.1.1 Continue to record on previous record

Click the "Track" button on the [HOME] page or Chart page to continue the previous track record. Click the "Track" button again to end the track recording.

1.4.1.2 Add a new record

Method 1:

Long press the "Track" button on the chart page to create a new track and start recording. Click the "Track" button again to end the track recording.

Method 2:

Click the "Track" APP on the [HOME] page to enter the track list. Click the "Add" button to create a new track.

1.4.1.3 Select a record to continue recording

Method 1:

On the chart page, click to select the track to continue recording, and click "Track" button in the pop-up operation box to continue the track recording.

Method 2:

Click the "Track" APP on the [HOME] page to enter the track list. Click the "track record" button in the operation bar on the right side of the track to be recorded to continue recording the track.

1.4.2 Track Color Switch

Method 1:

Click to select the data that want to change color on the chart and there will pop-up an operation selection box, click "Edit" button to go to edit box to edit the display style including symbol and color of the selected data.

Method 2:

On the [HOME] page, click "Track" APP to go to track list. On the track list, click the data that want to change color to go to edit page to edit the display style including symbol and color of the selected data.

Notice: The track color switch only works for the new creation data after switch.

1.4.3 Track Deletion

Method 1:

Click to select the data that want to delete on the chart and there will pop-up an operation selection box, click "Delete" button on the operation selection box to delete the track.

Method 2:

On the [HOME] page, click “Track” to go to track list. On the track list, swipe left the data that want to delete to call up delete button to select delete the data or delete to data that was with specified color.

1.4.4 Track Batch Edit, Deletion

On the [HOME] page, click “Track” to go to track list. On the track list, long press the track data to go to batch operation page. Multiple / All data can be selected for batch operations of Lock, Favorite, Display, Delete, etc.

1.5 Navigation Data Operation

Navigation data includes waypoint and route.

1.5.1 Navigation Data Creation

Method 1:

Long press (to create new) to confirm the starting point of navigation data on the chart and there will pop-up an operation selection box, click “Add” button on the operation selection box to confirm the adding.

[1] If it is to create a waypoint, go on to click “Confirm” button on the operation selection box and select the data type as waypoint to finish the waypoint creation. Click “Back” button to give up the waypoint creation.

[2] If it is to create a route, go on to click on the chart to add nodes. After finish nodes adding, click “Confirm” button and select the data type as route. Click the "Save" button to finish route creation. Click “Back” button to give up the route creation.

Method 2:

On the [HOME] page, click “NAVI Data” APP to go to navigation data list. On the navigation data list, click “Add” button and select add a waypoint or a route to go to data adding page to input LAT/LON data.

1.5.2 Navigation Data Deletion

Method 1:

Click to select the data that want to delete on the chart and there will pop-up an operation selection box, click “Delete” button on the operation selection box to delete the data.

Method 2:

On the [HOME] page, click “NAVI Data” APP to go to navigation data list. On the navigation data list, swipe left the data that want to delete to call up delete button, click the “Delete” button to delete the data.

1.5.3 Navigation Data Batch Edit, Deletion

On the [HOME] page, click “NAVI Data” APP to go to navigation data list. On the navigation data list, long press the navigation data to go to batch operation page. Multiple / All data can be selected for batch operations of Lock, Favorite, Display, Delete, etc.

1.6 Navigation operation

Navigation data and MOB* can be used to navigation.

1.6.1 Call Navigation Data / MOB to navigation

Method 1:

Click to select the data that want to navigation on the chart and there will pop-up an operation selection box, click "NAVI" button on the operation selection box to start navigation.

Method 2:

On the [HOME] page, click "NAVI Data" / "MOB" to go to navigation data / MOB list. On the navigation data / MOB list, click "NAVI" on the operation bar of the data that want to navigation to start navigating.

*MOB: Man Over Board (an emergency in which a person has fallen off a boat or ship into the water)

1.6.2 Call History Navigation Data

Click the "NAVI Data" APP on the [HOME] page to enter the navigation data list. Click the "History navigation" button to enter the history Navi data list and click the "NAVI" button in the operation bar on the right side of the data to be navigated again to start navigating from the ship's position.

1.7 Plot Data Operation

Plot data includes point, line, and polygon.

1.7.1 Plot Data Creation

Method 1:

Confirm to long press the starting point of plot data on the chart and there will pop-up an operation selection box. Click "Add" button on the operation selection box to confirm the adding.

[1] If it is to create a point, go on to click "Confirm" button on the operation selection box and select the data type as point to finish the point creation.

Click "Back" button to give up the point creation.

[2] If it is to create a line/polygon, go on to click on the chart to add nodes. After finish nodes adding, click "Confirm" button and select the data type as line/polygon. Click the "Save" button to finish data creation.

Click "Back" button to give up the data creation.

Method 2:

On the [HOME] page, click "Plot Data" APP to go to plot data list. On the plot data list, click "Add" button and select add a point, line or a polygon to go to data adding page to input

LAT/LON data.

Method 3:

Display the [CHART] page to add plot data directly to the own ship position.

[1] For KSD-1100, press the [ENTER] button on the operation panel. Plot data is added to the own ship position.

[2] For KSD-1210, click [Mark] icon on the chart screen. Plot data is added to the own ship position.

1.7.2 Plot Data Deletion**Method 1:**

Click to select the data that want to delete on the chart and there will pop-up an operation selection box. Click “Delete” button on the operation selection box to delete the data.

Method 2:

On the [HOME] page, click “Plot Data” APP to go to plot data list. On the plot data list, swipe left the data that want to delete to call up delete button. Click the “Delete” button to delete the data.

1.7.3 Plot Data Batch Edit, Deletion

On the [HOME] page, click “Plot Data” APP to go to plot data list. On the plot data list, long press the plot data to go to batch operation page. Multiple / All data can be selected for batch operations of Lock, Favorite, Display, Delete, etc.

1.8 AIS Operation**1.8.1 AIS List**

On the [HOME] page, click “AIS List” APP to go to AIS list.

[1] On the AIS list, click the “State ID” button of the AIS targets to do the operations of favorite, join in / remove to group.

[2] On the AIS list, click “NAVI” on the operation bar of the AIS target that want to be the destination of navigation to starting navigating. Click “SMS” to quickly go to message editing page to edit and send a message to the AIS target. Click “View” to quickly go to chart page to view the AIS target.

[3] Long press the AIS target data on the AIS list to go to batch operation page. Multiple / All AIS targets can be selected for batch operations of Favorite, SMS, Join in Group, etc.

1.8.2 AIS Radar

On the [HOME] page, click “AIS Radar” to go to AIS radar page.

