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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

08/12 PDF

KODEN

Marine Electronics Products 2008-2009

Marine Radar 8.4"

Revolutionary high-performance for 8-inch grade

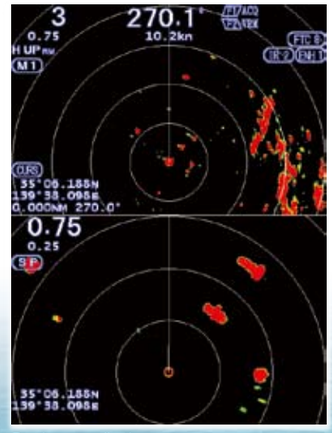
Marine Radar MDC-900 series presents larger professional grade performance and functions remarkable for 8-inch grade. The series features sophisticated Hyper-Digital Processing (HDP) Technology for real-time presentation and superior target discrimination.
The real - time presentation offers smooth movement 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 including for fishing to pleasure boats.

Features

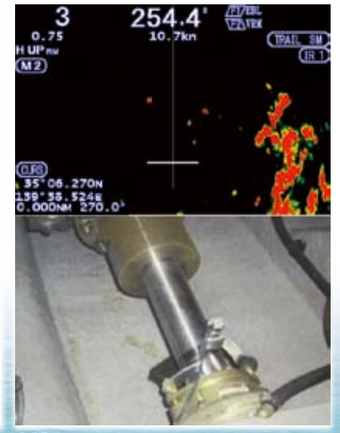
- "True trail" feature clearly identifies moving targets from stationary targets like land or buoys.
- Exclusive dual range radar feature lets you view split-screen display of both long and short-range targets simultaneously. It's like having two radars in one.
- Accepts CCD camera input, with which you can watch above deck and below deck any time you are steering.
- ATA (Automatic Tracking Aid) tracks up to 50 user designated targets. (Option)
- AIS (Automatic Identification System) displays up to 100 targets with AIS interface. (Option)
- The LCD and Anti-Reflecting coating filter are bonded directly to increase visibility and prevent condensation.

NEW

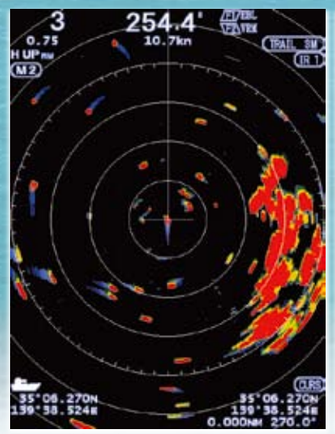
MDC-900 Series



Dual range display

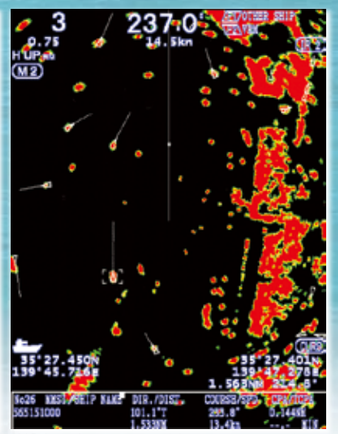


CCD camera input



True trail function

ATA with up to 50 targets as option



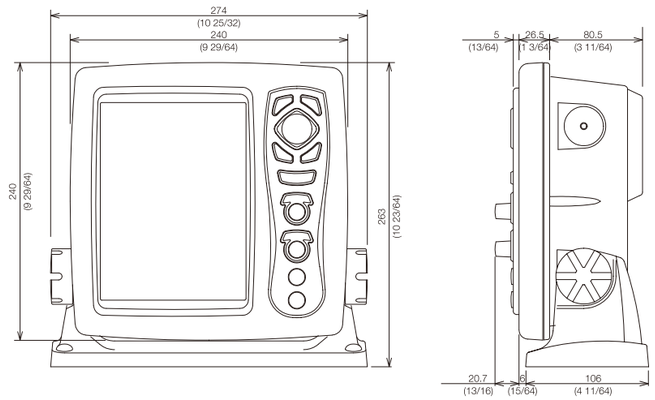
AIS interface up to 100 targets as option

Model	MDC-921	MDC-941	MDC-940
Specifications & Functions:			
Power output (Peak)	2 kW	4 kW	
Basic range	0.0625 to 24 NM	0.0625 to 32 NM	0.0625 to 48 NM
Display unit	MRD-103		
Display size / type	8.4" color LCD		
Effective diameter	127 mm		
Display resolution	480 x 640 pixels		
Off-centering	Max. 66%		
Echo area	2 types (Full screen, Inside of effective diameter)		
Presentation modes	Head-up, North-up*, Course-up*, WPT-up**		
Indication system	PPI, PPI/PPI, PPI/NAV		
Video levels	8		
Alarms	IN or OUT		
Functions	Interference rejection, Target expansion, VRM, EBL, Parallel index, Cursor position, Bearing, Trail*, RGB Monitor output, External 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 input/output port(s)	2		
AIS interface *	Option (100 Targets)*		
ATA *	Option (Auto/Manual 50 Targets)*		
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 :			
Water protection	CFR46 (Antenna-scanner unit), IPX5 (Display unit)	IPX6 (Antenna-scanner unit), IPX5 (Display unit)	
Operating temperature	-25°C to +55°C (Antenna-scanner unit), -15°C to +55°C (Display unit)		
Antenna-scanner connections: (See page 9 for details)			
2 kW, Radome	RB714A	-	-
4 kW, Radome	-	RB715A	-
4 kW, Open antenna	-	-	RB716A
Antenna-scanner unit cable 10, 15, 20 or 30 m	242J160680	242J158055	242J159098
Max. length (m)	30	100	

*Requires heading, speed, and / or position signal input from external equipment including GPS Compass depending on application of user.
**Requires waypoint data input.

Display unit:
MRD-103

Unit: mm (inch)



Weight : 3.7 kg (8.2 lb)

Marine Radar 12", 15"

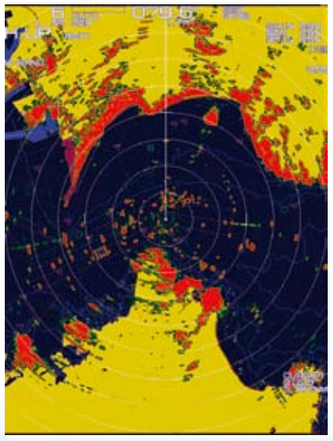
Superb performance for confidence at sea

MDC-2200/2500 series are high performance and multi-function Radars with the essence of Koden's latest technology.
Radars are especially recommended for work boats, fishing boats and commercial vessels.
Its superb detection capability and solid performance support safe and efficient navigation.
MDC-2500 series has keyboard for multiple installation locations.
Both series have high-resolution XGA (1024 x 768) grade LCD providing a clear picture, which is extraordinary for the 12-inch LCD display.

