KODEN

MARINE ELECTRONICS PRODUCTS

Catch the Ocean

With Your Reliable Partner

Le spécialiste des équipements électroniques

Zac de la plaine - 1, rue Brindejonc des Moulinais
31500 TOULOUSE
Tél : +33 (0)5 67 77 94 44
info@pst-france.fr - **www.pst-france.fr**

INDEX

Koden opens a new door towards the future.

Koden Electronics was founded in 1947. The free and lively atmosphere generated from the dawn of the company has been passed on to the current firm. While improving reliability and quality on the basis of the ISO certificate which is an international standard of quality assurance, Koden opens a new door towards the future with the unique products as well as cultivated technology in hand.

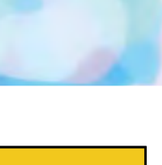
Product Line up 04
Marine Radar 06
RADAR*pc* 10
Marine RADAR / RADAR*pc* Antenna-Scanner 12
Echo Sounder 14
Sonar 18
Chart Plotter 22
GPS Navigator / Compass / Sensor 24
AIS Transceiver / Remote Display 26
Multi Function Display 28
Dimensions and Weight 32
Specifications 36

Product Line up

Radar

Model / Specifications	MDC-900 8.4 inch	MDC-2000 10.4 inch	MDC-2000BB Black Box	MDC-5000 Black Box	MDC-5200 12.1 inch		MDC-5500 15 inch	MDC-7000 Black Box	MDC-7900 19 inch	MDC-7000P Black Box	MDC-7900P 19 inch
	 P9	 P9	 P9	 P8	 P8		 P8	 P7	 P7	 P7	 P7
Output power(Peak)	4 kW	4 / 6 / 12 kW	4 / 6 / 12 kW	4 / 6 / 12 / 25 kW	4 / 6 / 12 / 25 kW		4 / 6 / 12 / 25 kW	6 / 12 / 25 kW	6 / 12 / 25 kW	12 / 25 kW	12 / 25 kW
TT(ARPA)	50	50	50	50	100		100	100	100	100	100
AIS	100	100	100	500	1000		1000	1000	1000	900	900
C-MAP Chart	–	–	–	✓	✓		✓	✓	✓	✓***	✓***
Resolution	VGA	VGA	(VGA)*	(XGA)*	XGA		XGA	(SXGA)*	SXGA	(SXGA)*	SXGA
Video level	8	8	8	16	16		16	16	16	16	16
USB Trackball connection	–	–	–	✓	✓		✓	✓	✓	✓	✓

Echo Sounder

Model / Specifications	CVS-126 5.7 inch	CVS-128 8.4 inch	CVS-128B 8.4 inch	CVS-1410/HS 10.4 inch	CVS-1410B 10.4 inch		CVS-1420 10.4 inch	CVS-872D 12.1 inch	CVS-875D 15 inch	CVS-877D Black Box	CVS-702D 12.1 inch	CVS-705D 15 inch	CVS-707D 17 inch**
	 P16	 P16	 P16	 P16	 P16		 P16	 P16	 P16	 P16	 P16	 P16	 P16
Broadband	–	–	✓	–	✓		–	✓	✓	✓	–	–	–
Fish information	✓	✓	✓	✓	✓		✓	–	–	–	–	–	–
Frequency presentation (Max.)	2	2	2	2	2		2****	4****	4****	4****	2	2	2
Resolution	QVGA	VGA	VGA	VGA	VGA		VGA	XGA	XGA	(XGA)*	XGA	XGA	XGA
Output power	600W	600W or 1 kW	2 kW	1 kW	2 kW		1 kW to 3 kW	1 kW to 3 kW	1 kW to 3 kW	1 kW to 3 kW	3 kW or 5 kW	3 kW or 5 kW	3 kW or 5 kW

	RADAR*pc*	Sonar			Chart Plotter		GPS Navigator		GPS Compass	GPS Sensor	Class A / Inland AIS Transceiver	Remote Display
Model	MDS-1100R	KDS-6000BB KDS-5500BB	KDS-5000BB	ESR-145	GTD-120		KGP-922	KGP-915	KGC-300	GPS-21	KAT-330	KRD-10
	 P11	 P19	 P20	 P21	 P23		 P25	 P25	 P25	 P25	 P27	 P27

	Multi Function Display	
Model	KSD-1100	KSD-1210
	 P29	 P29

* LCD monitor : Owner supplied ** For European model, please contact your nearest distributor.
*** Non official chart data **** Depending on the transducer to be installed

Marine Radar

MDC-7900P
MDC-7000P
MDC-7900
MDC-7000
MDC-5000
MDC-5200
MDC-5500
MDC-900
MDC-900A
MDC-2000
MDC-2000A
MDC-2000BB

Marine Radar 19"

MDC-7900P series

MDC-7000P series

MDC-7900 series

MDC-7000 series

Model	19-inch Display type			Black Box type		
Output Power	6 kW	12 kW	25 kW	6 kW	12 kW	25 kW
Standard model	MDC-7960	MDC-7910	MDC-7920	MDC-7060	MDC-7010	MDC-7020
CE model	MDC-7906	MDC-7912	MDC-7925	MDC-7006	MDC-7012	MDC-7025
IMO	–	MDC-7912P	MDC-7925P	–	MDC-7012P	MDC-7025P

Reliable Quality and Safety

MDC-7900 series provide outstanding performance and clear image by 19-inch high resolution SXGA display plus anti-reflection coating.
MDC-7000 series Black Box radars connect to any SXGA type display (owner supplied).

- Clear image with High-speed sampling in short range
- Auto gain with simple operation
- Improved visibility of the display by auto STC
- Simple and easy operation by trackball unit via USB
- Built-in AIS interface for displaying targets
  MDC-7000 / 7900 series: up to 1000 targets
  MDC-7000P / 7900P series: up to 900 targets
- Built-in TT (ARPA) tracks up to 100 targets
- MDC-7000P / 7900P series complies with new IMO and IEC regulations
- C-MAP chart (NT+ / MAX) can be overlaid on the radar screen (Owner supplied)
  (MDC-7000P / 7900P series: C-MAP chart data is non official data)

Marine Radar 12", 15"

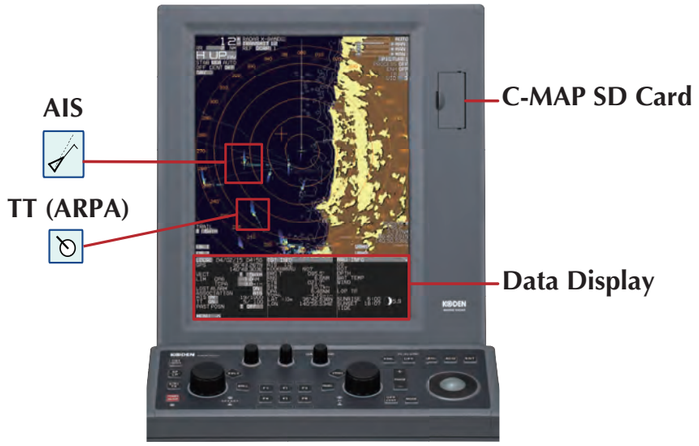
MDC-5200 series

MDC-5500 series

LCD monitor
(Owner supplied)

MDC-5000 series

Model	12-inch Display type				15-inch Display type				Black Box type			
Output Power	4 kW	6 kW	12 kW	25 kW	4 kW	6 kW	12 kW	25 kW	4 kW	6 kW	12 kW	25 kW
Standard model	MDC-5240	MDC-5260	MDC-5210	MDC-5220	MDC-5540	MDC-5560	MDC-5510	MDC-5520	–	MDC-5060	MDC-5010	MDC-5020
CE model	MDC-5204	MDC-5206	MDC-5212	MDC-5225	MDC-5504	MDC-5506	MDC-5512	MDC-5525	MDC-5004 MDC-5005	MDC-5006	MDC-5012	MDC-5025



Powerful. Precise. Professional Grade.

MDC-5200 / 5500 series have superior performance and functions of large grade radars.
High resolution XGA display with anti-reflection coating makes clear image.
Black Box type, MDC-5000 series are joined in lineup. It can be connected with XGA type display.

- Clear image with High-speed sampling in short range
- Auto gain with simple operation
- Improved visibility of the echoes by auto STC
- Simple and easy operation by trackball via USB
- Built-in AIS interface for displaying targets
  MDC-5200 / 5500 series : up to 1000 targets
  MDC-5000 series : up to 500 targets
- Built-in TT(ARPA) tracks
  MDC-5200 / 5500 series : up to 100 targets
  MDC-5000 series : up to 50 targets
- C-MAP chart (NT+ / MAX) is overlaid on the radar screen (Chart : owner supplied)

Marine Radar 8.4", 10.4"

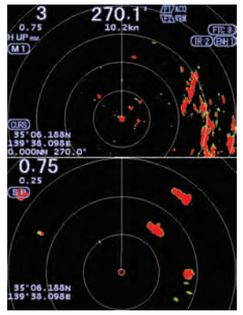
MDC-900 series
MDC-900A series

MDC-2000 series
MDC-2000A series

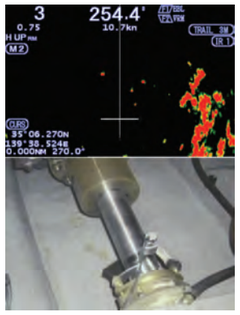
LCD monitor
Horizontal type / Vertical type
(Owner supplied)

MDC-2000BB series

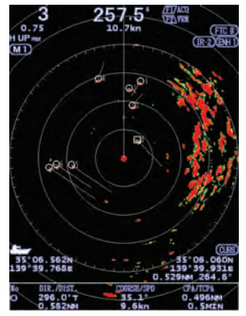
Model	8.4-inch Display type		10.4-inch Display type				Black Box type			
Output Power	4 kW (Radome)	4 kW	4 kW (Radome)	4 kW	6 kW	12 kW	4 kW (Radome)	4 kW	6 kW	12 kW
Standard model	MDC-941	MDC-940	MDC-2041	MDC-2040	MDC-2060	MDC-2010	–	–	MDC-2060BB	MDC-2010BB
CE model	MDC-941A MDC-904A	MDC-940A	MDC-2041A MDC-2004A	MDC-2040A	MDC-2006A	MDC-2012A	MDC-2003BB MDC-2005BB	MDC-2004BB	MDC-2006BB	MDC-2012BB



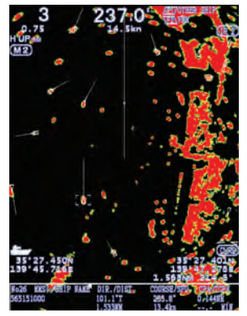
Dual range display



CCD camera input



ATA up to 50 targets as option



AIS interface up to 100 targets as option

Smart selection for safe navigation

Marine radar MDC-900 (A) series and MDC-2000 (A) series present performance and functions of larger professional grade radars.
The series features sophisticated Hyper Digital Processing (HDP™) technology for real-time presentation and superior target discrimination.
The real-time smooth head-up presentation offers smooth movement as bearing changes.
The superior target discrimination virtually eliminates unwanted noise to provide a clearer detailed image of targets and enhances the detection of smaller targets.
Also various functions on the compact body are of considerable utility for both fishing and pleasure boats.

- True Trail function clearly identifies moving targets from stationary targets like land or buoys
- Exclusive dual range radar function lets you have split-screen display of both long and short ranges simultaneously. It is like having two radars in one
- The LCD and acrylic sheet with Anti-Reflection coated filter are bonded directly. It increases visibility in direct sunlight and prevents condensation (MDC-900 (A) / 2000 (A) series)
- MDC-2000BB series: Black Box type, it can be connected with VGA type display (Owner supplied)
- ATA tracks up to 50 targets (Option)
- AIS interface displays up to 100 AIS targets (Option)
- Accepts CCD camera input, with which you can watch above or below deck any time you are steering

RADAR*pc*

MDS-1100R

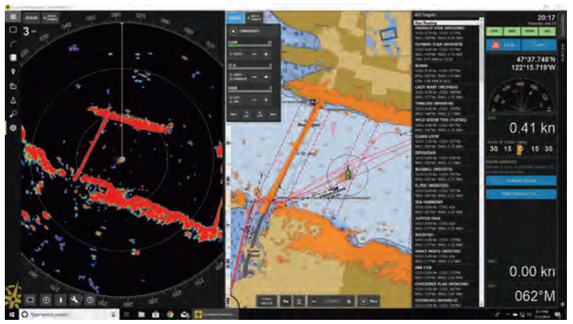
RADAR*pc*

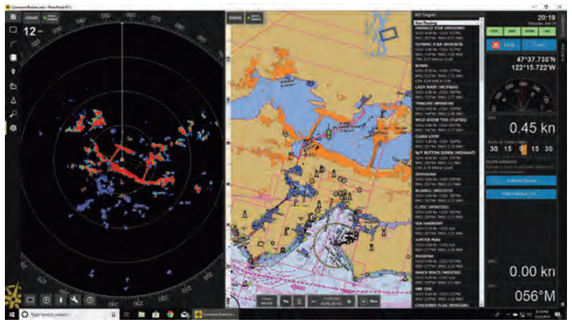
Antenna - Scanner unit

Control Box

Your computer
(Owner supplied)

MDS-1100R series





Screen images

Output Power	4 kW (Radome)	4 kW	6 kW	12 kW	25 kW
Standard model	–	–	MDS-1160R	MDS-1110R	MDS-1120R
CE model	MDS-1103R MDS-1105R	MDS-1104R	MDS-1106R	MDS-1112R	MDS-1125R

RADAR*pc* turns your PC charting system into a full featured real-time radar system.

