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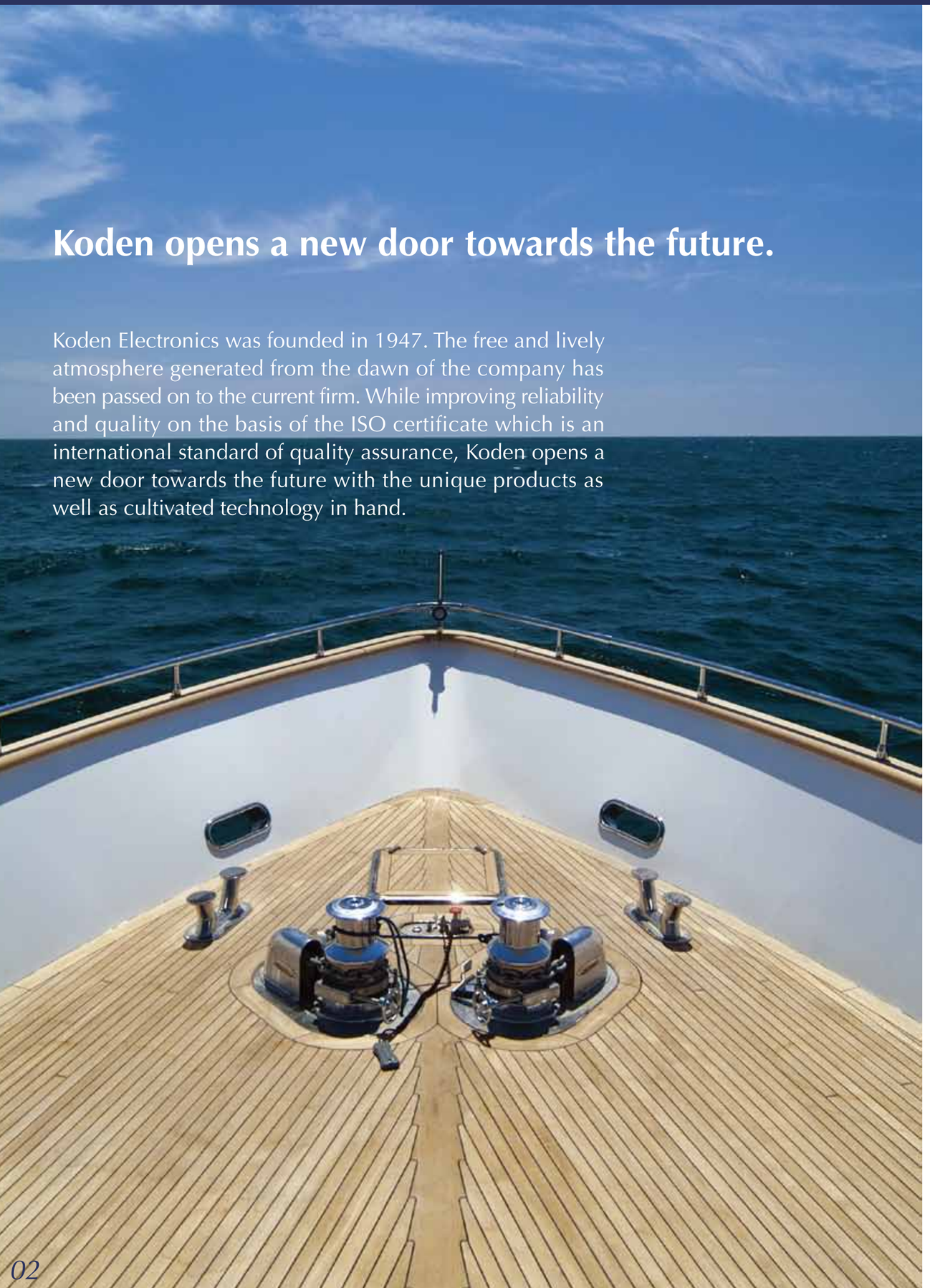
• Design and specifications are subject to change without notice.

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

12/11 PDF

KODEN



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.

INDEX

Marine Radar 8.4", 10.4"

MDC-900 series

Smart selection for safe navigation

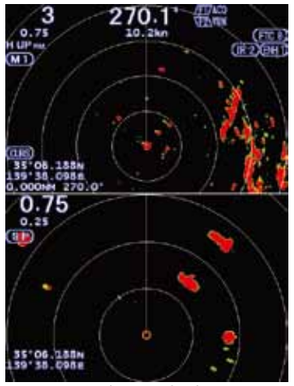
Marine radar MDC-900 series and MDC-2000 series present performance and functions of larger professional grade radars. The series features sophisticated Hyper Digital Processing (HDP™) technology for real-time presentation and superior target discrimination.
The real-time smooth head-up presentation 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.
- ATA (Automatic Tracking Aid) tracks up to 50 targets (Option).
- AIS (Automatic Identification System) 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.

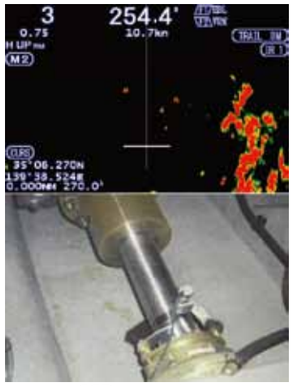
MDC-2000 series

Model	MDC-921	MDC-941	MDC-940
Specifications & Functions:			
Output power (Peak)	2 kW	4 kW	
Display unit	MRD-103		
Display size and type	8.4" color LCD		
Effective diameter	127.4 mm		
Display resolution	480 x 640 pixels (VGA)		
Off-centering	Max. 66%		
Echo area	2 types (Full screen, Inside of effective diameter)		
Basic ranges	0.0625 to 24 NM	0.0625 to 32 NM	0.0625 to 48 NM
Presentation modes	Head-up, North-up (True motion)***, North-up (Relative motion)*, Course-up (True motion) ***, Course-up (Relative motion)*, WPT-up**		
Indication system	PPI, PPI/PPI, PPI/NAV		
Video levels	8		
Alarms	Echo (IN / OUT), ATA / AIS (CPA / TCPA) etc.		
Functions	Interference rejection, Target expansion, VRM, EBL (true* / relative), Parallel index, Cursor position (Lat / Lon)***, Bearing (true* / relative), Trail***, RGB Monitor output, Extemal Buzzer output, Slave display monitor input / output, Accepts CCD camera input		
Input data format and sentences	NMEA 0183 (BEC, BWC, BWR, DPT, DBT, GGA, GLL, GNS, HDG, HDM, HDT, MTW, MWD, MWV, RMA, RMB, RMC, VHW, VTG, XTE)		
Output data format and sentences	NMEA 0183 (TTM, TLL)		
NMEA ports	Total 2 : input and output		
AIS interface ***	100 Targets (Option)		
ATA ***	50 Targets (Option)		
Power supply	10.8 to 31.2 VDC		
Power consumption (at 24 VDC)	45 W or less	55 W or less	70 W or less
Environmental :			
Operating temperature	-25°C to +55°C (Antenna-scanner unit), -15°C to +55°C (Display unit)		
Water protection	CFR46 (Antenna-scanner unit), IPX5 (Display unit)	IPX6 (Antenna-scanner unit), IPX5 (Display unit)	
Antenna-scanner connections: (See page 11 for details)			
2 kW, Radome	RB714A	-	-
4 kW, Radome	-	RB715A	-
4 kW, Open antenna	-	-	RB716A
6 kW, Open antenna	-	-	-
12 kW, Open antenna	-	-	-
Antenna-scanner unit cable 10, 15, 20 or 30 m	242J160680	242J158055	242J159098
Antenna-scanner unit cable Max. length (m)	30	100	

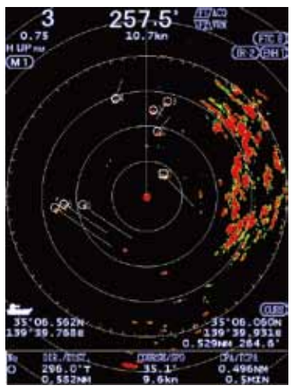
* Requires bearing data input.
** Requires waypoint data input.
*** Requires bearing data, ship's speed data and latitude / longitude data input.



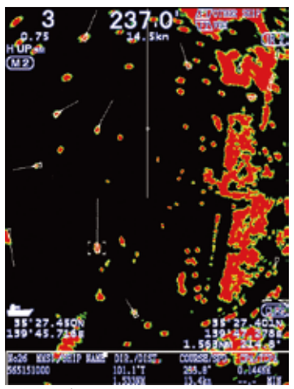
Dual range display



CCD camera input



ATA up to 50 targets as option



AIS interface up to 100 targets as option

Model	MDC-2041	MDC-2040	MDC-2060	MDC-2010
Specifications & Functions:				
Output power (Peak)	4 kW		6 kW	12 kW
Display unit	MRD-104			
Display size and type	10.4" color LCD			
Effective diameter	157.4 mm			
Display resolution	480 x 640 pixels (VGA)			
Off-centering	Max. 66%			
Echo area	2 types (Full screen, Inside of effective diameter)			
Basic ranges	0.0625 to 32 NM	0.0625 to 48 NM	0.0625 to 64 NM	0.0625 to 72 NM
Presentation modes	Head-up, North-up (True motion)***, North-up (Relative motion)*, Course-up (True motion) ***, Course-up (Relative motion)*, WPT-up**			
Indication system	PPI, PPI/PPI, PPI/NAV			
Video levels	8			
Alarms	Echo (IN / OUT), ATA / AIS (CPA / TCPA) etc.			
Functions	Interference rejection, Target expansion, VRM, EBL (true* / relative), Parallel index, Cursor position (Lat / Lon)***, Bearing (true* / relative), Trail***, RGB Monitor output, Extemal Buzzer output, Slave display monitor input / output, Accepts CCD camera input			
Input data format and sentences	NMEA 0183 (BEC, BWC, BWR, DPT, DBT, GGA, GLL, GNS, HDG, HDM, HDT, MTW, MWD, MWV, RMA, RMB, RMC, VHW, VTG, XTE)			
Output data format and sentences	NMEA 0183 (TTM, TLL)			
NMEA ports	Total 2 : input and output			
AIS interface ***	100 Targets (Option)			
ATA ***	50 Targets (Option)			
Power supply	10.8 to 31.2 VDC			
Power consumption (at 24 VDC)	65 W or less	80 W or less	110 W or less	130 W or less
Environmental :				
Operating temperature	-25°C to +55°C (Antenna-scanner unit), -15°C to +55°C (Display unit)			
Water protection	IPX6 (Antenna-scanner unit), IPX5 (Display unit)			
Antenna-scanner connections: (See page 11 for details)				
2 kW, Radome	-	-	-	-
4 kW, Radome	RB715A	-	-	-
4 kW, Open antenna	-	RB716A	-	-
6 kW, Open antenna	-	-	RB717A	-
12 kW, Open antenna	-	-	-	RB718A
Antenna-scanner unit cable 10, 15, 20 or 30 m	242J158055	242J159098	242J159098	242J159098
Antenna-scanner unit cable Max. length (m)	100			

* Requires bearing data input.
** Requires waypoint data input.
*** Requires bearing data, ship's speed data and latitude / longitude data input.

Marine Radar 12", 15"

Superb performance for confidence at sea

MDC-2200 / 2500 series are high performance and multi-function radars with the essence of Koden's advanced technology.
The radars are especially recommended for professional users such as work boats, fishing boats and commercial vessels.
Its superb detection capability and solid performance support safe and efficient navigation.
Black Box type is also available for owner-supplied XGA / UXGA monitor in landscape position (MDC-2500BB series).

MDC-2200 series

- Chart overlay with C-MAP NT+ or NT MAX chart as standard (Chart: owner supplied).
- Real-time smooth head-up.
- True Trail function clearly identifies moving targets from stationary targets like land or buoys.
- Built-in ATA (Automatic Tracking Aid) tracks up to 50 targets.
- AIS (Automatic Identification System) interface displays up to 200 AIS targets (option).
- Two-speed antenna rotation 24 or 48 rpm. 48 rpm can track fast moving and close-in targets.

