

MARINE ELECTRONICS PRODUCTS


Catch the Ocean
With Your Reliable Partner

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• Design and specifications are subject to change without notice.

 **Safety precaution** To ensure proper and safe use of the equipment, please carefully read and follow the instructions in the Operation Manual.

www.koden-electronics.co.jp

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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.

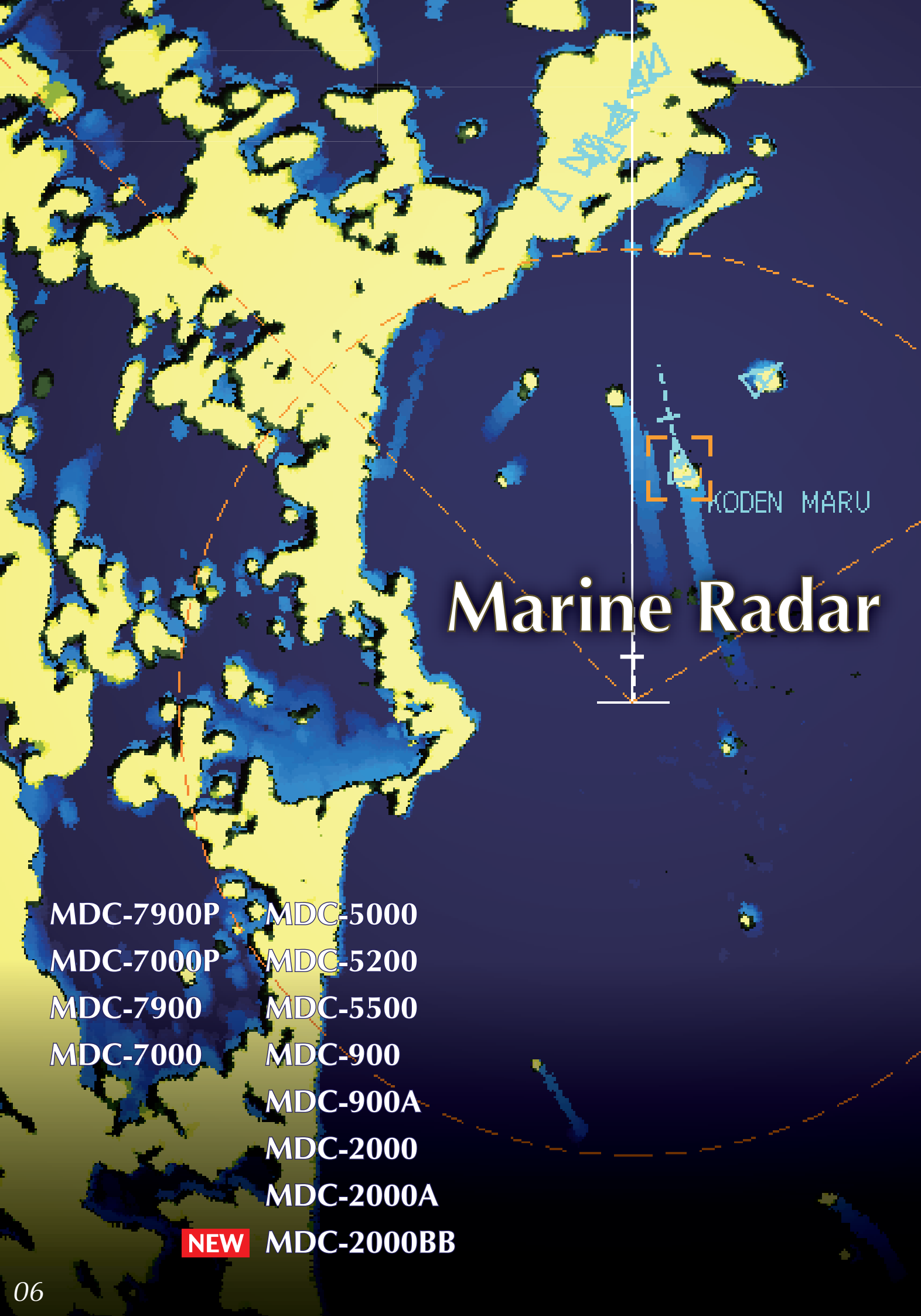
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Product Line up

Radar												
Model	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	
Specifications	 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	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-FX1 12.1 inch	CVS-FX2 15 inch	CVS-FX2BB Black Box	CVS-702D 12.1 inch	CVS-705D 15 inch	CVS-707D 17 inch**
Specifications	 P16	 P16	 P16	 P16	 P16		 P16	 P16	 P16	 P16	 P16	 P16
(Broadband)	-	-	✓	-	✓		✓	✓	✓	-	-	-
Fish information	✓	✓	✓	✓	✓		-	-	-	-	-	-
Frequency presentation (Max.)	2	2	2	2	2		4	4	4	2	2	2
Resolution	QVGA	VGA	VGA	VGA	VGA		XGA	XGA	(XGA)*	XGA	XGA	XGA
Output power	600W	600W or 1 kW	2 kW	1 kW	2 kW		3 kW	3 kW	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
Model	MDS-1100R  P11	KDS-8000BB  P19	KDS-6000BB  P20	KDS-5000BB  P21	GTD-120  P23		KGP-922  P25	KGP-915  P25	KGC-300  P25	KGC-222  P25	GPS-20A MkII  P25	KAT-330  P27
	Total Navigator	Navigational Echo Sounder	Remote Display	* LCD monitor : Owner supplied			** For European model, please contact your nearest distributor.		*** Non official chart data			
Model	KTN-70A / 70AF  P27	CVR-010  P27	KRD-10  P27									

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Marine Radar 19"



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



MDC-7900P series




MDC-7000P series



MDC-7900 series



MDC-7000 series

Model	19-inch Display type			Black Box type		
	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)

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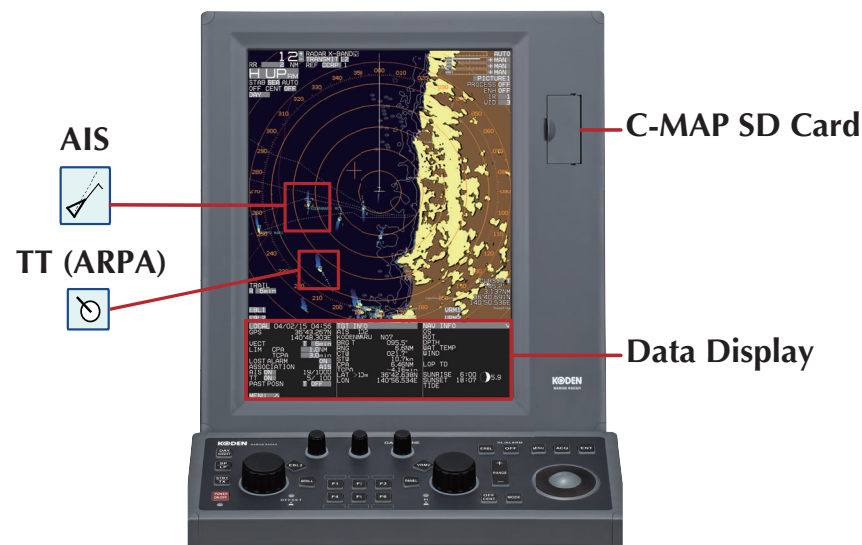
Marine Radar 12", 15"

Marine Radar 8.4", 10.4"



Model	12-inch Display type				15-inch Display type				Black Box type			
	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

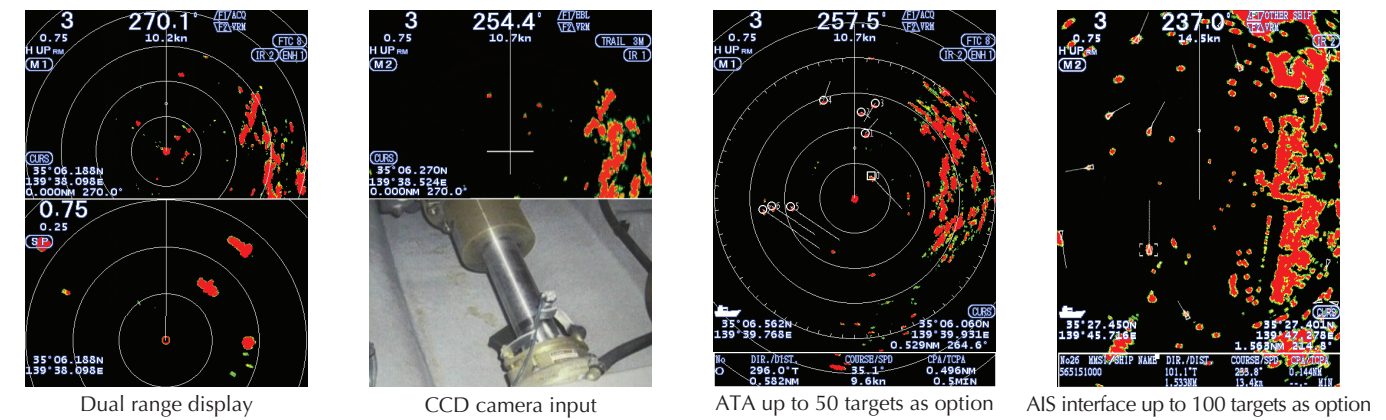
Model	8.4-inch Display type		10.4-inch Display type			Black Box type				
	4 kW (Radome)	4 kW	4 kW (Radome)	4 kW	6 kW	12 kW	4 kW (Radome)	4 kW	6 kW	12 kW
Standard model	MDC-941	MDC-940	MDC-2041	MDC-2040	MDC-2060	MDC-2010	-	-	MDC-2060BB	MDC-2010BB
CE model	MDC-941A MDC-904A	MDC-940A	MDC-2041A MDC-2004A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



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)

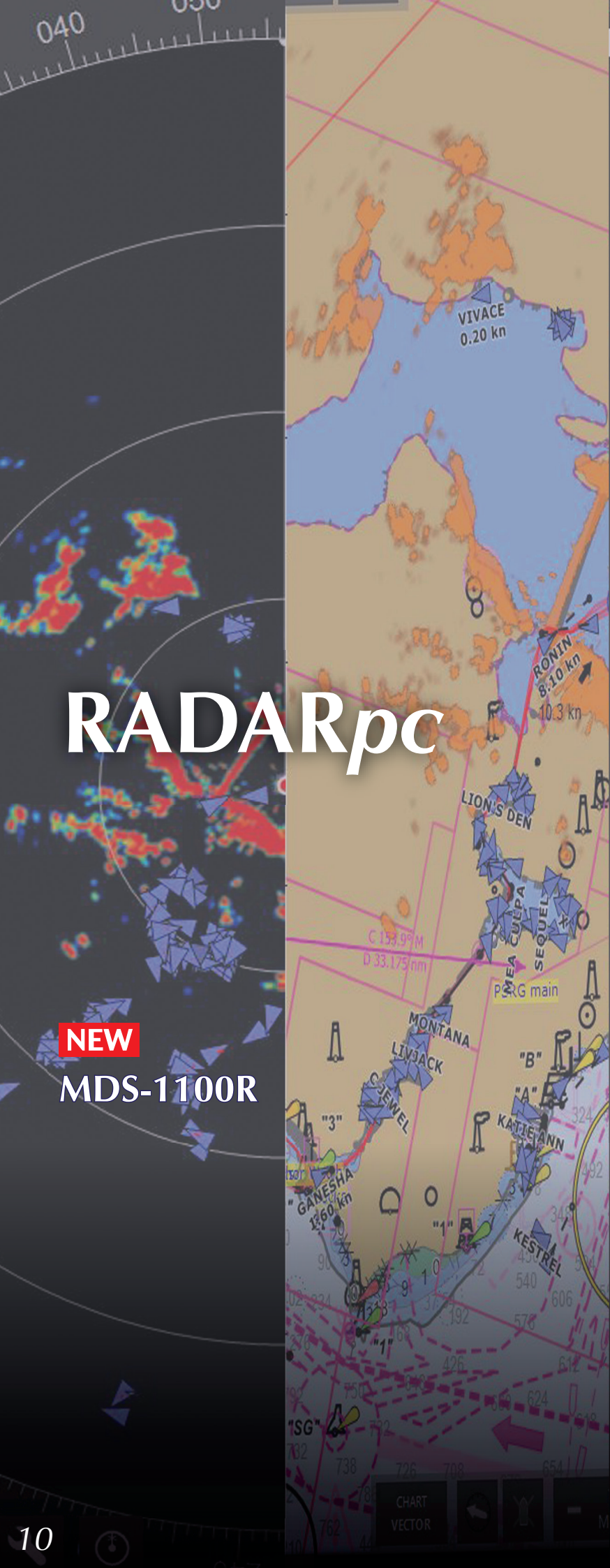


Smart selection for safe navigation

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

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RADARpc

NEW
MDS-1100R

20:19
Thursday, July 25

DPT	HDG	POSN	AIS
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MOB

Event

47°37.735'N
122°15.722'W

0.45 kn

SOG

0.45 kn

RATE OF TURN (°/MIN)

30 15 0 15 30

ROUTE MONITOR

Activate a route or add Mile Markers to use the Route Monitor.

Activate Route

Mile Marker ETA...