- **Great Range of Antenna-Scanners**
  The MDS-11R Control Box can be combined with great range of Koden Antenna - Scanners.
- **High speed data communication**
  Ethernet data communication provides interface capability with most PCs.
  Multi PC network system can be constructed.
- **Compatible with previous model MDS-5R / 6R**

Marine Radar / RADAR*pc* Antenna- Scanner

Radome for Standard Model

	
Type	RB715A
Specifications:	
Antenna length	2 feet
Output power (Peak)	4 kW
Output frequency	9410 ± 30 MHz
Horizontal beam width	3.9°
Vertical beam width	25°
Rotation	24 rpm or 48 rpm
IF center frequency	60 MHz
Environmental:	
Operating temperature	-25°C to + 55°C
Water protection	IPX6 (IEC 60529)
Display / processor connections for marine Radar:	
8.4" color LCD: MRD-103	MDC-941
10.4" color LCD: MRD-104	MDC-2041
Processor unit for VGA LCD Display: MRM-112	-
Processor unit for XGA LCD Display: MRM-110	-
12" color LCD: MRD-111	-
15" color LCD: MRD-109	-
19" color LCD: MRD-108	-
19" color LCD: MRD-108P	-
Processor unit for SXGA LCD Display: MRM-108	-
Processor unit for SXGA LCD IMO Display: MRM-108P	-
RADAR*pc*	-

Radome for CE Model

		
Type	RB804	RB805
Specifications:		
Antenna length	1.2 feet	2 feet
Output power (Peak)	4 kW	
Output frequency	9410 ± 30 MHz	
Horizontal beam width	5.9°	3.9°
Vertical beam width	25°	
Rotation	24 rpm or 48 rpm	
IF center frequency	60 MHz	
Environmental:		
Operating temperature	-25°C to + 55°C	
Water protection	IPX6 (IEC 60529)	
Display / processor connections for marine Radar:		
8.4" color LCD: MRD-103A	MDC-904A	MDC-941A
10.4" color LCD: MRD-104A	MDC-2004A	MDC-2041A
Processor unit for VGA LCD Display: MRM-112	MDC-2003BB	MDC-2005BB
Processor unit for XGA LCD Display: MRM-110	-	MDC-5005
12" color LCD: MRD-111	-	-
15" color LCD: MRD-109	-	-
19" color LCD: MRD-108	-	-
19" color LCD: MRD-108P	-	-
Processor unit for SXGA LCD Display: MRM-108	-	-
Processor unit for SXGA LCD IMO Display: MRM-108P	-	-
RADAR*pc*	MDS-1103R	MDS-1105R

Open antenna for Standard Model

			
Type	RB716A	RB717A	RB718A	RB719A
Specifications:				
Antenna length	3 or 4 feet	4 or 6 feet	4, 6 or 9 feet**	4***, 6 or 9 feet**
Output power (Peak)	4 kW	6 kW	12 kW	25 kW
Output frequency	9410 ±30 MHz			
Horizontal beam width	3 ft: 2.5°, 4 ft: 1.8°	4 ft: 1.8°, 6 ft: 1.2°	4 ft: 1.8°, 6 ft: 1.2°, 9 ft: 0.8°	4 ft: 1.8°, 6 ft: 1.2°, 9 ft: 0.8°
Vertical beam width	22°	22°	4 ft: 22°, 6 ft: 22°, 9 ft: 25°	4 ft: 22°, 6 ft: 22°, 9 ft: 25°
Rotation	24 or 48 rpm			
IF center frequency	60 MHz			
Environmental:				
Operating temperature	-25°C to + 55°C			
Water protection	IPX6 (IEC 60529)			
Display / processor connections for marine Radar:				
8.4" color LCD: MRD-103	MDC-940*	-	-	-
10.4" color LCD: MRD-104	MDC-2040	MDC-2060	MDC-2010	-
Processor unit for VGA LCD Display: MRM-112	-	MDC-2060BB	MDC-2010BB	-
Processor unit for XGA LCD Display: MRM-110	-	MDC-5060	MDC-5010	MDC-5020
12" color LCD: MRD-111	MDC-5240	MDC-5260	MDC-5210	MDC-5220
15" color LCD: MRD-109	MDC-5540	MDC-5560	MDC-5510	MDC-5520
19" color LCD: MRD-108	-	MDC-7960	MDC-7910	MDC-7920
19" color LCD: MRD-108P	-	-	-	-
Processor unit for SXGA LCD Display: MRM-108	-	MDC-7060	MDC-7010	MDC-7020
Processor unit for SXGA LCD IMO Display: MRM-108P	-	-	-	-
RADAR*pc*	-	MDS-1160R	MDS-1110R	MDS-1120R

* 48 rpm requires for input voltage of 24 VDC or more **9ft antenna is available for MDC-5010, 5020, 5220, 5520, 7910, 7920, 7010, 7020.

*** 4ft antenna is available for MDC-5020, 7920 and 7020

Open antenna for CE Model

					
Type	RB806	RB807	RB808	RB809	RB808P	RB809P
Specifications:						
Antenna length	3, 4 or 6 feet***	4 or 6 feet	4, 6 or 9 feet**	4, 6 or 9 feet**	4, 6 or 9 feet	
Output power (Peak)	4 kW	6 kW	12 kW	25 kW	12 kW	25 kW
Output frequency	9410 ±30 MHz					
Horizontal beam width	3 ft: 2.5°, 4 ft: 1.8°, 6 ft: 1.2°	4 ft: 1.8°, 6 ft: 1.2°	4 ft: 1.8°, 6 ft: 1.2°, 9 ft: 0.8°	4 ft: 1.8°, 6 ft: 1.2°, 9 ft: 0.8°	4 ft: 1.8°, 6 ft: 1.2°, 9 ft: 0.8°	
Vertical beam width	22°	22°	4 ft: 22°, 6 ft: 22°, 9 ft: 25°	4 ft: 22°, 6 ft: 22°, 9 ft: 25°	4 ft: 22°, 6 ft: 22°, 9 ft: 25°	
Rotation	24rpm or 48rpm		24 rpm or 42rpm		24 rpm	
IF center frequency	60 MHz					
Environmental:						
Operating temperature	-25°C to + 55°C					
Water protection	IPX6 (IEC 60529)					
Display / processor connections for marine Radar:						
8.4" color LCD: MRD-103A	MDC-940A*	-	-	-	-	-
10.4" color LCD: MRD-104A	MDC-2040A	MDC-2006A	MDC-2012A	-	-	-
Processor unit for VGA LCD Display: MRM-112	MDC-2004BB	MDC-2006BB	MDC-2012BB	-	-	-
Processor unit for XGA LCD Display: MRM-110	MDC-5004	MDC-5006	MDC-5012	MDC-5025	-	-
12" color LCD: MRD-111	MDC-5204	MDC-5206	MDC-5212	MDC-5225	-	-
15" color LCD: MRD-109	MDC-5504	MDC-5506	MDC-5512	MDC-5525	-	-
19" color LCD: MRD-108	-	MDC-7906	MDC-7912	MDC-7925	-	-
19" color LCD: MRD-108P	-	-	-	-	MDC-7912P	MDC-7925P
Processor unit for SXGA LCD Display: MRM-108	-	MDC-7006	MDC-7012	MDC-7025	-	-
Processor unit for SXGA LCD IMO Display: MRM-108P	-	-	-	-	MDC-7012P	MDC-7025P
RADAR*pc*	MDS-1104R	MDS-1106R	MDS-1112R	MDS-1125R	-	-

* 48 rpm requires for input voltage of 24 VDC or more **9ft antenna is available for MDC-5012, 5025, 5512, 5525, 7912, 7925, 7012, and 7025. (Not available for European model.)

*** 6ft antenna is available for MDC-5004, MDC-5204 and MDC-5504

Echo Sounder

CVS-126
CVS-128
CVS-1410 / 1410HS
NEW CVS-1420
CVS-702D
CVS-705D
CVS-707D
CVS-128B
CVS-1410B
CVS-872D
CVS-875D
CVS-877D

Koden Digital and Broadband technology

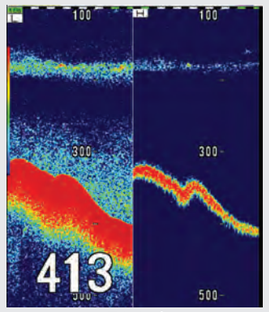
Wide range, wide variety of uses

Koden offers a wide range of echo sounders which are designed for a variety of fishing styles from shallow to deep sea applications. Koden Echo Sounders have a unique signal processing system which aids in finding of weak echo of fish school in any ocean conditions.

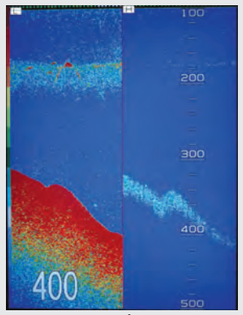
Digital

Koden Digital Filtering (KDF™)

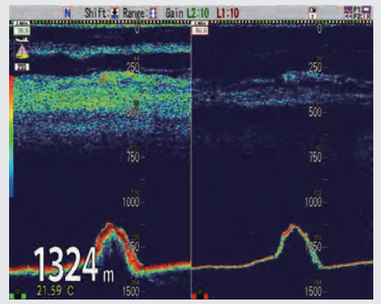
The Koden Digital Filtering (KDF™) feature eliminates clutter by filtering out the noise to provide a clear detailed image that enhances fish targets in shallow and deep sea.



Digital



Analog

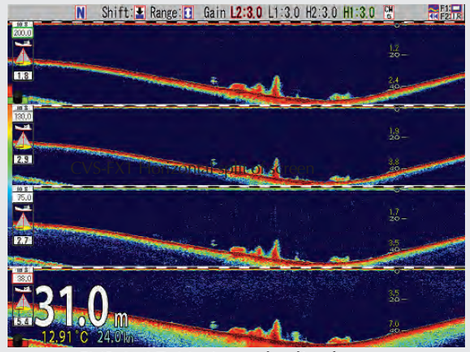


Deep sea

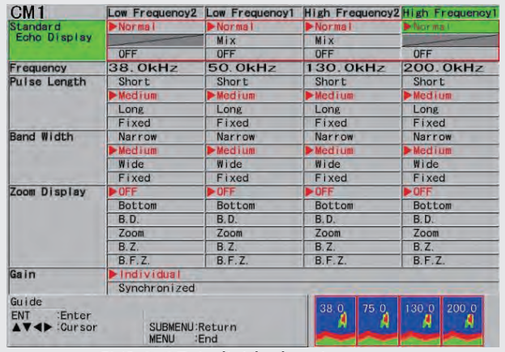
Broadband

What are broadband echo sounders?

Broadband digital echo sounders can transmit and receive over a wide range of frequency with only one transducer.
In the past, available frequency for an echo sounder has been preset such as 50 kHz and 200 kHz depending on connected transducer.
However, Koden broadband digital echo sounders can search from shallow to deep sea with optimized performance in a given environment, water condition or style of fishing by selecting the most suitable frequencies randomly in 0.1 kHz step.
Koden CVS-87xD series sounders have the ability to transmit and display four separate frequencies simultaneously for different views of sea bottom composition, structure, fish and their relation to one another. CVS-128B and CVS-1410B can display two separate frequencies in the same manner.
This frequency adjustability also provides clear targets and eliminates interference from nearby vessels without conventional interference rejection function.



CVS-872D Horizontal split of screen



CVS-872D Individual setting menu

Echo Sounder Digital • Echo Sounder Digital Broadband

DIGITAL

CVS-126
5.7 inch

CVS-128
8.4 inch

NEW

CVS-1410 / 1410HS / 1420
10.4 inch (3 kW)

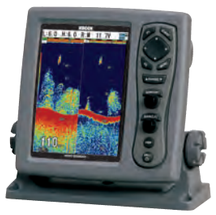
CVS-702D
12.1 inch

CVS-705D
15 inch

CVS-707D
17 inch

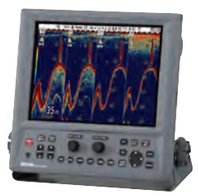
For European model, please contact your nearest distributor.

Broadband

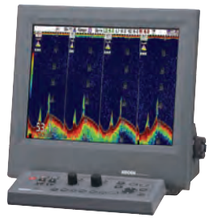


CVS-128B
8.4 inch

CVS-1410B
10.4 inch

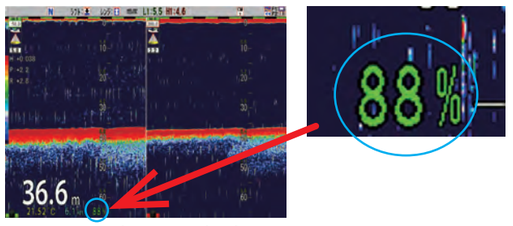


CVS-872D
12.1 inch

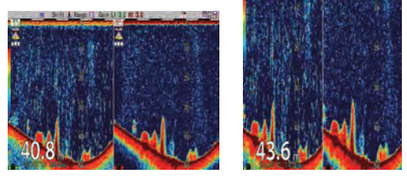


CVS-875D
15 inch

CVS-877D
Black Box



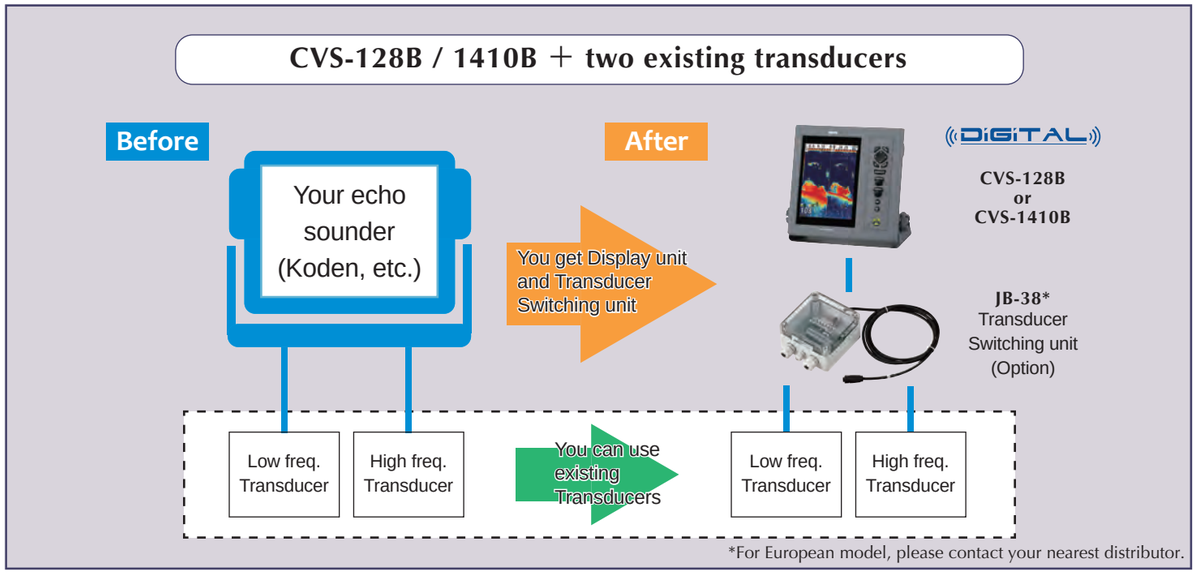
Bottmom Hardness Display by % (CVS-872D / 875D / 877D)



Horizontal / Vertical screen switching (CVS-877D)

Latest technology with minimum out of pocket expense

You can exchange from your existing Echo Sounder to the latest Digital Echo Sounder CVS-128B / 1410B and keep using your existing transducers (from 24 to 210kHz) by utilizing Transducer Switching unit.



*For European model, please contact your nearest distributor.

Detection area display

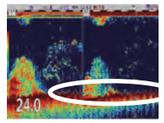
Know exactly the bottom area covered by the low and high frequency sound beams. This can help you target the fish directly under the boat or off to the side.

Fishing Hot Spot

With data input from external GPS sensor, it can lead you back to your favorite fishing spots or other previously saved positions in memory.