1.8.2.1 Range Circle

On the AIS Rader page, there are four range circles. Users can click “+” or “-” to adjust the field of view. There are 2nm, 5nm, 10nm, 15nm, 20nm, 30nm, 40nm, and 50nm for adjustment.

1.8.2.2 Information Display

[1] Around the range circles, there displays own-ship's SOG, COG, HDT, LAT/LON and the targets in view, filed of view, etc.

[2] Selecting an AIS target, the AIS target's static parameter and navigational information are displayed on the right side. Users also can operate of navigation, favorite, add to group and send message for the selected AIS targets.

1.8.2.3 Display Setting

Click “Setting”, users can set the heading line, COG line and track Length of AIS targets.

1.8.3 Ship Parameters

Method 1:

In the AIS list, click the "Ship Parameters" button to open the ship parameters page. Click the "Static Parameter" button to enter the static parameters page, where you can view the ship's MMSI, ship name, call sign, ship model, A / B / C / D and other parameters.

Method 2:

Click the "Ship Parameters" APP on the [HOME] page to open the parameters of the ship. Click the "static parameters" button to enter the static parameters page, where you can view the ship's MMSI, ship name, call sign, ship model, A / B / C / D and other parameters.

Note: Once the "Static Parameters" for a vessel have been entered, this data is fixed and cannot be modified.

1.8.4 Group Management

Click the "Group Management" APP on the [HOME] page to enter the group management page.

[1] Click "Add Group" button on the left side of group management page to go to add a new group and set the group's name, group member display symbol and group alarm.

Click "Add" button on the right top of group management page to add group members. Click "Search" to input MMSI / Name to search the group member list. Click "Edit" to edit the properties of the group. Click "SMS" to quickly send a message to the group members.

[2] Swipe left the group name button to call up delete button. Click the "Delete" button to delete the group.

1.8.5 Safety Information

Click "SOS" APP on the [HOME] page or long press "MOB SOS" key (for KSD-1100) to enter the information display page. According to the actual situation, click the corresponding information button to pop up the security information sending reminder box. Click "Confirm" to start sending security information. Click "Cancel" to cancel the security information sending.

1.8.6 Message

Click "Message" APP on the [HOME] page to enter the short message page.

[1] Message list: You can view the message directly. Click a message to view all the information sent by the account.

[2] Contact List: You can view the members in the address book. Click the address book member to open the message dialog box.

[3] Search: Enter keywords in the search box on the message list page, and the message list will display the relevant information of search keywords. In the address book page, enter keywords to display the key members of address book.

[4] New: Click "contact" and click "+" to add new member information to the address book. Click "common phrase" and click "Add Common Phrase" to add common words.

1.8.7 Chart

Click "Chart" APP on the [HOME] page to enter the chart page.

[1] AIS target display: Touch the AIS target symbol on the map, the AIS target information will be displayed, and it can be added to or removed from favorites and groups.

[2] Transmit/Receive Signal Indicator: Shows TX and RX signals. The signal light shows the status of AIS with 3 patterns of display.

Green: Normal

Blinking green and gray: Transmit/receive (TX/RX) status

Gray and crossed: Failure / AIS is not transmitted for 3 minutes, or longer / AIS signal is not received for 10 minutes or longer (not a failure)

Note: AIS transmission/reception requires a GPS antenna to be connected to the device.
It does not work with position input from outside.

1.9 Video Surveillance

The device supports up to 4 network cameras, which can be used for video monitoring, video recording, screen capture, mobile monitoring alarm and other functions.

KODEN recommends the following manufacturer and model of the Camera to be used.
(Camera: Owner supplied)

Manufacturer	Model	Manufacturer	Model
Hikvision	DS-2DC2402IW-DE3	Dahua (DH)	DH-IPC-HFW1025B
Hikvision	DS-2CD2225CD-I3	SV3C	B08W-5MP-HX
Hikvision	DS-2CD3T56WD-I3	SV3C	B08POE-5MPL-A
Hikvision	DS-2CD1221-I3		

Note: The specifications of the connected camera must be ONVIF compatible and must be capable of LAN connection.

1.9.1 Installation connection diagram

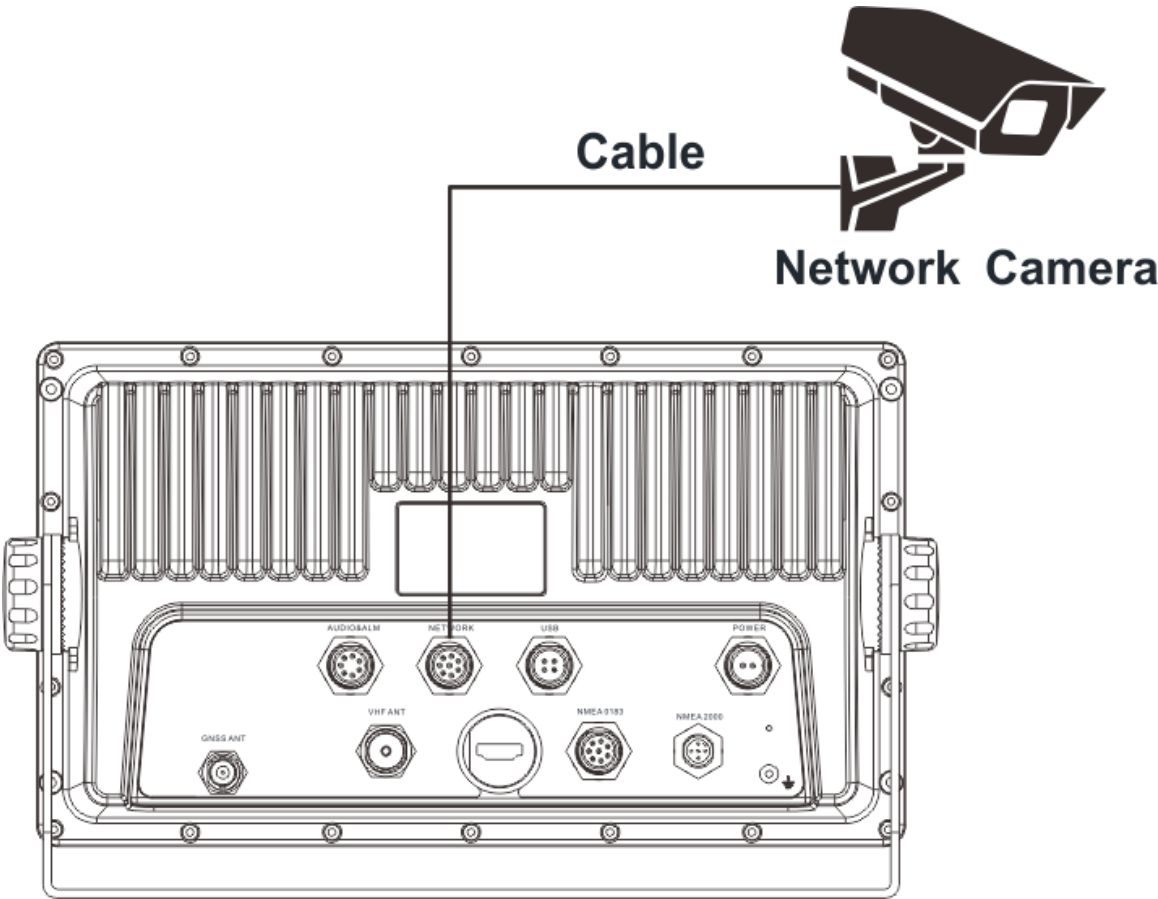


Fig. 1: Video monitoring connection diagram

Note: Camera and LAN cable are owner supplied.