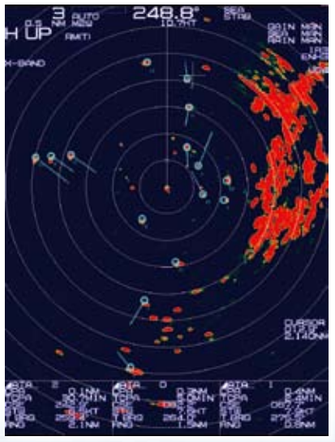
Features

- MAP Overlay with C-Map NT+ or NT MAX chart.
- True Trail feature clearly identifies moving targets from stationary targets like land or buoys.
- New signal processing technology for constant display of small targets.
- ATA with up to 50 targets as standard.
- AIS displays up to 200 targets with AIS interface.(Option)
- Accommodates optional remote second-station.
- Two-speed antenna rotation (48/24 rpm) tracks fast moving, close-in targets.

MDC-2200 series

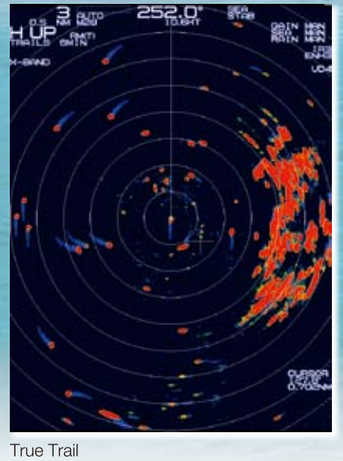


Map Overlay with C-Map chart as standard

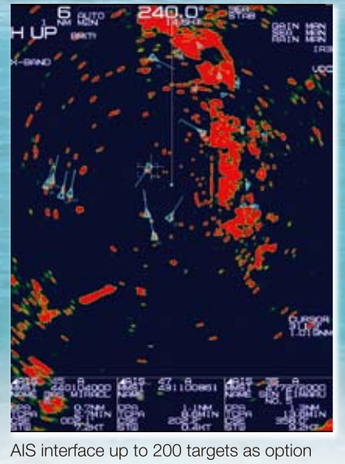


ATA with up to 50 targets as standard

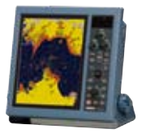
MDC-2500 series



True Trail



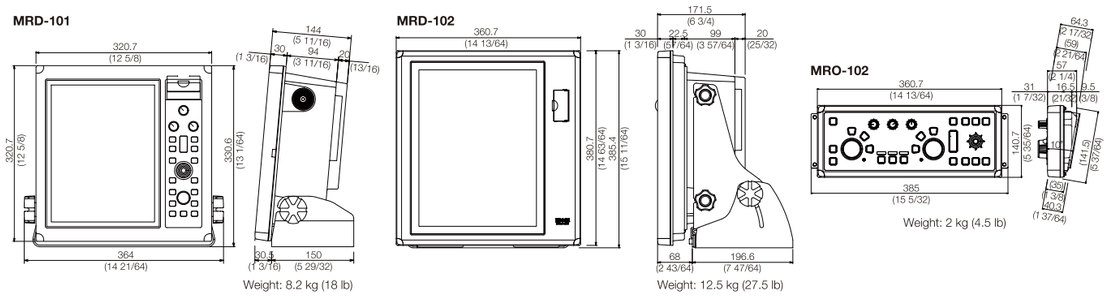
AIS interface up to 200 targets as option

								
Model	MDC-2240	MDC-2260	MDC-2210	MDC-2220	MDC-2540	MDC-2560	MDC-2510	MDC-2520
Specifications & Functions:								
Power output (Peak)	4 kW	6 kW	12 kW	25 kW	4 kW	6 kW	12 kW	25 kW
Basic range	0.125 to 48 NM	0.125 to 72 NM		0.125 to 96 NM	0.125 to 48 NM	0.125 to 72 NM		0.125 to 96 NM
Display unit	MRD-101				MRD-102			
Operation unit	-				MRO-102			
Display size / type	12.1" color LCD				15" color LCD			
Effective diameter	184 mm				228 mm			
Display resolution	768 x 1024 pixels							
Off-centering	Max. 66%							
Echo area	2 types (Full screen, Inside of effective diameter)							
Presentation modes	Head-up, North-up*, Course-up*, True motion*							
Indication system	PPI							
Video level	8							
Alarms	IN or OUT							
Functions	Interference rejection, Target expansion, Zoom, 2 VRMs, 2 EBLs (0.1°step), Floating EBL / VRM, Cursor position Parallel cursor, Bearing, Day / Night mode, Alarms, Trail*, Past course*, Mark* Route*, Dual station RGB Monitor output, Slave display monitor output, Nav line, Ship's profile, External buzzer							
Input data format and sentences	NMEA 0183 (BWC, DBT, DPT, DTM, GGA, GLC, GLL, GNS, HDG, HDM, HDT MTW, RMA, RMB, RMC, RTE, VBW, VDR, VHW VTG, WPL, ZDA							
Output data format and sentences	NMEA 0183 (HDT, VHW, VTG, GLL, VDR, RSD, OSD, TTM, TLL)							
NMEA input/output port (s)	3							
AIS interface *	Option (200 Targets)							
ATA *	Standard (Auto / Manual, 50 Targets)							
Map overlay	C-Map NT+ / NT MAX (Owner supplied)							
Power supply	10.8 to 41.6 VDC (25 kW: 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	100 W or less	130 W or less	150 W or less	200 W or less
Environmental:								
Water protection	IPX6 (Antenna-scanner unit), IPX5 (Display unit)							
Operating temperature	-25°C to +55°C (Antenna-scanner unit), -15°C to +55°C (Display unit)							
Antenna-scanner connections: (See page 9 for details)								
4 kW, Open antenna	RB716A	-	-	-	RB716A	-	-	-
6 kW, Open antenna	-	RB717A	-	-	-	RB717A	-	-
12 kW, Open antenna	-	-	RB718A	-	-	-	RB718A	-
25 kW, Open antenna	-	-	-	RB719A	-	-	-	RB719A
Antenna-scanner unit cable 10, 15, 20 or 30 m	242J159098							
Max. length (m)	100							

*Requires heading, speed, and / or position signal input from external equipment including GPS Compass depending on application of user.

Display unit:

Unit: mm (inch)



Marine Radar 7",10",15",18", Black Box

Koden Marine Radars are always running in the main stream of the equipment along with the brilliant history across the seven seas. We have been presenting state of the art Technology of Dimension/Distance Measuring and Information/Signal Processing including pioneering marine color radar.
Now you can enjoy our high performance and easy-to-use/high resolution LCD Marine Radar series.
The Radars are proud to be your third eye on-board for safer navigation watching geography of surroundings or other vessels' movement during day and night even under harsh weather.

Features

- High - speed antenna rotation at 48 rpm selectable for navigating congested waters, rivers, canals, etc.
- One-key-one-function plus menu for easy operation.