Heaving Compensation

When a vessel moves up and down due to heaving, the bottom image looks bumpy as if the bottom is waving. By using a heaving compensation, the echo sounder can display the actual bottom image by cancelling the heave factor. (Requires a sensor to output heave sentence)



Normal image

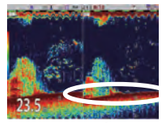


Image after Heaving Compensation

Store Image

Stores screen images in built-in memory to recall the image later by a single touch.
Up to 500 screen images : CVS-872D / 875D / 877D, CVS-702D / 705D / 707D
Up to 10 screen images : CVS-126, CVS-128 / 128B, CVS-1410 / 1410HS / 1410B / 1420

Condition Memory

Up to six settings created by user can be stored in the Condition Memory (CM). The user can recall each setting quickly by simply pushing the CM keys.
It is like having six echo sounders in one. (CVS-872D / 875D / 877D, CVS-702D / 705D / 707D)

Transducer

TD-500T-2B
for CVS-126 / 128

TD-500T-3B
for CVS-126 / 128

TD-500T-5
for CVS-126

NGM100-200-12L
for CVS-1420

TD-501T-3B
for CVS-128 / 1420
CVS-872D / 875D / 877D

TDM-071* / 091D*
for CVS-128B / 1410B
CVS-872D / 875D / 877D

TD-501C
for CVS-128 / 1410 / 1420
CVS-872D / 875D / 877D

TDM-031D
for CVS-1410HS
CVS-872D / 875D / 877D

TDM-052A* / 062A* / 083*
for CVS-872D / 875D / 877D

TD-754
for CVS-1420
CVS-702D / 705D / 707D
CVS-872D / 875D / 877D

TD-756
for CVS-702D / 705D / 707D

TD-286 / 506F
for CVS-702D / 705D / 707D

TD-66
for CVS-702D / 705D / 707D
CVS-872D / 875D / 877D

TD-284A / 404T / 504F / 504T
for CVS-1420
CVS-702D / 705D / 707D
CVS-872D / 875D / 877D

* Broadband type

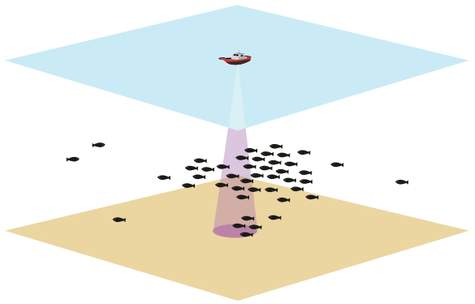
Sonar

KDS-6000BB
NEW KDS-5500BB
KDS-5000BB
ESR-145

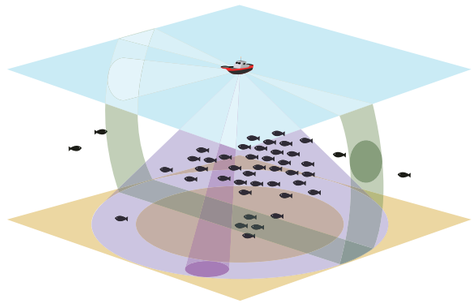
What is the difference between the sonar and the echo sounder?

The echo sounder always detects beneath the ship with the transducer installed at bottom of the ship.
The sonar is a multi-directional echo sounder with a revolving and tilting transducer emitting and receiving ultrasonic waves in various directions.
The sonar can search 360-degree direction area automatically and the tilt angle can be adjusted from +5 to -90 degrees too.
A remarkable feature of the sonar is that the transducer can go down toward the sea bottom automatically and operator can control the transducer.
The operator can adjust the direction and tilt angle for detection as flexibly.

Echo Sounder



Sonar



Digital Searchlight Sonar

Advanced Broadband Technology

KDS-6000BB is world first Broadband searchlight sonar. With the broadband transducer equipped as standard, the most suitable output frequency can be selected in 0.1 kHz step depending on the fishing method and the target species from closer range to longer range.
Flexible frequency selection enables user to tune outside of other vessel interference frequency, providing much cleaner image.

New line-up 80 kHz / 140 kHz / 180 kHz

KDS-5500BB is a fixed frequency digital sonar.
Higher frequencies increase the resolution and provide detailed image expression. Lower frequencies increase sensitivity at long distances and enable detection at deeper depths. (Select frequency at time of purchase)

- Change frequency quickly and easily. (KDS-6000BB)
- Massive improvement in scan speed, making detection of fish schools much faster
- Stabilizer function to reduce the sonar image disturbance caused by the pitch and roll of the vessel. (AS model)
- All setup and user settings changed instantly by utilizing Condition Memory function
- Short stroke model available for limited space installation

Black Box

Processor unit

Motion sensor
(AS model)

17 inch LCD Monitor (Option)

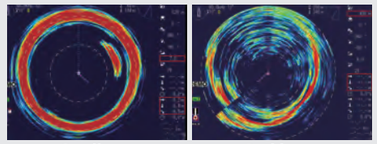
Operation unit

KDS-6000BB Broadband
NEW KDS-5500BB DIGITAL

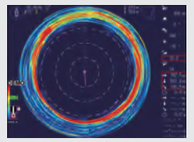
Short stroke Normal stroke

Hull unit

80 kHz screen images



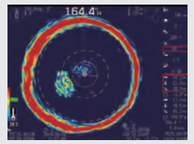
Sardine Red bream



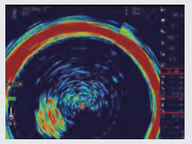
Depth of 680m

KDS-5500BB

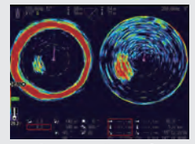
Six different presentation modes



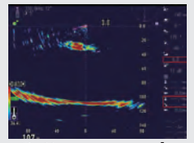
Sonar mode
Search around the ship



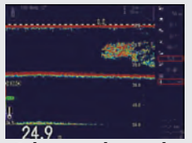
Off-center mode
Show more information of ahead



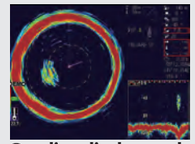
Sonar x 2 mode
Two different frequencies



Bottom scan mode
Reflected echo
from underwater and sea bottom



Echo sounder mode
Image like Echo sounder



One line display mode
Show vertical Sonar image like an echo sounder image in the Sub-screen

Digital Searchlight Sonar

DIGITAL

Processor unit

Junction box

Motion sensor
(AS model)

17 inch LCD Monitor (Option)

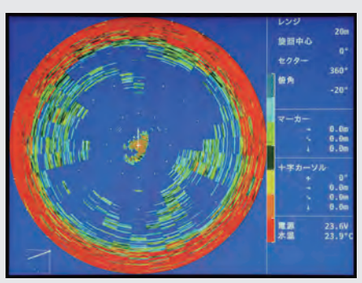
Operation unit

Hull unit

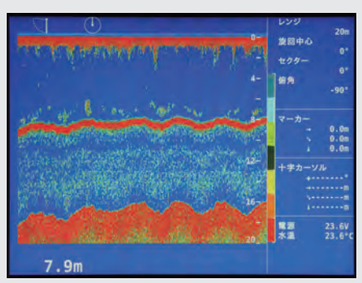
KDS-5000BB

- DSP technology (High Resolution by digital control)
- Space saving installation
- Black Box sonar connect to any XGA type display (Owner supplied)
- Easy operation
- Stabilizer function to reduce the sonar image disturbance caused by the pitch and roll of the vessel. (AS model)

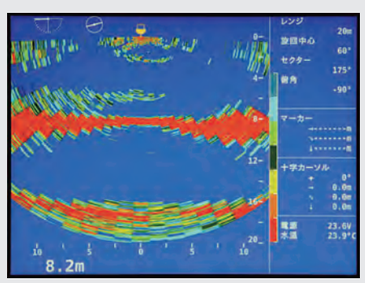
Presentation modes



Sonar mode
at 180 kHz



Echo sounder mode
at 180 kHz



Bottom scan mode
at 180 kHz

Searchlight Sonar

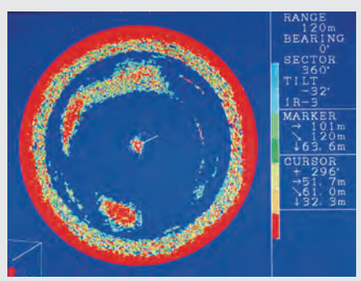
Affordable professional sonar
Compact design for easy installation

ESR-145

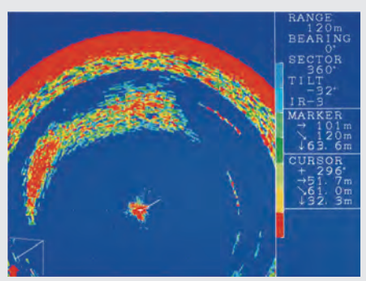
Hull unit

- Newly designed to fit small fishing boats
- Compact Hull unit for space saving installation
- Audio kit is available
- Remote controller and speaker are available as option

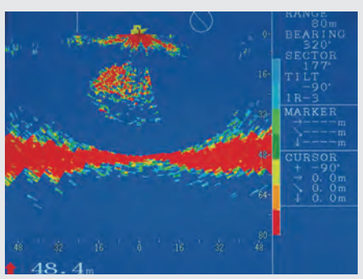
Presentation modes



Sonar mode



Off-center mode



Bottom scan mode

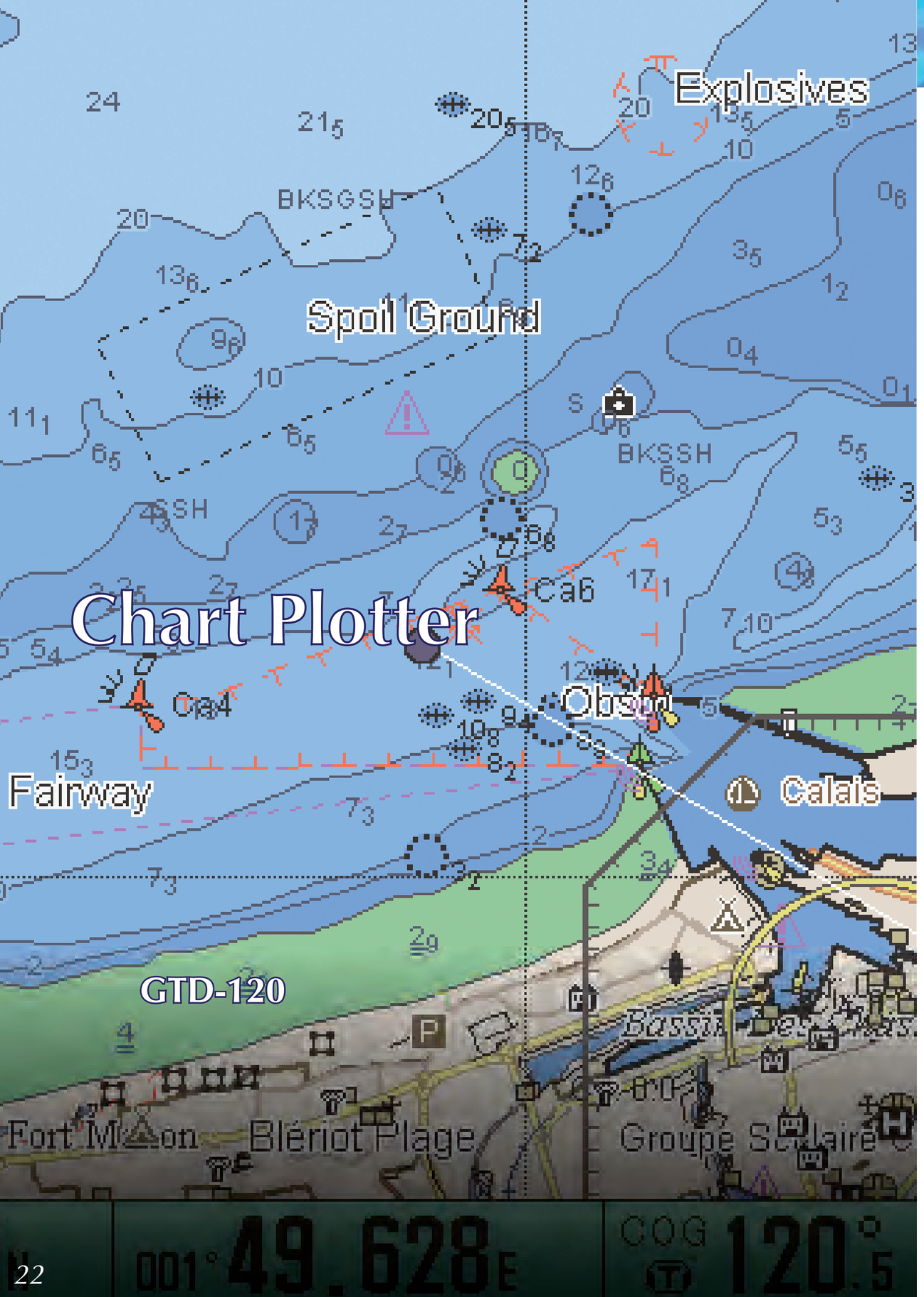


Chart Plotter

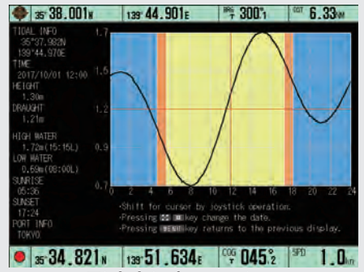
Professional plotter with impressive operability
Fully supports to improve your fishing efficiency

Expandable functionality is achieved when connected with Radar with ATA, AIS receiver, and etc. Substantially increased number of records, such as marks, plots, tracks,and etc. Stored data from previous models GTD-110 / 150 can be transferred without change.

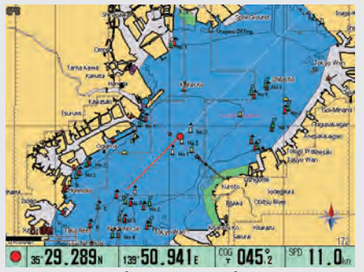
- 10.4 inch High brightness LCD
- User-friendly Operation
- Various display screen such as Bird view and dual range display
- SD card capable, save user data such as marks, tracks and settings
- Various marks and greater numbers of ship's tracks
- Useful information display in the information window on the screen
- AIS display function
- C-MAP MAX chart Ready (Chart: Owner supplied)

GTD-120

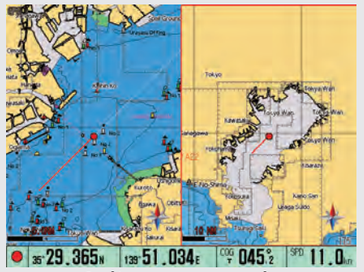
Quick info



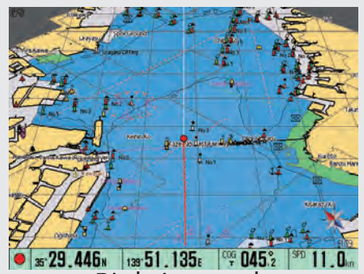
Tidal information



Plotter mode



Split screen mode



Bird view mode

GPS Navigator / Compass / Sensor

KGP-922
KGP-915
KGC-300
GPS-21

GPS Navigator, Compass and Sensor for highly-accurate positioning

Koden GPS products support your safe navigation in various fields of Commercial, Fishing and Pleasure. In addition to the GPS, they output accurate position or heading information to your Radar, Echo Sounder, Plotter, and Autopilot for safer and smoother navigation by the differential information from the Satellite Based Augmentation System (SBAS), WAAS in the North America and EGNOS in Europe, or the Russian satellite system GLONASS (KGP-915). SBAS is very effective for pinpoint fishing, harbor approaching and narrow channel running.