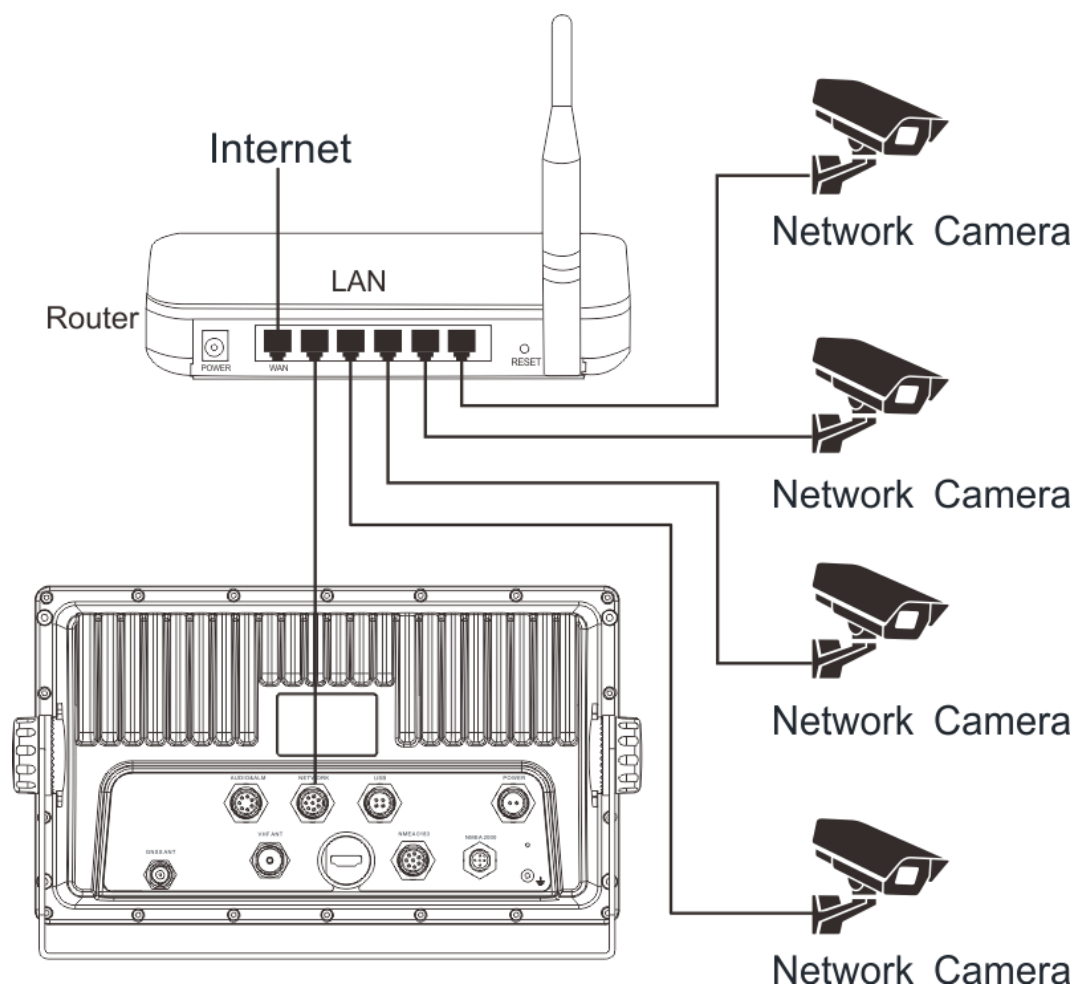


Fig. 2: Video monitoring connection diagram

Note: Camera, Router and LAN cable are owner supplied.

Note: Use the router with DHCP settings.

1.9.2 Video input screen

After access to the camera, click "Video Surveillance" APP on the [HOME] page to enter the video monitoring screen. Through the shortcut button on the video monitoring screen, you can realize screenshot, video recording, channel switching, alarm area setting, monitor transmission on or off, full screen display and other operations.

MicroSD card* (Owner supplied) must be inserted to save video and image recordings. (See [4] Save Settings in 1.9.3.4 Monitoring Settings)

*: MicroSD card or TF card

(1) Screenshot

Click “Screenshot” to capture the page image and save it in the microSD card / TF card of the device. (See 1.9.3.2)

(2) Start REC

Click "Start REC" and click again to end the recording. The video is saved in the microSD card* of the device, which can be viewed in the video management.

(See 1.9.3.1)

(3) SW CAMERA

Click "SW CAMERA ", and 4 camera channels are available for selection and display. Select one channel, the monitoring screen will display the monitoring image of the channel.

(4) ALM area

Click "ALM area", and the alarm area setting box will pop up. Drag the border to flexibly set the alarm area of the monitoring screen. It can monitor the movement of the alarm area, monitor the moving picture in the alarm area, and generate an alarm. The alarm information can be viewed in the alarm information management. (See 1.9.3.3)

(5) Close SCRN

Click "Close SCRN" to turn on or off the display of the channel image.

(6) Full SCRN

Click "Full SCRN" to display the monitoring image of the channel in full screen. Click "Split SCRN" to exit the full screen.

*: MicroSD card or TF card

1.9.3 Operation menu

Under the video monitoring screen, swipe the upper right edge to the left to call up the video surveillance operation menu. It can be used for monitoring settings, including Video management, Screenshot management, Alarm Log, Monitoring settings.

1.9.3.1 Video Management

Click the video management of menu to view the relevant stored videos, which can play, pause, drag progress, search, and batch operation.

While the video is playing (or paused), you can capture the video by clicking the camera icon at the top right of the screen.

1.9.3.2 Screenshot Management

View the relevant storage pictures of the screenshots and the time of the screenshots. You can share, search, delete single and batch photos.

1.9.3.3 Alarm Log

Display the alarm time, alarm camera and alarm type. Swipe the data bar to be deleted to the left to call up the delete button, click "Delete" button to delete the alarm information. Long press the alarm information to go to batch operation.