VMG

0.00 kn

HDG

056°M

Instruments
AIS panel

RADARpc

NEW



Antenna - Scanner unit

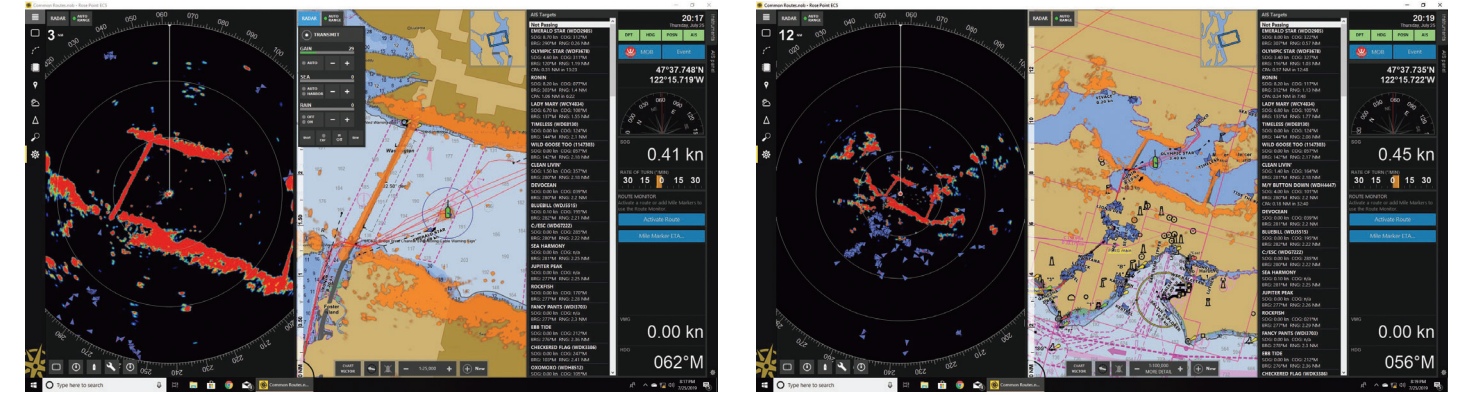


Control Box



Your computer
(Owner supply)

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


RADARpc turns your PC charting system into a full featured real-time radar system.

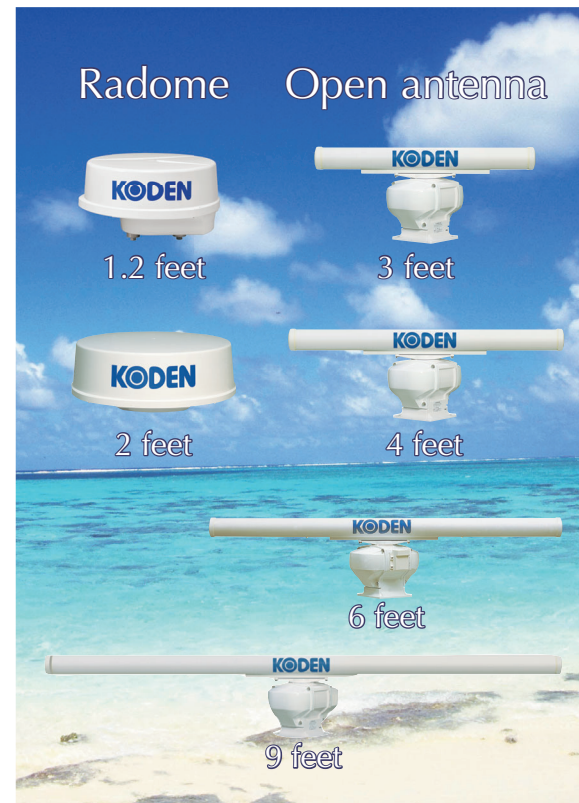
- ▶ **Great Range of Antenna-Scanners**
The MDS-11R Control Box can be combined with great range of Koden Antenna - Scanners.
- ▶ **High speed data communication**
Ethernet data communication provides interface capability with most PCs. Multi PC network system can be constructed.
- ▶ **Compatible with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

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Marine Radar / RADARpc 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	-
RADARpc	-





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	-	-	-	-
RADARpc	-	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

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	-	-
RADARpc	MDS-1103R	MDS-1105R



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
RADARpc	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.)

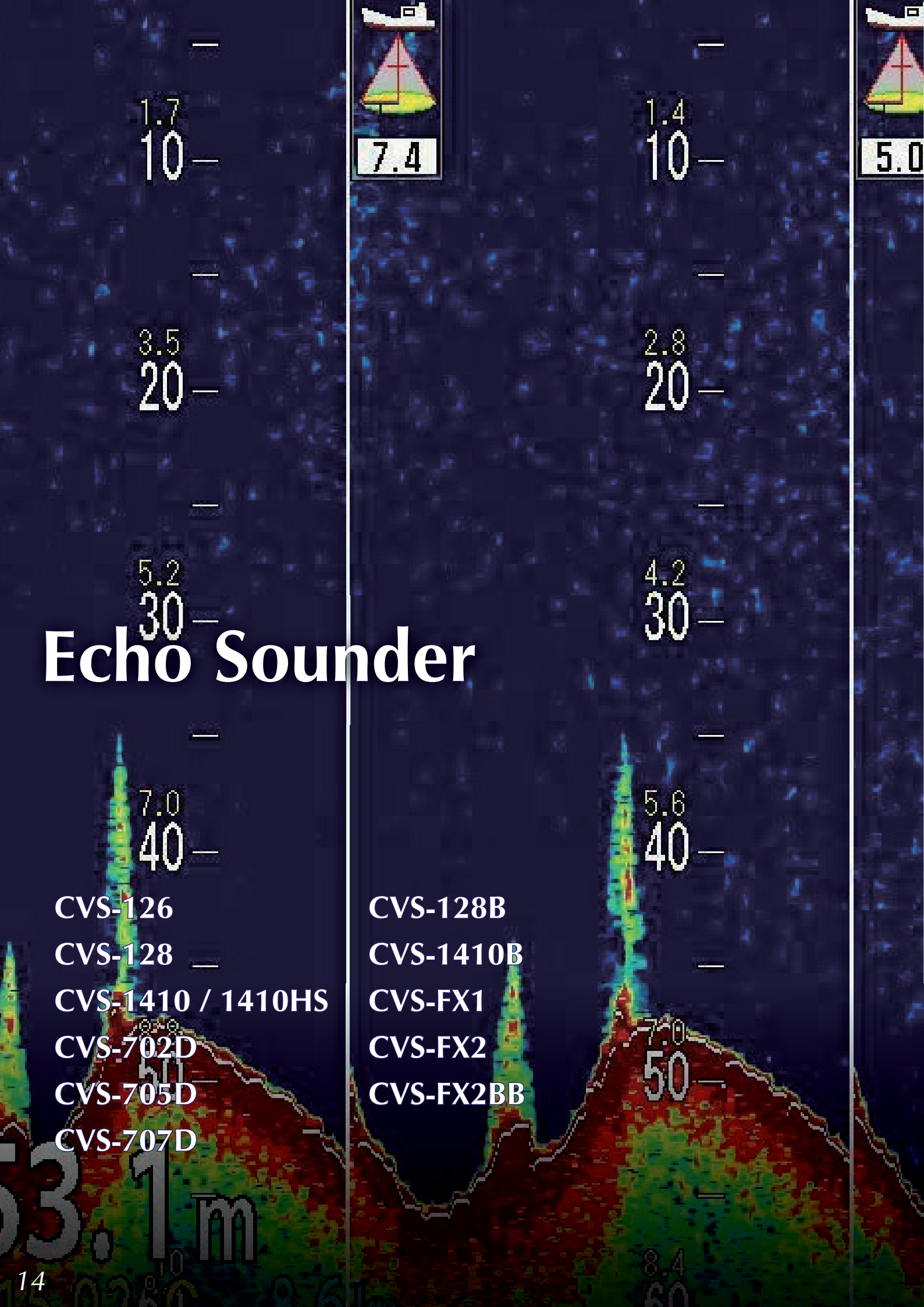
*** 6ft antenna is available for MDC-5004, MDC-5204 and MDC-5504

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Echo Sounder

- CVS-126
- CVS-128
- CVS-1410 / 1410HS
- CVS-702D
- CVS-705D
- CVS-707D

- CVS-128B
- CVS-1410B
- CVS-FX1
- CVS-FX2
- CVS-FX2BB



Koden Digital and Broadband technology

Wide range, wide variety of uses

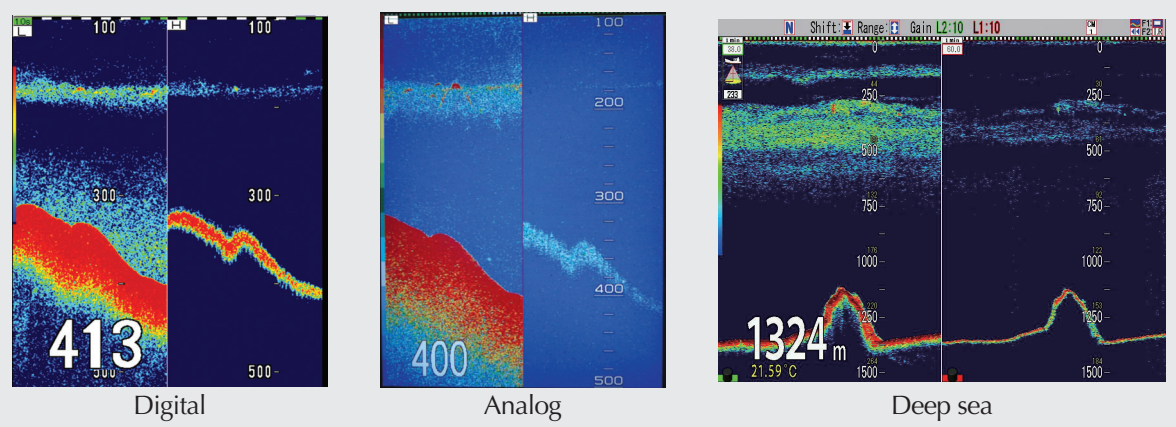
Koden offers a wide range of echo sounders which are designed for a variety of fishing styles from shallow to deep sea applications. Koden Echo Sounders have a unique signal processing system which aids in finding of weak echo of fish school in any ocean conditions.

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.

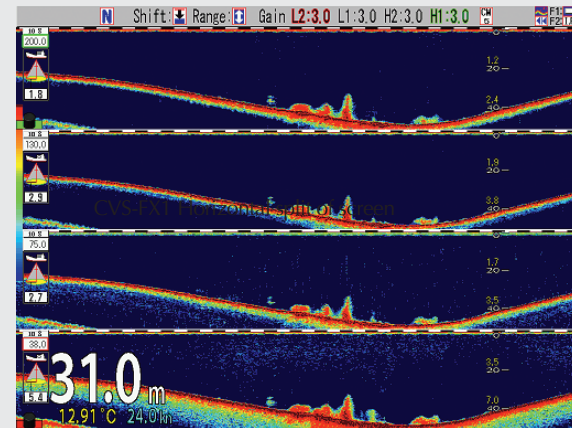


Broadband



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-FX 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-FX1 Horizontal split of screen

	Low Frequency2	Low Frequency1	High Frequency2	High Frequency1
Standard Echo Display	Normal	Normal	Normal	Normal
	OFF	Mix	Mix	OFF
	OFF	OFF	OFF	OFF
Frequency	38.0kHz	75.0kHz	130.0kHz	200.0kHz
Pulse Length	Short	Short	Short	Short
	Medium	Medium	Medium	Medium
	Long	Long	Long	Long
	Fixed	Fixed	Fixed	Fixed
Band Width	Narrow	Narrow	Narrow	Narrow
	Medium	Medium	Medium	Medium
	Wide	Wide	Wide	Wide
	Fixed	Fixed	Fixed	Fixed
Zoom Display	OFF	OFF	OFF	OFF
	Bottom	Bottom	Bottom	Bottom
	B.D.	B.D.	B.D.	B.D.
	Zoom	Zoom	Zoom	Zoom
	B.Z.	B.Z.	B.Z.	B.Z.
	B.F.Z.	B.F.Z.	B.F.Z.	B.F.Z.
Gain	Individual			
	Synchronized			
Guide	ENT: Enter			
	SUBMENU: Return			
	MENU: End			

CVS-FX1 Individual setting menu

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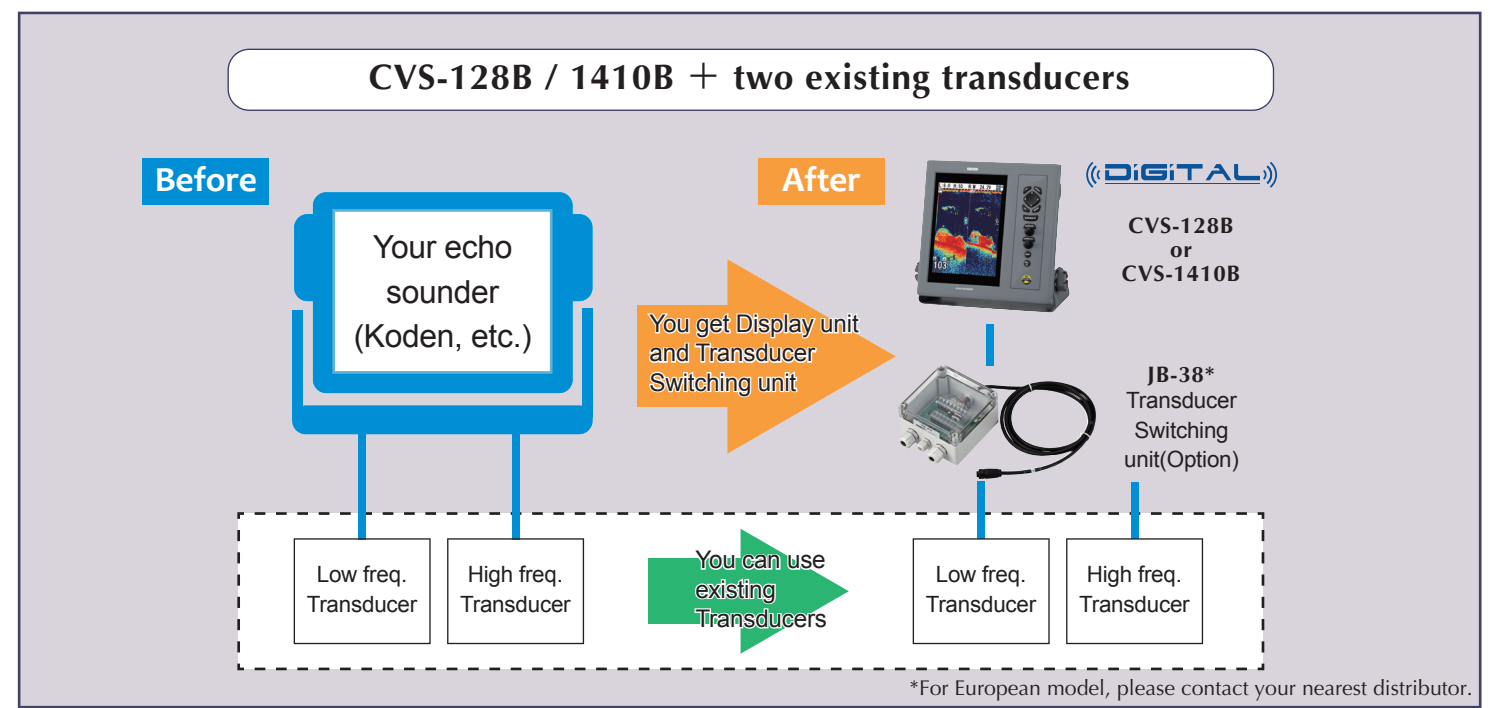
Echo Sounder Digital • Echo Sounder Digital Broadband

«DIGITAL»



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.