GPS Navigator

KGP-922

- Meeting with IMO requirements and IEC regulations
- Eye-friendly 4.3-inch high-resolution Color LCD
- Numeric keypad mounted
- DGPS enabled by connecting an external beacon receiver (owner supplied)
- SBAS (Satellite Based Augmentation System) enabled
- Ethernet port for connection to a LAN

KGP-922
(GPS / SBAS)

KGP-915

- Eye-friendly 4.3-inch high-resolution Color LCD
- Numeric keypad mounted
- Waypoint memory 10,000 points
- Route memory 100 × 50 point
- GLONASS (the Russian satellite system) compatible

KGP-915
(GPS / SBAS / GLONASS)

GPS Compass

KGC-300

- IMO certified GPS Compass (THD) and GPS Navigator
- Highly accurate heading, position and speed data
- Stable and fast tracking capability
- Aesthetically pleasing 4.3-inch high resolution Color LCD
- Backup sensor built-in
- 5 heading data output ports
- SBAS (WAAS / EGNOS) enabled

KGC-300

GPS Sensor

GPS-21

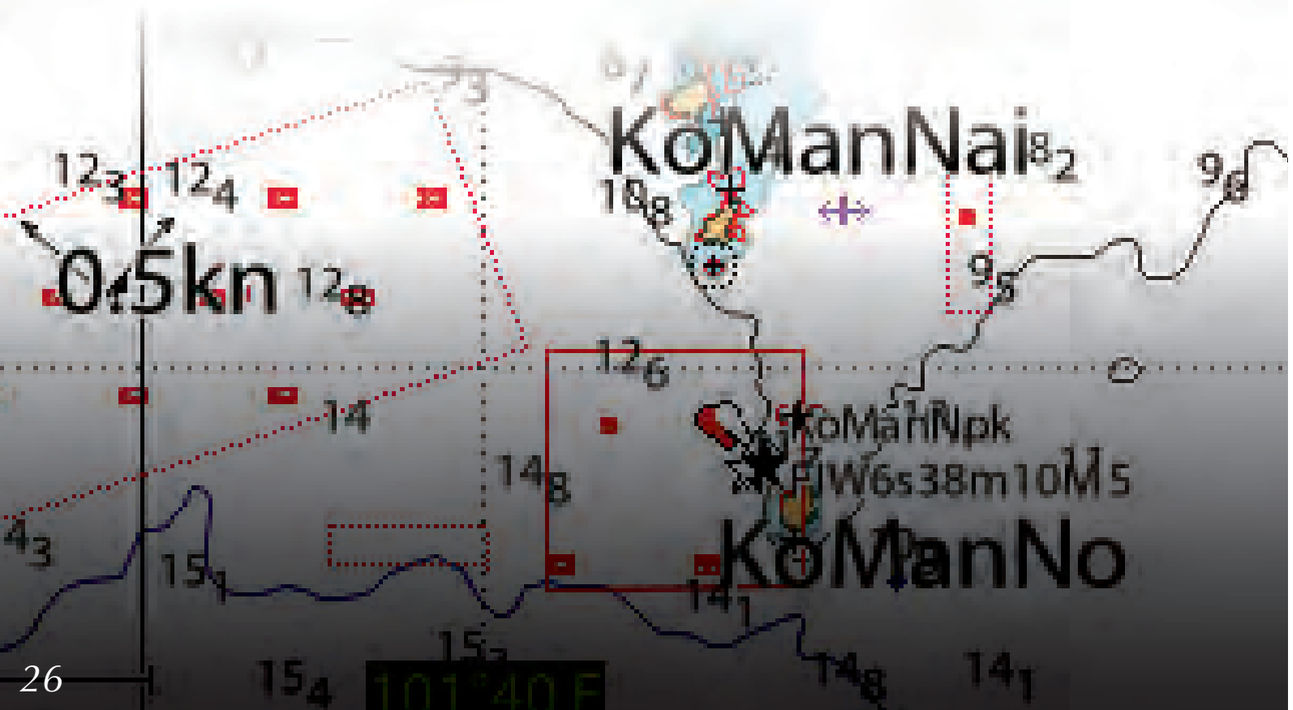
- Seamless precise positioning anywhere, anytime
- 24 channel parallel
- SBAS (WAAS / EGNOS), QZSS (L1S) enabled

GPS-21

AIS Transceiver / Remote Display

KAT-330

KRD-10



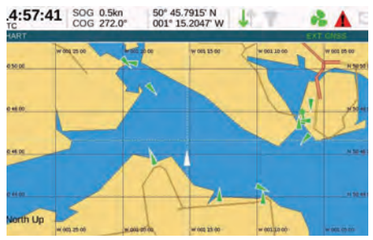
Class A / Inland AIS Transceiver

KAT-330

World's most sophisticated AIS Transceiver.

- Meets IMO Resolutions: A.694(17), MSC191(79), MSC.74(69), ITU-R M.1371-5(2014), MSC.302(87)
- Meets FCC, USCG, IC, TC, CCNR (Inland AIS)
- Chart display available by C-MAP MAX (on a Non-SOLAS or Inland vessel only)
- Simple menu display with icons
- Water and weather proof (IPX6 & IPX7)

KAT-330



Chart

Target List

Target Plot

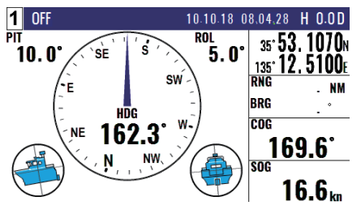
Remote Display

KRD-10

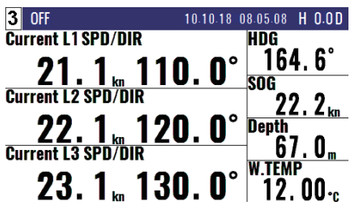
System capable of displaying wide range of NMEA Information.
GPS Compass, Weather Station, Wind Anemometer,
Rudder and much more.

- Quick access Numeric Panel
- 19 display modes available to choose from
- Up to 4 ports available with connecting optional junction box
- Switchable between day mode and night mode

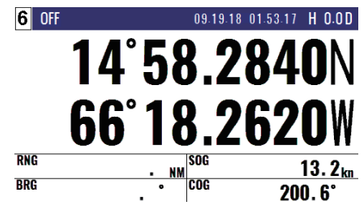
KRD-10



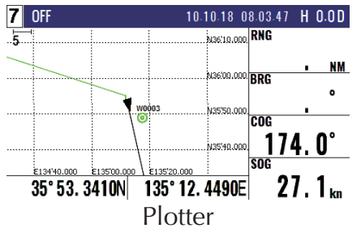
Compass



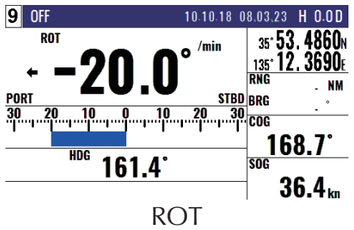
Current



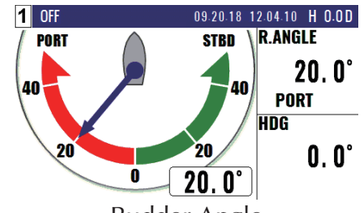
Navigation



Plotter



ROT



Rudder Angle

Multi Function Display

KSD-1100

NEW KSD-1210

Multi Function Display

The touch screen makes it easy to use! Easy to see! Affordable! AIS Class B Transceiver integrated Multi Function Display

KSD series Multi Function Display provide an intelligent system and multi-task operation networking solution. It supports Ethernet, Wi-Fi to realize update software online. The display is clear, the performance is superior. It supplies great control experience.

KSD-1100
10.1 inch

NEW

KSD-1210
21.5 inch

- **AIS Class B**
  Built-in Class B AIS transceiver essential for safe navigation.
- **Various screen displays**
  AIS radar screen which is easy to get the AIS information using ring markers / Dashboard to display various data / NAVI and PLOT data management / Tide information, etc., are possible.
- **Video surveillance**
  By installing network cameras*, it is possible to monitor onboard and outboard conditions up to four screens.
- **Chart display**
  Support variety charts of C-MAP MAX, original chart, ENC chart.
  It also supports to overlay satellite images on the chart.
- **Easy operation**
  Easy operation with touch screen and mouse*
  The KSD-1100 is equipped with an operation panel.
- **NMEA2000 Certified**
  NMEA2000 offers improved data transfer rates, ease of initial setup, and more.

*Owner supplied

Multi Function Display

Built-in AIS Class B Transceiver

Equipped with AIS (Automatic Identification System) Class B essential for safe navigation. The AIS target will be overlaid on chart with customer setting. AIS class B transceiver automatically transmit the own ship position, speed, course, MMSI, SMS etc.

Presentation modes

AIS Radar

AIS targets overlaid on the chart, variable range around own ship is shown by setting radius. It is for user reference easily to observe AIS targets real-time dynamic information.

AIS Group Management

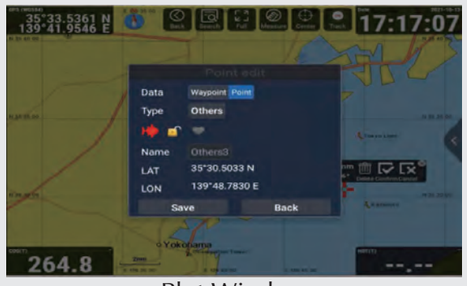
AIS group management helps user to do real-time monitoring COG, SOG, HDG, moving distance and other dynamic information of each member by groups.

Chart Plotter

Compact and easy to use chart plotter.
There are three kinds of chart ; C-MAP, ENC and original chart. (C-MAP & ENC are owner supply.)

Presentation modes

Original Chart



Plot Window

C-MAP MAX

ENC

Dual monitor

You can connect to a sub-monitor to display a screen different from the main screen.

Dual screen images

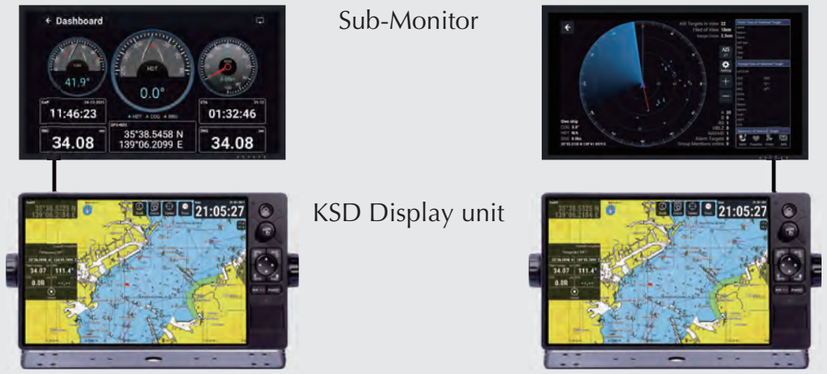


Chart plotter and Dash Board

Chart plotter and AIS Radar

Other screen images

AIS Target on Chart

Sailing Data

AIS List

Comfortable operations

Screen Operation

Panel Operation

Mouse Operation

Coming Soon

Display echo sounder screen by connecting with KSD-1100 / 1210

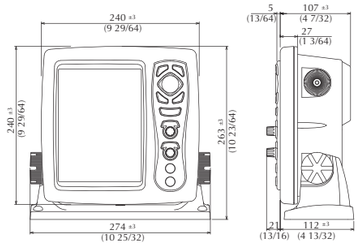
KED-1000
Black Box Echo Sounder

Dimensions and Weight

Marine Radar 8.4″ MDC-900 series, 10.4″ MDC-2000 series, MDC-2000BB series

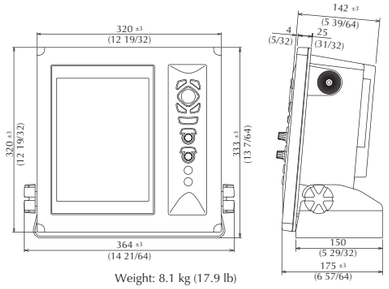
Unit: mm (inch)

Display unit:
MRD-103 / 103A: MDC-900 series



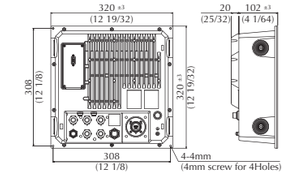
Weight : 3.4 kg (7.5 lb)

Display unit:
MRD-104 / 104A: MDC-2000 series



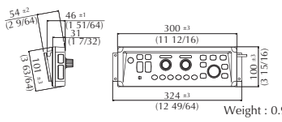
Weight: 8.1 kg (17.9 lb)

Processor unit:
MRM-112: MDC-2000BB series



Weight : 5.1kg (11.5lb)

Operation unit:
MRO-112: MDC-2000BB series

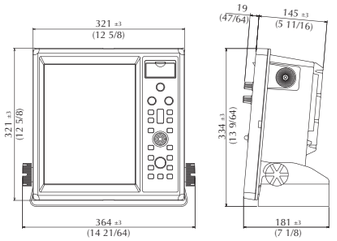


Weight : 0.94kg (2.07lb)

Marine Radar 12″ MDC-5200 series, 15″ MDC-5500 series, MDC-5000 series

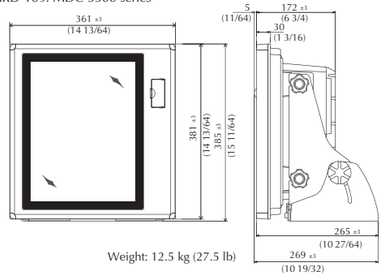
Unit: mm (inch)

Display unit:
MRD-111: MDC-5200 series



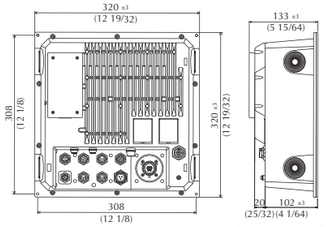
Weight: 7.9 kg (17.5 lb)

Display unit:
MRD-109: MDC-5500 series



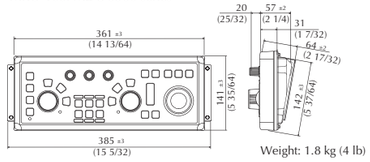
Weight: 12.5 kg (27.5 lb)

Processor unit:
MRM-110: MDC-5000 series



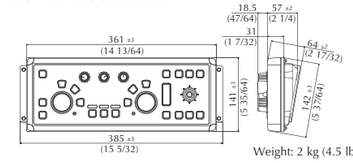
Weight: 5.1 kg (11.5 lb)

Operation unit:
MRO-108: MDC-5500 series



Weight: 1.8 kg (4 lb)

Operation unit:
MRO-110: MDC-5000 series

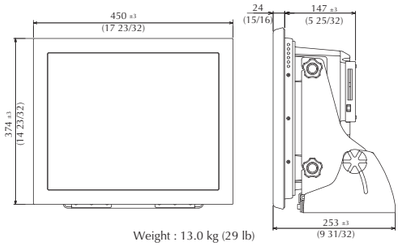


Weight: 2 kg (4.5 lb)

Marine Radar 19″ MDC-7000 / 7900 / 7000P / 7900P series

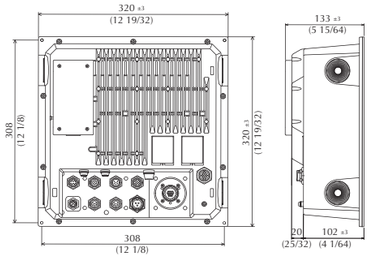
Unit: mm (inch)

Display unit:
MRD-108: MDC-7900 series
MRD-108P: MDC-7900P series



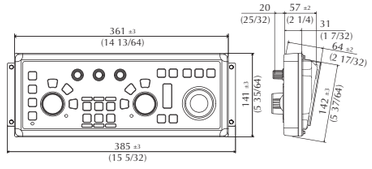
Weight : 13.0 kg (29 lb)

Processor unit:
MRM-108: MDC-7000 series
MRM-108P: MDC-7000P series



Weight : 5.1 kg (11.5 lb)

Operation unit:
MRO-108: MDC-7000/7900 series
MRO-108P: MDC-7000P/7900P series

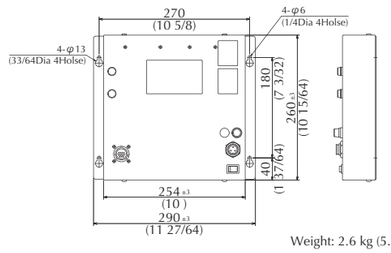


Weight : 1.8 kg (4 lb)