1.9.3.4 Monitoring Setting

Monitoring setting include menus for Camera Setting, Record Setting, Alarm Setting, Storage Setting, and Transmit Setting.

[1] Camera Setting

Camera screen: When the camera screen switch is turned off, the camera screen will not be displayed.

Camera List: When the "Camera screen" is set to on, the "Camera List" menu appears. Used to display and set the receiving switch of camera screen and the connection status of all cameras.

[2] Record Setting

When automatic recording is on, it can be recorded in full time. When it is off, it can set the timing recording time.

[3] Alarm Setting

There are four alarm types of signal disconnection, occlusion screen, video disconnection and voice alarm, which can be set by the user according to the actual use.

Voice Alarm: When set to on, audio is played for video surveillance alerts. (KSD-1210 requires speaker* connection.) (*Speaker: Owner supplied)

"Motion Detection Technology" function is to when the camera catches a moving object, it will record it as an image* and issue an alarm (trespassing). (Details of recording* are set in "Alarm image formats".)

"Alarm image formats" menu will appear when the "Motion Detection Technology" is turned on. Select "video" or "Screenshot" as the type to save when an alarm occurs.

Select "Screenshot" in "Alarm image formats", and you can select the "Number of screenshots" and the "Screenshot interval".

Set the save interval and the number of saves when an alarm occurs continuously.

Note: This function is auxiliary and may not work depending on the image.

[4] Storage Setting

Display the storage location of the microSD card*, turn on the automatic overwrite switch, automatically overwrite when the data is full.

You can format the memory card.

Note: Do not specify the wrong storage location of the microSD card for the C-MAP MAX card.

[5] Transmit Setting

Select the source of camera access through Ethernet or Wi-Fi.

*: microSD card or TF card

1.9.4 Exit operation

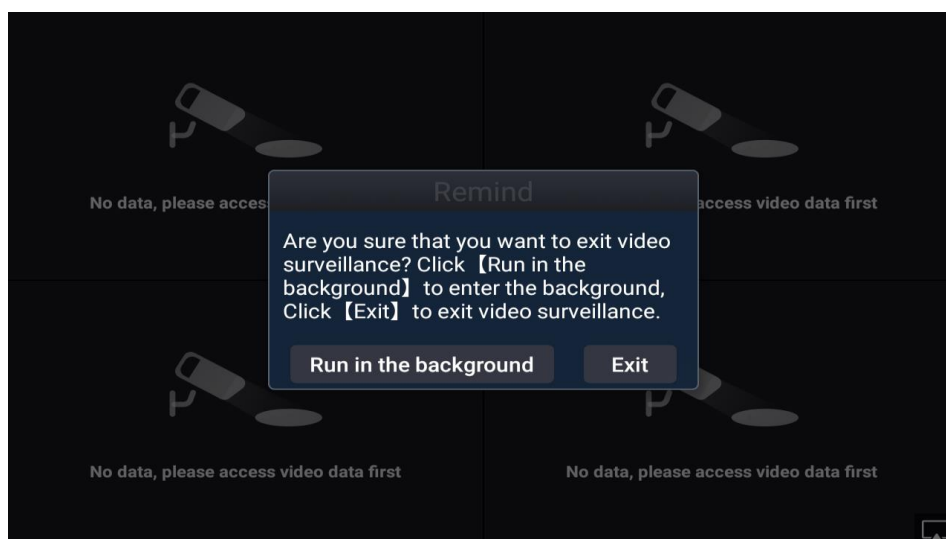
Under the video surveillance page, do the following operation.

For KSD-1100: Press the [BACK] button to call up the exit video surveillance window.

For KSD-1210: Swipe to the left on the right center edge or the right lower edge of the screen

to call up the exit video surveillance window.

“Are you sure that you want to exit video surveillance?” is displayed. To exit video surveillance, click [Exit]. To run video surveillance in the background, click [Run in the background].



1.10 Volume/Brightness Adjustment

Method 1:

Press the physical key [Power] to open the mode adjustment setting window, which can adjust the volume and brightness of the equipment, switch the chart display mode, and select the day and night modes.

Notice: long press the physical button [Power] will power off the equipment.

Method 2:

Click the "Display Mode" APP on the [HOME] page to open the mode adjustment window, where you can adjust the volume and brightness of the device. And switch the chart display mode. You can select the modes of day and night.

1.11 Connecting external speaker or buzzer

This is to use an external speaker or buzzer, please follow the steps below:

(1) External speaker

How to connect KSD-1100:

Connect pin No.1 or pin No.2 of the 7-pin connector (supplied) to the + (positive) side of the external speaker and pin No.4 to the - (negative) side of the external speaker. And then connect pin No.3 and No.4 directly.

Connect as shown in the figure below.

Notice: The main unit speaker cannot be used when an external speaker is used.

How to connect KSD-1210:

Connect pin No.1 of the 7-pin connector (supplied) to the + (positive) side of the external speaker and pin No.2 to the - (negative) side of the external speaker.