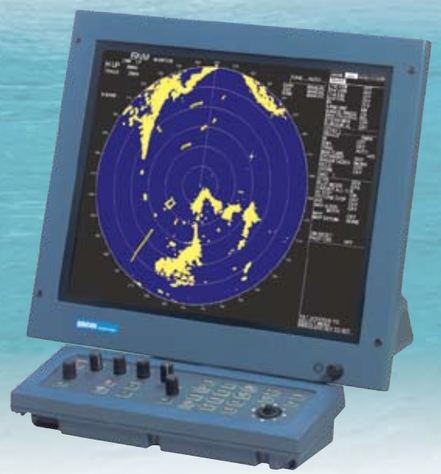
MDC-700 series / MDC-1000 series / MDC-1500 series

- Exclusive dual range radar feature lets you view split-screen display of both long and short range targets simultaneously. It's like having two radars in one. (MDC-1000 series / MDC-1500 series)
- Hands free operation with Auto function such as setting up Tuning, STC, and Gain.
- ATA (Automatic Tracking Aid) feature is available as an option for MDC-700 series / MDC-1000 series and a standard for MDC-1500 series.
- Multi – languages selectable via the menu.
  Chinese, Danish, English, French, German, Greek, Italian, Japanese, Korean, Norwegian, Portuguese, Russian, Spanish, Swedish, Thai and Turkish.

MDC-1800 series / MDC-1800 BB series

- Collision assessment in vector form using the built-in EPA (Electronic Plotting Aid) or optional ATA (Automatic Tracking Aid) with 10 targets.
- Almost any size user supplied SXGA grade or higher display for flexible installation suiting user's needs are available. (MDC-1800 BB series)

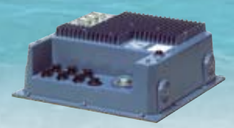
MDC-1000 series



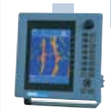
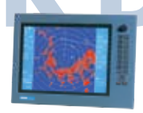
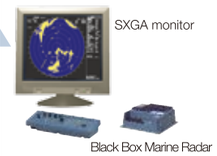
MDC-1800 series

SXGA monitor

MRO-100



MRM-100

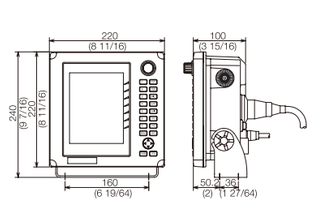
																 SXGA monitor Black Box Marine Radar				
Model	MDC-721	MDC-741	MDC-740	MDC-1041	MDC-1040	MDC-1060	MDC-1010	MDC-1541	MDC-1540	MDC-1560	MDC-1510	MDC-1520	MDC-1860	MDC-1810	MDC-1820	MDC-1841BB	MDC-1840BB	MDC-1860BB	MDC-1810BB	MDC-1820BB
Specifications & Functions:																				
Power output (Peak)	2 kW	4 kW	4 kW	4 kW	4 kW	6 kW	12 kW	4 kW	4 kW	6 kW	12 kW	25 kW	6 kW	12 kW	25 kW	4 kW		6 kW	12 kW	25 kW
Basic range	0.125 to 24 NM	0.125 to 36 NM	0.125 to 48 NM	0.125 to 36 NM	0.125 to 48 NM	0.125 to 64 NM	0.125 to 72 NM	0.125 to 36 NM	0.125 to 48 NM	0.125 to 64 NM	0.125 to 72 NM	0.125 to 120 NM	0.125 to 64 NM	0.125 to 72 NM	0.125 to 96 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
Display unit	MRD-99			MRD-97		MRD-97B		MRD-96				MRD-96B	MRD-100			MRM-100 (Processor Unit)				
Operation unit	-												MRO-100							
Display size / type	7" color LCD			10.4" color LCD				15" color LCD					18" color LCD			Any size, any type, resolution must be SXGA grade (Owner supplied)				
Effective diameter	96 mm			154 mm				222 mm					269 mm			269 mm for 18" display, subject to change according to the display size				
Display resolution	480 x 640 pixels			640 x 480 pixels									1280 x 1024 pixels							
Off-centering	Can be 100% off-centered over the full range												Max. 66%							
Echo area	2 Types (Full screen or Mask menu screen)												1 Type (Inside of effective diameter)							
Presentation modes	Head-up, North-up*, Course-up*, True motion*, Head set												Head-up, North-up*, Course-up*, True motion*, Head set							
Indication system	PPI, PPI + Semi-3D, All PPI			PPI, PPI + Semi-3D, PPI / PPI, All PPI									PPI							
Video level	4												8							
Alarms	IN or OUT																			
Functions	Interference rejection, Target expansion, Zoom, 2 VRMs, 2 EBLs (0.1°step), Floating EBL/VRM, Cursor position, Parallel cursor, Bearing Location memory (POB), Intermittent transmission, Day/Night mode, Alarms, Trail*, Route*, Slave display monitor output, External buzzer												Interference rejection, Target expansion, Zoom, 2 VRMs, 2 EBLs (0.1°step), Floating EBL/VRM, Cursor position, Parallel cursor, Bearing, Day/Night mode, Alarms, Trail*, Past course*, Mark*, Route*, Dual station, RGB Monitor output, Slave display monitor output, Nav line, Ship's profile							
Input data format and sentences	NMEA 0183 (BEC, BER, BPI, BWR, DBT, DPT, GGA, GLL, HCC, HDG, HDM, HDT, HVD, HVM, RMA, RMB, RMC, VBW, VHW, VTG, XTE												IEC 61162-1 / NMEA 0183 (BWC, GGA, GLC, GLL, HDT, RMB, RTE, VBW, VDR, VHW, VTG, WPL)							
Output data format and sentences	NMEA 0183 (TTM,TLL,WPL [At POB ON])												NMEA 0183 (TTM, OSD, RSD)							
NMEA input / output port(s)	Input/output: 1, Input: 1												3							
AIS interface *	-												Option(64 Targets)							
ATA *	Option (Auto / Manual, 10 Targets)							Standard (Auto / Manual, 10 Targets)					Option (Auto / Manual, 10 Targets)							
Power supply	10.2 to 41.6 VDC											21.6 to 41.6 VDC	10.8 to 41.6 VDC		21.6 to 41.6 VDC	10.8 to 41.6 VDC				21.6 to 41.6 VDC
Power consumption (at 24 VDC)	45 W or less	55 W or less	70 W or less	55 W or less	70 W or less	80 W or less	90 W or less	75 W or less	90 W or less	100 W or less	110 W or less	200 W nominal	170 W nominal							
Environmental:																				
Water protection	IPX6 (Antenna-scanner unit, CFR46 for RB714A), IPX5 (Display unit)												IPX6 (Antenna-scanner unit), IPX0 (Display unit)							
Operating temperature	-25°C to +55°C (Antenna-scanner unit), 0°C to +55°C (Display unit)												-25°C to +55°C (Antenna-scanner unit), -15°C to +55°C (Display unit)							
Antenna-scanner connections: (See page 9 for details)																				
2 kW, 1.2 feet Radome	RB714A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4 kW, 2 feet Radome	-	RB715A	-	RB715A	-	-	-	RB715A	-	-	-	-	-	-	-	RB715A	-	-	-	-
4 kW, Open antenna	-	-	RB716A	-	RB716A	-	-	-	RB716A	-	-	-	-	-	-	-	RB716A	-	-	-
6 kW, Open antenna	-	-	-	-	-	RB717A	-	-	-	RB717A	-	-	RB717A	-	-	-	-	RB717A	-	-
12 kW, Open antenna	-	-	-	-	-	-	RB718A	-	-	-	RB718A	-	-	RB718A	-	-	-	-	RB718A	-
25 kW, Open antenna	-	-	-	-	-	-	-	-	-	-	-	RB719A	-	-	RB719A	-	-	-	-	RB719A
Antenna-scanner unit cable 10, 15, 20 or 30 m	242J160980	242J158055	242J159098	242J158055	242J159098			242J158055	242J159098				242J159098			242J158055	242J159098			
Antenna-scanner unit cable Max. length (m)	30	100																		

*Requires heading, speed, and / or position signal input from external equipment including GPS Compass depending on application of user.