RADAR*pc* Control Box

Unit: mm (inch)

MDS-11R

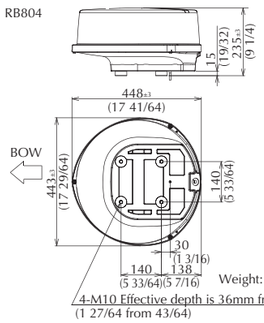


Weight: 2.6 kg (5.8 lb)

Antenna - Scanner unit

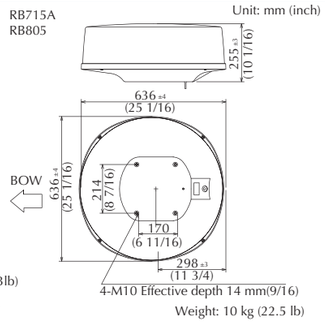
Unit: mm (inch)

RB804



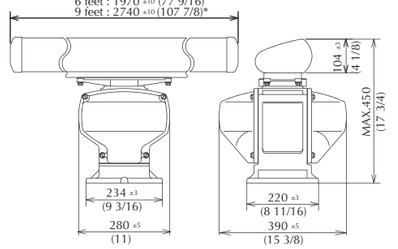
Weight: 8.3kg (18.3lb)

RB715A
RB805



Weight: 10 kg (22.5 lb)

RB716A / RB717A / RB718A with RW701A-03 / 04 / 06 / RW701B-09
RB806 / RB807 / RB808 with RW701A-03 / 04 / 06 / RW701B-09*



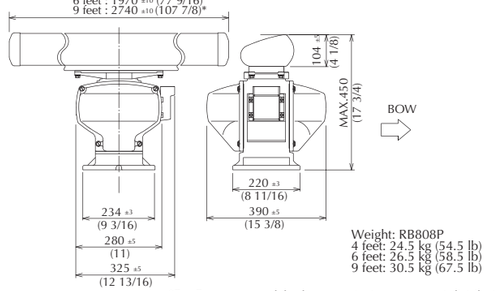
Weight: RB716A / RB806
3 feet: 21.5 kg (47 lb)
4 feet: 22.5 kg (50 lb)
6 feet: 24.5 kg (54 lb)

Weight: RB717A / RB807
4 feet: 24.1 kg (53 lb)
6 feet: 26.1 kg (58 lb)

Weight: RB718A / RB808
4 feet: 24 kg (53 lb)
6 feet: 26 kg (57.5 lb)
9 feet: 30 kg (66.5 lB)

RB808P with RW701A-04 / 06 / RW701B-09*

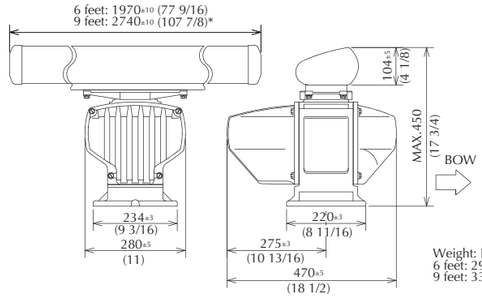
Unit: mm (inch)



Weight: RB808P
4 feet: 24.5 kg (54.5 lb)
6 feet: 26.5 kg (58.5 lb)
9 feet: 30.5 kg (67.5 lb)

*For European model, please contact your nearest distributor.

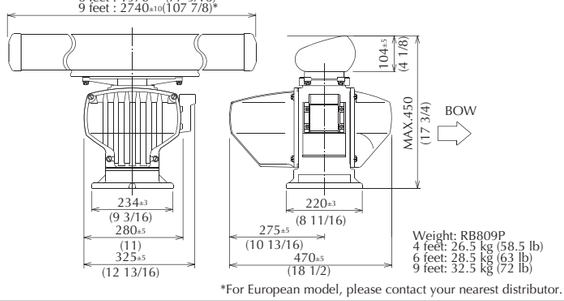
RB719A with RW701A-06 / RW701B-09
RB809 with RW701A-06 / RW701B-09*



Weight: RB719A / RB809
6 feet: 29 kg (64 lb)
9 feet: 33 kg (73 lb)

RB809P with RW701A-04 / 06 / RW701B-09*

Unit: mm (inch)



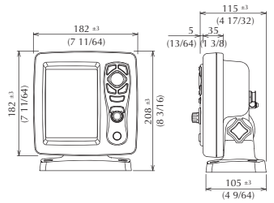
Weight: RB809P
4 feet: 26.5 kg (58.5 lb)
6 feet: 28.5 kg (63 lb)
9 feet: 32.5 kg (72 lb)

*For European model, please contact your nearest distributor.

Echo Sounder CVS-126, CVS-128 / 128B, CVS-1410 / 1410HS / 1410B / 1420

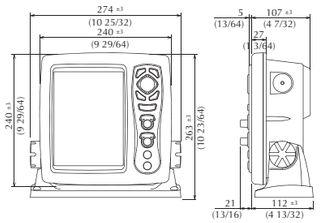
Unit: mm (inch)

Display unit:
CVS-126



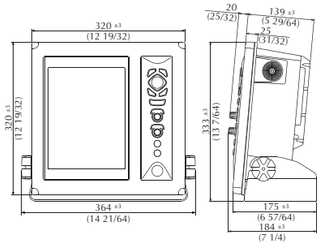
Weight : 1.3 kg (2.9 lb)

Display unit:
CVS-128 / 128B



Weight : 3.5 kg (7.7 lb)

Display unit:
CVS-1410 / 1410HS / 1410B / 1420



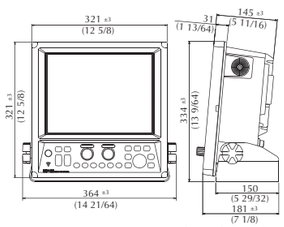
Weight : 7.5kg (16.6lb)

Dimensions and Weight

Echo Sounder CVS-872D / 875D / 877D, CVS-702D / 705D / 707D

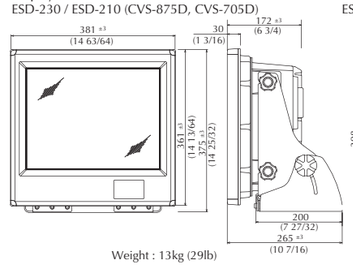
Unit: mm (inch)

Display unit:
CVS-872D, CVS-702D



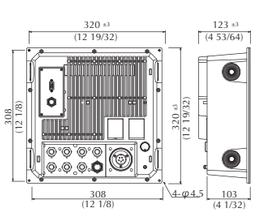
Weight : 9.1kg (20.1lb)

Display unit:
ESD-230 / ESD-210 (CVS-875D, CVS-705D)



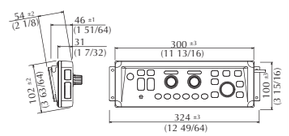
Weight : 13kg (29lb)

Processor unit:
ESM-230 / ESM-210 (CVS-877D, CVS-707D)



Weight : 5.6kg (12.5lb)

Operation unit:
ESO-200 (CVS-875D/877D, CVS-705D/707D)

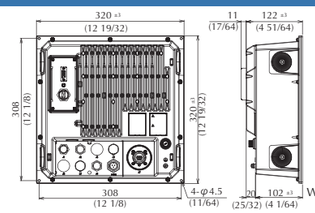


Weight : 0.7kg (1.55lb)

Sonar KDS-6000BB / KDS-5500BB

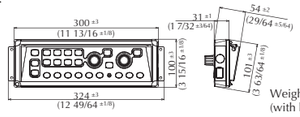
Unit: mm (inch)

Processor unit:
DPU-610
(KDS-6000BB)
DPU-551
(KDS-5500BB)



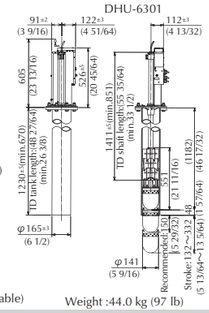
Weight : 5.1kg (11.5lb)

Operation unit:
DOU-620



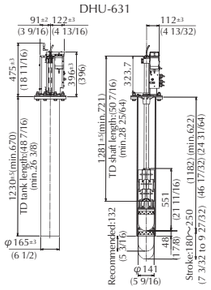
Weight : 1.1kg (2.5lb)
(with base and 5M connecting cable)

Hull unit:
Normal stroke
DHU-6301



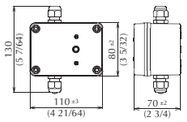
Weight :44.0 kg (97 lb)

Short stroke
DHU-631



Weight : 42.3 kg (93.27 lb)

TD Position alarm / Ext. Sync. Box:
JB-36

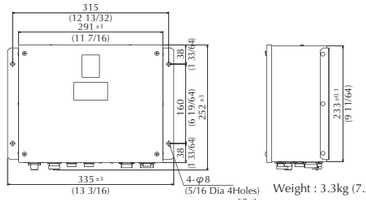


Weight : 0.25kg (0.56lb)
(without cable)

Sonar KDS-5000BB

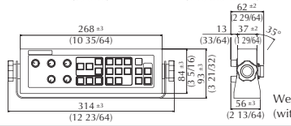
Unit: mm (inch)

Processor unit:
DPU-510



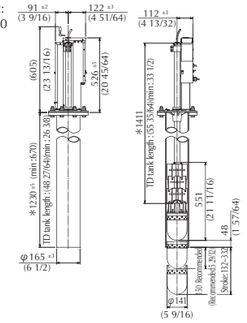
Weight : 3.3kg (7.3lb)

Operation unit:
DOU-520

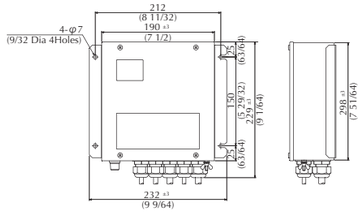


Weight : 1.1kg (2.5lb)
(with base)

Hull unit:
DHU-530



Junction box:
DJB-540

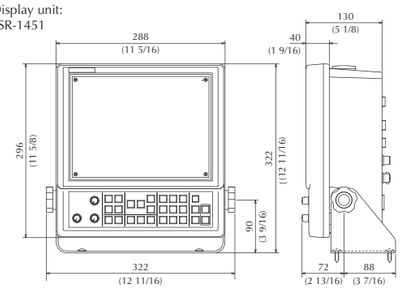


Weight : 5.2kg (11.5lb)
(with base)

Sonar ESR-145

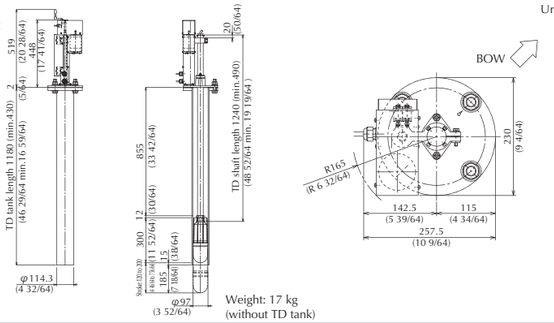
Unit: mm (inch)

Display unit:
ESR-1451



Weight: 6 kg (13.23 lb)
(with base)

Hull unit:
ESR-1452

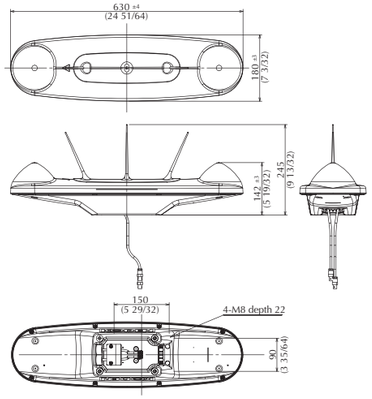


Weight: 17 kg
(without TD tank)

GPS Compass KGC-300, GPS Navigator KGP-922 / 915, Remote Display KRD-10

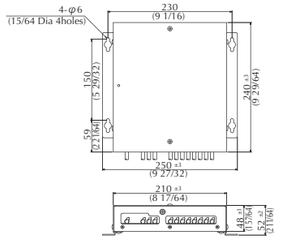
Unit: mm (inch)

GPS antenna GA-14 (KGC-300)



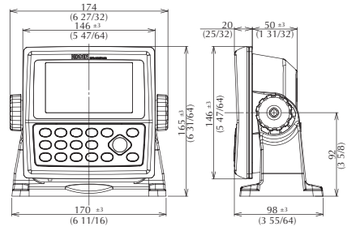
Weight: 2.2kg (4.9lb)(GA-14)

Processor unit: KGC-300.MU



Weight : 1.2kg (2.7lb)

Display unit: KGC-300.DU
KGP-922 / 915
KRD-10

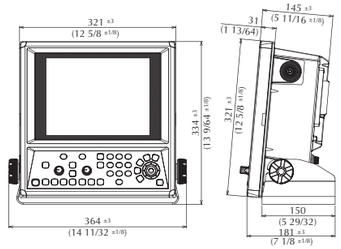


KGC-300.DU
Weight: 0.82 kg (1.81 lb)
KGP-922
Weight:0.97kg (2.2 lb)
KGP-915 / KRD-10
Weight: 0.74 kg (1.7 lb)

Chart Plotter GTD-120

Unit: mm (inch)

Display unit: GTD-120

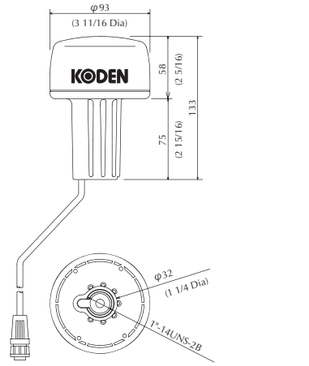


Weight：8.0kg (17.7lb)
(with base)

GPS Sensor GPS-21

Unit: mm (inch)

GPS-21

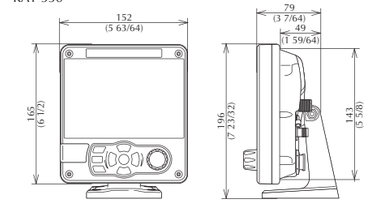


Weight:0.25 kg (0.55 lb)
(without cable)

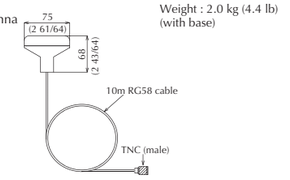
Class A / Inland AIS Transceiver KAT-330

Unit: mm (inch)

Display unit:
KAT-330



GNSS Antenna



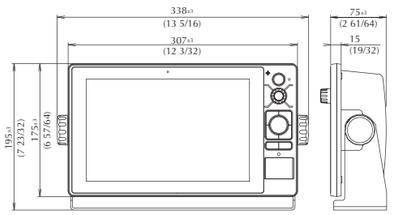
Weight : 2.0 kg (4.4 lb)
(with base)

Weight: 0.48 kg (1.1 lb)

Multi Function Display KSD-1100 / 1210

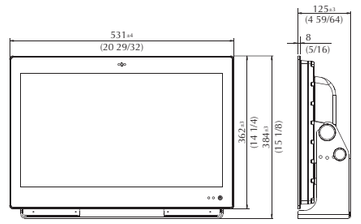
Unit: mm (inch)

Display unit: KSD-1100



Weight: 2.1 kg (4.64 lb)
(without base)