(2) External buzzer

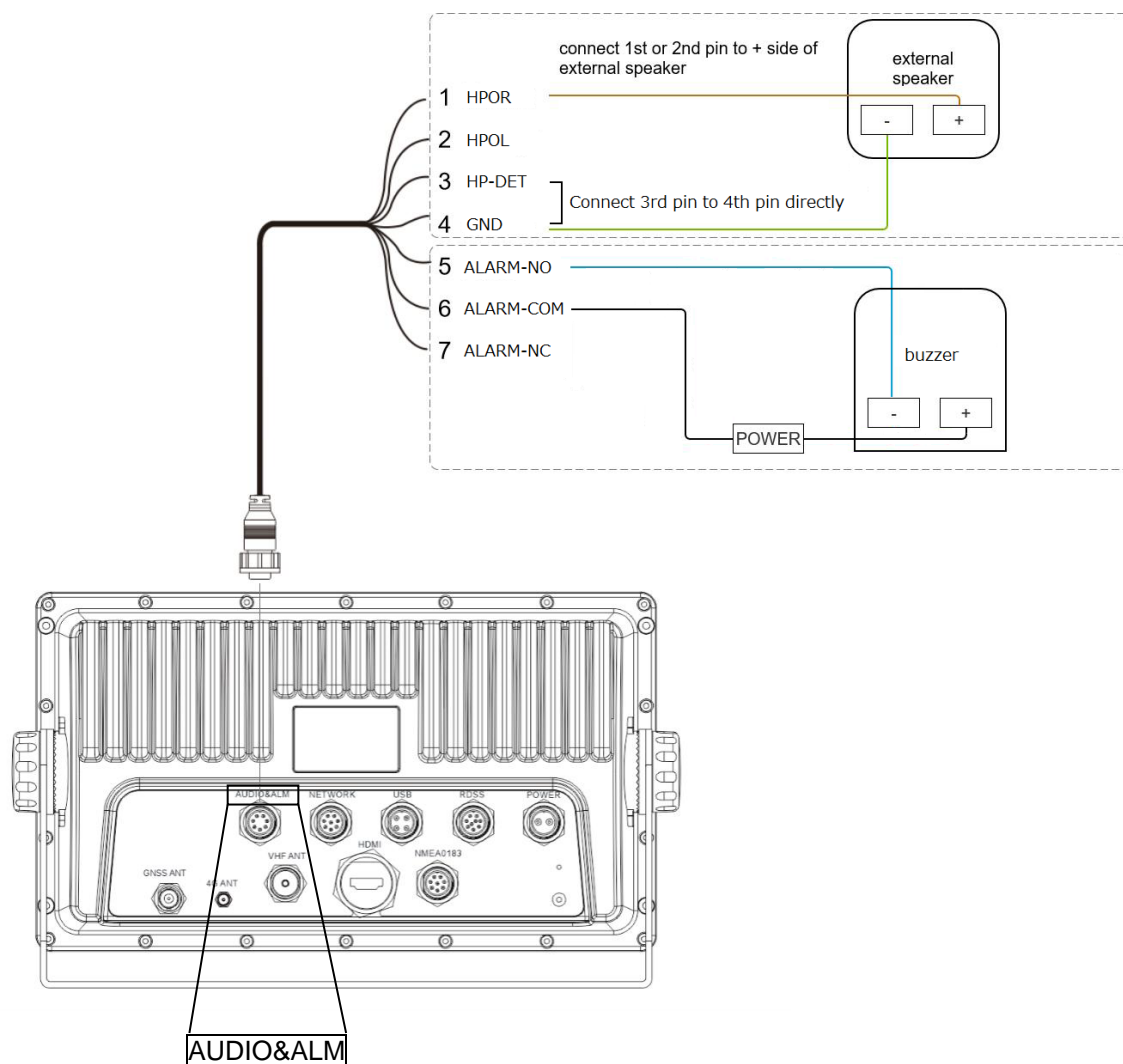
The relay contacts are switched ON for 1 second and OFF for 1.5 seconds when the alarm occurs. When the alarm condition is cleared, the relay contacts should be OFF.

Connection method:

Connect pin No.6 of the 7-pin connector (supplied) to the + (positive) side of the external buzzer, pin No.5 to the - (negative) side of external buzzer.

Connect as shown in the figure below. (There is no difference in the way the buzzer is connected to the KSD-1100/1210.)

Notice: As for the self-excited buzzer, use to a maximum current of 500mA and 12V to 24V as a guide, considering the safety margin.



Note: External speaker and buzzer are owner supplied.

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Chapter 2 Update Operation

On the [HOME] page, click "Settings" to go to setting page. Click "Software Update" on the left of setting page to go to view the version information of operation system, chart, calendar, main application, etc.

2.1 Update Online

Under normal network connection, if there is a new version, there is a red identification point in front of the version number to prompt the update. Click the red identification point to enter the update content page. Click "download and install" to automatically download the installation package online.

Note: Internet connection is required for update work.

2.2 Local microSD card / USB stick upgrade

Note: KSD-1100 and KSD-1210 can be updated by using microSD card* and USB stick.

2.2.1 Format the microSD card /USB stick to FAT32 or NTFS format

This feature can be formatted in FAT32 or NTFS format according to the format of the memory card inserted in this device.

2.2.2 Update File Download

Get the upgrade link from the competent department and dealers to download the upgrade program, including the main application, calendar, chart data, etc.

2.2.3 Update

After the microSD card* is inserted into the microSD card* slot or USB stick and connected to the USB port, the option of "SD Upgrade" will automatically appear on the page of "Settings" - "Software update". Click the "SD Upgrade" button to start the update installation.

Notice:

[1] The microSD Card* /USB Update menu appears only when the microSD card* is already put into the card slot or USB stick and connected to the USB port of device.

[2] If there are no new versions, the microSD Card* /USB stick update menu will not appear.

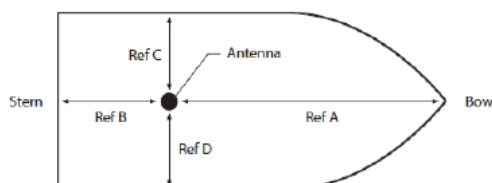
*: microSD card or TF card

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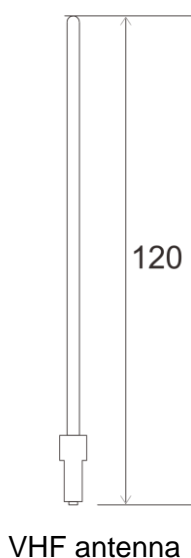
Chapter 3 Installation

3.1 Installation of GNSS antenna

GNSS antenna should be without continuous obstacles in the level 360° , elevation 5° to 90° . Apart from more than 3m from the s-band radar and INMARSAT system and other high power antenna beam. Measure A/B/C/D distance data to set up the ship's static parameter.



3.2 Installation of VHF antenna

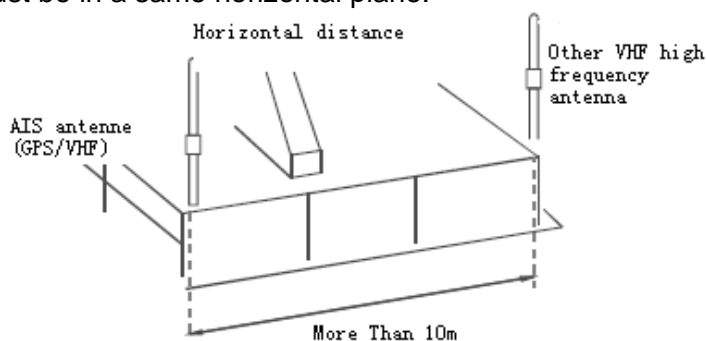


Unit: mm

VHF antenna base fixed

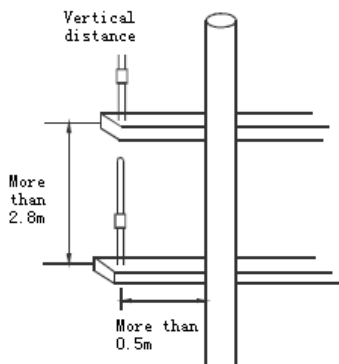
3.2.1 Horizontal Installation

- [1] VHF antenna should be installed in the level 360° without any obstacles.
- [2] VHF antenna should be kept more than 2m away from conductor structure in horizontal position. It also should be kept more than 3m away from the transmitted beam of radar and high power source antenna.
- [3] VHF antenna should be kept more than 10m away from ship's other VHF in horizontal position, if it must be in a same horizontal plane.