MDC-2500 series

MDC-2500BB series

Model	MDC-2240	MDC-2260	MDC-2210	MDC-2220
Specifications & Functions:				
Output power (Peak)	4 kW	6 kW	12 kW	25 kW
Display unit	MRD-101			
Display size and type	12.1″ color LCD			
Effective diameter	184 mm			
Display resolution	1024 x 768 pixels (XGA)			
Off-centering	Max. 66%			
Echo area	2 types (Full screen, Inside of effective diameter)			
Basic ranges	0.125 to 48 NM	0.125 to 72 NM		0.125 to 96 NM
Presentation modes	Head-up, North-up (True motion)***, North-up (Relative motion)*, Course-up (True motion)***, Course-up (Relative motion)*			
Indication system	PPI			
Video level	8			
Alarms	Echo (IN / OUT), ATA / AIS (CPA / TCPA), Guard zone etc.			
Functions	Interference rejection, Target expansion, Zoom, 2 VRMs, 2 EBLs (true* / relative), Floating EBL / VRM, Cursor position (Lat / Lon**), Parallel cursor, Bearing (true* / relative), Day / Night mode, Trail**, Past cursor**, Mark**, Route**, RGB Monitor output, Slave display monitor input / output, External buzzer output			
Input data format and sentences	NMEA 0183 (BWC, DBT, DPT, DTM, GGA, GLC, GLL, GNS, HDG, HDM, HDT, MTW, RMA, RMB, RMC, RTE, VBW, VDH, VHW, VTG, WPL, ZDA)			
Output data format and sentences	NMEA 0183 (HDT, VHW, VTG, GLL, VDR, RSD, OSD, TTM, TLL)			
NMEA ports	Total 3 : input 1, input and output 2			
AIS interface **	200 Targets (Option)			
ATA **	50 Targets			
Power supply	10.8 to 41.6 VDC			21.6 to 41.6 VDC
Power consumption (at 24 VDC)	80 W or less	110 W or less	130 W or less	170 W or less
Environmental:				
Operating temperature	-25°C to +55°C (Antenna-scanner unit), -15°C to +55°C (Display unit / Processor unit)			
Water protection	IPX6 (Antenna-scanner unit), IPX5 (Display unit)			
Antenna-scanner connections: (See page 11 for details)				
4 kW, Open antenna	RB716A	-	-	-
6 kW, Open antenna	-	RB717A	-	-
12 kW, Open antenna	-	-	RB718A	-
25 kW, Open antenna	-	-	-	RB719A
Antenna-scanner unit cable 15, 20 or 30 m	242J159098			
Max. length (m)	100 m			

* Requires bearing data input.
** Requires bearing data, ship's speed data and latitude / longitude data input.
*** Requires bearing data and ship's speed data input.
Above specifications are standard model. For IEC approved model, please contact your nearest distributor.

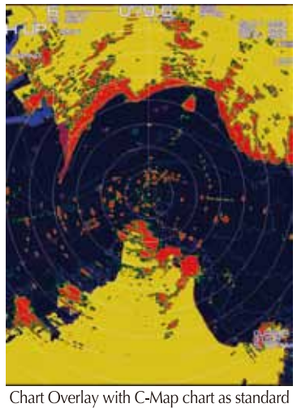
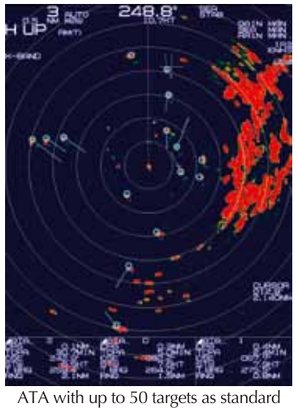
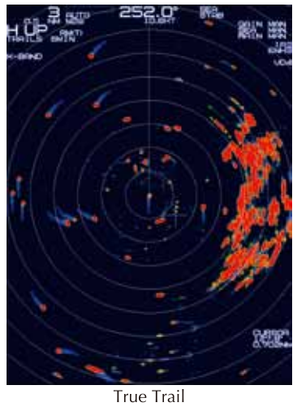


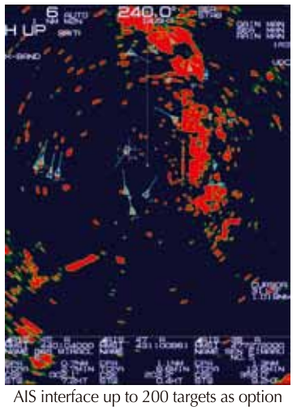
Chart Overlay with C-Map chart as standard



ATA with up to 50 targets as standard



True Trail

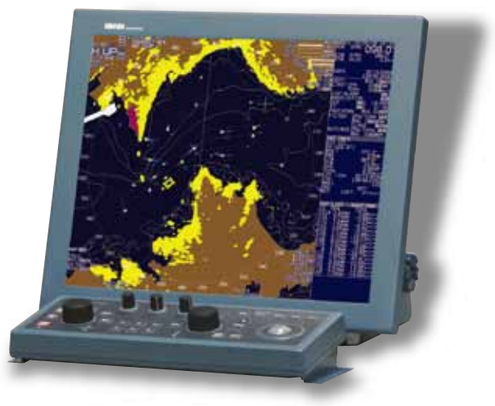


AIS interface up to 200 targets as option

Model	MDC-2540 / MDC-2540BB	MDC-2560 / MDC-2560BB	MDC-2510 / MDC-2510BB	MDC-2520 / MDC-2520BB
Specifications & Functions:				
Output power (Peak)	4 kW	6 kW	12 kW	25 kW
Display unit	MRD-102 / MRM-102 (Processor unit)			
Operation unit	MRO-102			
Display size and type	15" color LCD / Any monitor with XGA or UXGA resolution (Owner supplied)			
Effective diameter	228 mm			
Display resolution	1024 x 768 pixels (XGA)			
Off-centering	Max. 66%			
Echo area	2 types (Full screen, Inside of effective diameter)			
Basic ranges	0.125 to 48 NM	0.125 to 72 NM		0.125 to 96 NM
Presentation modes	Head-up, North-up (True motion)***, North-up (Relative motion)*, Course-up (True motion)***, Course-up (Relative motion)*			
Indication system	PPI			
Video level	8			
Alarms	Echo (IN / OUT), ATA / AIS (CPA / TCPA), Guard zone etc.			
Functions	Interference rejection, Target expansion, Zoom, 2 VRMs, 2 EBLs (true* / relative), Floating EBL / VRM, Cursor position (Lat / Lon**), Parallel cursor, Bearing (true* / relative), Day / Night mode, Trail**, Past cursor**, Mark**, Route**, RGB Monitor output, Slave display monitor input / output, External buzzer output			
Input data format and sentences	NMEA 0183 (BWC, DBT, DPT, DTM, GGA, GLC, GLL, GNS, HDG, HDM, HDT, MTW, RMA, RMB, RMC, RTE, VBW, VDH, VHW, VTG, WPL, ZDA)			
Output data format and sentences	NMEA 0183 (HDT, VHW, VTG, GLL, VDR, RSD, OSD, TTM, TLL)			
NMEA ports	Total 3 : input 1, input and output 2			
AIS interface **	200 Targets (Option)			
ATA **	50 Targets			
Power supply	10.8 to 41.6 VDC			21.6 to 41.6 VDC
Power consumption (at 24 VDC)	110W or less / 80 W or less	130 W or less / 110 W or less	150 W or less / 130 W or less	200 W or less / 180 W or less
Environmental:				
Operating temperature	-25°C to +55°C (Antenna-scanner unit), -15°C to +55°C (Display unit / Processor unit)			
Water protection	IPX6 (Antenna-scanner unit), IPX5 (Display unit / BB type with optional water protection RGB cable)			
Antenna-scanner connections: (See page 11 for details)				
4 kW, Open antenna	RB716A	-	-	
6 kW, Open antenna	-	RB717A	-	-
12 kW, Open antenna	-	-	RB718A	-
25 kW, Open antenna	-	-	-	RB719A
Antenna-scanner unit cable 15, 20 or 30 m	242J159098			
Max. length (m)	100 m			

* Requires bearing data input.
** Requires bearing data, ship's speed data and latitude / longitude data input.
*** Requires bearing data and ship's speed data input.
Above specifications are standard model. For IEC approved model, please contact your nearest distributor.

Marine Radar 19"
ARPA



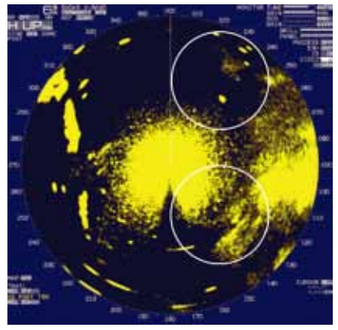
MDC-2900 / 2900BB series

Expand your professional world

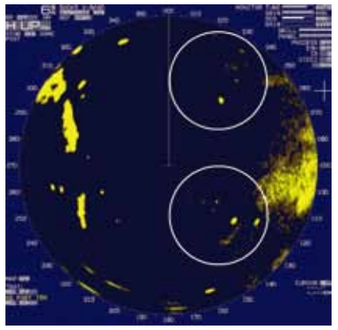
- MDC-2900 series has a chart overlay feature with C-Map NT+ or NT MAX chart. It provides clear radar pictures of coastlines, buoys, and other features (Chart: owner supply).
- MDC-2900P series complies with the IMO regulation MSC192 (79) and meet the SOLAS carriage requirements for ships up to 10,000 gross tons.
- Full ARPA (Automatic Radar Plotting Aid) functions including trial manoeuvre are provided.
- 19" high-resolution SXGA color LCD with anti-reflective coating. It increased visibility in direct sunlight and prevents condensation.
- CFAR, function of clutter suppression to provide clear target image (Check CFAR function image).
- Real-time smooth head-up.
- True Trail function clearly identifies moving targets from stationary targets like land or buoys.
- Built-in AIS (Automatic Identification System) interface displays up to 254 AIS targets.
- Built-in TT (ARPA) tracks up to 60 targets.
- Black Box models also available.

MDC-2900P / 2900PBB series

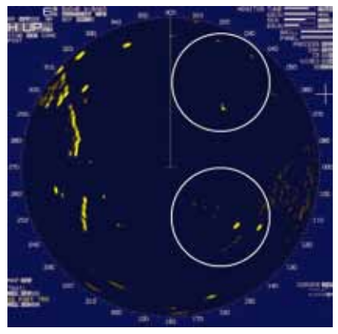
Model	MDC-2960 / MDC-2960BB	MDC-2910 / MDC-2910BB	MDC-2920 / MDC-2920BB
Specifications & Functions:			
Output power (Peak)	6 kW	12 kW	25 kW
Display unit	MRD-105 (Except BB type) / MRM-105 (Processor unit)		
Operation unit	MRO-105		
Display size and type	19" color LCD / Any monitor with SXGA or higher grade resolution (owner supplied)		
Effective diameter	278mm		
Display resolution	1280 x 1024 pixels (SXGA)		
Off-centering	Max. 72%		
Echo area	2 types (Full screen, Inside of effective diameter)		
Basic range	0.125 to 72 NM		0.125 to 96 NM
Presentation modes	Head-up, North-up (True motion)*, North-up (Relative motion)*, Course-up (True motion)*, Course-up (Relative motion)*		
Indication system	PPI		
Video levels	8		
Alarms	Echo (IN / OUT), TT / AIS (CPA / TCPA), Guard zone etc.		
Functions	C-Map chart*, CFAR (Clutter rejection), Interference rejection, Target expansion, Process (Averaging), VRM, EBL, Parallel index, ERBL, Cursor position, Bearing (true* / relative), Trail (true* / relative), Own ship past track*, MAP* (Event mark, etc), Analog RGB Monitor output, Trial Manoeuvre*		
Input data formats and sentences	IEC61162-1 / -2 BWC, DBT, DPT, DTM, GGA, GLC, GLL, GNS, HDG, HDT, HDM, MTW, RMA, RMB, RMC, ROT, RTE, THS,VBW, VDR, VHW, VTG, WPL, XTE, ZDA		
Output data formats and sentences	IEC61162 -1 / -2 RSD, OSD, TLB, TTD, TTM, TLL, DTM, GLL, HDT, ROT, VBW, VDR, VHW, VTG, ZDA		
NMEA ports	Total 4: input 2 , input and output 2		
AIS interface*	254 Targets (Standard)		
TT (ARPA)*	Auto/Manual 60 Targets (Standard)		
Power supply	21.6 to 41.6 VDC		
Power consumption (at 24 VDC)	130 W or less	150 W or less	200 W or less
Environmental:			
Operating temperature	-25°C to +55°C (Antenna-scanner unit) -15°C to +55°C (Display unit / Processor unit)		
Water protection	-		
Antenna-scanner connections: (See page 11 for details)			
6kW, Open antenna	RB717A	-	-
12kW, Open antenna	-	RB718A	-
25kW, Open antenna	-	-	RB719A
Antenna-scanner unit cable 15, 20 or 30 m	242J159098		
Antenna-scanner unit cable Max. length (m)	100m		
* Requires heading, speed, and / or position signal input from external equipment including GPS Compass depending on application of user.			