Display unit: KSD-1210

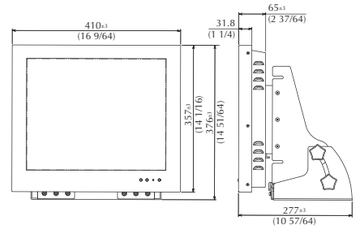


Weight: 7.4 kg (16.32 lb)
(without base)

17 inch LCD Monitor

Unit: mm (inch)

17 inch LCD Monitor



Weight : 7.0kg (15.5lb)
(with base)

Specifications Radar / RADAR*pc*

Radar

Model	MDC-900 Series	MDC-2000 Series	MDC-2000BB Series	MDC-5000 Series	MDC-5200 Series	MDC-5500 Series	MDC-7000 Series	MDC-7900 Series	MDC-7000P	MDC-7900P
Specifications & Functions:										
Display unit (Processor unit)	MRD-103 / 103A	MRD-104 / 104A	MRM-112	MRM-110	MRD-111	MRD-109	MRM-108	MRD-108	MRM-108P	MRD-108P
Operation unit	-	-	MRO-112	MRO-110	-	MRO-108	MRO-108		MRO-108P	
Display size	8.4″	10.4″	-	-	12.1"	15"	-	19"	-	19"
Display resolution	480 X 640 pixels (VGA)			1024×768 pixels (XGA)	768 x 1024 pixels (XGA)		1280 x 1024 pixels (SXGA)			
Effective diameter (mm)	127.4	157.4	-	-	184	228	-	282	-	282
Off-centering	Max. 66%			Max. 75%						
Echo area	2 types (Full screen, Inside of effective diameter)								1 type (Inside of effective diameter)	
Presentation modes	Head-up, North-up (True motion)***, North-up (Relative motion)*, Course-up (True motion)***, Course-up (Relative motion)*, WPT-up**			Head-up, North-up (True motion)***, North-up (Relative motion)*, Course-up (True motion)***, Course-up (Relative motion)*						
Indication system	PPI, PPI/PPI, PPI/NAV			PPI						
Video levels	8			16						
Range unit	NM, sm, km			NM, sm, km, kf, ky						
Alarms	Echo (IN / OUT), ATA / AIS (CPA / TCPA) etc.			Echo (IN / OUT), TT / AIS (CPA / TCPA), Guard zone etc.						
Functions	Interference rejection, Target expansion, VRM, EBL, Parallel index, Cursor position (Lat / Lon)***, Trail***, RGB Monitor output, Slave display monitor input/output, External Buzzer output, CCD camera input, Dual display			CFAR (Clutter rejection), Interference rejection, Enhance, Process (Residual image, Averaging)***, VRM, EBL, Parallel index, Cursor position (Lat / Lon)***, Trail (true / relative)***, Own ship past track***, MAP (Event mark, etc.)***, External monitor output, Inter-switch, Chart overlay***	CFAR (Clutter rejection), Interference rejection, Expansion, Process (Residual image, Averaging), VRM, EBL, Parallel index, ERBL, Cursor position, Trail (true / relative)***, Own ship past track***, MAP*** (Event mark etc.), Analog RGB output, VDR output, Inter-switch, C-MAP chart***		CFAR (Clutter rejection), Interference rejection, Expansion, Process (Residual image, Averaging), VRM, EBL, Parallel index, ERBL, Cursor position, Trail (true / relative)***, Own ship past track***, MAP*** (Event mark etc.), Analog RGB output, Trial Manoeuvre***,VDR output, Inter-switch, C-MAP chart***(MDC-7000 / 7900), Non official chart display (C-MAP chart)(MDC-7000P / 7900P)		
Input data format and sentences	NMEA0183 (BEC, BWC, BWR, DPT, DBT, GGA, GLL, GNS, HDG, HDM, HDT, MTW, MWD, MWV, RMA, RMB, RMC, VHW, VTG, XTE)			NMEA0183 (4800 / 9600 / 19200 / 38400 bps) BWC, DBT, DPT, DTM, GBS, GGA, GLC, GLL, GNS, HDG, HDM, HDT, MTW, MWD, RMA, RMB, RMC, ROT, RTE, THS, VBW, VDM, VDO, VDR, VHW, VTG, WPL, XTE, ZDA					IEC61162-1 / -2 BWC, DBT, DPT, DTM, GBS, GGA, GLC, GLL, GNS, HDT, MTW, MWD, RMB, ROT, RTE, THS, VBW, VDM, VDR, VHW, VTG, WPL, XTE, ZDA	
Output data format and sentences	NMEA0183 (TTM, TLL)			NMEA0183 (4800 / 9600 / 19200 / 38400 bps) OSD, RSD, TLB, TLL, TTD, TTM					IEC61162-1 / -2 ALC, ALF, DTM, EVE, HBT, RSD, OSD, TLB, TLL, TTD, TTM	
NMEA ports	Total 2: input and output 2	Total 1: input and output 1		Total 3: input and output 3			Total 3: input and output 3		Total 5: input and output 5 (with JB-35)	
AIS interface***	100 targets (Option)			500 targets	1000 targets		1000 targets		900 targets	
TT***	50 targets (Option)			50 targets	100 targets		100 targets			
Power supply	10.8 to 31.2 VDC			21.6 to 41.6 VDC						
Environmental :										
Operating temperature	-15°C to + 55°C (Display unit) -25°C to + 55°C (Antenna unit)									
Water Protection	IPX5 (Display unit): MDC-900 / 900A / 2000 / 2000A, IPX0 (Processor unit): MDC-2000BB IP23 (Operation unit): MDC-2000BB, IPX6 (Antenna-scanner unit)			IPX0 (Processor unit) IP23 (Operation unit) IPX6 (Antenna-scanner unit)	IPX5 (Display unit) IPX6 (Antenna-scanner unit)	IPX5 (Display unit) IP23(Operation unit) IPX6 (Antenna-scanner unit)	IP23 (Front panel and Operation unit): MDC-7900 / 7900P, IPX0 (Processor unit) IP23 (Operation unit): MDC-7000 / 7000P IPX6 (Antenna-scanner unit)			

Model	MDC-904A / 2004A / 2003BB	MDC-941 / 2041	MDC-941A / 2041A/ 2005BB	MDC-940 / 2040	MDC-940A / 2040A / 2004BB	MDC-2060 / 2060BB	MDC-2006A / 2006BB	MDC-2010 / 2010BB	MDC-2012A / 2012BB	MDC-5005	MDC-5004	MDC-5060 / 5006	MDC-5010 / 5012	MDC-5020 / 5025	MDC-5240 / 5540	MDC-5260 / 5560	MDC-5210 / 5510	MDC-5220 / 5520	MDC-5204 / 5504	MDC-5206 / 5506	MDC-5212 / 5512	MDC-5225 / 5525	MDC-7060 / 7960	MDC-7010 / 7910	MDC-7020 / 7920	MDC-7006 / 7906	MDC-7012 / 7912	MDC-7025 / 7925	MDC-7012P / 7912P	MDC-7025P / 7925P
Output power (Peak)	4 kW					6 kW		12 kW		4 kW		6 kW	12 kW	25 kW	4 kW	6 kW	12 kW	25 kW	4 kW	6 kW	12 kW	25 kW	6 kW	12 kW	25 kW	6 kW	12 kW	25 kW	12 kW	25 kW
Basic ranges	0.0625 to 32 NM			0.0625 to 48 NM		0.0625 to 64NM		0.0625 to 72NM		0.125 to 48NM		0.125 to 64NM		0.125 to 96NM	0.125 to 48NM	0.125 to 64NM		0.125 to 96NM	0.125 to 48NM	0.125 to 64NM		0.125 to 96NM	0.125 to 64NM		0.125 to 96NM	0.125 to 64NM		0.125 to 96NM	0.125 to 64NM	0.125 to 96NM
Power consumption (24 VDC)	55 W or less / 65 W or less / 65 W or less	55 W or less / 65 W or less	55 W or less / 65 W or less / 65 W or less	70 W or less / 80 W or less	70 W or less / 80 W or less / 80 W or less	110 W or less / 110 W or less	110 W or less / 110 W or less	130 W or less / 130 W or less	130 W or less / 130 W or less	85 W or less	100 W or less	130 W or less	150 W or less	200 W or less	100 W or less	130 W or less	150 W or less	200 W or less	100 W or less	130 W or less	150 W or less	200 W or less	130 W or less	150 W or less	200 W or less	130 W or less	150 W or less	200 W or less	150 W or less	200 W or less

Antenna-scanner connections : (See page 12 - 13 for details)																														
4 kW Radome antenna	RB804	RB715A	RB805							RB805																				
4 kW Open antenna				RB716A	RB806						RB806					RB716A				RB806										
6 kW Open antenna						RB717A	RB807					RB717A / RB807					RB717A				RB807			RB717A			RB807			
12 kW Open antenna								RB718A	RB808				RB718A / RB808					RB718A			RB808				RB718A			RB808		RB808P	
25 kW Open antenna														RB719A / RB809					RB719A			RB809				RB719A			RB809		RB809P
Interconnecting cable length Standard (m)	242J158055 (10m)			242J159098 (10m)		****				242J158055 (10m)	****				242J159098 (15m)				CW-845 (15m)			242J159098 (15m)			CW-845 (15m)				
Max. length (m)	30					100	30	100	30	100					100														65	

* Requires bearing data input. ** Requires waypoint data input. *** Requires bearing data, ship's speed data and latitude / longitude data input. **** CW-845 (15m) (RB806・807・808・809) / 242J159098 (15m) (RB717A・718A・719A)

RADAR*pc*

Model	MDS-1103R	MDS-1105R	MDS-1104R	MDS-1106R / 1160R	MDS-1112R / 1110R	MDS-1125R / 1120R
Specifications & Functions:						
Output power (RMS)	4 kW			6 kW	12 kW	25 kW
Control box	MDS-11R					
Basic range	0.125 to 96 NM					
Range accuracy	Better than 8 m or 0.9% (at the maximum range of the scale in use)					
Bearing accuracy	Better than ±1°					
Minimum range	Better than 25 m on 1/8 NM range					
Range discrimination	Better than 25 m					
Functions of radar image	Gain, STC,FTC, Tune, Interference rejection, Expansion, Trigger delay adjustment, Heading line adjustment					
Transfer data size Real time transfer	256 / 512 / 1024 dots / sweep (1024 / 2048 / 4096 sweeps per antenna rotation) Level: 3 / 4 bits					
Other function Preheat times output (by 5 sec step)	115 sec to 5 sec					175 sec to 5 sec
Program version up	by Ethernet					
Error output	SHF, System, AZI, PRF, ROM, DHCP server, Mag. current, High voltage					
Antenna-Scanner unit type	RB804	RB805	RB806	RB807 / RB717A	RB808 / RB718A	RB809 / RB719A
Antenna length	1.2 feet (Radome)	2 feet (Radome)	3 feet / 4 feet / 6 feet	4 feet / 6 feet	4 feet / 6 feet / 9 feet	4 feet / 6 feet / 9 feet
Antenna cable length	10 m (standard)		15 m (standard)			
Power supply	21.6 to 41.6 VDC					
Power consumption	60 W or less		70 W or less	90 W or less	110 W or less	150 W or less
Ethernet Interface:						
Mode of communication	Ethernet 100base-TX / 10base-T					
TCP / IP layer Application layer	Communication command and radar image transfer					
Internet layer	ARP (Address Resolution Protocol), ICMP (Internet Control Message Protocol)					
Transport layer	UDP (User Datagram Protocol)					
Network Interface	Shielded UTP (Unshielded Twisted Pair Cable)					
Transmission speed	10 Mbps / 100 Mbps					
Output data	Radar image video by proprietary protocol					
Input data	Radar control by proprietary protocol					
Environmental:						
Operating temperature	-15°C to +55°C (Control box) -25°C to +55°C (Antenna-Scanner unit)					
Water protection	IPX0 (Control box) IPX6 (Antenna unit)					

Specifications Echo Sounder

Model	CVS-128B	CVS-1410B	CVS-872D		CVS-875D	CVS-877D
Specifications & Functions:						
Output power (RMS)	2 kW		Refer to Table of Transducer for CVS-872D / 875D / 877D		Refer to Table of Transducer for CVS-872D / 875D / 877D	
Transducer	TDM-071, TDM-091D					
Output frequency	38 to 65 kHz (TDM-071), 42 to 65 kHz and 130 to 210 kHz (TDM-091D)					
Selectable frequency range	24 to 210 kHz 0.1kHz step					
Display size and type	8.4 inch color TFT LCD	10.4 inch color TFT LCD	12.1 inch color XGA LCD		15 inch color XGA LCD	Any monitor with XGA resolution (Owner supplied)
Display resolution	640 x 480 pixels (VGA)		1024 × 768 pixels (XGA)		1024 × 768 pixels (XGA)	-
Basic ranges	2.5 to 1200 (m) 10 to 3600 (ft) 2.5 to 700 (fm / l. fm) (8 ranges can be set to users choice)	2.5 to 2000 (m) 10 to 6000 (ft) 2.5 to 1100 (fm / l. fm) (8 ranges can be set to users choice)	1 to 3000 (m) 5 to 8000 (ft) 1 to 1700 (fm) 1 to 2000 (l. fm) (8 ranges can be set to users choice)		1 to 3000 (m) 5 to 8000 (ft) 1 to 1700 (fm) 1 to 2000 (l. fm) (8 ranges can be set to users choice)	
Range units	m, ft, fm, l.fm		m, ft, fm, l.fm		m, ft, fm, l.fm	
Presentation modes	High frequency, Low frequency, Dual frequency, Zoom image (Bottom lock, Bottom discrimination, Bottom zoom, Zoom, Bottom follow zoom), Nav mode, Vertical split, Horizontal split A-scope can be displayed at all above modes		High frequency, Low frequency, 1 to 4 frequency****, Zoom image (Bottom lock, Bottom discrimination, Bottom zoom, Zoom, Bottom follow zoom), Nav mode, Vertical split, Horizontal split, Mix A-scope can be displayed at all above modes		High frequency, Low frequency, 1 to 4 frequency****, Zoom image (Bottom lock, Bottom discrimination, Bottom zoom, Zoom, Bottom follow zoom), Nav mode, Vertical split, Horizontal split, Mix A-scope can be displayed at all above modes	
Presentation colors	64 colors,16 colors, 8 colors, Monochrome		64 colors,16 colors, 8 colors, Monochrome		64 colors,16 colors, 8 colors, Monochrome	
Alarms	Bottom, Fish, Temperature*, Speed***, Arrival***, XTE***		Bottom, Fish, Temperature*, Speed**, Arrival***, XTE***		Bottom, Fish, Temperature*, Speed**, Arrival***, XTE***	
Image speed	9 steps & stop		12 steps & stop		12 steps & stop	
Functions	Interference rejection, Color rejection, VRM, Noise reduction, White line, Draft correct, Water temperature correct, Boat speed correct, Store image (10 images), Sona-Tone™, Fishing Hot Spot, Event memory, Simple plotter, Panel illumination, Power reduction, External trigger (CVS-1410B only), Fish information, Detection area display		Interference rejection, Color erase, VRM, Noise reduction, White line, Draft correct, Water temperature correct, Boat speed correct, Store image (500 images), Sona-Tone™, Homing, Event memory, Simple plotter, Panel illumination, Power reduction, External trigger, Detection area display, CM key, Water Temp.graph, Individual range operation, Individual shift operation, Heaving compensation, Bottom hardness display		Interference rejection, Color erase, VRM, Noise reduction, White line, Draft correct, Water temperature correct, Boat speed correct, Store image (500 images), Sona-Tone™ , Homing, Event memory, Simple plotter, Panel illumination, Power reduction, External trigger, Detection area display, CM key, Water Temp.graph, Individual range operation, Individual shift operation, External memory storage (SD card, USB memory), Heaving compensation, Bottom hardness display, Display direction (CVS-877D only)	
Auto functions	Range, Shift, TX Power, White Line, Gain	Range, Shift, TVG, TX Power, White Line,	Range, Shift, TVG, TX Power, White Line		Range, Shift, TVG, TX Power, White Line	
Input data formats and sentences	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, RMC, THS, VHW, VTG, ZDA		NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, MWD, RMC, THS, VHW, VTG, ZDA, HEV, HPR, PFEC,GPhve, PFEC,GPatt, PKODG,21		NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, MWD, RMC, THS, VHW, VTG, ZDA, HEV, HPR, PFEC,GPhve, PFEC,GPatt, PKODG,21	
Output data formats and sentences	NMEA0183 Ver.2.0 / 3.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA		NMEA0183 Ver.2.0 / 3.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA, PKODS,4, Nobeltec, Olex		NMEA0183Ver.2.0 / 3.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA, PKODS,4, Nobeltec, Olex	
NMEA ports	Total 1: input and output		Total 2 : input and output		Total 2 : input and output	
Power supply	10.8 to 31.2 VDC		10.8 to 31.2 VDC		21.6 to 31.2 VDC	
Power consumption (24 VDC)	25 W or less	30 W or less	60 W or less		70 W or less	50 W or less
Environmental:						
Operating temperature	-15°C to +55°C		-15°C to +55°C		-15°C to +55°C	
Water protection	IPX5		IPX5		IPX5	IPX5 (Operation unit) IPX0 (Processor unit)

* Requires data from Temp sensor
** Requires speed data from Speed sensor or GPS sensor
*** Requires data from GPS sensor
**** The number of display screen depends on Transducer.