Display unit:

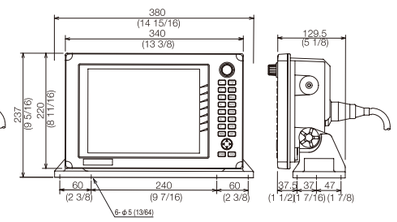
Unit: mm (inch)

MRD-99



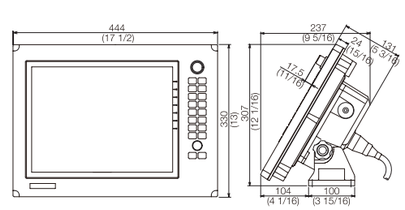
Weight: 3.5 kg (7.7 lb)

MRD-97/97B



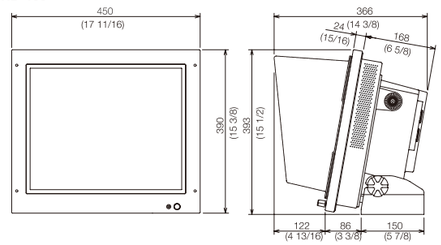
Weight: 4.0 kg (8.9 lb)

MRD-96/96B



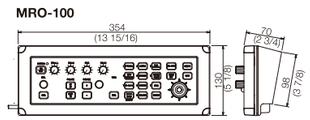
Weight: 7.8 kg (17.2 lb)

MRD-100



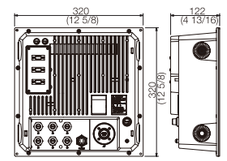
Weight : 14 kg (30.9 lb)

MRO-100



Weight : 2 kg (4.5 lb)

MRM-100



Weight : 5.5 kg (12.1 lb)

RADARpc®

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.

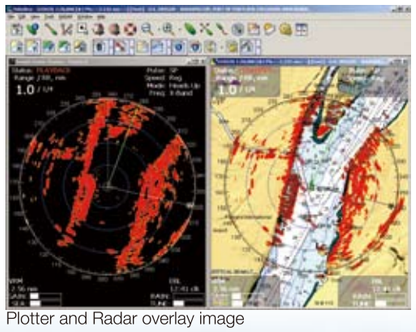
High speed data communication

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

Full performance on the compatible software

Variety of RADAR*pc* compatible software including Nobeltec, Euronav, P-Sea gives you stand alone, side by side or overlay radar image with full radar control in addition to their advanced charting capability.

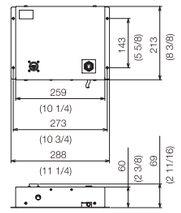
Your computer



Plotter and Radar overlay image

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

Unit: mm (inch)



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

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 9					
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:							
Water Protection		IPX 6 (Antenna-scanner unit, CFR46 for RB714A), IPX 0 (Control box)					
Operating temperature		-25°C to +55°C (Antenna-scanner unit), -15°C to +55°C (Control box)					

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

Marine Radar Antenna–Scanner

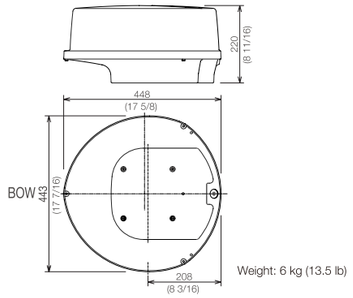
							
Type		RB714A	RB715A	RB716A	RB717A	RB718A	RB719A
Specifications:							
Antenna type		Radome		Open antenna			
Antenna length		1.2 feet	2 feet	3 or 4 feet	4 or 6 feet		4, 6 or 9 feet**
Power output (Peak)		2 kW	4 kW		6 kW	12 kW	25 kW
Output frequency		9445 ±30 MHz	9410 ±30 MHz				
Horizontal beam width		6.0°	3.9°	3 feet : 2.5° 4 feet : 1.8°	4 feet : 1.8° 6 feet : 1.2°		4 feet : 1.8° 6 feet : 1.2° 9 feet : 0.8°
Vertical beam width		25°		22°			4 / 6 feet : 22° 9 feet : 25°
Rotation		24 rpm ±20 %	24 or 48 rpm*				24 or 48 rpm*
IF center frequency		60 MHz					
Environmental:							
Water protection		CFR46	IPX6 (IEC 60529)				
Operating temperature		-25°C to + 55°C					
Display connections for Marine Radar:							
Marine Radar	7" color LCD : MRD-99	MDC-721	MDC-741	MDC-740	-	-	-
	8.4" color LCD: MRD-103	MDC-921	MDC-941	MDC-940	-	-	-
	10.4" color LCD: MRD-97	-	MDC-1041	MDC-1040	-	-	-
	10.4" color LCD: MRD-97B	-	-	-	MDC-1060	MDC-1010	-
	12" color LCD: MRD-101	-	-	MDC-2240	MDC-2260	MDC-2210	MDC-2220
	15" color LCD: MRD-96	-	MDC-1541	MDC-1540	MDC-1560	MDC-1510	-
	15" color LCD: MRD-96B	-	-	-	-	-	MDC-1520
	15" color LCD: MRD-102	-	-	MDC-2540	MDC-2560	MDC-2510	MDC-2520
	18" color LCD: MRD-100	-	-	-	MDC-1860	MDC-1810	MDC-1820
	Black Box Marine Radar	-	MDC-1841BB	MDC-1840BB	MDC-1860BB	MDC-1810BB	MDC-1820BB

* 48 rpm requires for input voltage of 24 VDC or more ** 9 ft antenna is available for MDC-1520 only

Antenna - scanner unit:

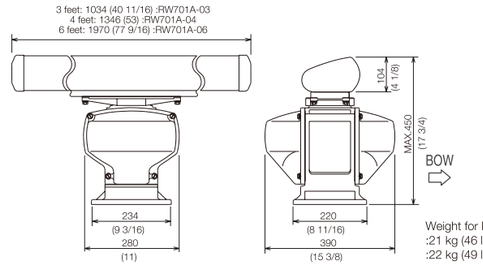
Unit: mm (inch)

RB714A



Weight: 6 kg (13.5 lb)

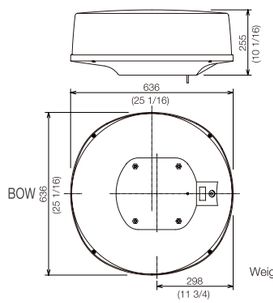
RB716A/RB717A and RB718A with RW701A-03/04/06