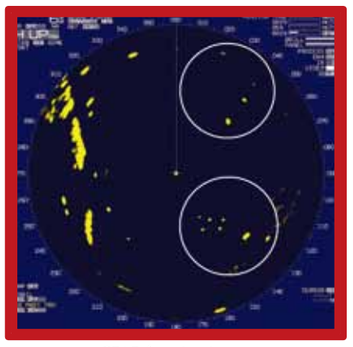
SEA and RAIN clutter on Radar image



SEA anti-clutter function image



SEA anti-clutter and RAIN anti-clutter function image



CFAR function image for clear target detection

Model	MDC-2910P / MDC-2910PBB	MDC-2920P / MDC-2920PBB
Specifications & Functions:		
Output power (Peak)	12 kW	25 kW
Display unit	MRD-105P (Except BB type) / MRM-105P (Processor unit)	
Operation unit	MRO-105	
Display size and type	19" color LCD / 19" IMO approved display made by Hatteland or North Invent (owner supplied)	
Effective diameter	278mm	
Display resolution	1280 x 1024 pixels (SXGA)	
Off-centering	Max. 72%	
Echo area	1 type (Inside of effective diameter)	
Basic range	0.125 to 72 NM	0.125 to 96 NM
Presentation modes	Head-up, North-up (True motion)*, North-up (Relative motion)*, Course-up (True motion)*, Course-up (Relative motion)*	
Indication system	PPI	
Video levels	8	
Alarms	Echo (IN / OUT), TT / AIS (CPA / TCPA), Guard zone etc.	
Functions	CFAR (Clutter rejection), Interference rejection, Target expansion, Process (Averaging), VRM, EBL, Parallel index, ERBL, Cursor position, Bearing (true*/ relative), Trail (true* / relative), Own ship past track*, MAP* (Event mark etc), Analog RGB Monitor, Trail Manoeuver*	
Input data formats and sentences	IEC61162-1 / -2 BWC, DBT, DPT, DTM, GGA, GLC, GLL, GNS, HDT, MTW, RMB, RMC, RTE, THS, VBW, VDR, VHW, VTG,WPL, XTE, ZDA	
Output data formats and sentences	IEC61162 -1 / -2 RSD, OSD, TLB, TTD, TTM	
NMEA ports	Total 4: input 2 , input and output 2	
AIS interface*	254 Targets (Standard)	
TT (ARPA)*	Auto/Manual 60 Targets (Standard)	
Power supply	21.6 to 41.6 VDC	
Power consumption (at 24 VDC)	150 W or less	200 W or less
Environmental:		
Operating temperature	-25°C to + 55°C (Antenna - scanner unit) -15°C to + 55°C (Display unit / Processor unit)	
Water protection	-	
Antenna-scanner connections: (See page 11 for details)		
12kW, Open antenna	RB718BP	-
25kW, Open antenna	-	RB719BP
Antenna-scanner unit cable 15, 20 or 30 m	242J159098	
Antenna-scanner unit cable Max. length (m)	65m	
* Requires heading, speed, and / or position signal input from external equipment including GPS Compass depending on application of user.		

RADAR*pc*®

Antenna-scanner unit

Control box

Your computer

Full radar performance on PC with compatible software

Variety of RADAR*pc* compatible software gives you stand alone, side by side and overlay radar image with full radar control in addition to their advanced charting capability.
Software is available from the following companies and more.

- Nobeltec http://www.nobeltec.com/
- Euronav http://www.euronav.co.uk/
- P-Sea http://www.p-sea.com/
- Rose Point http://rosepointnav.com/
- Sodena http://w3.sodena.eu/en/

Full range of radar variation

A combination of the MDS-5R or MDS-6R control box and any Koden antenna – scanner unit covers full range of radar variety selection.

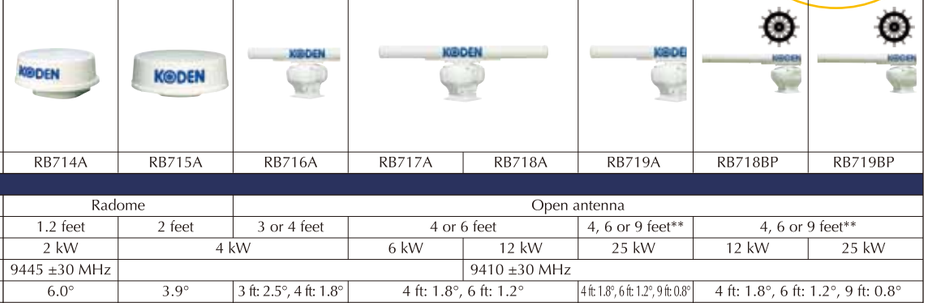
High speed data communication

Ethernet data communication gives interface ability with almost all the PC.
Multi PC network system can be constructed.

Model		MDS-50R	MDS-51R	MDS-52R	MDS-61R	MDS-62R	MDS-63R
Specifications & Functions:							
Antenna-scanner unit		RB714A	RB715A	RB716A	RB717A	RB718A	RB719A
Antenna specifications		See page 11					
Control box		MDS-5R			MDS-6R		
Presentation modes		Head up, North up*, Course up*					
Range scales		0.125 to 24 NM	0.125 to 36 NM	0.125 to 48 NM	0.125 to 64 NM	0.125 to 72 NM	0.125 to 96 NM
Echo trail interval **		OFF, 15, 30 sec, 1, 3, 6 min, Continuous					
Transfer data size	Real time image transfer	256 / 512 / 680 dots / sweep (1024 / 2048 / 4096 sweeps per antenna rotation) Level: 3 bits					
	Full image transfer	240 x 240 / 480 x 480 dots Level: 2 bits					
	Quadrant image transfer	120 x 120 / 240 x 240 dots Level: 2 bits					
Functions		Interference rejection, Target expansion, Serial number output : Yes, Preheat times output (by 5 sec step) : 115 sec to 5 sec (MDS-50R, MDS-51R, MDS-52R, MDS-61R, MDS-62R), 175 sec to 5 sec (MDS-63R) Error output : SHF, System, AZI, RAM, ROM, DHCP server					
Interface:							
Mode of communication		Ethernet (10BASE-T / 100BASE-TX)					
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) with cross style, 2 m (standard)					
Transmission speed		10 Mbps / 100 Mbps					
Input data protocol		Radar control by proprietary protocol					
Output data protocol		Radar image video by proprietary protocol					
Antenna-scanner unit cable		10 m (standard)				15 m (standard)	
Power supply		10.2 to 41.6 VDC					21.6 to 41.6 VDC
Power consumption		45 W or less	55 W or less	70 W or less	80 W or less	90 W or less	130 W or less
Environmental:							
Operating temperature		-25°C to +55°C (Antenna-scanner unit), -15°C to +55°C (Control box)					
Water Protection		IPX 6 (Antenna-scanner unit, CFR-46 for RB714A), IPX 0 (Control box)					

* Requires bearing data **Unavailable on Real time image transfer mode

Marine Radar Antenna-Scanner



Type	RB714A	RB715A	RB716A	RB717A	RB718A	RB719A	RB718BP	RB719BP
Specifications:								
Antenna type	Radome		Open antenna					
Antenna length	1.2 feet	2 feet	3 or 4 feet	4 or 6 feet		4, 6 or 9 feet**	4, 6 or 9 feet**	
Output power (Peak)	2 kW	4 kW		6 kW	12 kW	25 kW	12 kW	25 kW
Output frequency	9445 ±30 MHz				9410 ±30 MHz			
Horizontal beam width	6.0°	3.9°	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	25°	25°	22°	22°		4 ft: 22°, 6 ft: 22°, 9 ft: 25°	4 ft: 22°, 6 ft: 22°, 9 ft: 25°	
Rotation	24 rpm	24 or 48 rpm				24 rpm		
IF center frequency	60 MHz							
Environmental:								
Operating temperature	-25°C to + 55°C							
Water protection	CFR-46	IPX6 (IEC 60529)						
Display / processor connections for marine Radar:								
8.4" color LCD: MRD-103	MDC-921	MDC-941	MDC-940*	-	-	-	-	-
10.4" color LCD: MRD-104	-	MDC-2041	MDC-2040	MDC-2060	MDC-2010	-	-	-
12" color LCD: MRD-101	-	-	MDC-2240	MDC-2260	MDC-2210	MDC-2220	-	-
15" color LCD: MRD-102	-	-	MDC-2540	MDC-2560	MDC-2510	MDC-2520	-	-
19" color LCD: MRD-105	-	-	-	MDC-2960	MDC-2910	MDC-2920	-	-
19" color LCD: MRD-105P	-	-	-	-	-	-	MDC-2910P	MDC-2920P
Processor unit for XGA / UXGA LCD Display: MRM-102	-	-	MDC-2540BB	MDC-2560BB	MDC-2510BB	MDC-2520BB	-	-
Processor unit for SXGA LCD Display: MRM-105	-	-	-	MDC-2960BB	MDC-2910BB	MDC-2920BB	-	-
Processor unit for SXGA LCD IMO Display: MRM-105P	-	-	-	-	-	-	MDC-2910PBB	MDC-2920PBB

* 48 rpm requires for input voltage of 24 VDC or more **9ft antenna is available for MDC-2220, 2520, 2520BB, 2910P, 2920P, 2910PBB and 2920PBB

Echo Sounder

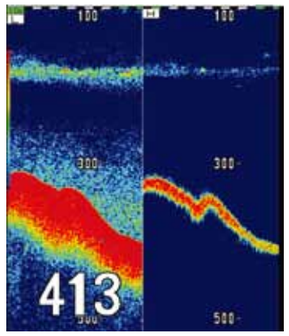
Wide range, wide variety of uses

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 week echo of fish school in any ocean conditions.

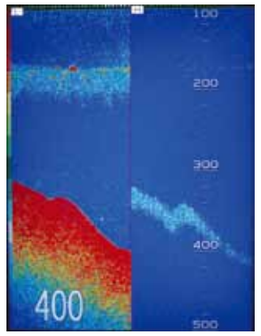
Digital

Koden Digital Filtering (KDF™)

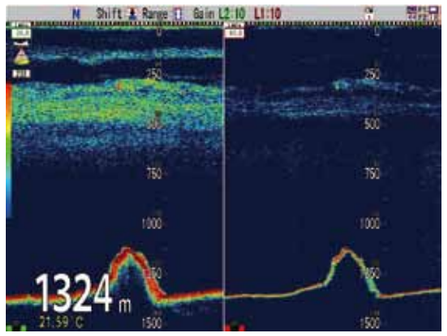
The Koden Digital Filtering (KDF™) feature eliminates clutter by filtering out the noise to provide a clear detailed image that enhances fish targets in shallow and deep sea.



Digital



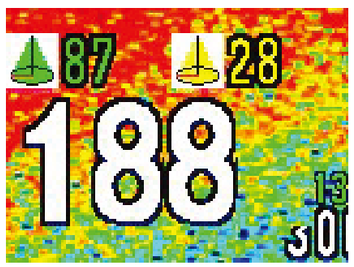
Analog



Deep sea

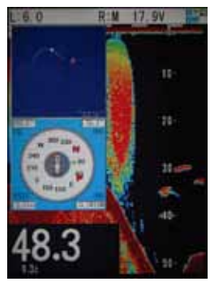
Detection area display

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.



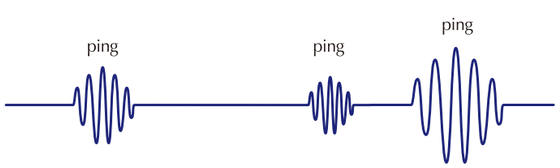
Fishing Hot Spot

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



Sona-Tone™

Exclusive Sona-Tone identifies what's under your boat with different sounds for fish and schools of fish.