Model	CVS-126	CVS-128	CVS-1410	CVS-1410HS	CVS-1420		CVS-702D	CVS-705D	CVS-707D
Specifications & Functions:									
Output power (RMS)	600 W	600W or 1kW	1 kW		Refer to Table of Transducer for CVS-1420		3kW, 5kW		
Output frequency	50 kHz and 200 kHz	50 kHz and 200 kHz	50 kHz and 200 kHz				Dual Freq: 28, 50, 75, 200 kHz (200 kHz is 1kW only)		
Display size and type	5.7 inch color TFT LCD	8.4 inch color TFT LCD	10.4 inch color TFT LCD				12.1 inch color XGA LCD	15 inch color XGA LCD	17 inch color XGA LCD****
Display resolution	320×240 pixels(QVGA)	640×480 pixels(VGA)	640 x 480 pixels (VGA)				1024 × 768 pixels (XGA)		
Basic ranges	2.5 to 800 (m) 10 to 2800 (ft) 2.5 to 600 (fm / l. fm) (8 ranges can be set to users choice)	2.5 to 1200 (m) 10 to 3600 (ft) 2.5 to 700 (fm / l. fm) (8 ranges can be set to users choice)	2.5 to 2000 (m) 10 to 6000 (ft) 2.5 to 1100 (fm / l. fm) (8 ranges can be set to users choice)				1 to 3000 (m) 5 to 8000 (ft) 1 to 1700 (fm) 1 to 2000 (l. fm) (8 ranges can be set to users choice)		
Range units	m, ft, fm, l.fm						m, ft, fm, l.fm		
Presentation modes	High frequency, Low frequency, Dual frequency, Zoom image (Bottom lock, Bottom discrimination, Bottom zoom, Zoom, Bottom follow zoom), Nav mode, Vertical split, Horizontal split A-scope can be displayed at all above modes						High frequency, Low frequency, 1 to 2 frequency, Zoom image (Bottom lock, Bottom discrimination, Bottom zoom, Zoom, Bottom follow zoom), Nav mode, Vertical split, Horizontal split, Mix A-scope can be displayed at all above modes		
Presentation colors	64 colors,16 colors, 8 colors, Monochrome						64 colors,16 colors, 8 colors, Monochrome		
Alarms	Bottom, Fish, Temperature*, Speed***, Arrival***, XTE***						Bottom, Fish, Temperature*, Speed**, Arrival***, XTE***		
Image speed	9 steps & stop						12 steps & stop		
Functions	Interference rejection, Color rejection, VRM, Noise reduction, White line, Draft correct, Water temperature correct, Boat speed correct, Store image (10 images), Sona-Tone™, Fishing Hot Spot, Event memory, Simple plotter, Panel illumination, Power reduction, Fish information, Detection area display etc.		Interference rejection, Color rejection, VRM, Noise reduction, White line, Draft correct, Water temperature correct, Boat speed correct, Store image (10 images), Sona-Tone™ (CVS-1410 / 1410HS), Fishing Hot Spot, Event memory, Simple plotter, Panel illumination, Power reduction, External trigger, Fish information, Detection area display				Interference rejection, Color rejection, VRM, Noise reduction, White line, Draft correct, Water temperature correct, Boat speed correct, Store image (500 images), Sona-Tone™, Homing, Event memory, Simple plotter, Panel illumination, Power reduction, External trigger, Detection area display, CM key, Water Temp. graph, Individual range operation, Individual shift operation, Heaving compensation, External memoly storage (SD card, USB memory)(CVS-705D / 707D only)		
Auto functions	Range, Shift, TX Power, White Line, Gain		Range, Shift, TVG, TX Power, White Line				Range, Shift, TVG, TX Power, White Line		
Input data formats and sentences	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, RMC, THS, VHW, VTG, ZDA						NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, MWD, RMC, THS, VHW, VTG, ZDA, HEV, HPR, PFEC,GPhve, PFEC,GPatt, PKODG,21		
Output data formats and sentences	NMEA0183 Ver.2.0 / 3.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA						NMEA0183 Ver.2.0 / 3.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA, PKODS,4, Nobeltec, Olex		
NMEA ports	Total 1 : input and output						Total 2: input and output		
Power supply	10.8 to 31.2 VDC						10.8 to 31.2 VDC	21.6 to 31.2 VDC	21.6 to 31.2 VDC
Power consumption	10 W or less (12 VDC)	25 W or less (12 VDC)	30 W or less (24V DC)		50 W or less (24V DC)		60 W or less (24 VDC)	70 W or less (24 VDC)	50 W or less (24 VDC) without Display
Environmental:									
Operating temperature	-15°C to +55°C						-15°C to +55°C		
Water protection	IPX5						IPX5		IPX5 (Operation unit) IPX0 (Processor unit)

* Requires data from Temp sensor
** Requires speed data from Speed sensor or GPS sensor
*** Requires data from GPS sensor
**** For European model, please contact your nearest distributor.

Transducer for CVS-872D / 875D / 877D		
Broadband type		
Model	Output frequency	Output power (RMS)
TDM-052A	38 to 75 kHz and 130 to 210 kHz	3 kW
TDM-062A	38 to 75 kHz and 80 to 130 kHz	3 kW
TDM-083	28 to 60 kHz and 130 to 210 kHz	3 kW
TDM-091 / 091D	42 to 65 kHz and 130 to 210 kHz	2 kW
TDM-071	35 to 65 kHz	2 kW
Selectable frequency range: 24 to 240 kHz, 0.1 kHz step		
Normal type		
Model	Output frequency	Output power (RMS)
TD-284 / 284A	28 kHz	3 kW
TD-404T	40 kHz	3 kW
TD-504T / 504F	50 kHz	3 kW
TD-501C	50 / 200 kHz	1 kW
TD-501T-3B	50 / 200 kHz	1 kW
TD-754	75 kHz	3 kW
TD-66	200 kHz	1 kW
TDM-031D	50 / 200 kHz	2 kW

Transducer for CVS-1420		
Normal type		
Model	Output frequency	Output power (RMS)
TD-284A	28 kHz	3 kW
TD-404T	40 kHz	3 kW
TD-504T / 504F	50 kHz	3 kW
TD-501C	50 / 200 kHz	1 kW
TD-501T-3B	50 / 200 kHz	1 kW
TD-754	75 kHz	3 kW
150kHz 120φx1	150 kHz	2 kW
NGM100-200-12L	200 kHz	2 kW

Specifications Sonar / Chart Plotter / Remote Display

Sonar

Model		KDS-5500BB										
Specifications & Functions:												
Output power (RMS)		1.5 kW										
Transducer		DHU-6302-80 (AS) / 140 (AS) / 180 (AS) kHz*						DHU-6302-BRD.B / BRD.B (AS)				
Output frequency		80 kHz / 140 kHz / 180 kHz						130 to 210 kHz (0.1 kHz step)				
Tilt angle		5° to -90° (1 step)										
Beam angle		80 kHz : 19° / 140 kHz : 12° / 180 kHz : 10°						8° to 12°				
TD stroke		150 to 380 mm (Recommended value 150 mm)										
Display size and type		Any monitor with VGA resolution (Owner supplied)										
Basic ranges		10 to 1000 (m), 30 to 3000 (ft), 10 to 600 (fm),10 to 700 (l.fm) (8 ranges can be set to users choice)										
Range units		m, ft, fm, l.fm										
Scanning sector angles	Sonar mode	5°step: 5°, 25°, 45°, 85°, 125°, 165°, 205°, 360° 10°step: 10°, 30°, 50°, 90°, 130°, 170°, 210°, 360° 15°step: 15°, 45°, 75°,105°, 135°, 165°, 225°, 360° 20°step: 20°, 60°,100°,140°, 180°, 220°, 260°, 360°										
	Bottom scan mode	3°step: 3°, 27°, 45°, 63°, 93°, 117°, 147°, 177° 5°step: 5°, 25°, 45°, 65°, 95°, 115°, 145°, 175°										
360° Scanning time (extracts)	Scanning range (m)	20	40	60	80	100	120	160	180	200	240	400
	Scanning time (sec.) 5° step	6.3	8	10	11.8	14	15.8	19.5	21.6	23.5	27.5	43.3
	Scanning time (sec.)10° step	3.7	4.7	5.6	6.5	7.6	8.6	10.6	11.5	12.5	14.4	22.4
	Scanning time (sec.)15° step	3.3	3.7	4.3	4.9	5.7	6.4	7.9	8.2	8.9	10.3	15.7
	Scanning time (sec.)20° step	3.3	3.4	3.8	4.2	4.8	5.2	6.4	6.6	7.3	8.1	12.2
Bearing center		1°step										
Presentation mode		Sonar, Off-center, Bottom scan, Echo sounder, 2 Mode Display, One line										
Off-Center		Fore, Back, Left, Right										
Target lock		Reverse, Horizontal, Horizontal + Vertical, Marker + Horizontal, Marker + Horizontal + Vertical										
Presentation colors		8 colors, 16 colors										
Functions		TVG , Color rejection, Dynamic range, Compass display, Pulse width, Output power control, Noise reduction, A-scope, CM key, Frequency bandwidth, Image correction, Bearing display, TD auto up, Sona-Tone™										
Input data format and sentences		NMEA0183 GGA, GLL, HDG, HDM, HDT, RMC, THS, VTG, ZDA										
Output data format and sentences		NMEA0183 DBT, DPT, GGA, GLL, MTW, RMC, TLL, VTG, ZDA										
NMEA ports		Total 1 : input / output										
Power supply	Processor unit	10.8 to 31.2 VDC										
	Hull unit	10.8 to 31.2 VDC										
Power consumption (24 VDC)	Processor unit	70 W or less										
	Hull unit	70 W or less										
Environmental:												
Operating temperature		-15 °C to + 55 °C										
Water protection		-										

* Select the frequency at time of purchase

Chart Plotter

Model		GTD-120
Specifications & Functions:		
Display size and type		10.4 inch color TFT LCD
Map mode		Mercator projection
Presentation modes		North-up, South-up, East-up, West-up, Course-up (Waypoint), Head-up
Display resolution		480×640(VGA)
Zooming range		0.01 to 1,000 NM (or 0.02 to 2,000 km)
Effective map creation area		Below the latitude 80 degree
Plotting interval	Time	1, 2, 5, 10, 20, 30, 60, 120, 300, 600 sec
	Distance	0.01, 0.02, 0.05, 0.1, 0.2, 0.5, 1.0, 2.0, 5.0, 10.0 NM / km
Track color		7 colors
Position data display		Lat / Lon, Loran C LOP
Navigation data display		Own ship's position, Own ship's course, Own ship's speed, Waypoint position, Waypoint bearing, Waypoint distance, POB position, POB bearing, POB distance, Cursor position, Cursor bearing, Cursor distance
Position registration		15,000 points × 6 blocks + Marked line 15,000 points (All points can be registered as waypoint)
Mark color		7 colors
Alarm		Arrival, POB, Cross track error, CPA / TCPA, Area, Drawing, Ship's speed, Depth limit, Grounding, GPS buoy distance
Magnetic compass correction		Auto / Manual
Input data format and sentences		NMEA0183 Ver.1.5 / 2.0 / 3.0 DBS, DBT, DPT, GGA, GLL, HDG, HDT, MSK, MTW, MWD, MWV, RMC, THS, TLL, TTM, VTG, ZDA
Output data format and sentences		NMEA0183 Ver.2.0 GGA, GLL, GTD, HDT, VTG, ZDA, APB, BOD, BWC, RMB, RMC, WPL, XTE
NMEA ports		Total 5: input / output 4, input (GPS)1
Data output cycle		1sec
Power supply		10.8 to 31.2 VDC
Power consumption (24 VDC)		25W or less
Environmental:		
Temperature		-15 °C to + 55 °C
Water protection		IPX5

Sonar

Model			KDS-5000BB										
Specifications & Functions:													
Output power (RMS)			1.5 kW										
Output frequency			180 kHz										
Tilt angle			5° to -90° (1°step)										
Beam angle			10°										
TD stroke			180 to 380 mm (Recommended value 180 mm)										
Display size and type			Any monitor with XGA resolution (Owner supplied)										
Basic ranges			10 to 2000 (m), 20 to 6000 (ft), 10 to 2000 (fm), 10 to 2000 (l.fm) (8 ranges can be set to users choice)										
Range units			m, ft, fm, l.fm										
Scanning sector angles		Sonar mode	5°step: 5°, 25°, 45°, 85°, 125°, 165°, 205°, 360° 10°step: 10°, 30°, 50°, 90°, 130°, 170°, 210°, 360° 15°step: 15°, 45°, 75°, 105°, 135°, 165°, 225°, 360° 20°step: 20°, 60°, 100°, 140°, 180°, 220°, 260°, 360°										
		Bottom scan mode	3°step: 3°, 27°, 45°, 63°, 93°, 117°, 147°, 177° 5°step: 5°, 25°, 45°, 65°, 95°, 115°, 145°, 175°										
360° Scanning time (extracts)	Scanning range (m)		20	40	60	80	100	120	160	180	200	240	400
	Scanning time (sec.) 5° step		5.7	7.6	9.5	11.4	13.3	15.3	19.1	21.0	23.0	26.8	42.2
	Scanning time (sec.) 10° step		4.1	5.0	6.0	7.0	8.0	8.9	10.8	11.8	12.7	14.7	22.3
	Scanning time (sec.) 15° step		3.5	4.1	4.8	5.4	6.1	6.7	8.0	8.6	9.3	10.6	15.7
	Scanning time (sec.) 20° step		3.2	3.7	4.2	4.6	5.1	5.6	6.6	7.1	7.5	8.5	12.3
Bearing center			5°step										
Presentation mode			Sonar mode + Data display, Off-center mode + Data display, Off-center on the whole screen, Bottom scan mode + Data display, Sounder Mode + Data display										
Off-Center			Fore, Back, Left, Right										
Target lock			Reverse, Horizontal, Horizontal + Vertical, Marker + Horizontal										
Presentation colors			8 colors, 16 colors										
Functions			Operation mode (3 modes), Off-center (4 changes), Train correct, Power rejection, Gain adjust, Temperature adjust, Pulse width control, TVG change, Target lock, Color change (4 types + 2 types of color palette settings), Dynamic range, Interference rejection, Color rejection, Filter (OFF/1/2), Gain control, Far gain control, External trigger synchronization, Trigger signal output, Hoist sensor lamp, Audio (optional speaker required), Stabilizer (up to 25°controllable), Transducer unit automatic retract (Navigator connect required), Full-screen gain control										
Input data format and sentences			NMEA 0183 GGA, GLL, HDG, HDT, HDM, VTG										
Output data format and sentences			NMEA 0183 TLL*, DBT, MTW (*TTL sentence is not output without data.)										
NMEA ports			Total 1 : input / output										
Power supply		Processor unit	21.6 to 31.2 VDC										
		Hull unit	21.6 to 31.2 VDC										
Power consumption(24 VDC)		Processor unit	70 W or less										
		Hull unit	70 W or less										
Environmental:													
Operating temperature			-15 °C to + 55 °C										
Water protection			-										