Weight for RB716A
:21 kg (46 lb) 3 feet
:22 kg (49 lb) 4 feet

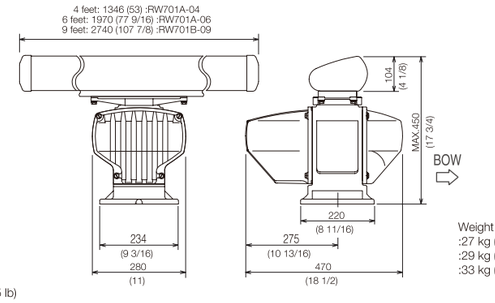
Weight for RB717A / 718A
:23 kg (51 lb) 4 feet
:25 kg (56 lb) 6 feet

RB715A



Weight: 10 kg (22.5 lb)

RB719A with RW701A-04/06/09



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

Plotter Sounder

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

CVG-80 / 200 is one solution for vessels with limited space.
Full function of chart plotter and echo sounder are here in your hands with almost the same high performance as GTD-110 and CVS-841 on one compact display.They can be used on a wider variety of vessels, ranging from pleasure boats to small and mid-size commercial vessels, providing a powerful navigation aid to users. CVG-80 boasts the best performance in the 8-inch class of Plotter Sounder.

More abundant C-Map Chart information with C-Map NT MAX

Combined with C-Map NT MAX, these two models produce the enhanced fundamental functions covered by the plotter. In addition to previous images from plotters, various information such as tides and port facilities is now available.

Features

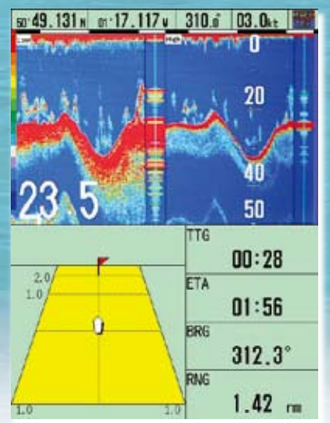
- Parallel line drawing function
- Dedicated keys for all frequency used functions insure ease of operation
- Track color variation on water depth and water temperature
- Clear and vivid images of charts and fish are shown on the display
- Easy-to-view LCD even under direct sunlight with thanks to special filter (CVG-80)
- External monitor (VGA) output is available
- DGPS WAAS/EGNOS with DGPS Sensor like KBG-3
- Tracks of the target on the display with ATA equipped Radar
- Head up even when the vessel is at rest with GPS Compass

MAX C-MAP NT

CVG-80

CVG-200

Plotter / Sounder

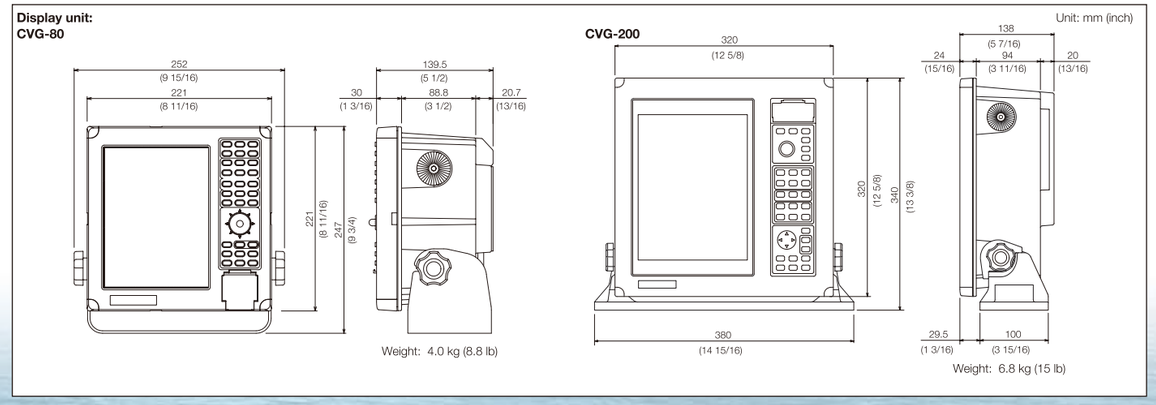


Sounder / Highway

		
Model	CVG-80	CVG-200
Specifications & Functions:		
Display size/type	8" color LCD	10.4" color LCD
Display resolution	480 x 640 pixels	
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 input/output port(s)	2	
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	
Plotting interval 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:		
Power output (RMS)	600 W or 1 kW	
Basic range m, ft, fa, l.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 alarm, Depth alarm	
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:		
Water protection	IPX5	
Operating temperature	-15°C to +55°C	

*Requires other ship's position data (TTM) from ATA equipped Radar

Display unit:



Echo Sounder

Wide range, wide variety of uses

Echo sounders are the most popular item of marine electronics and there are many different features available.
Koden offers a wide range of echo sounders which are designed for users from small pleasure boats to professional fishing vessels.
Furthermore new digital echo sounder CVS-126 (5.7-inch display) join the line-up.

Professional specification

Dual-frequency operation with adequate power output makes Koden echo sounder the No. 1 choice for the professional fisherman.
A unique signal processing system which aids in the finding of weak schools of fish in murky ocean conditions, is built in as standard.
By combining these features, you can use Koden echo sounder for a wide variety of fishing styles from shallow to deep sea applications.

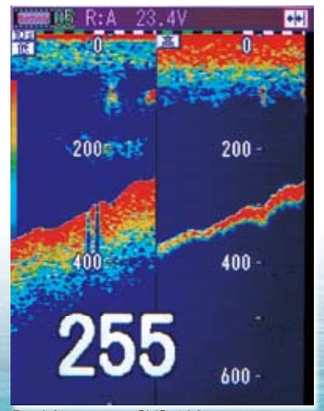
Features

- The Koden Digital Filterling (KDF) frasure eliminates clutter by filtering out the noise to provide a clear detailed image that enhances fish targets in shallow and deep depths. (CVS-126)
- Stores up to 10 screen images in built-in memory for recalling later by "one-touch". (CVS-126)
- Preferable color selection for daytime and nighttime operations
- Reliable A-scope display for precise fish detection image
- Many presentation modes lead you the best suitable image for individual use
- Greatly enhanced echo detection ability
- Entire image control by which you can adjust the gain of previously captured images (CVS-841 / 842 / 852)
- Exclusive audio Sona-Tone identify what is under your boat with different sounds for fish, schools of fish, etc. = “Sona-Tone” (CVS-126)
- With input from external GPS sensor, it can lead you back to your favorite fishing hot spots or other previously saved positions in memory. = “Fishing Hot Spot” support (CVS-126)