Store Image

Stores up to 10 screen images in built-in memory for recalling later by a single touch.
(CVS-126, CVS-128, CVS-1410 / 1410HS, CVS-1410B)

Broadband

Ultimate broadband sounder with digital processing

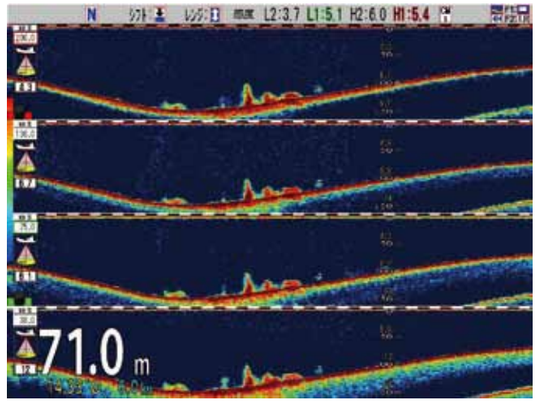
Broadband Digital Echo Sounders are designed to satisfy demanding professionals.
These innovative sounders are equipped with the capability of selecting frequencies within the range of broadband transducers.
Flexible selection of frequencies enables the user to stay away from interference with the sounders on the other vessels.

What are the features of the broadband transducers?

The broadband transducer has sharper directive angle characteristics with almost no side robe when compared with conventional transducers. This allows more accurate access of vessel to the target point.

Selectable frequencies

World's first simultaneous and variable quad frequency sounder enables clearer discrimination of targets (CVS-FX1, CVS-FX2 / FX2BB).
Two frequencies can be selected and changed in 0.1 kHz interval (CVS-1410B).



CVS-FX1 Horizontal split of screen

CVS-FX1 Individual setting menu

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).

Store Image

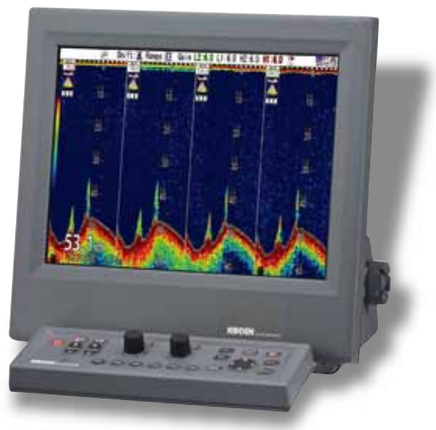
Stores up to 500 screen images in built-in memory to recall the images later by a single touch (CVS-FX1, CVS-FX2 / FX2BB).

Echo Sounder
Digital - Broadband

Broadband

CVS-1410B

CVS-FX1



CVS-FX2

CVS-FX2BB

Model	CVS-1410B	
Specifications & Functions:		
Output power (RMS)	1 kW	
Transducer	TDM-071	TDM-091D
Output frequency (Transducer)	38 to 75 kHz	42 to 65 kHz and 130 to 210 kHz
Selectable frequency range	24 to 210kHz 0.1kHz step	
Display size and type	10.4 inch color TFT LCD	
Display resolution	640 x 480 pixels (VGA)	
Basic ranges	2.5 to 2000 (m), 10 to 6000 (ft), 2.5 to 1100 (fm / l. fm) (8 ranges can be set to users choice)	
Range units	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	
Presentation colors	64 colors,16 colors, 8 colors, Monochrome	
Alarms	Bottom, Fish, Temperature*, Speed**, Arrival***, XTE***	
Image speed	9 steps & stop	
Functions	Interference rejection, Color rejection, VRM, Noise rejection, 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,Fish information, Detection area display	
Auto functions	Range, Shift, TVG	
Input data format and sentences	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, RMC, VHW, VTG, ZDA	
Output data format and sentences	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	
Power supply	10.8 to 31.2 VDC	
Power consumption	30 W or less (24VDC)	
Environmental:		
Operating temperature	-15°C to +55°C	
Water protection	IPX5	

* Requires data from Temp sensor
** Requires speed data from Speed sensor or GPS sensor
*** Requires data from GPS sensor

Model	CVS-FX1	
Specifications & Functions:		
Output power (RMS)	3 kW	
Transducer	TDM-052	TDM-062
Output frequency (Transducer)	38 to75 kHz and 130 to 210 kHz	38 to 75 kHz and 85 to135 kHz
Selectable frequency range	24 to 240 kHz 0.1kHz step	
Display size and type	12.1 inch color XGA LCD	
Display resolution	1024 × 768 pixels (XGA)	
Basic ranges	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	
Presentation 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	
Alarms	Bottom, Fish, Temperature*, Speed**, Arrival***, XTE***	
Image speed	9 steps & stop	
Functions	Interference rejection, Color rejection, VRM, Noise reduction, White line, Draft correct, Water temperature correct, Boat speed correct, Store image (500 images), Sona-Tone™, Fishing Hot Spot, Event memory, Simple plotter, Panel illumination, Power reduction, External trigger, Detectionarea display, CM key, Water Temp.graph, Individual range operation, Individual shift operation	
Auto functions	Range, Shift, TVG, TX Power, White Line	
Input data format and sentences	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, MWD, RMC, VHW, VTG, ZDA	
Output data format and sentences	NMEA0183 Ver.2.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA	
NMEA ports	Total 2 : input and output	
Power supply	10.8 to 31.2 VDC	
Power consumption	60 W or less (24VDC)	
Environmental:		
Operating temperature	-15°C to +55°C	
Water protection	IPX5	

* Requires data from Temp sensor
** Requires speed data from Speed sensor or GPS sensor
*** Requires data from GPS sensor

Model	CVS-FX2	
Specifications & Functions:		
Output power (RMS)	3 kW	
Transducer	TDM-052	TDM-062
Output frequency (Transducer)	38 to75 kHz and 130 to 210 kHz	38 to 75 kHz and 85 to135 kHz
Selectable frequency range	24 to 240 kHz 0.1kHz step	
Display size and type	15 inch color XGA LCD	
Display resolution	1024 × 768 pixels (XGA)	
Basic ranges	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	
Presentation 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	
Alarms	Bottom, Fish, Temperature*, Speed**, Arrival***, XTE***	
Image speed	9 steps & stop	
Functions	Interference rejection, Color rejection, VRM, Noise reduction, White line, Draft correct, Water temperature correct, Boat speed correct, Store image (500 images), Sona-Tone™ , Fishing Hot Spot, Event memory, Simple plotter, Panel illumination, Power reduction, External trigger, Detection area display, CM key, Water Temp.graph, Individual range operation, Individual shift operation	
Auto functions	Range, Shift, TVG, TX Power, White Line	
Input data format and sentences	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, MWD, RMC, VHW, VTG, ZDA	
Output data format and sentences	NMEA0183 Ver.2.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA	
NMEA ports	2 : input and output	
Power supply	21.6 to 31.2 VDC	
Power consumption	70 W or less (24VDC)	
Environmental:		
Operating temperature	-15°C to +55°C	
Water protection	IPX5	

* Requires data from Temp sensor
** Requires speed data from Speed sensor or GPS sensor
*** Requires data from GPS sensor

Model	CVS-FX2BB	
Specifications & Functions:		
Output power (RMS)	3 kW	
Transducer	TDM-052	TDM-062
Output frequency (Transducer)	38 to75 kHz and 130 to 210 kHz	38 to 75 kHz and 85 to135 kHz
Selectable frequency range	24 to 240 kHz 0.1kHz step	
Display size and type	Any monitor with XGA resolution (Owner supplied)	
Display resolution	-	
Basic ranges	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	
Presentation 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	
Alarms	Bottom, Fish, Temperature*, Speed**, Arrival***, XTE***	
Image speed	9 steps & stop	
Functions	Interference rejection, Color rejection, VRM, Noise reduction, White line, Draft correct, Water temperature correct, Boat speed correct, Store image (500 images), Sona-Tone™ , Fishing Hot Spot, Event memory, Simple plotter, Panel illumination, Power reduction, External trigger, Detection area display, CM key, Water Temp.graph, Individual range operation, Individual shift operation	
Auto functions	Range, Shift, TVG, TX Power, White Line	
Input data format and sentences	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, MWD, RMC, VHW, VTG, ZDA	
Output data format and sentences	NMEA0183 Ver.2.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA	
NMEA ports	2 : input and output	
Power supply	21.6 to 31.2 VDC	
Power consumption	55 W or less (24VDC)	
Environmental:		
Operating temperature	-15°C to +55°C	
Water protection	-	

* Requires data from Temp sensor
** Requires speed data from Speed sensor or GPS sensor
*** Requires data from GPS sensor

Echo Sounder
Digital - Standard, Standard

CVS-126

CVS-128

CVS-1410 /1410HS

Model	CVS-126	CVS-128
Specifications & Functions:		
Output power (RMS)	600 W	600W or 1kW
Output frequency	50 kHz and 200 kHz	50 kHz and 200 kHz
Display size and type	5.7 inch color TFT LCD	8.4 inch color TFT LCD
Display resolution	320 x 240 pixels (QVGA)	640 x 480 pixels (VGA)
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)
Range units	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 sprit, Horizontal split, A-scope can be displayed at all above modes	
Presentation colors	64 colors,16 colors, 8 colors, Monochrome	
Alarms	Bottom, Fish, Temperature*, Speed**, Arrival***, XTE***	
Image speed	9 steps & stop	
Functions	Interference rejection, Color rejection, VRM, Noise rejection, 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,	
Auto functions	Range, Shift , Gain	
Input data formats and sentences	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)	
NMEA ports	Total 1 : input and output	
Power supply	10.8 to 31.2 VDC	
Power consumption	10 W or less (12VDC)	25 W or less (12VDC)
Environmental:		
Operating temperature	-15°C to +55°C	
Water protection	IPX5	

* 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.

Model	CVS-1410	CVS-1410HS
Specifications & Functions:		
Output power (RMS)	1 kW	
Output frequency	50 kHz and 200 kHz ****	50 kHz and 200 kHz
Display size and type	10.4 inch color TFT LCD	
Display resolution	640 x 480 pixels (VGA)	
Basic ranges	2.5 to 2000 (m) 10 to 6000 (ft) 2.5 to 1100 (fm / l. fm) (8 ranges can be set to users choice)	
Range units	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 sprit, Horizontal split, A-scope can be displayed at all above modes	
Presentation colors	64 colors,16 colors, 8 colors, Monochrome	
Alarms	Bottom, Fish, Temperature*, Speed**, Arrival***, XTE***	
Image speed	9 steps & stop	
Functions	Interference rejection, Color rejection, VRM, Noise rejection, 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, External trigger etc.	
Auto functions	Range, Shift, TVG	
Input data formats and sentences	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)	
NMEA ports	Total 1 : input and output	
Power supply	10.8 to 31.2 VDC	
Power consumption	30 W or less (12VDC)	
Environmental:		
Operating temperature	-15°C to +55°C	
Water protection	IPX5	

* 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.

Model	CVS-841C	CVS-841P
Specifications & Functions:		
Output power (RMS)	1 kW	3 kW
Output frequency	Dual combination selected from 28, 38, 50, 75, 200 kHz	
Display size and type	10.4 inch color TFT LCD	
Display resolution	640 x 480 pixels (VGA)	
Basic ranges	2.5 to 1200 (m) 10 to 4000 (ft) 2.5 to 1200 (fm / l. fm) (8 ranges can be set to users choice)	2.5 to 3000 (m) 10 to 8000 (ft) 2.5 to 3000 (fm / l. fm) (8 ranges can be set to users choice)
Range units	m, ft, fm, l.fm	
Presentation modes	High frequency, Low frequency, Dual frequency, Zoom image (Bottom lock, Bottom discrimination, Bottom zoom, Zoom, Vertical sprit, Horizontal split, 3 vertical divided A-scope can be displayed at all above modes	
Presentation colors	16 colors, 8 colors	
Alarms	Bottom, Fish, Depth	
Image speed	12 steps & stop	
Functions	Interference rejection, Color rejection, VRM, White line, Draft correct, Water temperature correct, Boat speed correct etc.	
Auto functions	Range, Shift	
Input data formats and sentences	NMEA 0183 (GGA, GLL, GTD, MTW, RMC, VTG)	
Output data formats and sentences	NMEA 0183 (DBS, DBT, DPT, MTW, TLL)	
NMEA ports	Total 2 : input 1, input and output 1	
Power supply	10.8 to 31.2 VDC	
Power consumption	45 W or less (12VDC)	
Environmental:		
Operating temperature	-15°C to +55°C	
Water protection	IPX5	

* 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.