«Broadband»



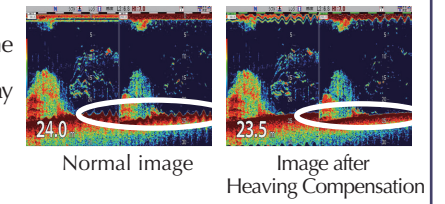
Detection area display

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.



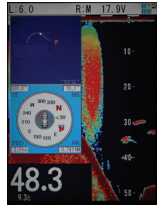
Heaving Compensation

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.



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.



Store Image

Stores screen images in built-in memory to recall the image later by a single touch.
Up to 500 screen images : CVS-FX1, CVS-FX2 / FX2BB, CVS-702D, CVS-705D, CVS-707D
Up to 10 screen images : CVS-126, CVS-128, CVS-128B, CVS-1410 / 1410HS, CVS-1410B

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-FX1, CVS-FX2 / FX2BB, CVS-702D, CVS-705D, CVS-707D)



Transducer



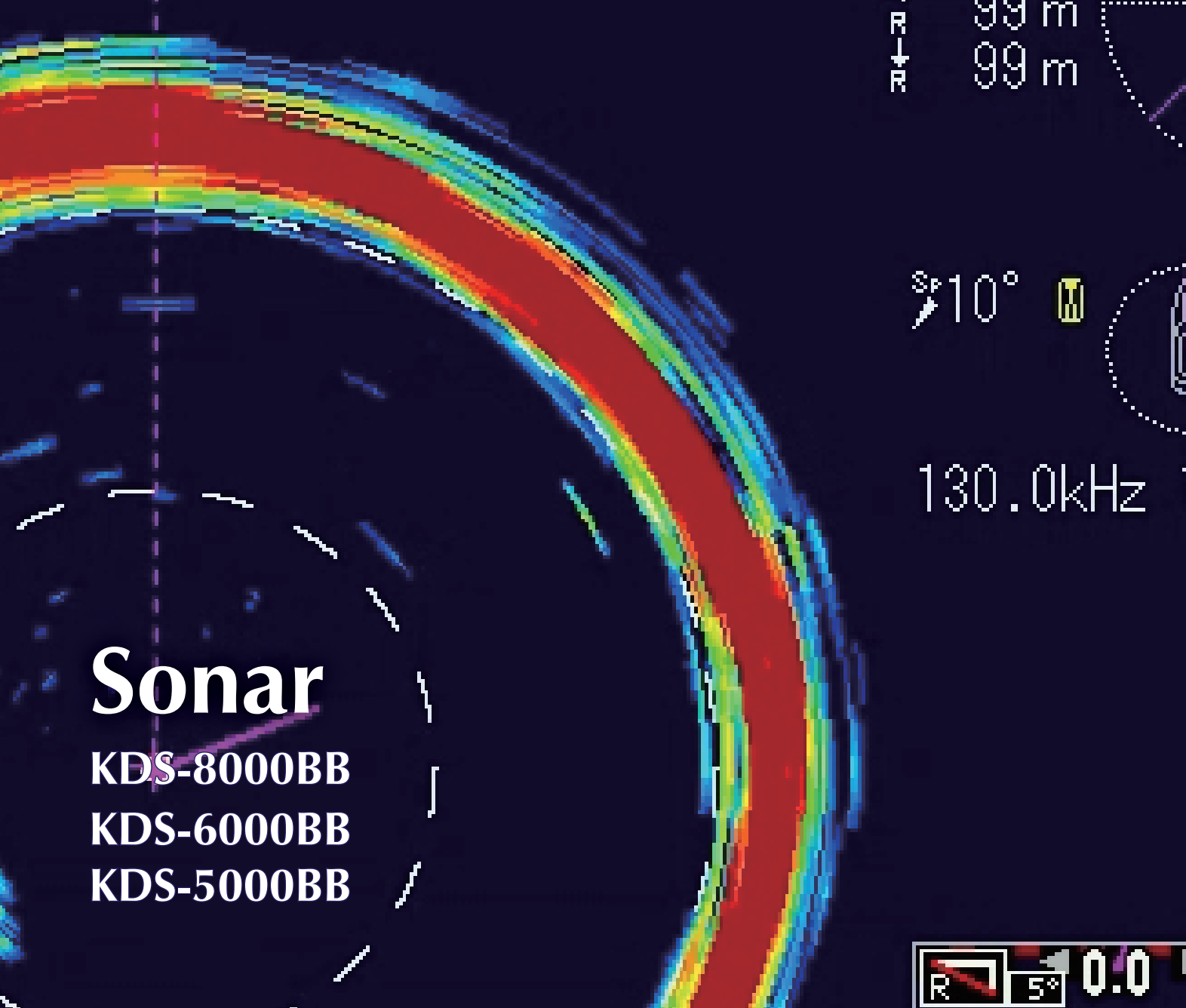
Marine Radar 06
RADAR 10
Antenna-Scanner 12
Echo Sounder 14
Sonar 18
Chart Plotter 22
GPS Navigator • Compass • Sensor 24
Navgational Echo Sounder / Remote Display 26
AIS Transceiver / Total Navigator /
Dimensions and Weight 28
Specifications 32

Digital Broadband Sector Scanning Sonar

Advanced technology and user friendly operation Clear image enabled from high speed scanning

Thanks to high speed sector scanning, surrounding moving fish will not be missed. High resolution images are materialized from latest signal processing technology. High maneuverability is obtained at affordable price.

- ▶ Fast image refreshing due to high rotation speed combined with 45° sector using 9 beams of 5°
- ▶ High resolution and clear images using advanced Kodon Digital Signal Processing
- ▶ Change frequency on the go with our most advanced Broadband technology
- ▶ Five quick access presentation modes (Sonar, Off-Center, Bottom Scan, Echo Sounder, and Dual Sonar)
- ▶ Advanced Condition Memory for quick saving of different setting and preferences
- ▶ Black Box sector scanning sonar for ease of installation

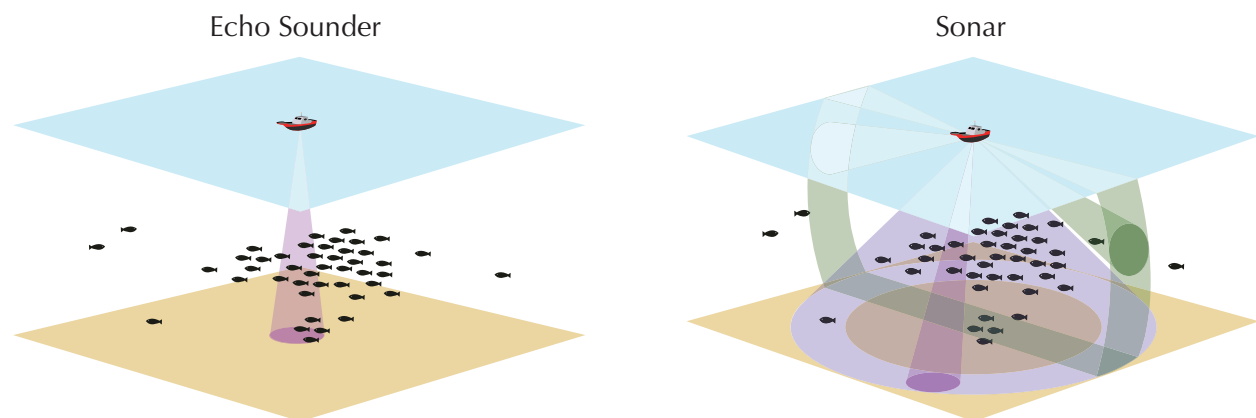


Sonar

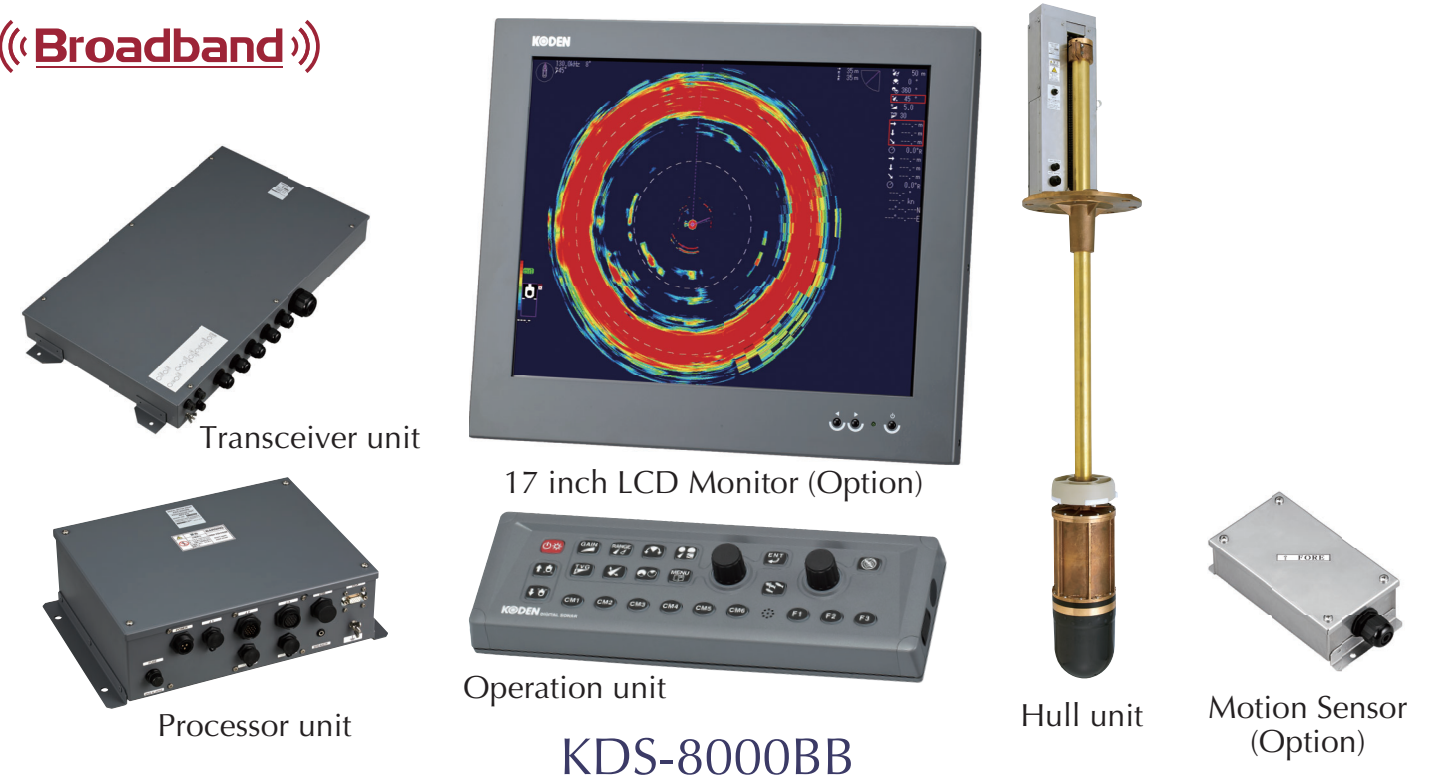
KDS-8000BB
KDS-6000BB
KDS-5000BB

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

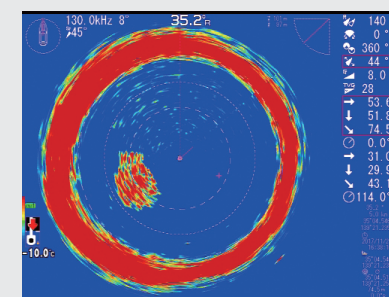
The echo sounder always detects beneath the ship with the transducer installed at bottom of the ship.
The sonar is a multi-directional echo sounder with a revolving and tilting transducer emitting and receiving ultrasonic waves in various directions.
The sonar can search 360-degree direction area automatically 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.



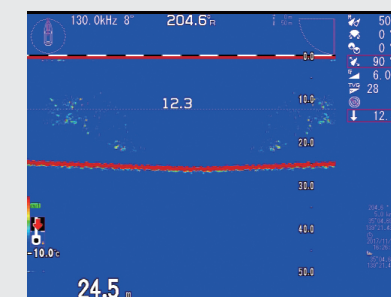
(((Broadband)))



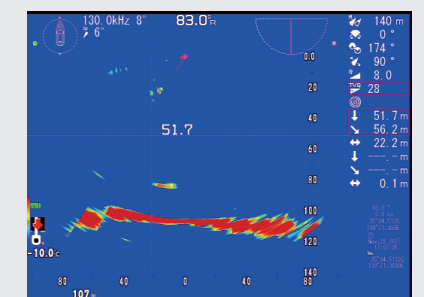
Presentation modes



Sonar mode
Search around the ship



Echo sounder mode
Image like Echo sounder



Bottom scan mode
Reflected echo
from underwater and sea bottom

Marine Radar 06
 RADARc 10
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Digital Searchlight Sonar

Advanced Broadband Technology

KDS-6000BB is world first Broadband searchlight sonar. The 80 to 90 kHz frequency or 130 to 210 kHz frequency can be selected depending on the Transducer. 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. Selection of frequency is as easy and quick as tuning a radio. Flexible selection of frequency enables the user to stay away from interference with the sounders on the other vessels.