NEW

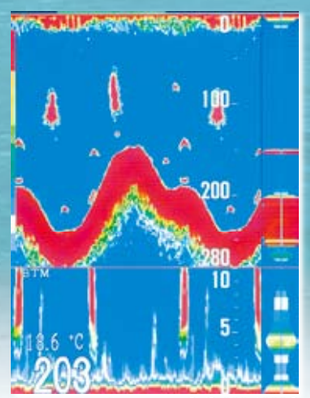
Digital

CVS-126



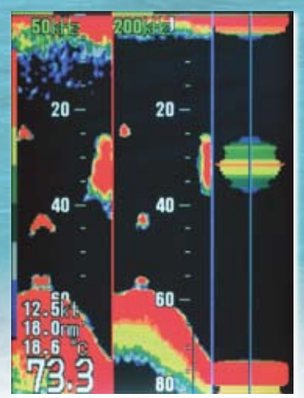
Dual-frequency CVS-126

CVS-833 / 833C

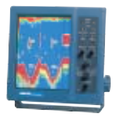
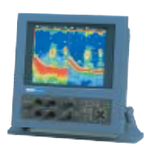
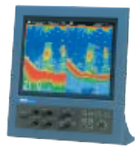


Bottom lock with A-scope CVS-833 / 833C

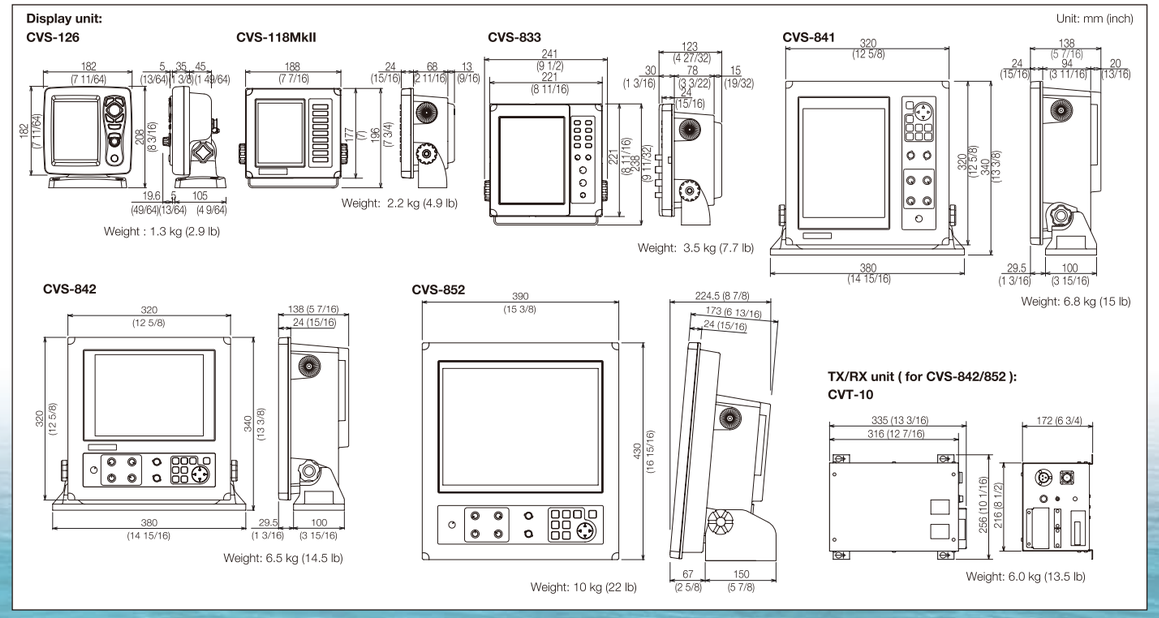
CVS-118MkII



Nighttime color CVS-118MkII

												
Model	CVS-126	CVS-118MkII	CVS-833	CVS-833C	CVS-841C	CVS-841P	CVS-842C	CVS-842P	CVS-842T	CVS-852C	CVS-852P	CVS-852T
Specifications & Functions:												
Power output (RMS)	600 W	300 W	600 W	1 kW	1 kW	3 kW	1 kW	3 kW	5 kW	1 kW	3 kW	5 kW
Basic range m, ft, fa, l.fa can be selectable in the menu	2.5 to 800 m 10 to 2800 ft	5 to 320 m 10 to 1280 ft	5 to 600 m 10 to 2000 ft	5 to 1200 m 10 to 4000 ft	2.5 to 1200 m 10 to 4000 ft	2.5 to 3000 m 10 to 8000 ft	2.5 to 1200 m 10 to 4000 ft	2.5 to 3000 m 10 to 8000 ft		2.5 to 1200 m 10 to 4000 ft	2.5 to 3000 m 10 to 8000 ft	
Output frequency	Dual 50 / 200 kHz				Dual combination selected from 28, 50, 75, 200 kHz(CVS-842 / 852), 28, 38, 50, 75, 200 kHz(CVS-841)							
Display size / type	5.7" color LCD	5.6" color LCD	8" color LCD		10.4" color LCD					15" color LCD		
Display resolution	240 x 320 pixels	234 x 320 pixels	480 x 640 pixels				640 x 480 pixels					
Image shift	Auto or Manual											
Presentation modes	Normal, Zoom, Bottom lock, Bottom discrimination, Bottom zoom, A-scope											
Presentation colors	64 /16 / 8 colors	16 / 8 colors selectable										
Alarms	Fish alarm, Depth alarm, Temperature alarm (for CVS-126 / 833 / 833C), Speed alarm* / Arrival alarm** / XTE alarm** (for CVS-126)											
Image speed	9 steps & stop	5 steps & stop	7 steps & stop		12 steps & stop							
Functions	Marker, Water temperature graph, Interference rejection, Color rejection, Draft adjustment, White line, Sona-Tone, Store image, Fishing Hot Spot (CVS-126)											
Auto functions	Depth range, Shift, Gain (for CVS-126, CVS-118MKII, CVS-833/833C)											
Input data format and sentences	NMEA 0183 (GGA, GLL, ZDA, VTG, RMC, MTW, VHW, VWV, HDT)	NMEA 0183 (GGA, GLL, GNS, GTD HDM, MTW, VTG) / NMEA 0182	NMEA 0183 (GGA, GLL, GNS GTD, VTG, MTW)		NMEA 0183 (GGA, GLL, GTD MTW, RMC, VTG)		NMEA 0183 (GGA, GLL, GTD, MTW, RMC, VTG)					
Output data format and sentences	NMEA 0183, (DBT, DPT, GGA, GLL, MTW, RMC, TLL, VHW, VTG, ZDA, HDT, MWV)	NMEA 0183 (DBS, DBT DPT, MTW, VHW)	NMEA 0183 (GGA, DBS, DBT DPT, VHW, MTW)		NMEA 0183 (DBS, DBT, DPT MTW, TLL)		NMEA 0183 (DBS, DBT, DPT, MTW, TLL)					
NMEA input/output port(s)	1				input : 2, output : 1							
Power supply	10.8 to 31.2 VDC								21.6 to 31.2 VDC	10.8 to 31.2 VDC		21.6 to 31.2 VDC
Power consumption (at 24 VDC)	10 W or less	15 W or less	25 W or less	30 W or less	45 W or less		30 W or less	75 W or less		40 W or less	75 W or less	
Environmental:												
Water protection	IPX5	IPX2			IPX5							
Operating temperature	-15°C to +55°C											

*Requires speed data from speed sensor or GPS sensor. **Requires speed data from GPS sensor.