CVS-841

CVS-852

Model	CVS-852C	CVS-852P	CVS-852T
Specifications & Functions:			
Output power (RMS)	1 kW	3 kW	5 kW
Output frequency (Transducer)	Dual combination selected from 28, 50, 75, 200 kHz		
Display size and type	15 inch color TFT LCD		
Display resolution	640 x 480 pixels (VGA)		
Basic range	2.5 to 1200 (m) 10 to 4000 (ft) 2.5 to 1200 (fm / l. fm) (8 ranges can be set to users choice)		2.5 to 3000 (m) 10 to 8000 (ft) 2.5 to 3000 (fm / l. fm) (8 ranges can be set to users choice)
Range units	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), Vertical split, Horizontal split, 3 vertical divided, A-scope can be displayed at all above modes		
Presentation colors	16 colors		
Alarms	Fish, Depth		
Image speed	12 steps & stop		
Functions	Interference rejection. Color rejection, VRM, White line, Draft correct, Water temperature correct, Boat speed correct etc.		
Auto functions	Range, Shift		
Input data formats and sentences	NMEA0183 Ver.1.5 / 2.0 GGA, GLL, GNS, GTD, VTG		
Output data formats and sentences	NMEA0183 Ver. 2.0 DBS, DBT, DPT, MTW, TLL		
NMEA ports	Total 2: input1, input and output 1		
Power supply	10.8 to 31.2 VDC		21.6 to 31.2 VDC
Power consumption	CVS-852: 45 W or less (24 VDC), CVT-10: 75 W or less (24 VDC)		
Environmental:			
Operating temperature	-15°C to +55°C		
Water protection	IPX5		

Sonar

ESR-140MkII

ESR-160

ESR-180 / 180BB

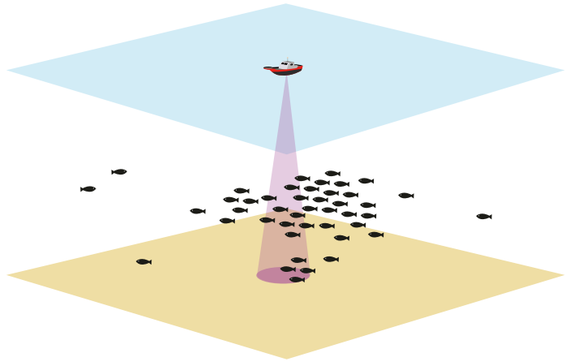
Koden high-speed searchlight Sonar line-up

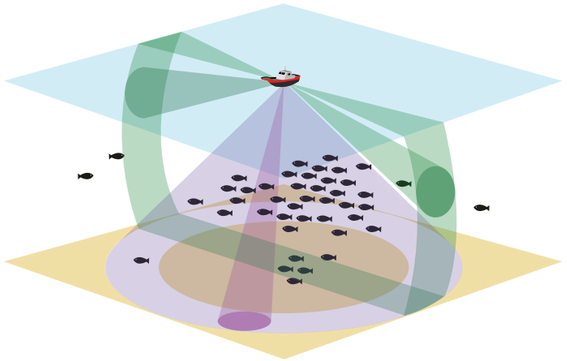
Color Sonar is a multi-directional Echo Sounder with a revolving and tilting transducer emitting and receiving ultrasonic waves in various directions. The sonar can locate schools of fish in wider area with the transducer tilting to change the angle of transmission from parallel to vertical.
Koden high-speed searchlight Sonar products have been beloved by fishing vessels world widely.
Frequency is selectable depending on the fishing method, type of fish; low frequency for Squid Jigging and high frequency for Trawling and Purse Seining for Cod, Anchovy, Sardine and Tuna, for example.

- Markers and a cross cursor provide accurate distance measurement to the target.
- Stabilizing function automatically adjusts the direction of transducer swayed by pitching and rolling movement of the boat.
- Hoist / Lower unit is automatically loaded to prevent damage when the boat travels faster than the preset speed.
- Echo Sounder display mode is effective for finding schools of fish.
- Three types of frequency, 180 kHz, 200 kHz or 220 kHz are available for ESR-140MkII.
  Two types, 80 kHz and 180 kHz for ESR-160/180/180BB.

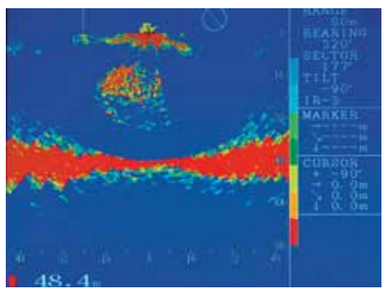
What is the difference between the sonar and the echo sounder?

The echo sounder always detects beneath the ship with the transducer installed at bottom of the ship.
The sonar 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.

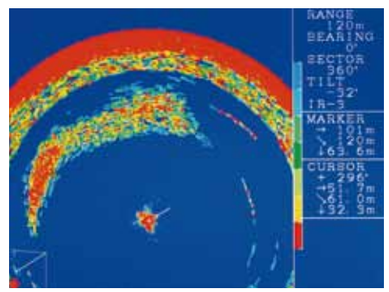




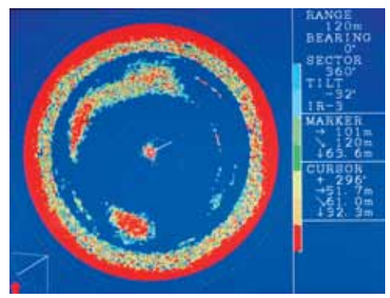
Model		ESR-140MkII							ESR-160														ESR-180 / 180BB
Specifications & Functions:																							
Output power (RMS)		800 W							1.5 kW														
Ouput frequency		180 kHz , 200 kHz, 220kHz							180 kHz, 80 kHz														
Tilt angle		+5° to -90° (1°step)							+5° to -90° (1°step)														
Hoist stroke		120 to 200 mm							200 to 400 mm														
Display size and type		10.4 inch color TFT LCD							10.4 inch color TFT LCD														15 inch color TFT LCD (Except BB type)
Display resolution		640 x 480 pixels (VGA)							640 x 480 pixels (VGA)														
Basic ranges		10 to 300 (m), 50 to 1000 (ft), 10 to 200 (fm, l. fm)							20 to 2000 (m), 80 to 6000 (ft), 12 to 1600 (fm / l. fm) (8 ranges can be set to users choice)														
Range units		m, ft, fm, l.fm							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°							5° step: 5°, 25°, 45°, 85°, 125°, 165°, 205°, 360° 10° step: 10°, 30°, 50°, 90°, 130°, 170°, 210°, 360°														
	Bottomscan mode	3° step: 3°, 27°, 45°, 63°, 93°, 117°, 147°, 177° 5° step: 5°, 25°, 45°, 65°, 95°, 115°, 145°, 175°							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	20	40	80	100	160	200	240	320	400	600	800	1000	1200	1600	2000
	Scanning time (sec.) 5° step	4.2	7.1	10.9	12.8	18.6	22.4	32.0	6.4	8.4	12.2	14.1	19.9	23.8	27.6	35.4	43.2	62.5	81.9	101	121	153	198
	Scanning time (sec.) 10° step	3.7	5.1	7.0	7.0	10.9	12.8	17.6	4.3	5.1	7.0	7.0	10.9	12.8	14.8	18.6	22.5	32.2	41.9	51.5	61.2	80.6	99.9
Presentation modes		Sonar, Off-center, Bottom scan, Echo sounder							Sonar, Off-center, Bottom scan, Echo sounder														
Presentation colors		8 colors (Selected in 4096 colors on color palette)							8 colors (Selected in 4096 colors on color palette)														
Functions		TVG (5 types), Pulse selection (4 types), Color rejection, Dynamic range (3 levels), Compass display, Interference rejection, Power reduction, Bow compensation							TVG (4 types), Pulse selection (3 types), Color rejection, Dynamic range (3 levels), Compass display, Interference rejection, Power reduction, Bow compensation														
Input data format and sentences		NMEA 0183 (GGA, GLL, VTG, MTW)							Option: NMEA0183 (GGA, GLL, VTG)														
Output data format and sentences		-							NMEA0183 (DBT, MTW, TLL)														
NMEA ports		Total 1: input							Total 2: input 1, output 1 (Option)														
Power supply	Display unit	20 to 30 VDC							10.8 to 31.2 VDC														20 to 30 VDC
	Hoist / lower unit	-							10.5 to 30 VDC														
Power consumption	Display unit	80 W or less (24 VDC)							30 W or less (24 VDC)														38 W or less (24 VDC)
	Hoist / lower unit	-							110 W or less (24 VDC)														
Enviromental:																							
Operating temperature		0°C to 50°C							0°C to 50°C														
Water protection		IPX 2							IPX 2														IPX 1



Bottm scan mode



Off-center mode



Sonar mode

GPS Navigator / Compass / Sensor

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), WASS in the North America and EGNOS in Europe.
SBAS is very effective for pinpoint fishing, harbor approaching, and narrow channel running.

GPS Navigator

KGP-920 / KGP-913MkII / KGP- 913MkIID

- Two graphic displays types.
- Beacon receiver built-in for a high-accuracy differential system where beacon stations are located (KGP-913MkIID / KGP-920 option).
- IMO type approved MSC.112 [73] and IEC61108-1 ED. 2 for SOLAS carriage requirements (KGP-920).
- Can be used as a GNSS sensor of AIS (KGP-920).

IMO Approved

KGP-913MkII / KGP-913MkIID

KGP-920

Model	KGP-913MkII	KGP-913MkIID	KGP-920
Specifications & Functions:			
Display size and type	4.2" LCD		
Display resolution	128 x 64 pixels		
Receiving channels	Parallel 18-channel		
Instant (Event) memory	200 points (Incl. one MOB point)		
Waypoint memory	200 points		
Route memory	20 routes (max.400 waypoints) reverse trail possible		
Alarms	Arrival Proximity, Cross track error, CDI, Anchor watch		
Position data display	Latitude / longitude in increments of 0.0001 minute converted Loran C LOPs converted Loran A LOPs, converted Decca LOPs		
Differential	Ready by RTCM SC-104 format	Built-in beacon receiver	Built-in beacon receiver at option
Input data formats and sentences	RTCM SC104 Ver. 2.0, NMEA 0183 *		RTCM SC104 Ver.2.0
Output data formats and sentences	NMEA0183 Ver.2.0/1.5		IEC61162-1, NMEA0183 Ver1.5
	GGA, GLL, RMC, VTG, ZDA etc.		GBS, GGA, GLL, VTG, ZDA, DTM etc.
	CIF / SHIPMATE0183 are also available		
NMEA ports	Total 1 : input and output		Total 2 : input and output
Power supply	10.8 to 31.2 VDC		
Power consumption (at 24 VDC)	4.5 W or less	6.0 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	IPX4 (Display unit), IPX6 (Antenna unit)		
* When GPS source is selected as EXT			

GPS compass

KGC-1

ECI 1 (Option)

GPS Compass

KGC-1

- Heading and position data output to Radar, Sonar, Plotter and AIS.
- High speed heading data output (38.4 kbps) fits Koden MDC-900 / 2000 / 2500 / 2900 Radar series.
- SBAS (WASS / EGNOS) enabled.
- Indicator ECI 1 as an option for heading presentation in analog and digital formats.

Model		KGC-1
Specifications & Functions:		
Receiving channels		Parallel 9 channel
Time to heading fix		2 min (at standard hot-start time)
Heading accuracy		1° (RMS PDOP≦3)
Heading resolution		0.1°
Positioning accuracy	Position	GPS: 15 m (2DRMS, SA=OFF, PDOP≦3)
	Velocity	1 m / sec (RMS, SA=OFF, PDOP≦3)
Output data level		RS-422
Output data formats and sentences		IEC61162-1/ NMEA 0183 (HDT, ROT, GGA,VTG, GLL ZDA, GSA, GSV, RMC, PKODA PKODG1, PKODG7)
NMEA output data ports		Heading data output: 2 (50 ms to 1 s) Navigation data output: 2 (1 s)
Power supply		10.8 to 31.2 VDC
Power consumption (at 24 VDC)		8 W or less
Environmental:		
Operating temperature	GPS Antenna	-25°C to +55°C
	Processor Unit	-15°C to +55°C
Water protection	GPS Antenna	IPX6
	Processor Unit	IPX0

KBG-3

GPS-20A

DGPS Sensor / GPS Sensor

KBG-3 / GPS-20A

- Parallel 18-channel
- SBAS (WASS / EGNOS) enabled.
- Beacon receiver built-in for a high-accuracy differential system where beacon stations are located (KBG-3).