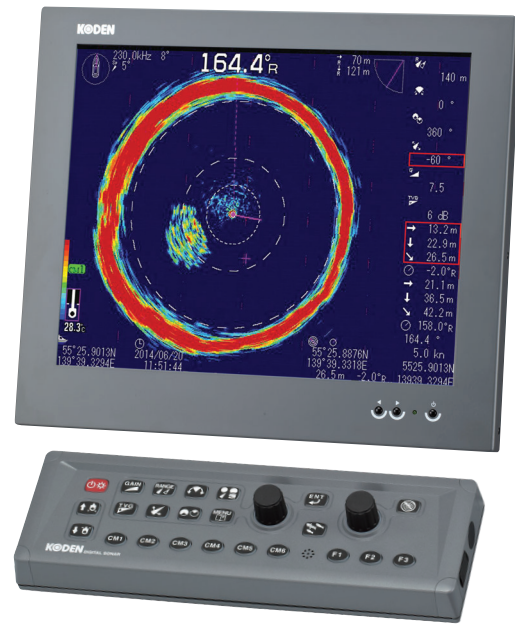
- ▶ Change frequency on the go with our advanced Broadband Technology
- ▶ Massive improvement in scan speed, making detection of fish schools much faster
- ▶ Clearest possible images with our digital signal processing
- ▶ All setup and user settings changed instantly by utilizing Condition Memory function
- ▶ Black Box sonar with 17 inch LCD Monitor available (Option)

(((Broadband)))

17 inch LCD Monitor (Option)



Processor unit



Operation unit

KDS-6000BB



Hull unit

(((DIGITAL)))



Processor unit



Junction box



Operation unit

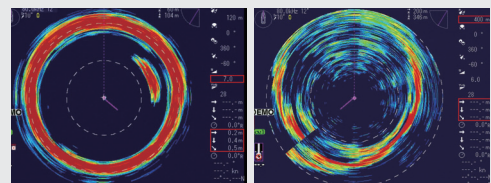
KDS-5000BB



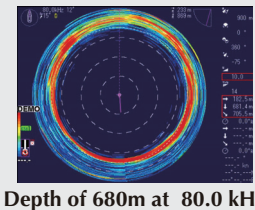
Hull unit

- ▶ DSP technology (High Resolution by digital control)
- ▶ Space saving installation
- ▶ Black Box sonar connect to any XGA type display (Owner supplied)
- ▶ Easy operation

80 kHz screen images

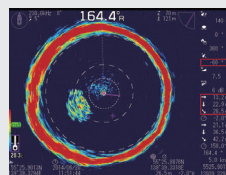


Sardine at 80.0 kHz Red bream at 80.0 kHz

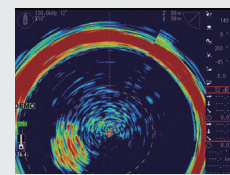


Depth of 680m at 80.0 kHz

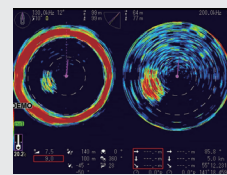
Six different presentation modes



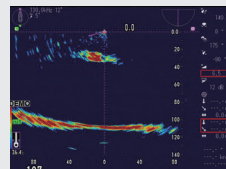
Sonar mode
Search around the ship



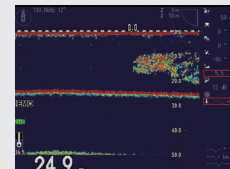
Off-center mode
Show more information of ahead



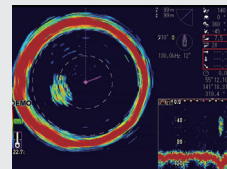
Sonar x 2 mode
Two different frequencies



Bottom scan mode
Reflected echo from underwater and sea bottom



Echo sounder mode
Image like Echo sounder

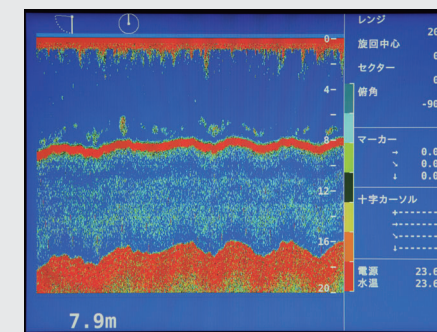


One line display mode
Show vertical Sonar image like an echo sounder image in the Sub-screen

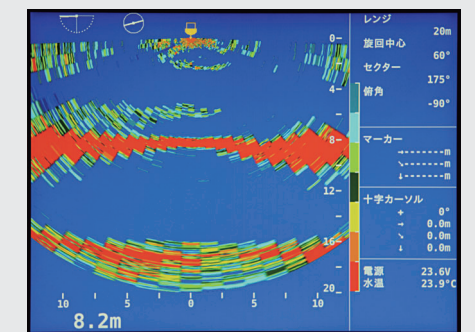
Presentation modes



Sonar mode
at 180 kHz



Echo sounder mode
at 180 kHz



Bottom scan mode
at 180 kHz

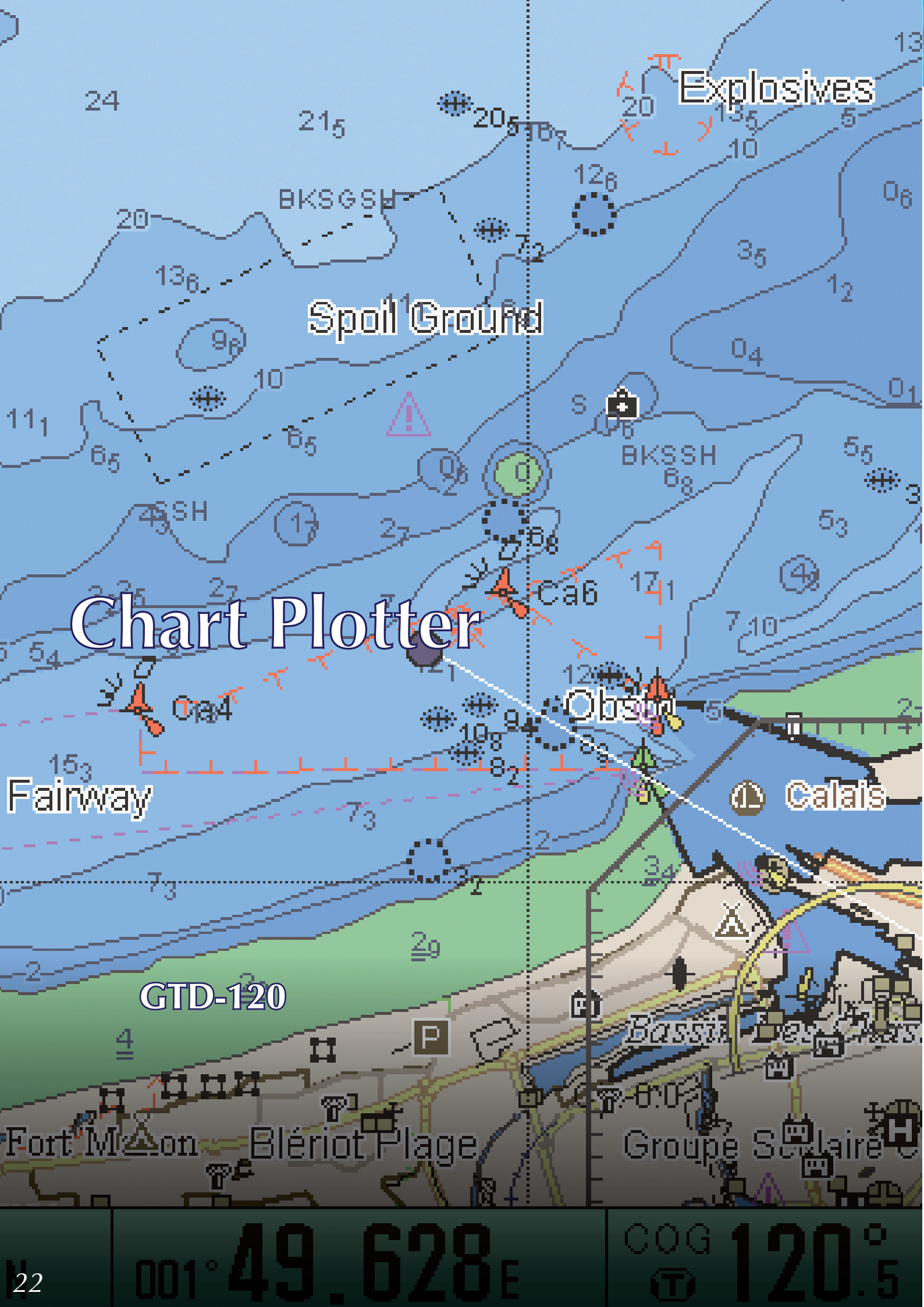
Marine Radar 06
RADARc 10
Antenna-Scanner 12
Echo Sounder 14
Sonar 18
Chart Plotter 22
GPS Navigator + Compass + Sensor 24
AIS Transceiver / Total Navigator / Navigational Echo Sounder / Remote Display 26
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Chart Plotter

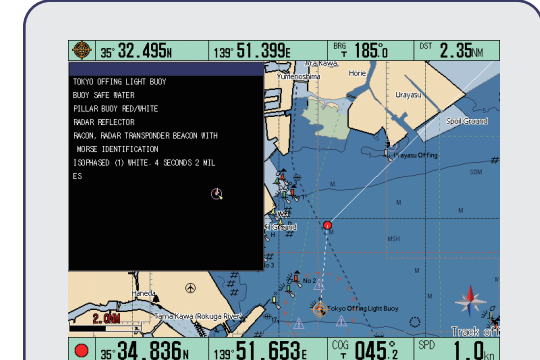
Professional plotter with impressive operability Fully supports to improve your fishing efficiency

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.

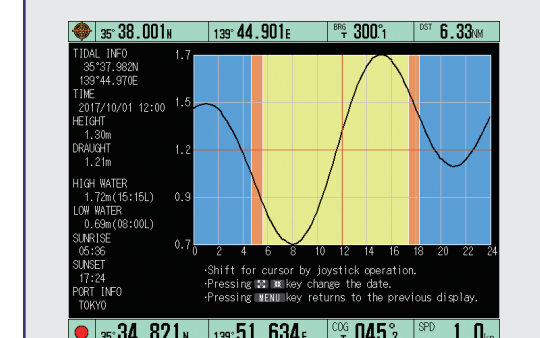
- ▶ 10.4 inch High brightness LCD
- ▶ User-friendly Operation
- ▶ Various display screen such as Bird view and dual range display
- ▶ SD card capable, save user data such as marks, tracks and settings
- ▶ Various marks and greater numbers of ship's tracks
- ▶ Useful information display in the information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



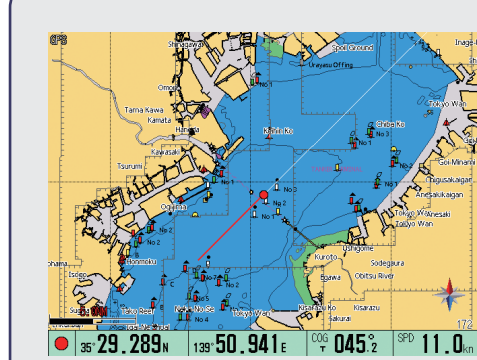
GTD-120



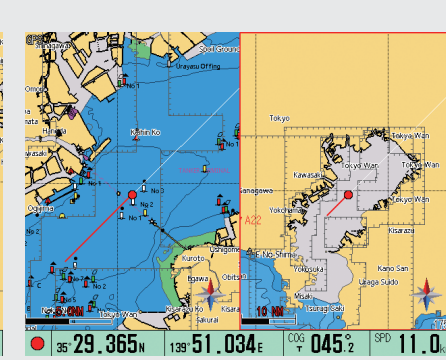
Quick info



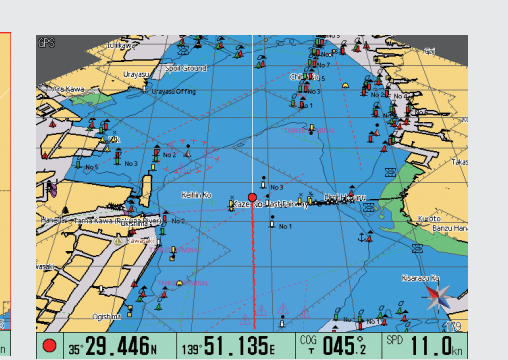
Tidal information



Plotter mode



Split screen mode



Bird view mode

Marine Radar 06
 RADARc 10
 Antenna-Scanner 12
 Echo Sounder 14
 Sonar 18
 Chart Plotter 22
 GPS Navigator + Compass + Sensor 24
 Navigational Echo Sounder / Tidal Navigator / AIS Transceiver / Tidal Navigator /
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GPS Navigator / Compass / Sensor