3.2.2 Vertical Installation

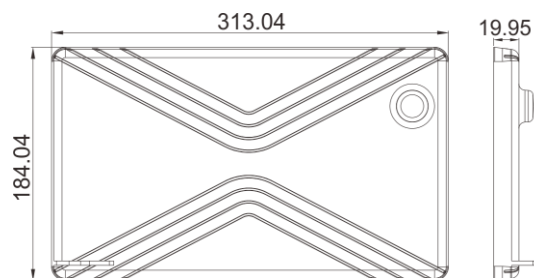
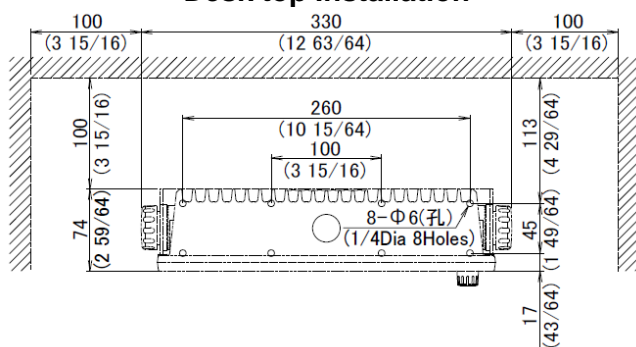
VHF antenna must be kept more than 2.8m away from ship's other VHF antenna in vertical position.



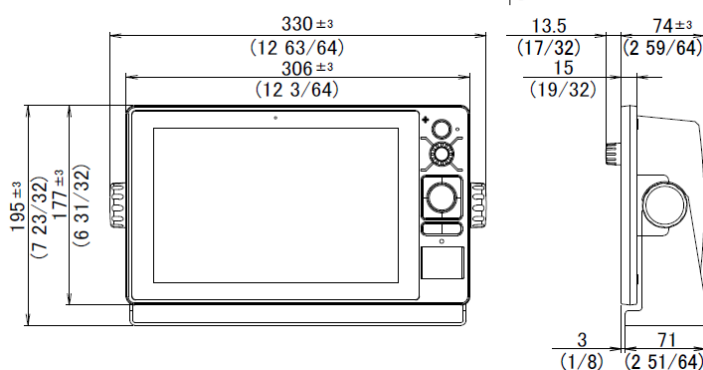
3.3 Equipment Installation

3.3.1 KSD-1100 (10.1") Installation

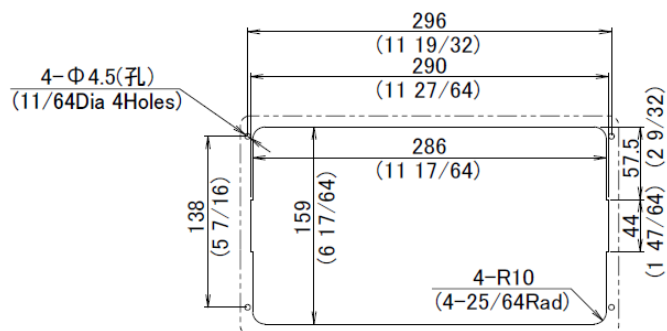
Desk top Installation



SUNCOVER



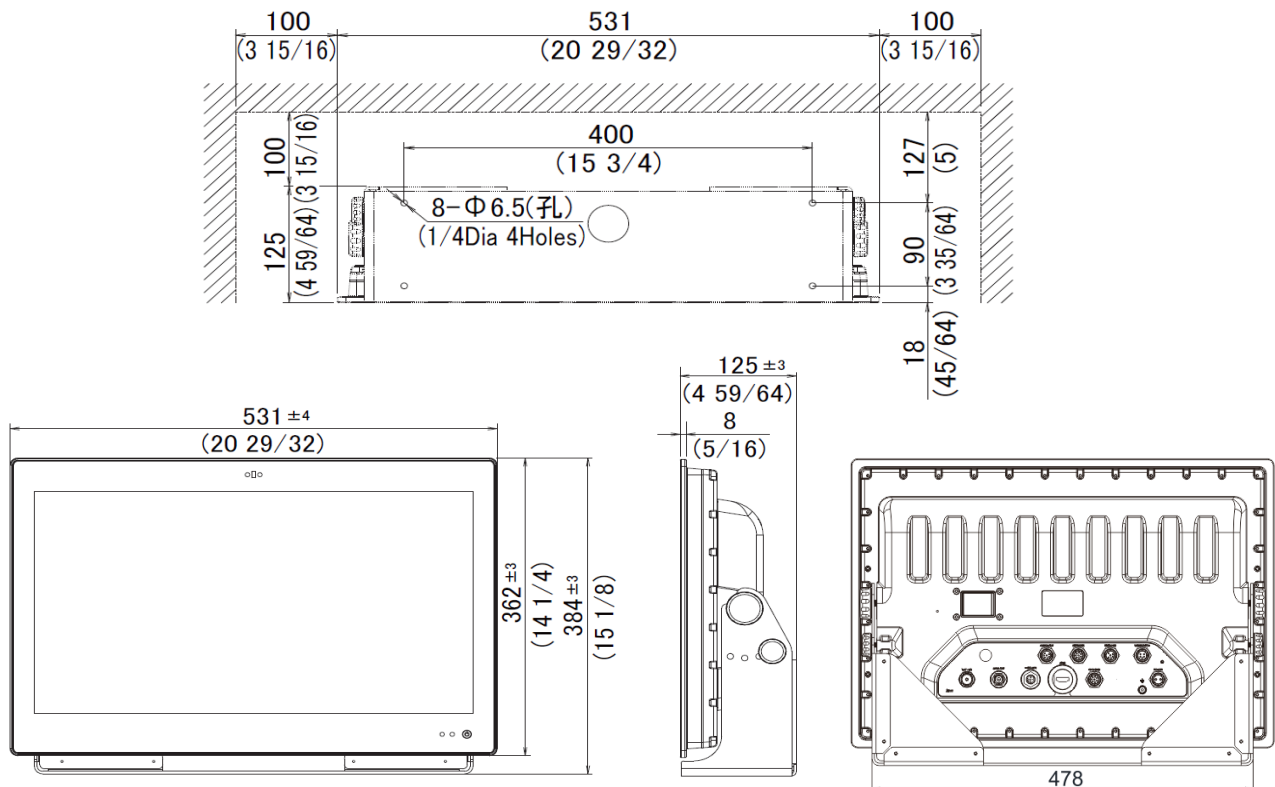
Flush mount installation



Weight: 2.1 kg
Unit: mm (inch)