Model		KBG-3	GPS-20A
Specifications & Functions:			
Receiving channels		Parallel 18-channel	
Receiving frequency		Receiving frequency 1575.42 MHz ± 1 MHz	
Position accuracy	GPS	10 m (2 drms, SA=OFF, PDOP≦3)	
	DGPS(Beacon)	5 m (2 drms, SA=OFF, PDOP≦3)	-
	SBAS	8 m (2 drms, SA=OFF, PDOP≦3)	
	Velocity	0.1 kt (rms, SA=OFF, PDOP≦3)	
Time to position fix	Cold start	50 seconds (typical)	
	Warm start	45 seconds (typical)	
	Hot start	25 seconds (typical)	
Differential GPS	Receiver input	SBAS (WAAS, EGNOS, MSAS)	
	External input	-	RTCM SC-104
Data communication		Asynchronous data communication with RS-422	
Output data formats and sentence		NMEA 0183 (GGA, GLL, VTG RMC, ZDA, GSA, GSV, MSS)	NMEA 0183 (GGA, GLL, VTG RMC, ZDA, GSA, GSV)
Input data		Parameter setting, Beacon setting	Parameter setting
Output data level		RS-422	
Output current		20 mA or less	40 mA or less
Power supply		10.8 to 31.2 VDC	
Power consumption		2.5 W or less	1.3 W or less
Environmental:			
Operating temperature		-25°C to +55°C	
Water protection		IPX6	

AIS Transceiver

Class A AIS Transceiver

KAT-100

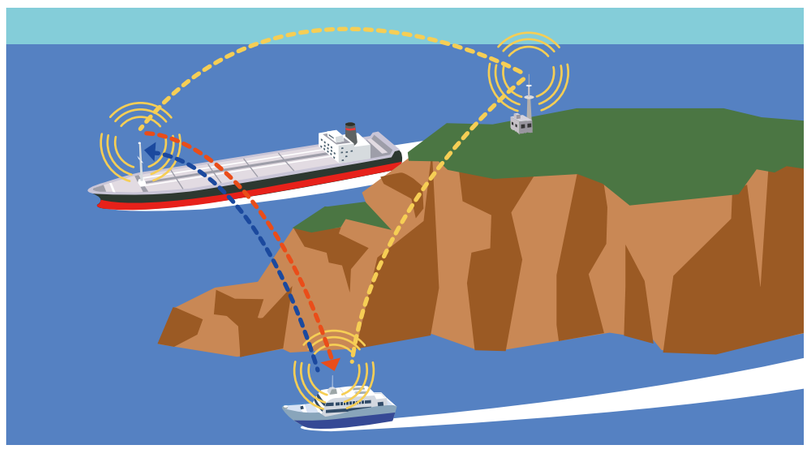
KAT-100 is the combined Class A / Inland AIS transceiver, designed to be fitted to commercial vessels.

- Meets IMO Standard MSC. 74 (69) Annex 4, EU Marine Equipment Directive (MED).
- Meets FCC, USCG, IC, TC, CCNR (Inland AIS).
- High accuracy and reliability.
- Simple and easy installation.

KAT-100

Model		KAT-100
Specifications & Functions:		
Output power		1 W or 12.5 W (automatic selection)
Display size and type		4 inch, monochrome LCD
Display resolution		248 x 128 pixels
TX / RX frequency		156.025 MHz to 162.025 MHz
Impedance		50Ω
DSC receiver		156.525MHz(CH70), 1200bps
Chanel bandwidth		25 kHz
Presentation modes		Target list, Own vessel & Voyage data, Own dynamic data, Received messages, Alarms, Target plot
Alarms		Transmitter malfunction, Antenna VSWR limit, Receiver malfunction, External EFPS lost, No sensor position in use, No valid COG, No valid SOG, Heading lost or invalid, No valid ROT
PC		RS-232C
Receiver channels*		16 channels
Frequency*		1575.42MHz, L1 band
Sensitivity*		Acquisition -138dBm, Tracking -146dBm
Position fixing system*		GPS
Time to position fix (Cold start)*		Typically 36 seconds
Accuracy*		GPS 2.5m CEP / 5.0m SEP DGPS 2.0m CEP / 3.0m SEP
Differential GPS		RTCM SC-104, AIS message #17
Input data formats and sentences		IEC61162-1/2 (ABM, ACA, ACK, AIR, BBM, DTM, GBS, GGA, GLL, GNS, HDT, LRF, LRI, RMC, ROT, SSD, VBW, VSD, VTG)
Output data formats and sentence		IEC61162-1/2 (ABK, ACA, ALR, LR1, LR2, LR3, LRF, LRI, TXT, VDM, VDO)
NMEA ports		Sensor data input ports (input) IEC61162-1/2 3ports 4800 or 38400 baud Bidirectional data ports (input / output) IEC61162-1/2 3ports 4800 or 38400 baud
Power supply		10.8V to 31.2V
Power Consumption		12W typical, 4.0A peak at 12VDC
Environmental:		
Operating temperature	Display unit	-15°C to +55°C
	GPS Antenna	-30°C to +80°C
Water protection	Display unit	IP52
	GPS Antenna	IEC60945 Exposed category
* Internal GPS		

The marine Automatic Identification System (AIS) is the location and vessel information reporting system.
It allows vessels equipped with AIS to automatically and dynamically share and regularly update their position, speed, course and other information.



Navigational Echo Sounder

Navigational Echo Sounder

CVR-010

CVR-010 is a single-channel navigational echo sounder.
Featuring a 5.7-inch daylight-viewing, LED backlight color TFT LDC 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

Model	CVR-010	
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, PSKPDPT, DBT, DBK, ALR)	
NMEA ports	Total 3 : input and output	
Power supply	24 VDC (11 to 40 VDC)	
Power consumption	15 W or less (24 VDC)	
Environmental:		
Operating temperature	-15°C to +55°C	
Water protection	n / a	
* Requires data from GPS sensor		

Plotter Sounder / Chart Plotter

Plotter Sounder

CVG-80 /200

Chart plotter and echo sounder come together in one unit with easy operation

CVG-200

Model		CVG-80	CVG-200
Specifications & Functions:			
Display size and type		8" color LCD	10.4" color LCD
Display resolution		480 x 640 pixels (VGA)	
Input data format and sentences		NMEA 0183 (GGA, GLL, HDT, MSK, MSS, MTW, PKODA, PKODG, RMC, TLL, TTM, VTG, ZDA)	
Output data format and sentences		NMEA 0183 (APB, BWC, GGA, GLL, GTD, RMB, VTG, WPL, XTE, ZDA, BOD, DBT, DPT, MTW)	
NMEA ports		Total 2 : input and output	
Plotter:			
Presentation modes		Head-up, North-up, South-up, East-up, West-up, Course-up, Own ship center fixed mode	
Alarms		Arrival, POB, Cross track error, Grounding, Depth, Routing	
Range scale		0.01 to 3600 NM	
Plotting interval	Time	1 to 600 sec	
	Distance	0.01 to 10 NM	
Memory capacity		Track: 2000, 4000, 7000 x 7 blocks, Mark (way point): 8300 points, Route: 50 routes with 50 points Drawing: 500 points x 7 blocks, Other ship's plot (with ATA): 1000 points x 10 targets*	
Chart		C-Map NT / NT+/ NT MAX	
Echo sounder:			
Output power (RMS)		600 W or 1 kW	
Basic range m, ft, fa, I.fa can be selectable in the menu		5 to 1200m / 15 to 4000ft	
Presentation colors		16 colors (Color pallet can be changed) / background: 9 colors	
Ouput frequency		Dual 50/200 kHz	
Image shift		Auto or Manual, 0 to 3000 m, 0 to 8000 ft	
Presentation modes		Normal, Bottom lock, Bottom discrimination, Zoom, Bottom zoom	
Alarms		Fish, Depth	
Image speed		Fixed 11 steps (4/1, 3/1, 2/1, 1/1, 1/2, 1/3, 1/4, 1/6, 1/8, 1/12, 1/16) and stop	
Auto functions		Depth range, Shift, Gain	
Power supply		10.8 to 31.2 VDC	
Power consumption (at 24 VDC)		40 W or less	45 W or less
Environmental:			
Operating temperature		-15°C to +55°C	
Water protection		IPX5	
*Requires other ship's position data (TTM) from ATA equipped Radar			

Chart Plotter

GTD-110 /150

The best choice for safe navigation and effective fishing

GTD-150

Model		GTD-110	GTD-150
Specifications & Functions:			
Display size and type		10.4" color LCD	15" color LCD
Display resolution		640 x 480 pixels (VGA)	
Presentation modes		North-up, East-up, South-up, West-up, Course-up (Waypoint) Head-up, Centered North-up	
Range scale		0.01 to 3600 NM	
Plotting interval	Time	1 to 600 sec. (10 steps)	
	Distance	0.01 to 10.0 NM (10 steps)	
Memory Capacity		Track : 2000, 4000, 7000 points x 7 blocks, Mark : 8300 points Route: 50 routes with 50 points, Drawing: 500 points x 7 blocks Other ship's plot (with ATA): 1000 points x 10 targets*	
Alarms		Arrival, POB, Cross track error, Grounding, Depth, Routing	
Chart		C-Map NT / NT+ / NT MAX	
Input data format and sentences		NMEA 0183 (GGA, GLL, VTG, ZDA, RMC, MSS, MTW, TTM, DBT, DPT, TLL)	
Output data format and sentences		NMEA 0183 (APB, GGA, GLL, VTG, XTE, ZDA, GTD, BOD, BWC, RMB, WPL)	
NMEA port		Total 1 : input and output	
Functions		Loran C LOP, Ring markers	
Power supply		10.8 to 31.2 VDC	
Power consumption (at 24 VDC)		30 W or less	40 W or less
Environmental:			
Operating temperature		-15°C to +55°C	
Water protection		IPX5	
*Requires other ship's position data (TTM) from ATA equipped Radar			

Direction Finder

Direction Finder

KS-5551

KS-5551 is the multi-frequency omni-directioal automatic direct-view Direction Finder.

- ▸ Wide coverage from MF / HF ranges to 27, 40, 50 MHz.
- ▸ Introducing Propelled Goniometric method for higher accuracy.
- ▸ Light weight antenna for easy installation.

KS-5551

Model		KS-5551
Specifications & Functions:		
Receiving system		Double superheterodyne
Bearing indication	10°step	LED Ring with 36 pieces
	1°step	LCD 3-digit
Antenna switching method		Electronic goniometric-switching
Antenna type		Loop antenna 600 mm (diameter)
Receiving frequency ranges	Band 1	1.0000 MHz to 1.9999 MHz
	Band 2	2.0000 MHz to 2.8000 MHz
	Band 3	26.0000 MHz to 26.9999 MHz
	Band 4	27.0000 MHz to 27.9999 MHz
	Band 5	35.5000 MHz to 39.9999 MHz
	Band 6	40.0000 MHz to 44.0000 MHz
	Band 7	50.0000 MHz to 51.9999 MHz
	Band 8	52.0000 MHz to 54.0000 MHz
Measuring receiving frequency ranges		Same as receiving frequency ranges
Modes		A1A, A2A, A3E, J3E, H3E, F3E
Direction finding tolerance		±3° or less at receiving freq.. 2.0MHz
Direction finding speed		0.5sec or less
Audio output		8Ω, 2W (distortion rate: 10% or less)
Spot reception		100 channels
Power supply		21.6 to 31.2VDC
Power consumption (at 24VDC)		2A or less
Environmental:		
Operating temperature		Antenna: -25°C to +55°C, Receiver-Indicator: -10°C to +55°C
Water protection		Antenna : IPX 4, Receiver irdicator : IPX 0

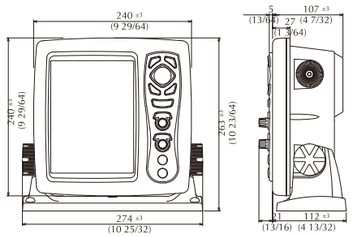
Dimensions and Weight

01

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

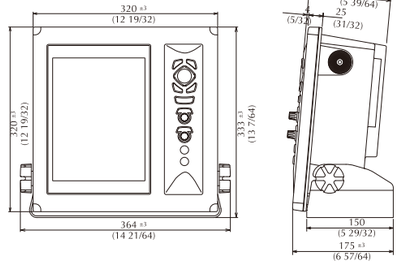
Unit: mm (inch)