Sonar

Koden high-speed searchlight Sonar line-up

Color Sonar is a multi-directional fish finder with a revolving and tilting transducer emitting and receiving ultrasonic waves in various directions.The sonar can locate fish school in wider areas with the transducer tilting itself to change the angle of transmission from parallel to vertical.
Koden high-speed scanning Sonar products have been loved by fishing vessels world widely.
Frequency is selective depending on the method, type of fish like low frequency in Squid Jigging and high frequency in Trawling and Purse Seining for Cod, Anchovy, Sardine and Tuna.

Features

- Brilliant, excellent visibility, compact and light weight color LCD permits flexible installation
- Highest-class speed beam scan in searchlight system results in reduction of detecting time and prevention of search failure for efficient fish finding operation
- Ring marker and cross cursor provide accurate distance measurement to a target
- Stabilizing function automatically rectifies the direction of transducer swayed by pitching and rolling movement of the boat
- Target lock function on fish school can help to increase fish catches
- Hoist/lower unit is automatically loaded to prevent damages when the boat travels faster than the preset speed
- Bottom scanning up to sector angle of 95 degrees
- Variable depth marker and cross cursor for accurate distance reading
- Echo Sounder display mode effective for finding school of fish
- Three types of frequency 180kHz, 200kHz or 220 kHz are available. (ESR-140MkII)
- Remote controller, Audio kit and speaker are available as option (ESR-140MkII)

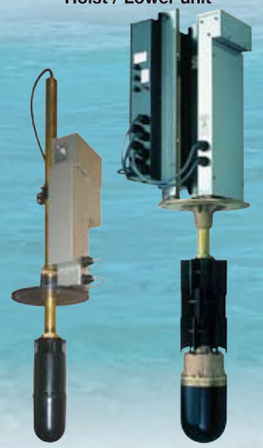
NEW

ESR-140MkII

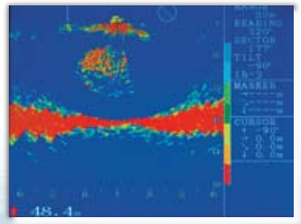
ESR-160

ESR-180

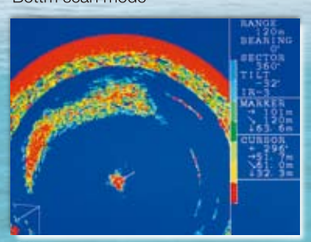
Hoist / Lower unit



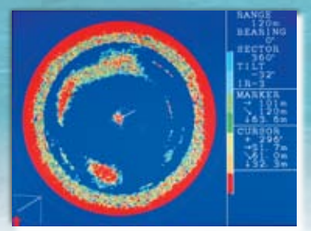
For ESR-140MkII For ESR-160 / 180



Bottm scan mode



Off-center mode



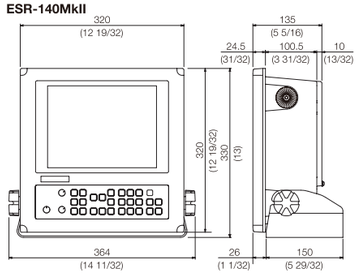
Sonar mode

				
Model		ESR-140MkII	ESR-160	ESR-180
Specifications & Functions:				
Power output (RMS)		800 W	1.5 kW	
Ouput frequency		180 kHz , 200 kHz , 220 kHz	80 kHz, 180 kHz	
Display size / type		10.4" color LCD		15" color LCD
Display resolution		640 x 480 pixels		
Presentation colors		8 image colors (selectable from 4096 colors on color palette)		
Presentation modes		Sonar, Off-center, Bottom scan, Echo sounder		
Off-centering		Fore, Back, Left, Right (Movable 50% of radius from the center of effective screen)		
Target lock		Automatic track, Automatic track with tilt control, Horizontal, Horizontal + vertical		
Hoist stroke		120 to 200 mm	200 to 400 mm	
Tilt angle		+5° to -90° (1° step)		
Beam angle		16°(180 kHz), 12°(200 kHz), 11°(220 kHz)	17°(80 kHz) , 8°(180 kHz)	
Scanning range m, ft, fa, l.fa can be selectable in the menu		10 to 300 m 50 to 1000 ft	20 to 2000 m 80 to 6000 ft	
Scanning sector angle	Sonar modes	10° step: 10°, 30°, 50°, 90°, 130°, 170°, 210°, 360° 5° step: 5°, 25°, 45°, 85°, 125°, 165°, 205°, 360°		
	Bottom scan modes	5° step: 5°, 25°, 45°, 65°, 95°, 115°, 145°, 175° 3° step: 3°, 27°, 45°, 63°, 93°, 117°, 147°, 177°		
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	
VGA Monitor terminal		1	-	1
Audio monitor		Option (Audio kit, Outer speaker)	Option (Outer speaker)	
Input data format and sentences		NMEA 0183 (GGA, GLL, VTG, MTW)	Option (NMEA 0183 - GLL, GGA, VTG)	
Output data format and sentences		-	Option (NMEA 0183 - TLL, DBT, MTW)	
NMEA input port(s)		1	Option (1)	
Functions		TVG (4 types), Pulse selection (3 types), Color rejection Dynamic range (3 levels), Compass display, Interference rejection, Bow compensation		
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 (24 VDC)	80 W	30 W	38 W
	Hoist / lower unit (24 VDC)	-	110 W	
Enviromental:				
Water protection		IPX 2		IPX 1
Operating temperature		0°C to 50°C		

Display unit:

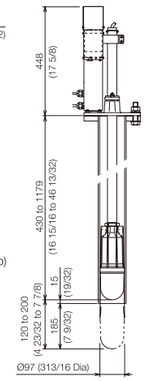
Unit: mm (inch)

ESR-140MkII



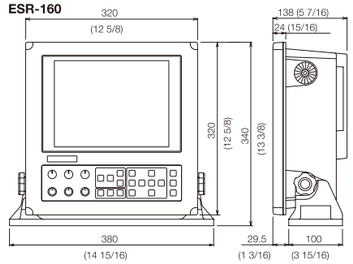
Weight: 8.5 kg (18.7 lb)

Hoist / lower unit



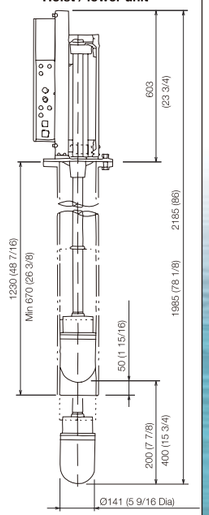
Weight: 23.5 kg (51.8 lb)

ESR-160



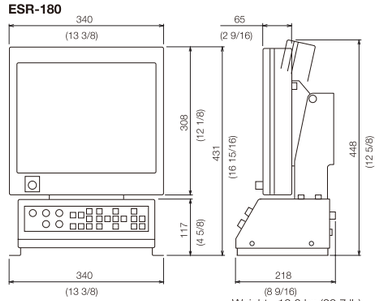
Weight: 7.0 kg (15.5 lb)

Hoist / lower unit



Weight: 44.0 kg (97 lb)

ESR-180



Weight: 13.0 kg (28.7 lb)

Chart Plotter

Easy installation anywhere on the boat

GTD-110 / 150 is a GPS based color electronic chart plotter, designed to provide navigational aids for small and medium size vessels. GTD-110 / 150 can be installed anywhere on the boat, on the table, tilted console or even on the fly bridge, thanks to a solid waterproof design, conforming to the IPX5 requirements. Where to install? The choice is yours.