3.3.2 KSD-1210 (21.5") Installation

Desk top Installation



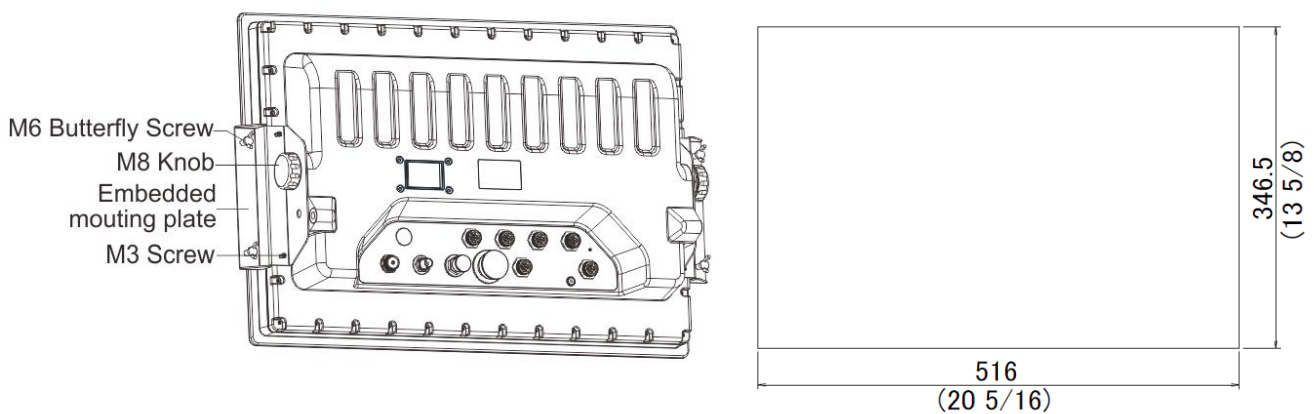
Weight: 7.4 kg

Unit: mm (inch)

Flush Mounting: First process the installation hole as required and then put the equipment into it. Install the embedded mounting plate. Lock the M8 knob and M3 screw to the back of the KSD-1210. And tighten and fix the 4 butterfly screws.

Note: After the terminal is installed, there should be enough space after connecting to the port for easy wiring.

Flush mount Installation

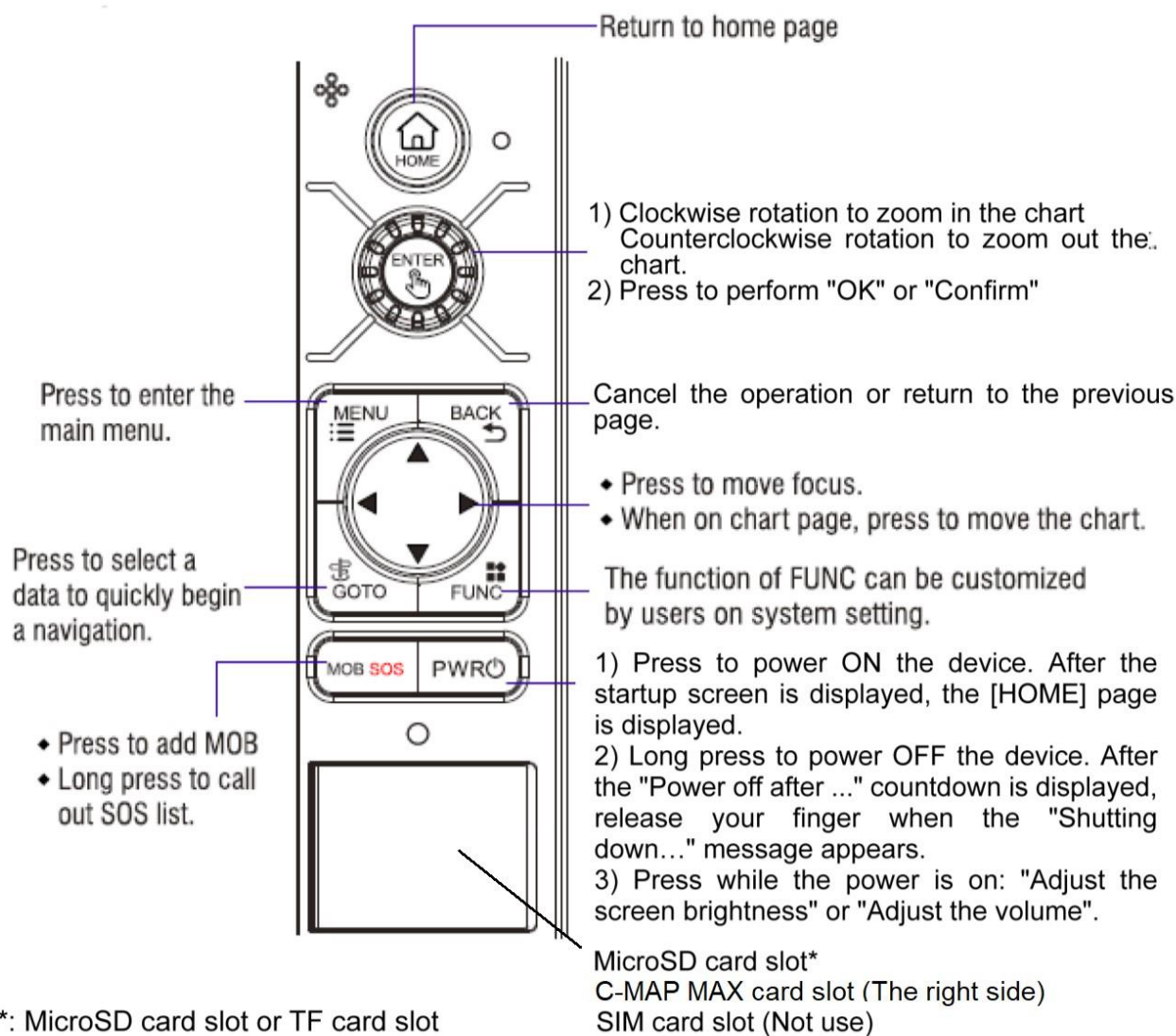


Unit: mm (inch)