Display unit:
MRD-103



Weight : 3.7 kg (8.2 lb)

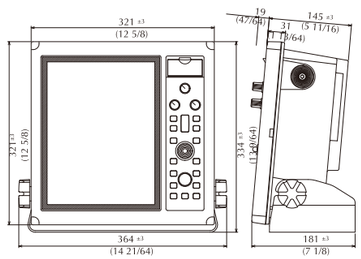
Display unit:
MRD-104



Weight: 8.1 kg (17.9 lb)

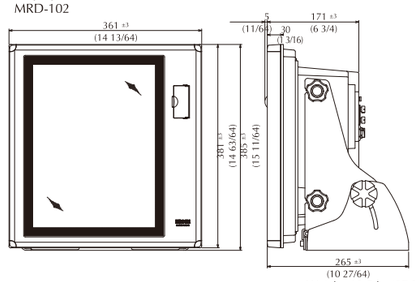
Marine Radar 12″ MDC-2200 series ,15″ MDC-2500 series

Display unit:
MRD-101



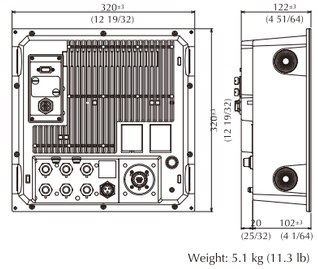
Weight: 8.2 kg (18 lb)

Display unit:
MRD-102



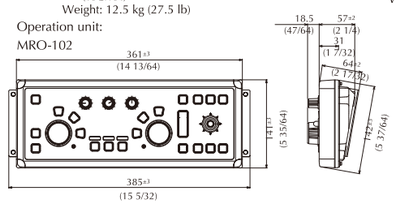
Weight: 12.5 kg (27.5 lb)

Display unit:
MRM-102



Weight: 5.1 kg (11.3 lb)

Operation unit:
MRO-102

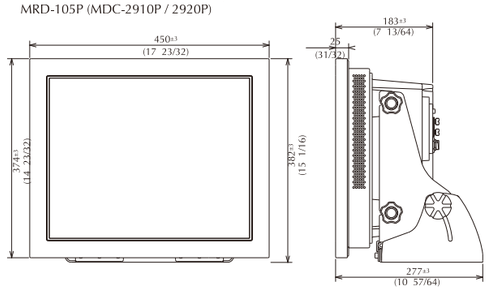


Weight: 2 kg (4.5 lb)

Marine Radar 19″ MDC-2900 / MDC-2900P series

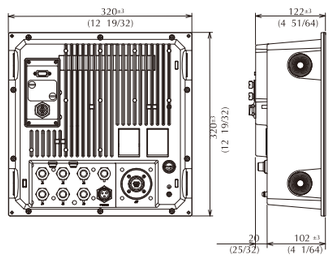
Unit: mm (inch)

Display unit:
MRD-105 (MDC-2960 /2910 / 2920)
MRD-105P (MDC-2910P / 2920P)



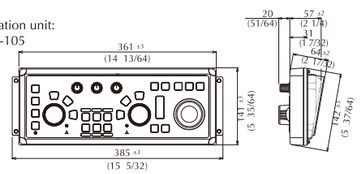
Weight : 15.0 kg (33 lb)

Processor unit:
MRM-105 (MDC-2960BB / 2910BB / 2920BB)
MRM-105P (MDC-2910PBB / 2920PBB)



Weight : 5.1 kg (11.5 lb)

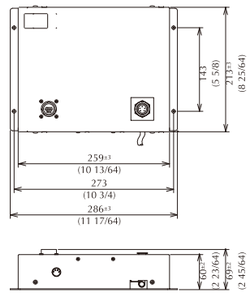
Operation unit:
MRO-105



Weight : 1.8 kg (4 lb)

RADAR*pc*

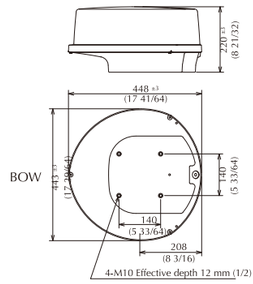
Control box:
MDS-5R/MDS-6R



Weight:MDS-5R: 1.5 kg (3.3 lb)
MDS-6R: 1.9 kg (4.2 lb)

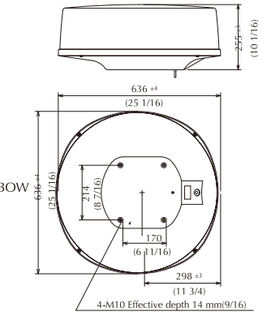
Antenna - Scanner unit

RB714A



Weight: 6 kg (13.5 lb)

RB715A



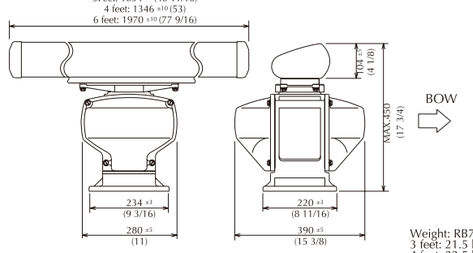
Weight: 10 kg (22.5 lb)

Antenna - Scanner unit

Display unit:

Unit: mm (inch)

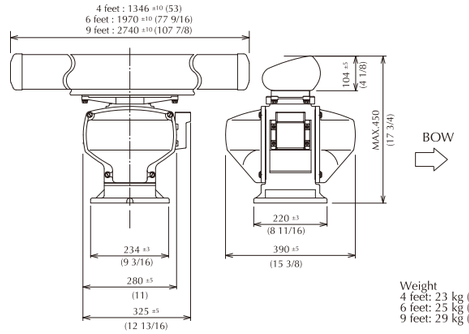
RB716A / RB717A and RB718A with RW701A-03 / 04 / 06



Weight: RB716A
3 feet: 21.5 kg (47 lb)
4 feet: 22.5 kg (50 lb)

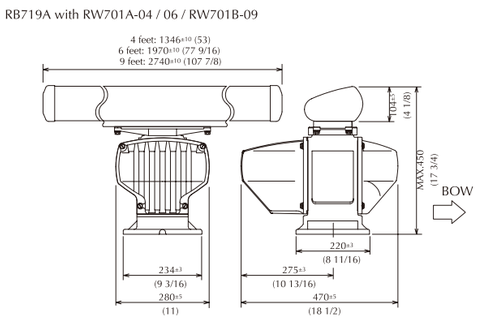
Weight: RB717A / RB718A
4 feet: 23 kg (51 lb)
6 feet: 25 kg (56 lb)

RB718BP with RW 701A-04 / 06 / RW701B-09



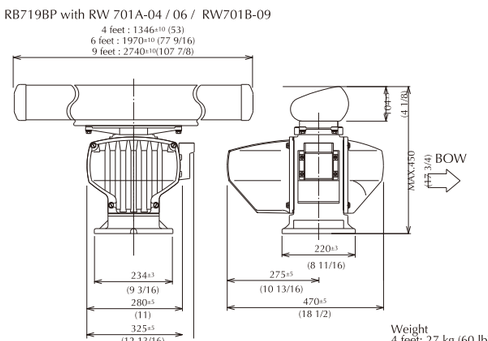
Weight
4 feet: 23 kg (51 lb)
6 feet: 25 kg (56 lb)
9 feet: 29 kg (64 lb)

RB719A with RW701A-04 / 06 / RW701B-09



Weight
4 feet: 27 kg (60 lb)
6 feet: 29 kg (64 lb)
9 feet: 33 kg (73 lb)

RB719BP with RW 701A-04 / 06 / RW701B-09



Weight
4 feet: 27 kg (60 lb)
6 feet: 29 kg (64 lb)
9 feet: 33 kg (73 lb)

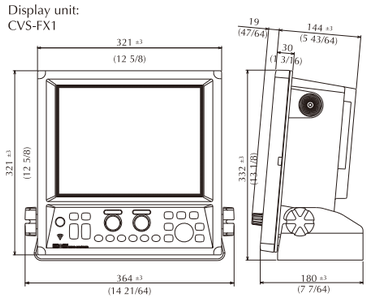
Dimensions and Weight

02

Echo Sounder CVS-FX1, CVS-FX2 / FX2BB, CVS-1410B

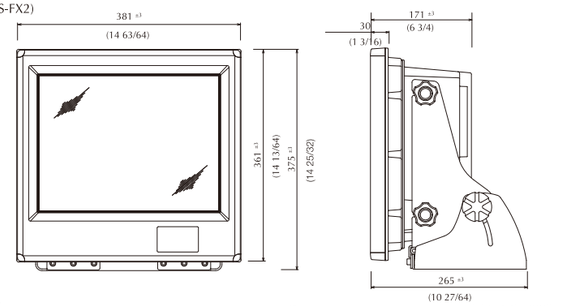
Unit: mm (inch)

Display unit:
CVS-FX1



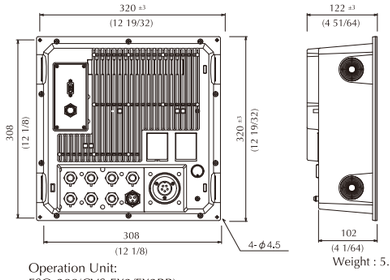
Weight : 9.1kg (20.1lb)

Display unit:
ESD-200(CVS-FX2)



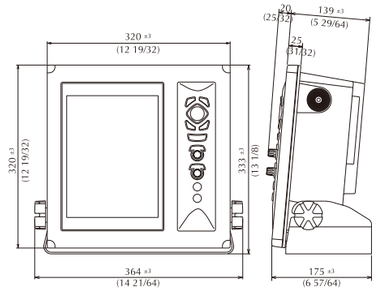
Weight : 13kg (29lb)

Processor Unit:
ESM-200(CVS-FX2BB)



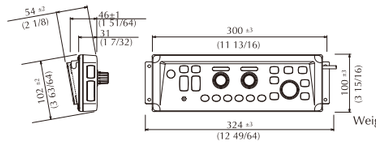
Weight : 5.6kg (12.5lb)

Display unit:
CVS-1410B



Weight : 7.5kg (16.6lb)

Operation Unit:
ESO-200(CVS-FX2/FX2BB)

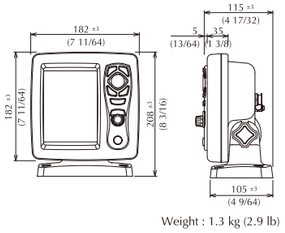


Weight : 0.7kg (1.55lb)

Echo Sounder CVS-126, CVS-128, CVS-1410/1410HS, CVS-841, CVS-852

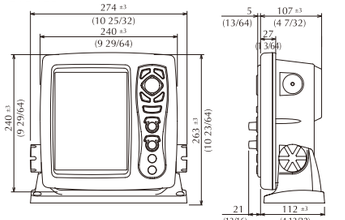
Unit: mm (inch)

Display unit:
CVS-126



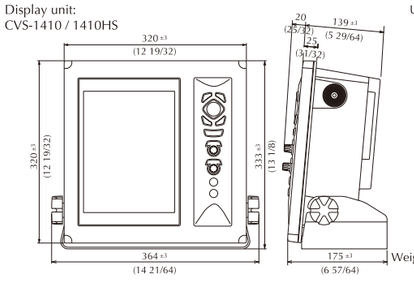
Weight : 1.3 kg (2.9 lb)

Display unit:
CVS-128



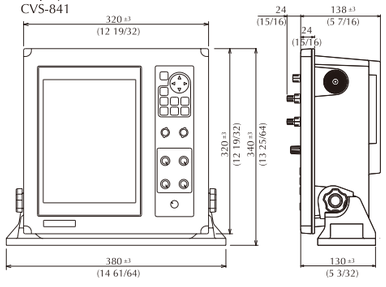
Weight : 3.5 kg (7.7 lb)

Display unit:
CVS-1410 / 1410HS



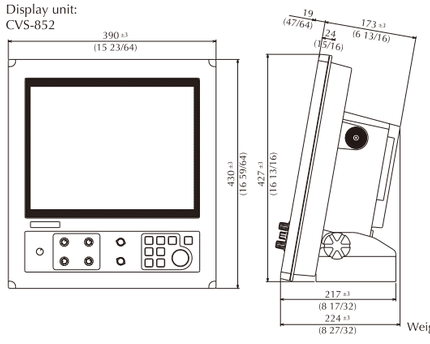
Weight : 7.5kg (16.6lb)