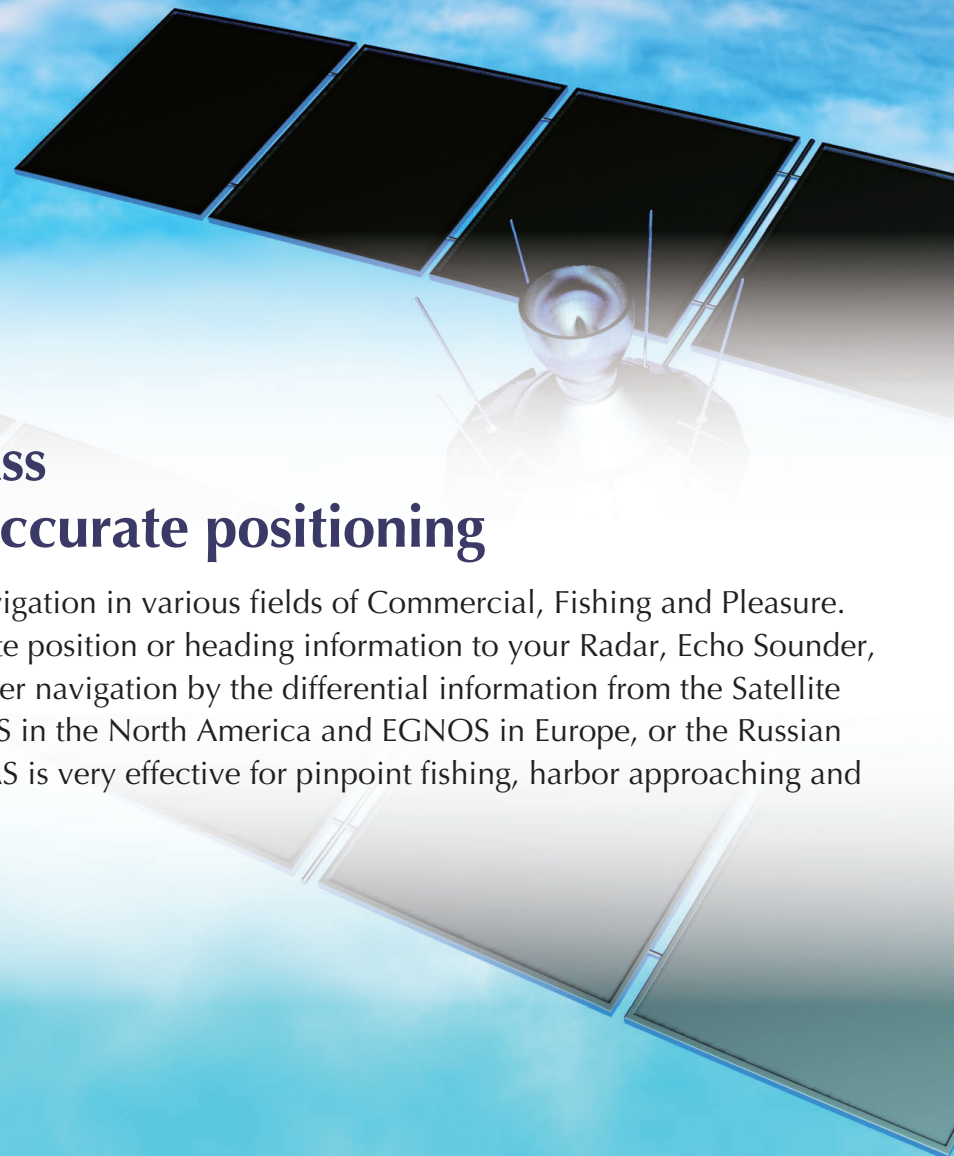
NEW KGP-922

KGP-915

KGC-300

KGC-222

NEW GPS-20AMkII



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 / Compass / Sensor

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

NEW



KGP-922
(SBAS)

KGP-915

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



KGP-915
(GPS / DGPS / 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

KGC-222

- ▶ 4.0-inch LCD Display unit
- ▶ Backup sensor built-in
- ▶ Pitch / roll and heaving data output
- ▶ 3 heading data output ports expandable to 5 ports (with optional junction box JB-35)
- ▶ SBAS (WAAS / EGNOS) enabled



KGC-222

GPS Sensor

GPS-20AMkII

- ▶ 24 channel parallel
- ▶ SBAS (WAAS / EGNOS), QZSS (L1S) enabled

NEW



GPS-20AMkII

Marine Radar 06
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Antenna-Scanner 12
Echo Sounder 14
Sona 18
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AIS Transceiver / Total Navigator Navigational Echo Sounder / Remote Display

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)
- ▶ Meets FCC, USCG, IC, TC, CCNR (Inland AIS)
- ▶ Color display with full ENC charting (C-MAP MAX)
- ▶ Simple menu display with icons
- ▶ Water and weather proof (IPX6 & IPX7)



KAT-330

Total Navigator

KTN-70A / 70AF

KTN-70A is an entry model of Plotter.
KTN-70AF is a model with a versatile function of Plotter Echo Sounder.

- ▶ 7-inch wide color LCD display
- ▶ High accuracy built in chart
- ▶ Radar ATA target overlay
- ▶ AIS information overlay
- ▶ Easy waypoints transfer to Radar



KTN-70A

Navigational Echo Sounder

CVR-010

CVR-010 is a single-channel navigational echo sounder. Featuring a 5.7-inch daylight-viewing, LED backlight color LCD screen, the equipment displays the echogram.

- ▶ Meets IMO Standard MSC. 74 (69) Annex 4, EU Marine Equipment Directive (MED)
- ▶ High accuracy and reliability
- ▶ Sounding data storage for the last 12 hours
- ▶ Password protection for keeping the menu settings



CVR-010

For European model, please contact your nearest distributor.

Remote Display

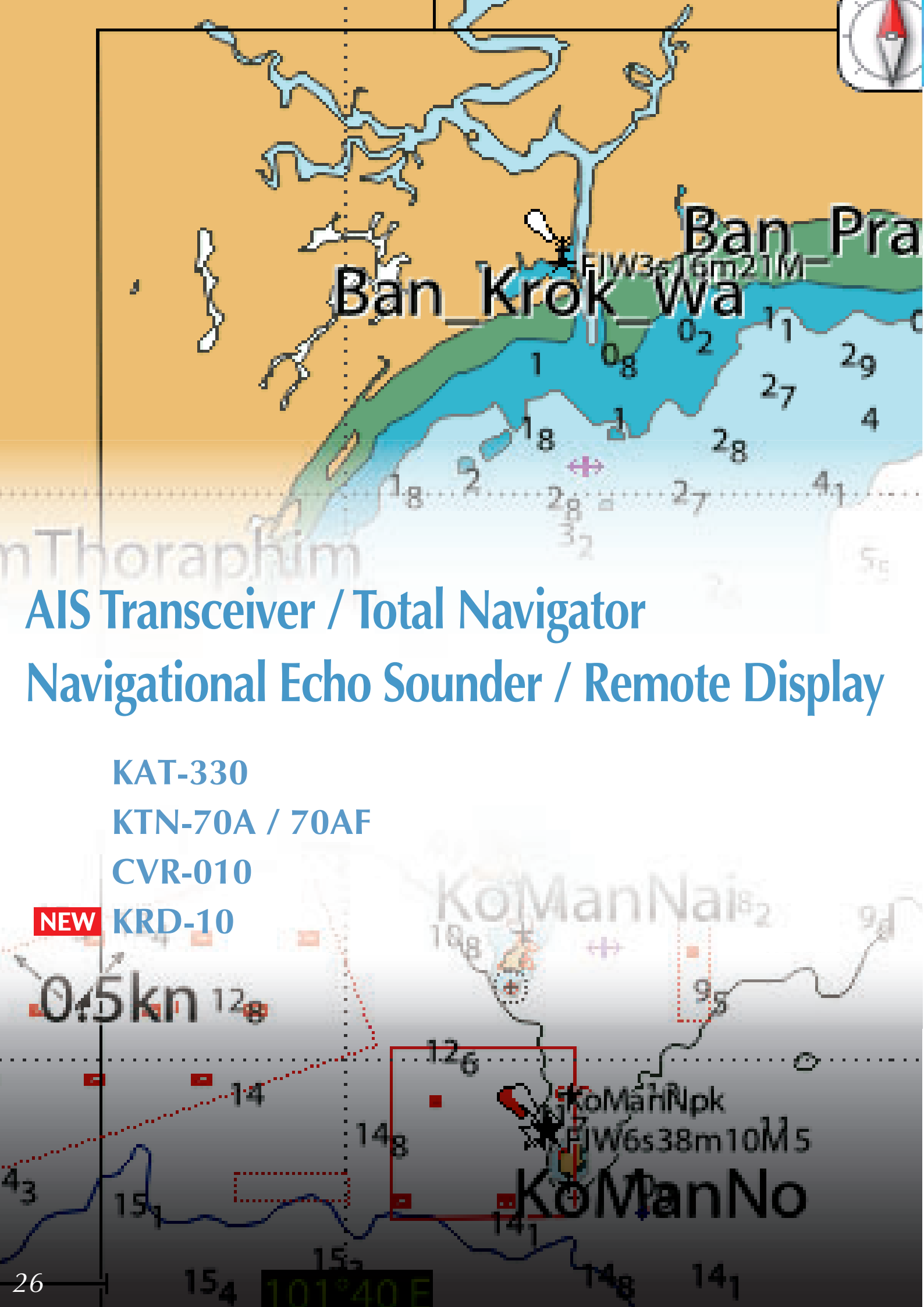
KRD-10

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



AIS Transceiver / Total Navigator Navigational Echo Sounder / Remote Display

KAT-330

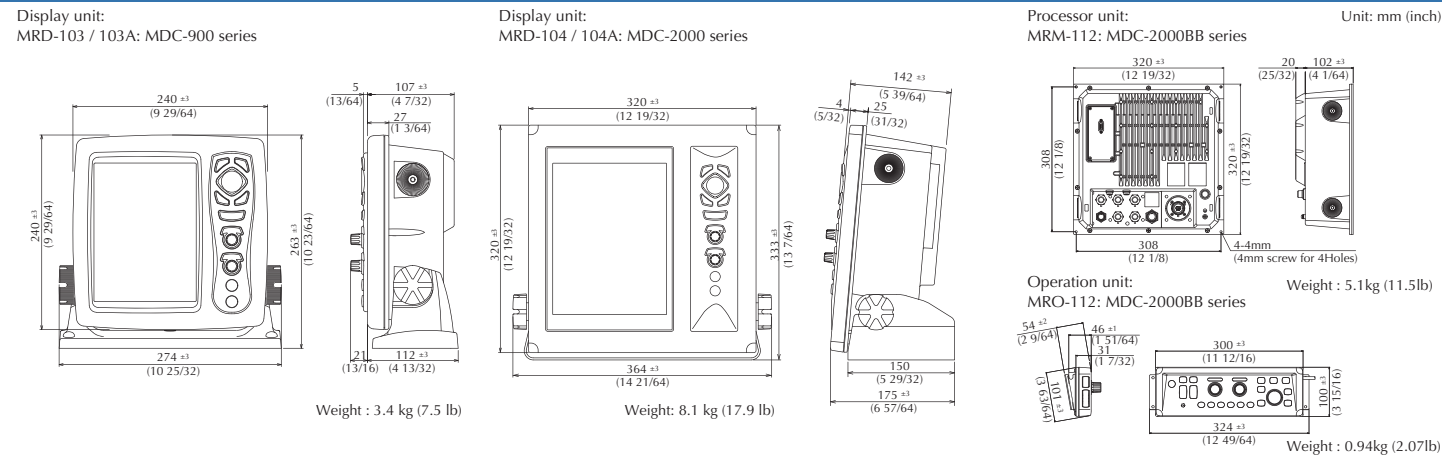
KTN-70A / 70AF

CVR-010

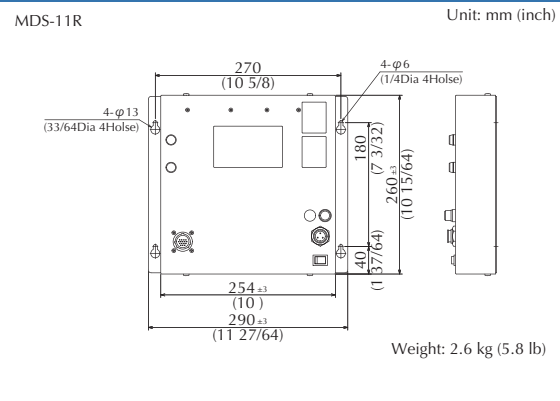
NEW KRD-10

Dimensions and Weight

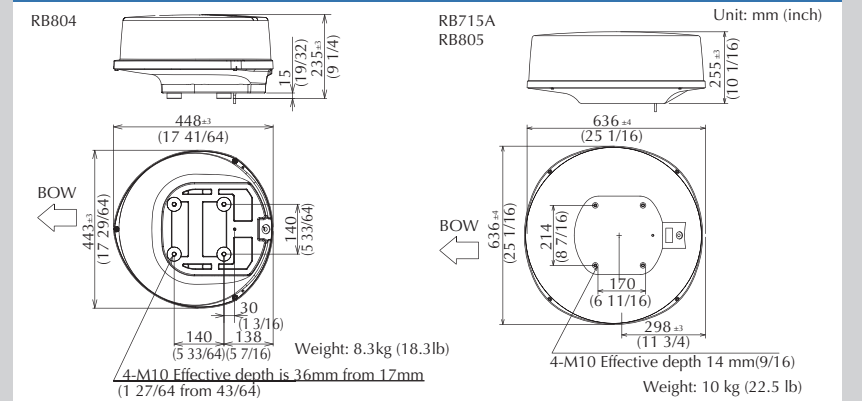
Marine Radar 8.4" MDC-900 series, 10.4" MDC-2000 series, MDC-2000BB series