Remote Display

Model			KRD-10
Specifications & Functions:			
Display size and type			4.3 inch color LCD
Display resolution			480 x 272 (WQVGA)
Presentetion modes			Navigation, Navigation graph, Highway, Plotter, Compass, ROT, Wind direction / Wind speed, Water temperature, Rudder angle, Distance info, General, Tide current, Weather info, Rain gauge, Custom
Track display		Display range	0.025, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20 NM (sm, km)
		Usable ground	Within 80° in latitude
		Plotting interval	5, 10, 20, 30 seconds, 1 minutes, 0.01, 0.05, 0.1, 0.5, 1 NM (sm, km)
		Plotting capacity	3,000 points
Position data display			Latitude / Longitude in increments of 0.0001 minutes, Converted Loran C LOPs, Converted Loran A LOPs, Converted Decca LOPs
Data display			Speed, Course, Heading, Distance / Bearing to waypoint, Cross track error, Time to go to waypoint, Total time to go and distance on route, DOP value, Present time (UTC or LTC), Navigation1, Navigation2, Navigation3, Steering, Highway, Plotter, Compass1, Compass2, ROT INFO, Rudder Angle, Distance info, Wind Direction analog, Water Temperature Graph, General1, General2, Tide Current, Weather Info, Rain Gauge, Lat/Lon, COG, SOG/STW, Rudder sensor Angle, TRIP / ODO, Current L1 SPD / DIR, Current L2 SPD / DIR, Current L3 SPD / DIR, Wind DIR / SPD, Wind Chill (REL), Wind Chill (TRUE), Heat Index, Air Pressure, Heave, Pitch, Roll, Rain Accumulation, Rain Duration, Rain Intensity Rate, Peak Rain Intensity Rate, Temperature, Humidity, Dew Point, Wind Direction (REL / TRUE), Wind Speed (REL / TRUE), Satellite status, Distance / Bearing between two points, POB display
Instant (event) memory			1000 points
Waypoint memory			10,000 points (9,000 + Event 1,000)
Route memory			100 routes reverse trail possible
Alarms			GNSS Fix, Proximity, Cross track error, CDI, Anchor watch, Water temperature, Depth
Position compensation			Latitude / Longitude, LOPs
Magnetic compensation			Auto / Manual
Parameters			Position (L / L, LOP), Language, LOP (Loran C, Loran A, Decca), Memory of waypoints and name (up to 10 letters), Selection of measuring unit (NM-kn, km-km / h, sm-mph), Temperature unit (°C, °F), Depth unit (m, fm, Lfm, ft, J.fm), Wind speed unit (kn, m / s, mph), SOG / COG / Heading / Rotation averaging (smooth) factor, Sailing mode (Great Circle, Rhumb Line)
Input data formats and sentences			NMEA 0183 Ver. 2.0 / 3.0 (DBT: Ver.1.5) (CUR, DBT, DPT, GGA, GLL, GNS, GSA, GSV, HEV, HDG, HDT, HDM, HPR, MDA, MSS, MTW, MWD, MWV, RMA, RMB, RMC, ROT, RSA, VBW, VDR, VHW, VLW, VTG, XDR, ZDA)
Output data formats and sentences			NMEA 0183 Ver.2.0 / 3.0 (AAM, APB, BOD, BWC, DCN, DPT, DTM, GGA, GLC, GLL, GSA, GSV, HEV, HDT, HDM, HPR, MSS, MTW, MWV, RMB, RMC, ROT, RTE, VHW, VTG, WPL, XTE, ZDA)
NMEA ports			Total 2: input / output (Total 4: input / output with optional Junction box)
Power supply			10.8 to 31.2 VDC
Power consumption (24 VDC)			4.5 W or less
Environmental:			
Operating temperature			-15°C to +55°C
Water protection			IPX4

Sonar

Model		ESR-145						
Specifications & Functions:								
Output power (RMS)		800 W						
Output frequency		220 kHz						
Tilt angle		5° to -90° (1°step)						
TD stroke		120 to 200 mm						
Display size and type		10.4 inch color TFT LCD						
Basic ranges		0 to 10 to 300 (m), 0 to 10 to 200 (l.fm) (selectable from 20 types)						
Range units		m, ft, fm, l.fm						
Scanning sector angles	Sonar mode	5°step: 5°, 25°, 45°, 85°, 125°, 165°, 205°, 360° 10°step: 10°, 30°, 50°, 90°, 130°, 170°, 210°, 360°						
	Bottom scan mode	3°step: 3°, 27°, 45°, 63°, 93°, 117°, 147°, 177° 5°step: 5°, 25°, 45°, 65°, 95°, 115°, 145°, 175°						
360° Scanning time (extracts)	Scanning range (m)	10	40	80	100	160	200	300
	Scanning time (sec.) 5° step	4.2	7.1	10.9	12.8	18.6	22.4	32.0
	Scanning time (sec.) 10° step	3.7	5.1	7.0	7.0	10.9	12.8	17.6
Bearing center		5°step						
Presentation mode		Sonar mode + Data display, Off-center mode + Data display, Bottom scan mode + Data display, Echo sounder mode + Data display						
Off-Center		Fore, Back, Left, Right						
Target lock		Reverse, Horizontal, Horizontal + Vertical						
Presentation colors		8 colors						
Functions		Operation mode (2 x 2 types), Off-center (4 types), Train correct, Power reduction, Pulse width, TVG, Target lock, Color select (4 types + 4 types of color palette settings), Dynamic range, Interference rejection, Gain control, Threshold control, Far gain control, TD auto up, Noise reduction, Brightness control, Sensor lamp						
Input data		NMEA0183 (Lat/Lon, Ship speed, Compass display, Temperature), Remote controller*						
Output data		Trigger signal, VGA*, Audio						
NMEA ports		Total 1 : input						
Power supply		21.6 to 31.2 VDC						
Power consumption(24 VDC)		70 W or less						
Environmental:								
Water protection		IPX1						

*Option

Specifications

AIS Transceiver / GPS Navigator GPS Compass

GPS Sensor / Multi Function Display

Class A / Inland AIS Transceiver

Model		KAT-330 (IMO)
Specifications:		
Output power		1 W or 12.5 W (automatic selection)
Display size and type		5 inch, color LCD with adjustable backlight
Display resolution		800 × 480 pixels
TX / RX frequency		156.025 MHz to 162.025 MHz
Impedance		50Ω
DSC receiver		156.525 MHz (Channel 70)
Channel bandwidth		25 kHz
Presentation modes		Target list, Voyage data setting, Target plot, Chart*, Messages, Alerts, Own dynamic data, System settings (*The chart feature is only enabled when this Class A AIS transceiver is operating on a non-SOLAS or inland vessel.)
Alerts		TX Malfunction, RX Channel x malfunction, VHF Antenna VSWR exceeds limit, External EPFS lost, No valid COG, No valid SOG, Heading lost or invalid, No valid ROT, No sensor position in use, UTC Sync Invalid, Nav Status Incorrect, Active AIS SART, Internal / External GNSS mismatch, Heading sensor offset
Receiver channels*		72 channels GPS and GLONASS operating modes
Frequency*		L1 GPS band, 1575.42 MHz, L1 GLONASS band 1597.1 to 1609.5 MHz, B1 BeiDou band 1561.098MHz
Sensitivity*		<-107 dBm for 20% PER (TDMA Transmitter / Receiver) -107 dBm@BER <10^{-2} (DSC Receiver)
Position fixing system*		EPFS
Time to first fix (Cold start)		Typically 26 seconds
Accuracy*		2.5 m CEP / 5.0 m SEP without differential correction 2.0 m CEP / 3.0 m SEP with SBAS or RTCM DGPS correction
Input data formats and sentences		IEC61162-1 / -2 ABM, ACA, ACK, ACN, AIR, BBM, DTM, EPV, GBS, GGA, GLL, GNS, HDT, RMC, ROT, SPW, SSA, SSD, THS, VBW, VSD, VTG, LRF, LRI
Output data formats and sentences		IEC61162-1 / -2 ABK, ACA, ACS, ALC, ALF, ALR, ARC, EPV, NAK, SSD, TRL, TXT, VDM, VDO, VER, VSD, LR1, LR2, LR3, LRF, LRI
NMEA ports		Sensor data input ports IEC61162-1 / -2 3 ports 4800 baud or 38400 baud Bi-directional data ports IEC61162-1 / -2 3 ports 4800 baud or 38400 baud
Power supply		10.8 to 31.2 VDC
Power consumption (24 VDC)		12 W or less (6.2 W (average))
Environmental:		
Operating temperature	Display unit	-15°C to +55°C
	GPS antenna	-40°C to +80°C
Water protection	Display unit	IPX6, IPX7
	GPS antenna	IP67

* Internal GNSS

GPS Navigator

Model	KGP-922 (IMO)	KGP-915
Specifications		
Antenna type	GA-09	
Display size and type	4.3 inch color LCD	
Display resolution	480 × 272 pixels	
Receiving channel	72 channel parallel	
Instant (Event) memory	1,000 points	
Waypoint memory	5,000 points (4,000 + Event 1,000)	10,000 points (9,000 + Event 1,000)
Route memory	100 routes reverse trail possible	
Alarms	Proximity, Cross track error, CDI, Anchor watch	
Position data display	Latitude / longitude in increments of 0.0001 minute converted Loran C LOPs, Loran A LOPs and Decca LOPs	
Differential	Ready by RTCM SC-104 format	
Input data formats and sentences	RTCM SC104 Ver.2.0 (DGPS), NMEA 0183* (GPS source: External)	RTCM SC104 Ver.2.0 (DGNSS) , NMEA 0183* (GNSS source: External)
Output data formats and sentences	NMEA 0183 Ver.2.0 / 3.0 / 4.1 / CIF AAM, APB, BOD, BWC, DCN, DTM, GGA, GLC, GLL, GSA, GSV, MSS, RMB, RMC, RTE, VTG, WPL, XTE, ZDA	
NMEA ports	Total 2 : input and output	
Power supply	10.8 to 31.2 VDC	
Power consumption (24 VDC)	6 W or less	4.5 W or less
Environmental:		
Operating temperature	-15°C to +55°C (Display unit), -25°C to +55°C (Antenna unit)	
Water protection	IPX2 (Display unit), IPX6 (Antenna unit)	IPX4 (Display unit), IPX6 (Antenna unit)

* When GPS source is selected as EXT

GPS Compass

Model		KGC-300 (IMO)
Specifications:		
Display size and type		4.3 inch color LCD
Display resolution		480×272 pixels
Receiving channel		16 channel parallel
Heading resolution		0.1°
Time to position fix	Cold start	50 sec (standard)
	Warm start	45 sec (standard)
	Hot start	20 sec (standard)
Accuracy	Heading	0.5° rms
	Position	GPS: 10m 2 drms (SA: OFF, PDOP: 3 or less) DGPS: 3m 2drms (SA: OFF, PDOP: 3 or less)
	Velocity	1 m / sec (rms, SA:OFF, PDOP: 3 or less)
Output data formats and sentences		NMEA 0183 Ver. 2.0, IEC61162-1/-2 AAM, APB, ATT, BOD, BWC, DTM, HDM, HDT, HVE, GBS, GGA, GLL, GNS, GSA, GSV, MSS, RMB, RMC, ROT, RTE, THS, VTG, WPL, XTE, ZDA, PKODA, PKODG1, PKODG7, PKODG21 (ALC, ALF , HBT *DATA1 only)
Output data level		RS-422
Input data format		RTCM SC104 Ver2.0 (DGPS)
NMEA ports		Total 5: output
Power supply		10.8 to 31.2 VDC
Power consumption (24 VDC)		9W or less
Environmental:		
Operating temperature		-15°C to +55°C (Processor unit), -15°C to +55°C (Display unit), -25°C to +55°C (Antenna unit)
Water protection		IPX0 (Processor unit), IPX4 (Display unit), IPX6 (GPS antenna)

GPS sensor

Model		GPS-21
Specifications:		
Receiving channel		24 parallel channels
Receiving frequency		1575.42 MHz ± 1 MHz
Position accuracy	Position	GPS: 10m (2drms, SA=OFF, PDOP: 3 or less)
		SBAS: 7m (2drms, SA=OFF, PDOP: 3 or less)
	Velocity	1m/sec (rms, SA=OFF, PDOP: 3 or less)
Tracking	Velocity	972 km/h or less
	Acceleration	1 G or less
Position updata interval		1 sec
Position fixing time	Cold start	35 secs (standard value)
Differential positioning	RX input	SBAS (WAAS, MSAS, EGNOS) QZSS (L1S)
Output data formats and sentences		NMEA 0183 Ver.2.3 (GGA, GLL, GSA, RMC, VTG, ZDA)
Input data		Parameter settings
Output data level		RS-422
Output current		20 mA or less
Power supply		10.8 to 31.2 VDC
Power consumption (12 VCD)		0.6W or less
Environmental:		
Operating temperature		-25 to +55 ℃
Water protection		IPX6

Multi Function Display

Model		KSD-1100	KSD-1210
Specifications:			
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 32 GB 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, VTG, ZDA NMEA2000 129025, 129026, 129029, 129033, 129539, 129540, 126992, 127250, 127258, 129038, 129040, 129041, 129793, 129794, 129809, 129810, 129795, 129797, 129801, 129802	
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 NMEA2000 129025, 129026, 129029, 129033, 129539, 129540, 127250, 129038, 129039, 129040, 129041, 129793, 129794, 129809, 129810, 129795, 129797, 129801, 129802, 129283, 129284, 129285	
NMEA ports		Total: 4 ports Input: 2, Output: 1, Input / Output: 1 (Output: AIS fixed)	Total: 7 ports Input: 4, Output: 2 (GNSS or AIS or GNSS & AIS fixed: 1), AIS Output: 1
Audio output		1	
Alarm output		1	
LAN net work		1000 Mbps	
Environmental:			
Operating Temperature		-15°C to +55° C	
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%