Display unit:
CVS-841



Weight: 6.8 kg (15 lb)

Display unit:
CVS-852

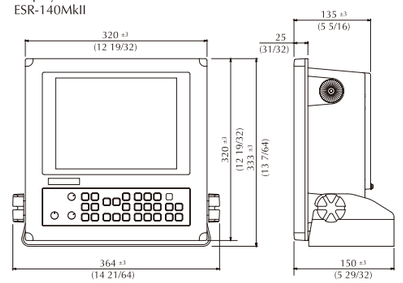


Weight: 10 kg (22 lb)

Sonar ESR-140MkII, ESR-160, ESR-180 / 180BB

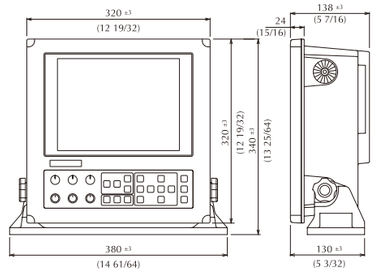
Unit: mm (inch)

Display unit:
ESR-140MkII



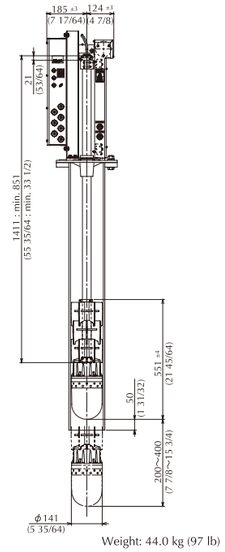
Weight: 8.5 kg (18.7 lb)

Display unit:
ESR-160



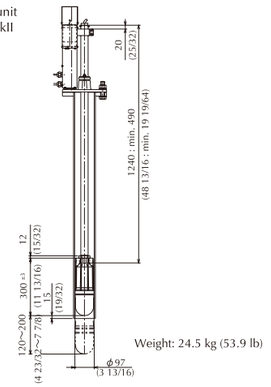
Weight: 7.0 kg (15.5 lb)

Hoist / lower unit
For ESR-160 / 180



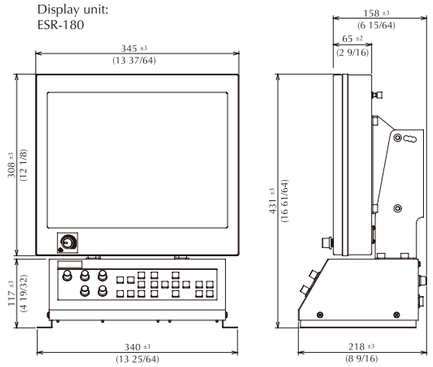
Weight: 44.0 kg (97 lb)

Hoist / lower unit
For ESR-140MkII



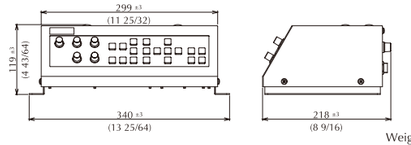
Weight: 24.5 kg (53.9 lb)

Display unit:
ESR-180



Weight: 13.0 kg (28.7 lb)

Operation Unit:
ESR-180BB

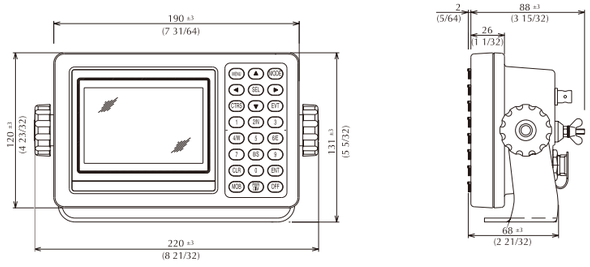


Weight: 5 kg (11.1 lb)

GPS Navigator KGP-920, KGP-913MkII / 913MkIID

Display unit:
KGP-920 / 913MkII / 913MkIID

Unit: mm (inch)



Weight:
KGP-920: 0.86 kg (1.9 lb)
KGP-913MkII: 0.86 kg (1.9 lb)
KGP-913MkIID: 0.96 kg (2.1 lb)

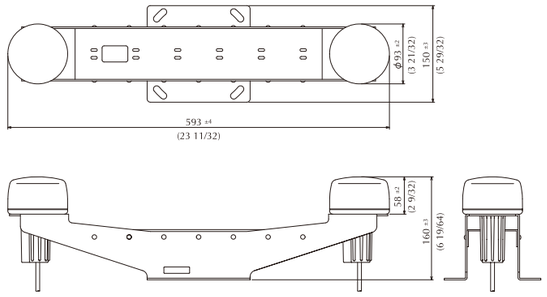
Dimensions and Weight

03

GPS Compass KGC-1, DGPS Sensor KBG-3, GPS Sensor GPS-20A

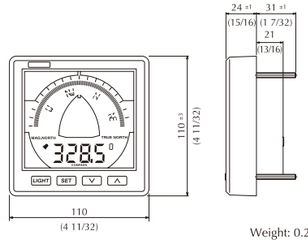
Unit: mm (inch)

GPS antenna GA-11



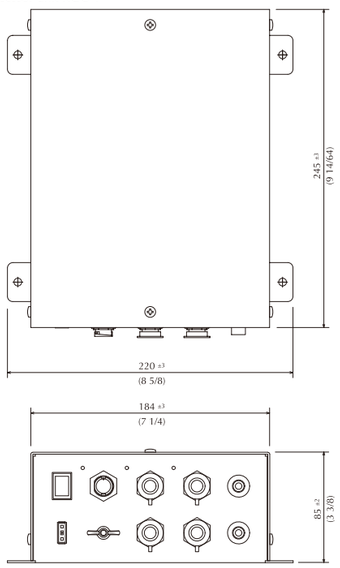
Weight: 1.4 kg (3.1 lb)

Indicator ECI 1 (Option)



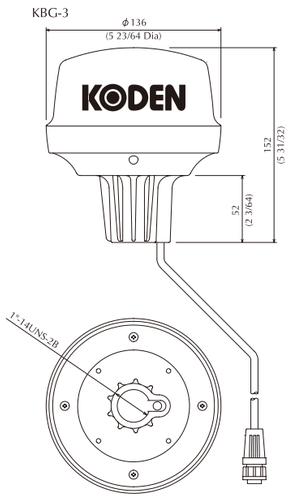
Weight: 0.27 kg (0.6 lb)

Processor unit KGC-1



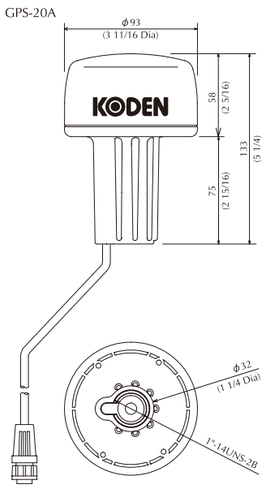
Weight: 1.2 kg (2.7 lb)

KBG-3



Weight:0.76 kg (1.68 lb)
(without cable)

GPS-20A

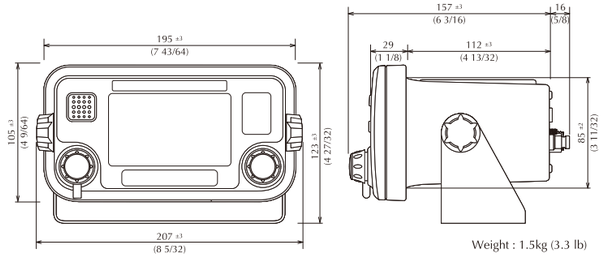


Weight:0.25 kg (0.55 lb)
(without cable)

AIS Transceiver KTA-100, Navigational Echo Sounder CVR-010

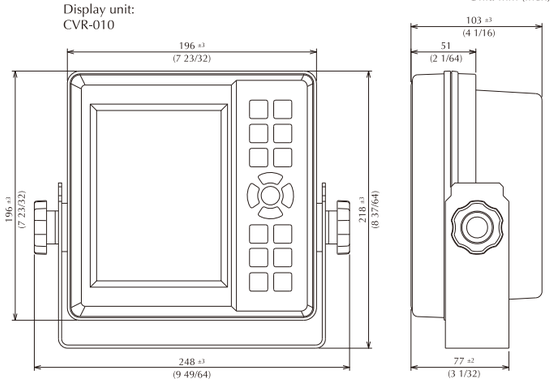
Unit: mm (inch)

Display unit:
KAT-100



Weight : 1.5kg (3.3 lb)

Display unit:
CVR-010

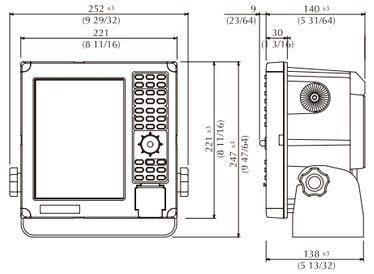


Weight : 2.2kg (4.9 lb)

Plotter Sounder CVG-80, CVG-200

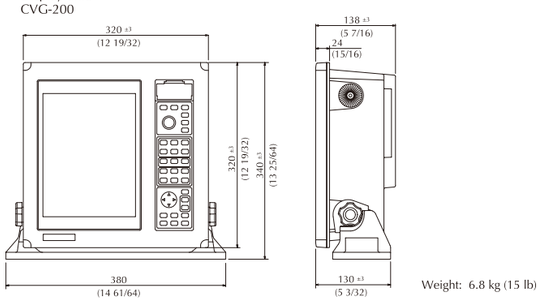
Unit: mm (inch)

Display unit:
CVG-80



Weight: 4.0 kg (8.8 lb)

Display unit:
CVG-200

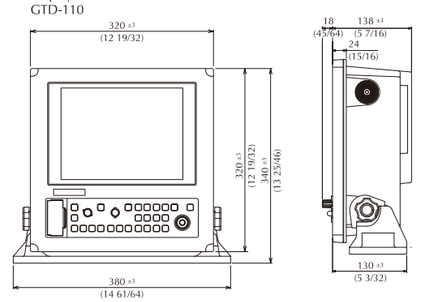


Weight: 6.8 kg (15 lb)

Chart Plotter GTD-110, GTD-150

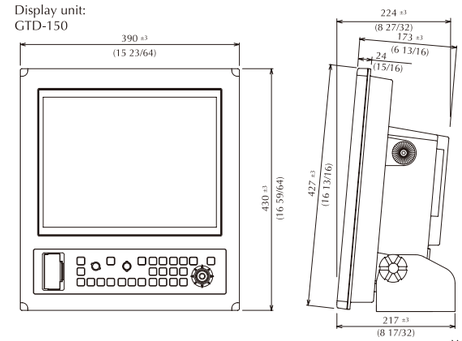
Unit: mm (inch)

Display unit:
GTD-110



Weight: 6.5 kg (14.5 lb)

Display unit:
GTD-150

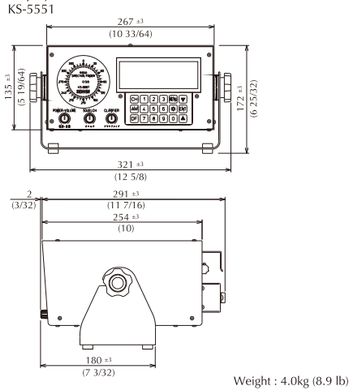


Weight: 10 kg (22 lb)

Direction Finder KS-5551

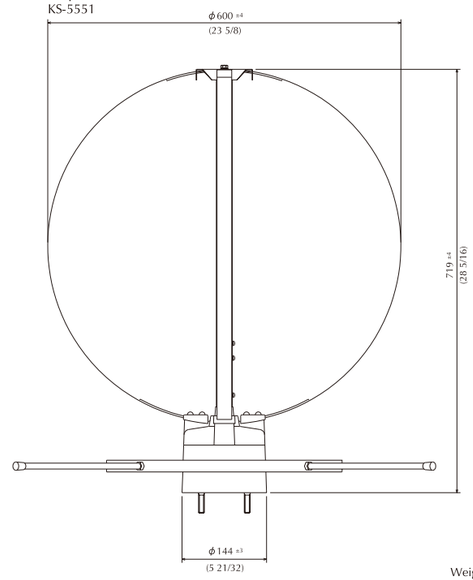
Unit: mm (inch)

Display unit:
KS-5551



Weight : 4.0kg (8.9 lb)

Loop antenna:
KS-5551



Weight : 6.0kg (13.2 lb)