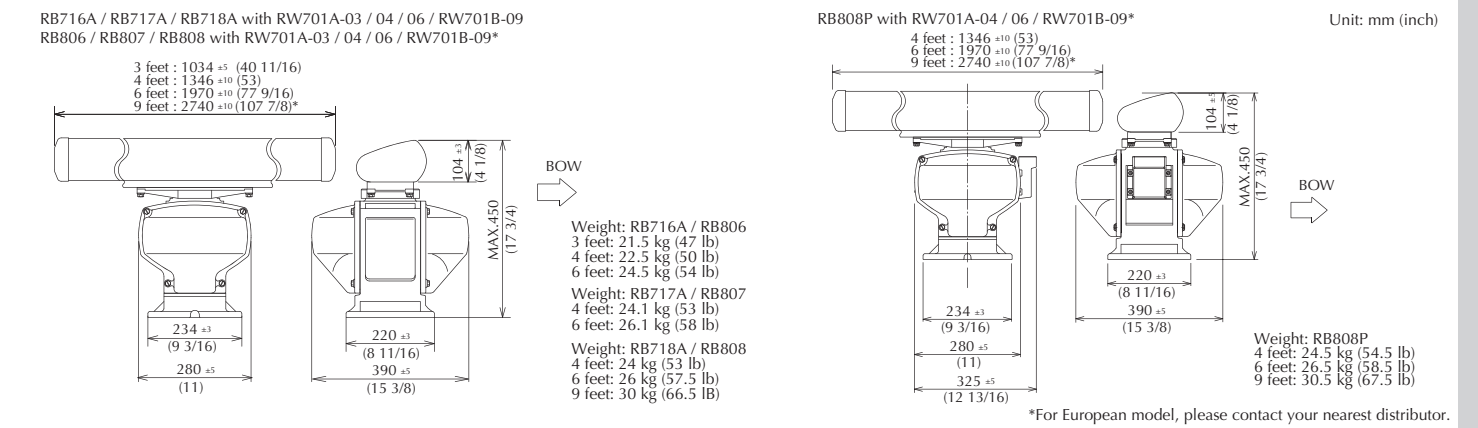
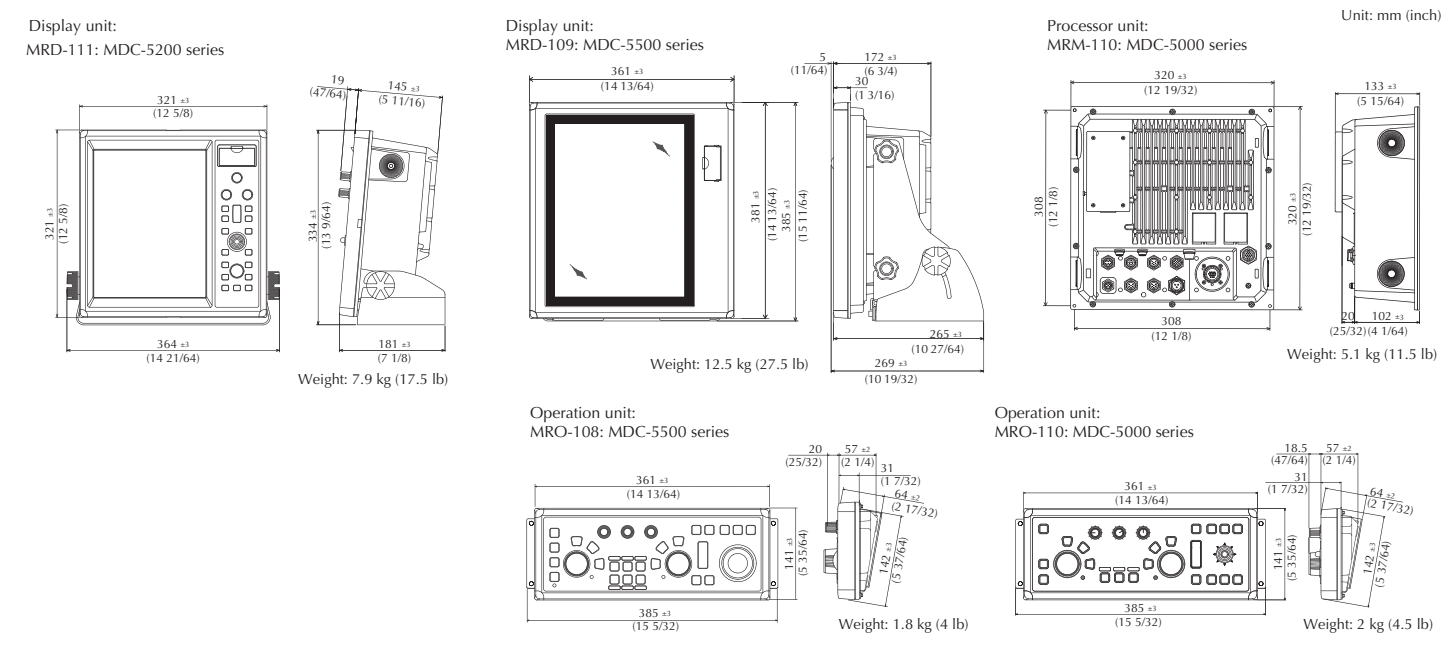
RADARpc Control Box



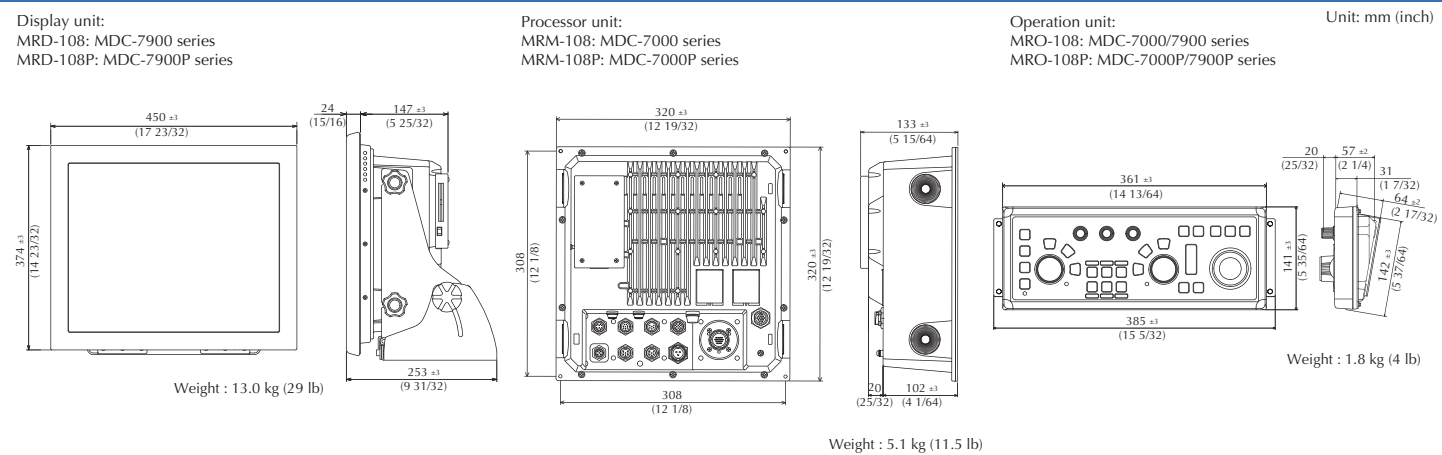
Antenna - Scanner unit



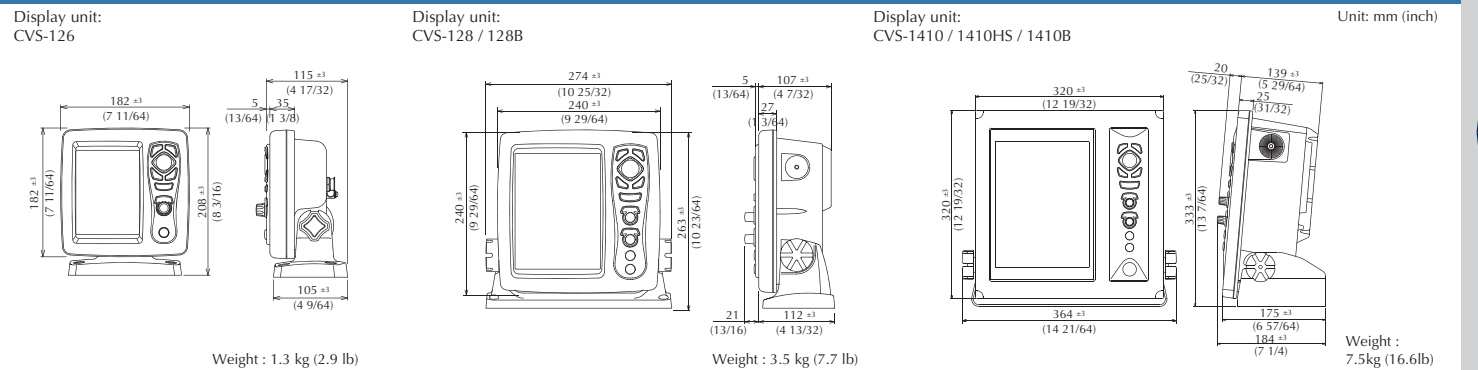
Marine Radar 12" MDC-5200 series, 15" MDC-5500 series, MDC-5000 series



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



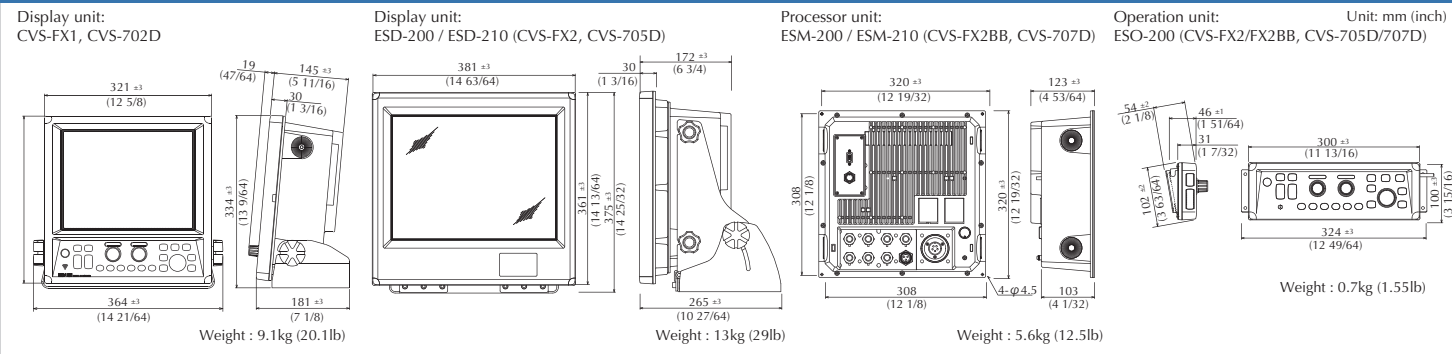
Echo Sounder CVS-126, CVS-128 / 128B, CVS-1410 / 1410HS / 1410B



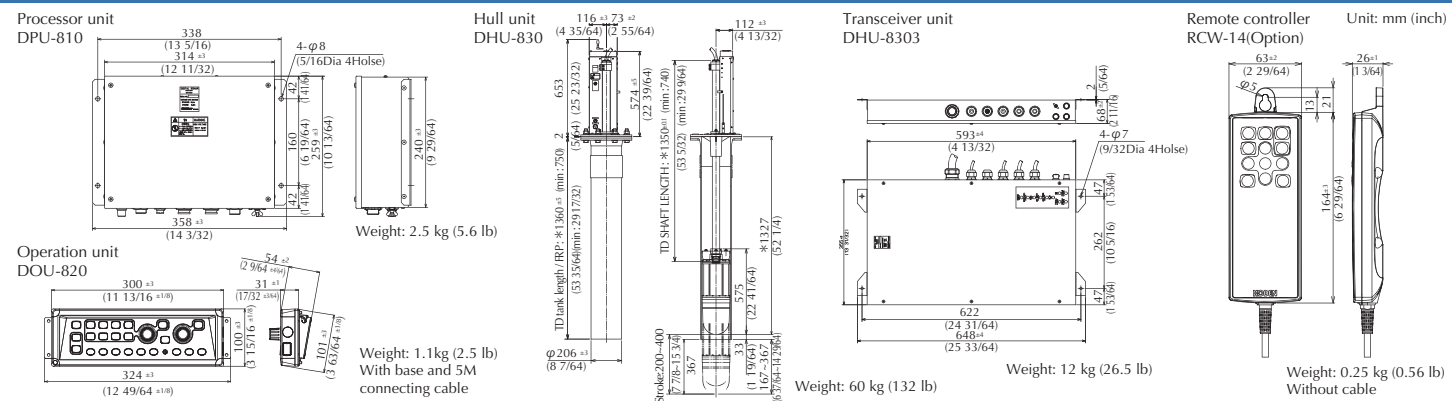
Marine Radar 06
RADARpc 10
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Dimensions and Weight

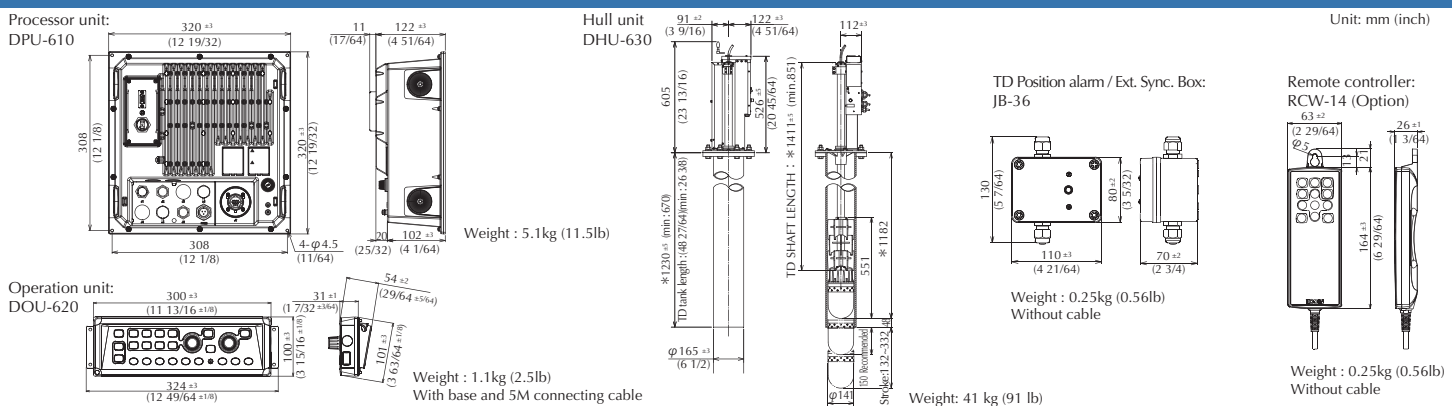
Echo Sounder CVS-FX1, CVS-FX2 / FX2BB, CVS-702D, CVS-705D, CVS-707D