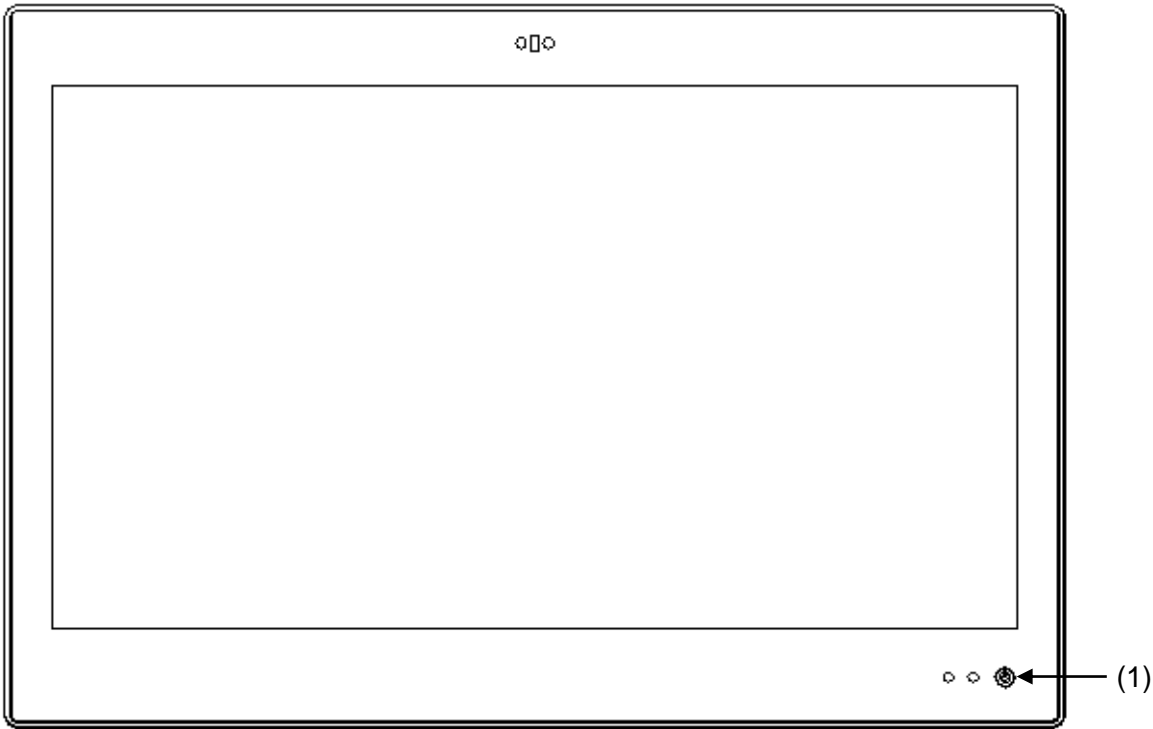
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Chapter 4 To use keys

4.1 KSD-1100 (10.1") Key Definition



4.2 KSD-1210 (21.5”) Key Definition



No.	Key	Function Description
(1)	 (POWER)	1) Short press to adjust screen brightness and device volume while the power is on. 2) Long press to power off / reboot the device.

Chapter 5 Specifications

5.1 Specification

Model	KSD-1100	KSD-1210
Operation System	Android 5.1 with OpenGL ES 3.0 & OpenCL 1.1	
CPU	Cortex-A17 quad core	
CPU speed	1.8 GHz 32 bit	
RAM	2 GB DDR3 1333 MHz	
Flash memory	16 GB	
Display size and type	10.1 inch Capacitive multi touch screen	21.5 inch Capacitive multi touch screen
Brightness	600 cd/m ² (Max)	800 cd/m ² (Max)
Display resolution	1280 x 800 (WXGA)	1920 x 1080 (1080P)
Power supply	10.8 VDC to 31.2 VDC	21.6 VDC to 31.2 VDC
Power consumption	15 W	60 W
GNSS	GPS / BDS / GPS & BDS	
	Position accuracy < 10m, 95% typical	
	Cold start time: 32 sec or less, Warm start time: 1 sec or less	
Audio power	1 W	3 W
MicroSD card slot*	2 ports (Support MicroSD card 32GB or less)	
Bluetooth	BT 4.0	
Wi-Fi	802.11 b/g/n	
Input data formats and sentences	NMEA0183 DPT, GGA, GLL, HDT, MTW, MWD, MWV, RMC, THS, VHW, VTG, ZDA	
Output data formats and sentences	NMEA0183 APB, BOD, BWC, DPT, GGA, GLL, GSA, GSV, HDT, MTW, MWD, MWV, RMB, RMC, THS, VTG, WPL, XTE, ZDA	
NMEA ports	Total:4 ports Input: 2 Output: 1 Input / Output: 1 (Output: AIS fixed)	Total:7 ports Input: 4 Output: 3 (GNSS / AIS / GNSS & AIS: 1, NMEA / AIS: 1, AIS fixed: 1)
Audio output	1	
Alarm output	1	
LAN net work	1000 Mbps	
Operating Temperature	-15°C to +55° C	
Water protection	IPX4	

AIS Class B	
Frequency	156.025 to 162.025 MHz
Bandwidth	25 kHz
Modulation	GMSK / FM
Number of AIS transmitter	1 channel
Number of AIS receiver	2 channels: Channel A CH87B (161.975MHz), Channel B CH88B (162.025MHz)
Output power	2W
Rx sensitivity	< -107 dBm @ PER<20%

*: MicroSD card slot or TF card slot

5.2 NMEA2000 PGN

Input and output PGN of NMEA2000 are as follows.

NMEA2000 is not supported for software version is V1.X.XX.

Input PGN	
PGN	Content
129025	Position, Rapid Update
129026	COG & SOG, Rapid Update
129029	GNSS Position Data
129033	Local Time Offset
129539	GNSS DOP
129540	GNSS Sats in View
126992	System Time
127250	Vessel Heading
127258	Magnetic Variation
129038	AIS Class A Position Report
129040	AIS Class B Extended Position Report
129041	AIS Aids to Navigation (AtoN) Report
129793	AIS UTC and Date Report
129794	AIS Class A Static and Voyage Related Data
129809	AIS Class B "CS" Static Data Report, Part A
129810	AIS Class B "CS" Static Data Report, Part B
129795	AIS Addressed Binary Message
129797	AIS Binary Broadcast Message
129801	AIS Addressed Safety Related Message
129802	AIS Safety Related Broadcast Message

Output PGN	
PGN	Content
129025	Position, Rapid Update
129026	COG & SOG, Rapid Update
129029	GNSS Position Data
129033	Local Time Offset
129539	GNSS DOP
129540	GNSS Sats in View
127250	Vessel Heading
129038	AIS Class A Position Report
129039	AIS Class B Position Report
129040	AIS Class B Extended Position Report
129041	AIS Aids to Navigation (AtoN) Report
129793	AIS UTC and Date Report
129794	AIS Class A Static and Voyage Related Data
129809	AIS Class B "CS" Static Data Report, Part A
129810	AIS Class B "CS" Static Data Report, Part B
129795	AIS Addressed Binary Message
129797	AIS Binary Broadcast Message
129801	AIS Addressed Safety Related Message
129802	AIS Safety Related Broadcast Message
129283	Cross Track Error
129284	Navigation Data
129285	Navigation-Route/WP information



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