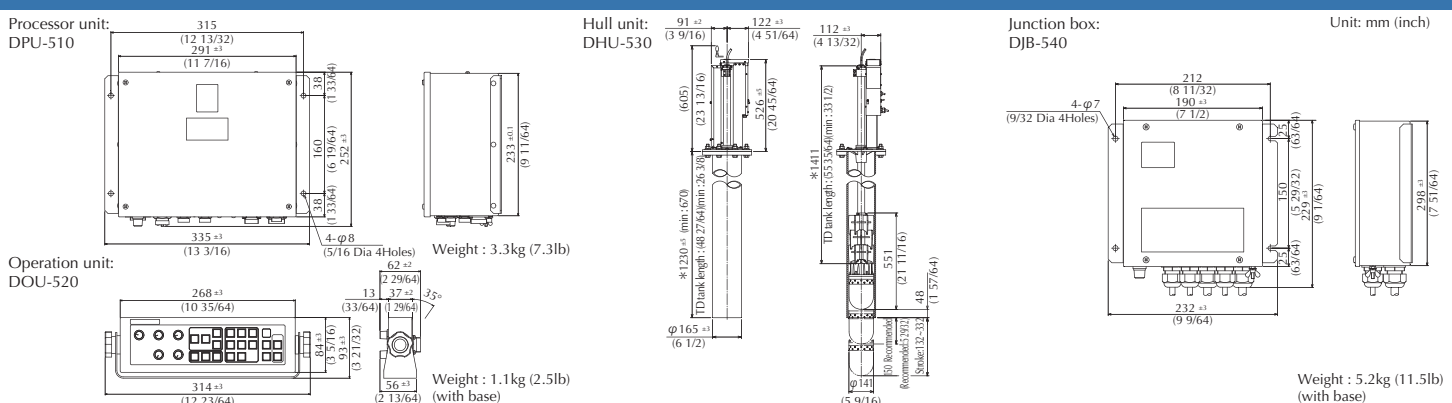
Sonar KDS-8000BB



Sonar KDS-6000BB



Sonar KDS-5000BB



GPS Compass KGC-300, KGC-222

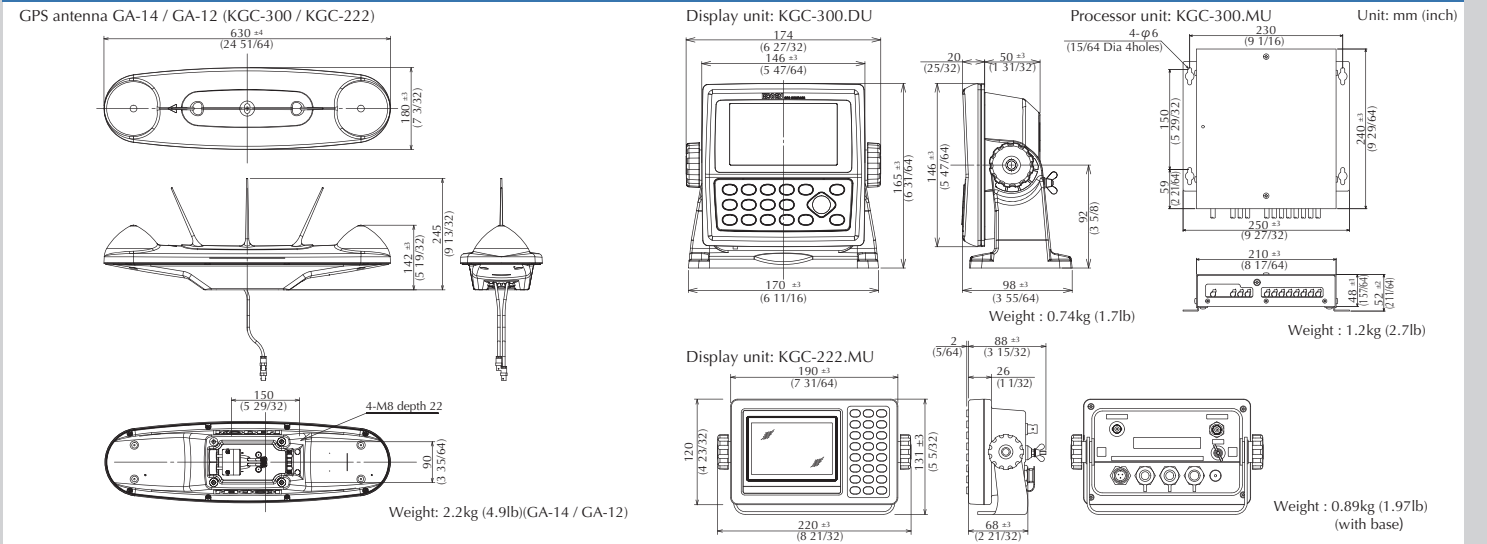
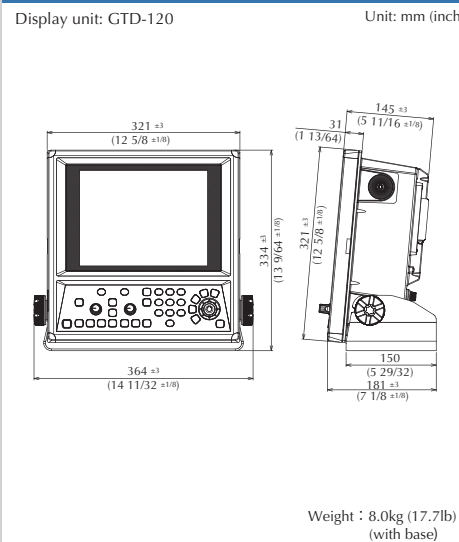
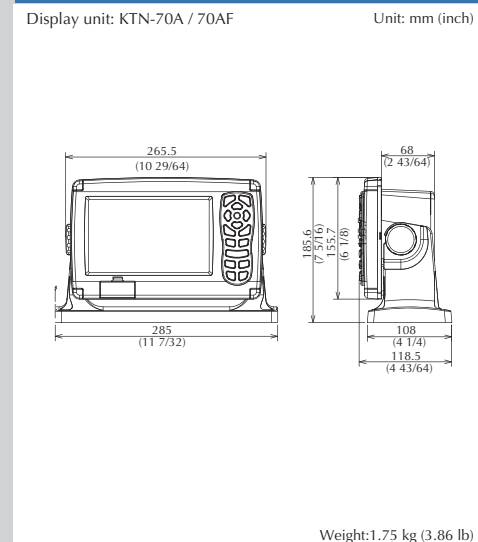


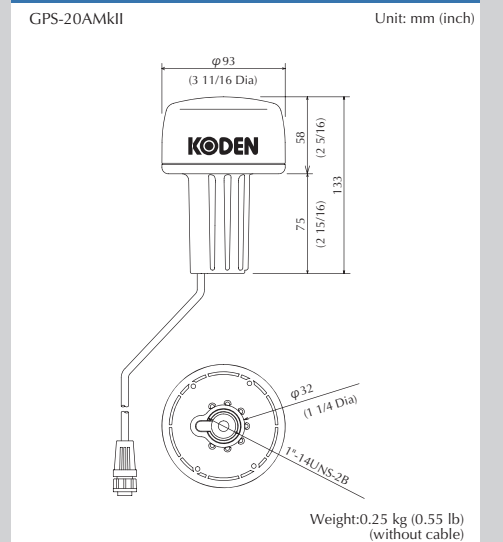
Chart Plotter GTD-120



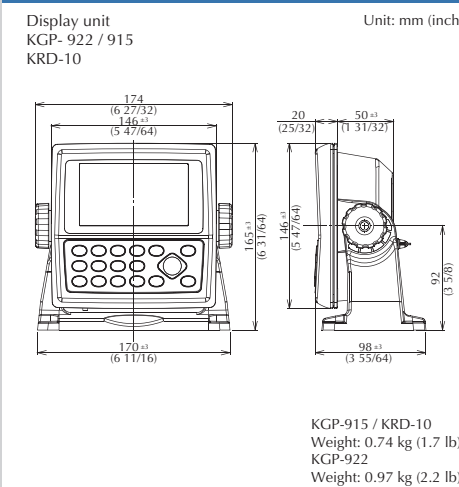
Total Navigator KTN-70A / 70AF



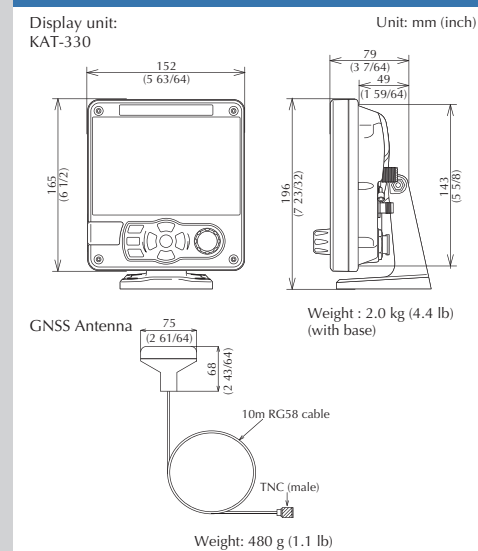
GPS Sensor GPS-20AMkII



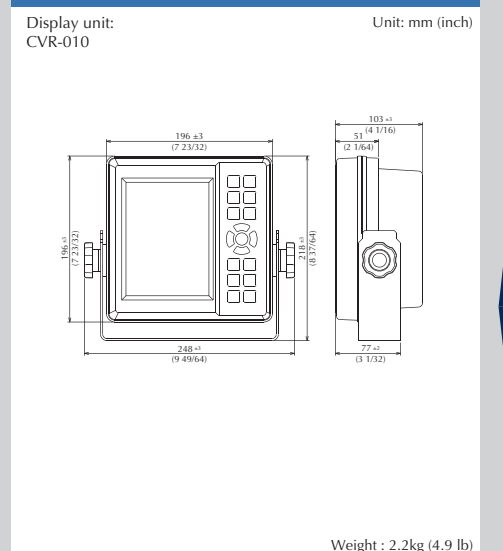
GPS Navigator KGP-922 / 915 Remote Display KRD-10



Class A / Inland AIS Transceiver KAT-330



Navigational Echo Sounder CVR-010



Marine Radar 06
 RADARc 10
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Specifications Radar / RADARpc

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)		1024x768 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%													
Echo area	2 types (Full screen, Inside of effective diameter)				Max. 75%									
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						EC61162-1-2 ALC, ALF, ALR, DTM, EVE, HBT, RSD, OSD, TLB, TLL, TTD, TTM			
Output data format and sentences	NMEA0183 (TTM, TLL)				NMEA0183 (4800 / 9600 / 19200 / 38400 bps) OSD, RSD, TLB, TLL, TTD, TTM						EC61162-1-2 ALC, ALF, ALR, 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				
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-900A / 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		6 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 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 / 65 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		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 / 200 W or less		100 W or less / 130 W or less / 150 W or less		200 W or less / 200 W or less / 200 W or less		100 W or less / 130 W or less / 150 W or less		200 W or less / 200 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		200 W or less / 200 W or less / 200 W or less		150 W or less / 200 W or less / 200 W or less		200 W or less / 200 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										RB716A																					
6 kW Open antenna						RB717A	RB807					RB717A / RB807				RB717A																				
12 kW Open antenna								RB718A	RB808							RB718A																				
25 kW Open antenna																																				
Interconnecting cable length	Standard (m) 242J158055 (10m)		242J159098 (10m)		****		****		242J158055 (10m)		****		****		242J159098 (15m)		****		****		****		242J159098 (15m)		****		****		****		****		****			
Max. length (m)	30		100		100		100		30		100		100		100		100		100		100		100		100		100		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)

RADARpc

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		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	256 / 512 / 1024 dots / sweep (1024 / 2048 / 4096 sweeps per antenna rotation) Level: 3 / 4 bits					
Other function	Preheats 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	
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)			



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Specifications Echo Sounder

Model	CVS-128B	CVS-1410B	CVS-FX1	CVS-FX2	CVS-FX2BB
Specifications & Functions:					
Output power (RMS)	2 kW	3 kW	3 kW	3 kW	3 kW
Transducer	TDM-071, TDM-091D	TDM-052A 38 to 75 kHz and 130 to 210 kHz	TDM-062A 38 to 75 kHz and 85 to 135 kHz	TDM-052A 38 to 75 kHz and 130 to 210 kHz	TDM-062A 38 to 75 kHz and 85 to 135 kHz
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	24 to 240 kHz 0.1kHz step	24 to 240 kHz 0.1kHz step	24 to 240 kHz 0.1kHz step	24 to 240 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 x 768 pixels (XGA)	1024 x 768 pixels (XGA)	1024 x 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.f.m	m, ft, fm, l.f.m	m, ft, fm, l.f.m	m, ft, fm, l.f.m	
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	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	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***	Bottom, Fish, Temperature*, Speed**, Arrival***, XTE***	
Image speed	9 steps & stop	12 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	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	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	
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, VHW, VTG, ZDA	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, RMC, VHW, VTG, ZDA	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, RMC, VHW, VTG, ZDA	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, RMC, VHW, VTG, ZDA	
Output data formats and sentences	NMEA0183 Ver.2.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA	NMEA0183 Ver.2.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA	NMEA0183 Ver.2.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA	NMEA0183 Ver.2.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA	
NMEA ports	Total 1 : input and output	Total 2 : 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	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	-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

Model	CVS-126	CVS-128	CVS-1410	CVS-1410HS	CVS-702D	CVS-705D	CVS-707D
Specifications & Functions:							
Output power (RMS)	600 W	600W or 1kW	1 kW	1 kW	3kW, 5kW	3kW, 5kW	3kW, 5kW
Output frequency	50 kHz and 200 kHz	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)	Dual Freq: 28, 50, 75, 200 kHz (200 kHz is 1kW only)	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	10.4 inch color TFT LCD	12.1 inch color XGA LCD	15 inch color XGA LCD	17 inch color XGA LCD****
Display resolution	320x240 pixels(QVGA)	640x480 pixels(VGA)	640 x 480 pixels (VGA)	640 x 480 pixels (VGA)	1024 x 768 pixels (XGA)	1024 x 768 pixels (XGA)	1024 x 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)	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)	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.f.m	m, ft, fm, l.f.m	m, ft, fm, l.f.m	m, ft, fm, l.f.m	m, ft, fm, l.f.m	m, ft, fm, l.f.m	m, ft, fm, l.f.m
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, 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, 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, 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	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	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	64 colors, 16 colors, 8 colors, Monochrome	64 colors, 16 colors, 8 colors, Monochrome	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***	Bottom, Fish, Temperature*, Speed**, Arrival***, XTE***	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	12 steps & stop	12 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, 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™, 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™, 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™, 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 (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 memory storage (SD card, USB memory)(CVS-705D / 707D only)	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 memory storage (SD card, USB memory)(CVS-705D / 707D only)	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 memory 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	Range, Shift, TVG, TX Power, White Line	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, VHW, VTG, ZDA	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, RMC, VHW, VTG, ZDA	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, RMC, VHW, VTG, ZDA	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, RMC, VHW, VTG, ZDA	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, RMC, VHW, VTG, ZDA	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, RMC, VHW, VTG, ZDA	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, RMC, VHW, VTG, ZDA
Output data formats and sentences	NMEA0183 Ver.2.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA	NMEA0183 Ver.2.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA	NMEA0183 Ver.2.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA	NMEA0183 Ver.2.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA	NMEA0183 Ver.2.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA	NMEA0183 Ver.2.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA	NMEA0183 Ver.2.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA
NMEA ports	Total 1 : input and output	Total 2 : input and output	Total 2 : input and output	Total 2 : input and output	Total 2 : 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	10.8 to 31.2 VDC	10.8 to 31.2 VDC	21.6 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 (24 VDC)	30 W or less (24 VDC)	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	-15°C to +55°C	-15°C to +55°C	-15°C to +55°C	-15°C to +55°C	-15°C to +55°C
Water protection	IPX5	IPX5	IPX5	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
 **** Installed single frequency transducer of 50 and 200 kHz can be also used. For details, please contact your nearest distributor.
 ***** For European model, please contact your nearest distributor.

Marine Radar 06
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 Chart Plotter 22
 GPS Navigator • Compass • Sensor 24
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Specifications Sonar / Chart Plotter / Remote Display

Sonar

Model		KDS-8000BB										
Specifications & Functions:												
Output power (RMS)	1.0 kW											
Output frequency	130 to 210 kHz (0.1 kHz step)											
Tilt angle	5° to -90° (1 step)											
Beam angle	Horizontal: 6°, 12°, 18°, 45° Vertical: 8.4°(130 Hz) to 5.2°(210 kHz)											
TD stroke	200 to 400 mm											
Display size and type	Any monitor with XGA or HD resolution (Owner supplied)											
Basic ranges	10 to 1200(m), 30 to 4000(ft), 10 to 700(fm), 10 to 800(l.f.m) (8 ranges can be set to users choice)											
Range units	m, ft, fm, l.f.m											
Scanning sector angles	Sector scan mode	45°step: 45°,90°,135°,180°,225°,360°										
	Sonar mode	6°step: 6°,30°,54°,102°,150°,198°,246°,360° 12°step: 12°,36°,60°,108°,156°,204°,252°,360° 18°step: 18°,54°,90°,126°,162°,198°,234°,360°										
	Bottom scan mode	6°step: 6°,30°,54°,78°,102°,126°,150°,174° 12°step: 12°,36°,60°,84°,108°,132°,156°,180°										
360° Scanning time (extracts)	Scanning range (m)	40	100	160	200	240	280	320	400			
		Scanning time(sec.) 45°step	3.9	4.5	5.2	5.6	6.0	6.5	6.9	7.7		
		Scanning range(m)	40	100	160	200	240	280	320	400		
		Scanning time(sec.) 18°step	5.3	6.9	8.6	9.7	10.8	11.8	12.9	15.0		
Bearing center	1°step											
Presentation mode	Sonar, Off-senter, Bottom scan, Echo sounder, Sonarx2											
Off-Center	Fore, Back, Left, Right											
Target lock	Reverse, Mode1, Mode2, Marker + Mode1, Marker + Mode2											
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, Image correction, Bearing display, TD auto up, Hull unit TD position alarm (Display LED red on Operation unit), etc											
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	21.6 to 31.2 VDC										
	Hull unit	21.6 to 31.2 VDC										
Power consumption (24 VDC)	Processor unit	80W or less										
	Hull unit	450W or less										
Environmental:												
Operating temperature	-15 °C to + 55 °C											
Water protection	Operation unit: IPX5 / Processor unit: IPX0 / Transceiver unit: IPX2											

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	480x640(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 x 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										
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-6000BB											
Specifications & Functions:													
Output power (RMS)	1.5 kW												
Transducer	DHU-6302-80 kHz					DHU-6302-BB							
Output frequency	80 to 90 kHz (0.1 kHz step)												
Tilt angle	5° to -90° (1 step)												
Beam angle	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.f.m) (8 ranges can be set to users choice)												
Range units	m, ft, fm, l.f.m												
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 + 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	-												

Remote Display

Model		KRD-10									
Specifications & Functions:											
Display size and type	4.3 inch color LCD										
Display resolution	480 x 272 (WQVGA)										
Presentation 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 / 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, l.f.m, ft, f.m), Wind speed unit (kn, m / s, mph), SOG / COG / Heading / Rotation averaging (smooth) factor, Sailing mode (Great Circle, Rhumb Line)										
Output data formats and sentences	NMEA 0183 Ver.2.0 / 3.0 (AAM, APB, BOD, BWC, DCN, DPT, DTM, GGA, GLL, GSA, GSV, HEV, HDT, HDM, HPR, MSS, MTW, MWV, RMB, RMC, ROT, RTE, VHW, VTG, WPL, XTE, ZDA)										
Input data formats and sentences	NMEA 0183 Ver. 2.0 / 3.0 (DBT: Ver.1.5) (CUR, DBT, DPT, GBS, 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)										
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		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.f.m) (8 ranges can be set to users choice)												
Range units	m, ft, fm, l.f.m												
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 (*TLL 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	-												

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Specifications GPS Sensor / Total Navigator Navigational Echo Sounder

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 x 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, Alarms, 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.)	
Alarms	TX Malfunction, RX Channel x malfunction, 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*	32 channels GPS and GLONASS operating modes	
Frequency*	L1 GPS band, 1575.42 MHz and L1 GLONASS band 1597.1 to 1609.5 MHz	
Sensitivity*	<-107 dBm for 20% PER (TDMA Transmitter / Receiver) -107 dBm@BER <10 ⁻³ (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, AIR, BBM, DTM, GBS, GGA, GLL, GNS, HDT, LRF, LRI, RMC, ROT, SSS, VBV, VSD, VTG, EPV, SPW, THS	
Output data formats and sentence	IEC61162-1/2 ABK, ACA, ALR, LR1, LR2, LR3, LRF, LRI, TXT, VDM, VDO, TRL, VER	
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	
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 x 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)	KGC-222
Specifications:		
Display size and type	4.3 inch color LCD	4.0 inch LCD
Display resolution	480x272 pixels	128 x 64 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, PKODG21 (ALC, ALF or ALR, HBT *DATA1 only)	NMEA 0183 Ver. 2.0 ATT, DTM, GGA, GLL, GSA, GSV, HDM, HDT, HVE, MSS, RMC, ROT, VTG, ZDA, PKODA, PKODG1, PKODG7, PKODG21, PKODQ
Output data level	RS-422	RS-422
Input data format	RTCM SC104 Ver.2.0 (DGPS)	-
NMEA ports	Total 5: output	Total 3: 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-20AMkII	
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 update 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 VDC)	0.6W or less	
Environmental:		
Operating temperature	-25 to +55 °C	
Water protection	IPX6	

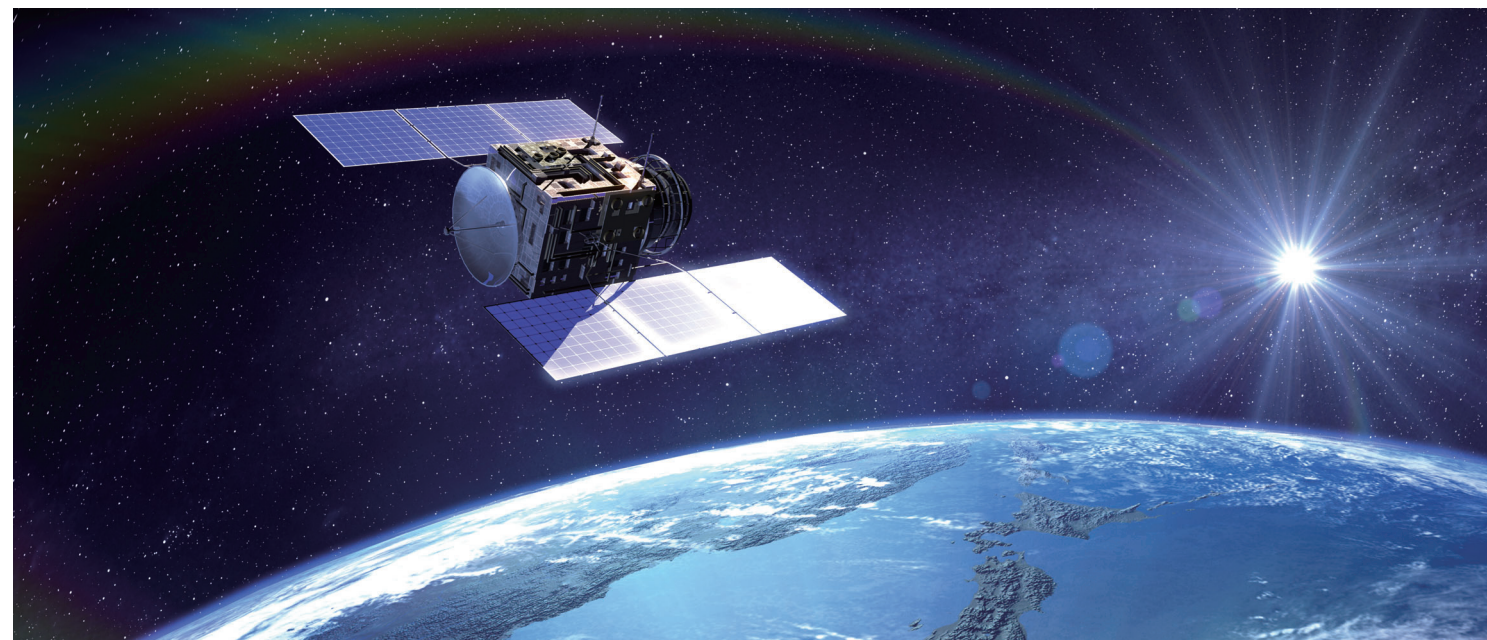
Navigational Echo Sounder

Model	CVR-010 (IMO)	
Specifications & Functions:		
Output power (RMS)	600 W	
Transducer	TGM 60-50-20L (TD-26 / 20L)	TGM 80-200-20L (TD-65 / 20L)
Output frequency	50 kHz	200 kHz
Display size and type	5.7 inch color TFT LCD, LED-backlight	
Display resolution	240 x 320 pixels (QVGA)	
Basic ranges	5 to 800 (m), 2.5 to 400 (fm), 20 to 4000 (ft)	
Range units	m, ft, fm	
Accuracy of measurement	Better than ±2.5% of digital depth readout	
Minimum detectable depth	1 m	0.5 m
Range discrimination	20 m range: 5 mm / m, 200 m range: 0.5 mm / m	
Soundings history	Max. 12 hours	
Data storage interval	At 2 seconds interval	
Presentation colors	8 colors	
Alarms	Depth, Bottom-Missing, Power failure, Power removal / Shutoff	
Image speed	1 step	
Functions	Noise reduction, LOG DATA, White line, VRM, Transducer location, Depth reference, Draft, Date / Time, LAT / LON *	
Auto functions	Range, TVG, GAIN	
Input data format and sentences	NMEA0183 (GGA, VTG, ZDA, RMC, ACK)	
Output data format and sentences	NMEA0183 (DPT, PSKDPT, DBT, DBK, RMC)	
NMEA ports	Total 3 : input and output	
Power supply	20 to 24 VDC (11 to 40 VDC)	
Power consumption (24 VDC)	15 W or less	
Environmental:		
Operating temperature	-15°C to +55°C	
Water protection	-	

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

Total Navigator

Model	KTN-70A / 70AF	
General		
Display size and type	7-inch Color LCD	
Display resolution	800 x 480 (WVGA)	
Presentation modes	KTN-70A	Plotter (Full screen, with information window), Compass, Data
	KTN-70AF	Plotter, Sounder (Hi / Low / Dual frequency / H: Zoom / L: Zoom), Plotter / Sounder (3:1 Vertical / 3:1 Horizontal), Compass, Data
Input data formats and sentences	NMEA0183 Ver.1.5 / 2.0 DPT, GGA, GLL, HDG, HDT, MTW, MWD, MWV, RMC, TLL, TTM, VTG, ZDA	
Output data formats and sentences	NMEA0183 Ver.1.5 / 2.0, AIS sentence APB, BOD, BWC, DPT, GGA, GLL, HDT, MTW, MWV, MWD, RMA, RMB, RMC, RTE, TLL, VTG, XTE, ZDA	
NMEA ports	Total 2 : input and output	
AIS	400 targets	
Power supply	10.8 to 31.2 VDC	
Power consumption (24 VDC)	25 W or less	
Operating temperature	-15°C to +55°C	
Water protection	IPX4 (Display unit), IPX6 (Antenna unit)	
Plotter		
Basic ranges	0.01 to 200 NM, 0.02 to 400km	
Range unit	Distance: km / NM, Speed: km / h / kn	
Track points	400,000 (1 Block / Max 20,000)	
Mark points / WPT	100,000	
Alarms	CPA, TCPA, Anchor watch, XTE, Arrival, Over speed, Drawing, Distance to turn waypoint, Lower depth, Higher depth, Water temperature	
Echo Sounder (KTN-70AF)		
Output power	300W	
Output frequency	50 / 200 kHz	
Basic ranges	0 to 400 (m), 0 to 1200 (ft), 0 to 260 (fm), 0 to 280 (l.f.m)	
Zoom ranges	2.5 to 200 (m), 5 to 640 (ft), 2.5 to 110 (fm), 2.5 to 130 (l.f.m)	
Shift step	1 (m, ft, fm, l.f.m)	
Range unit	m, ft, fm, l.f.m	
Presentation colors	16 colors / 8 colors / Monochrome	
Alarms	Bottom, Fish	
Image speed	7 steps & stop	
Zoom type	Bottom, B.D. (Bottom discrimination), Zoom	
Auto functions	Gain, Range, Shift	



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