More effective and safer navigation available with ATA equipped Radar connected

GTD-110 / 150 has Radar Plotting function. It permits tracked radar plots to be overlaid on the screen,when a radar with an ATA (Automatic Tracking Aid) function is connected. The maximum numbers of ship's track are 10, with 1,000 plotting points each. Each track can be modified in terms of mark size, track thickness, color, course line display yes / no, etc.

Features

- Brilliant, high-resolution LCD display with wide-viewing angle for steady and crisp images
- Various marks and greater numbers of ship's track
- All stored memory is securely protected with double layer memory
- Easy Operation with logically arranged keypads and controls
- GTD-110 / 150 supports C-Map NT, NT+ and NT MAX.
- Multi-languages are available as standard, including Chinese, English, French, Italian, Korean, Spanish, and Japanese.

GTD-110

GTD-150

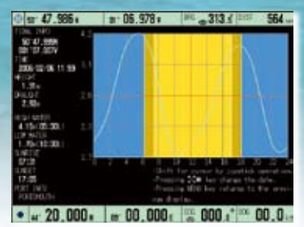
C-Map NT MAX compatible

Combination of GTD-110 / 150 and enhanced chart C-Map NT MAX improves utilization revolutionary. C-Map NT MAX provides a wide variety of navigation information such as lighthouses, buoys, contours, tides, currents and so on.

MAX C-MAP NT

Radar Plotting

This picture shows the ship's tracks of own ship with ship's profile mark and other ships in different colors.

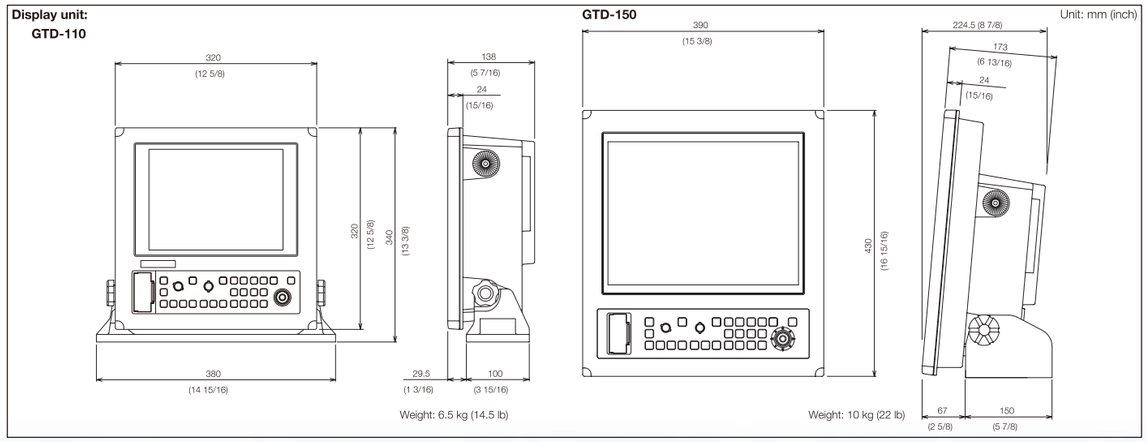


Tides & Currents

Tidal information is displayed graphically.

		
Model	GTD-110	GTD-150
Specifications & Functions:		
Display size / type	10.4" color LCD	15" color LCD
Display resolution	640 x 480 pixels	
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)	
Plotting interval 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)	
Output data format and sentences	NMEA 0183 (APB, GGA, GLL, VTG, XTE, ZDA, GTD)	
NMEA input/output port(s)	1	
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:		
Water protection	IPX5	
Operating temperature	-15°C to +55°C	

*Requires other ship's position data (TTM) from ATA equipped Radar



GPS Navigator / Compass / Sensor / Direction Finder

Koden GPS Navigators, Sensors, and Compass for highly-accurate positioning

Koden GPS products support you in various fields like Fishing, Pleasure, and Ocean Races.
Not only stand-alone use, they can also output accurate position or heading information to your Radar, Echo Sounder, Plotter, and Autopilot for safer and smoother navigation.
KGP-920, GPS-20A, KBG-3, and KGC-1 can provide you with state of the art technique of positioning using the differential information from the Satellite Based Augmentation System (SBAS), WAAS in the North America and EGNOS in Europe, which is very effective for Pinpoint fishing, Harbor approaching, and Narrow channel running.

Koden Direction Finder covering all HF range

KS-5551 is an omni-derectional automatic direct-view Direction Finder.

GPS Navigator Features

- Two types of graphic displays
- Beacon receiver built-in for a highly-accurate differential system where beacon stations are located (KGP-913D / KGP-920 option)
- IMO type approved MSC.112 [73] and IEC 61108-1 Ed.2 for SOLAS carriage requirements (KGP-920)
- Can be used as a GNSS sensor of AIS (KGP-920)
- SBAS (WAAS / EGNOS) enabled (KGP-920)

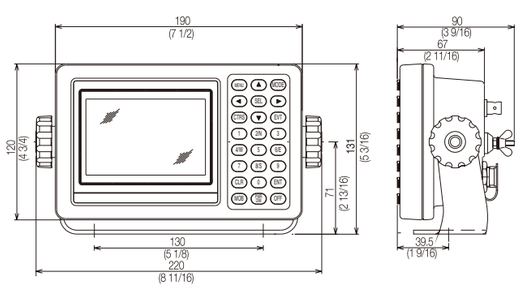
Direction Finder Features

- Epoch-Making wide coverage from MF / HF range to 27, 40, 50 MHz
- Introducing Propelled Goniometric method for higher accuracy
- Light weight antenna for easy installation

Model	KGP-920	KGP-913	KGP-913D
Specifications & Functions:			
Display size/type	4.2" LCD		
Display resolution	128 x 64 pixels		
Receiving channels	18-channel parallel	Digital 11-channel parallel/ sequential	
Instant (Event) memory	200 points	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	Built-in beacon receiver at option	Ready by RTCM SC-104 format	Built-in beacon receiver
Input data format and sentence	RTCM SC104 (DGPS)	-	RTCM SC104
Output data format and sentence	IEC61162-1/ NMEA0183 (DTN, GBS, GNS, RTE)	NMEA0183 (GTD, CDA, SNU)	
	(AAM, APB, BOD, BWC, DCN, GGA, GLC, GLL, GSA, GSV, MSS, RMB, RMC, RNN, SGR,VTG, WDC, WPL, XTE, ZDA)		
	CIF / SHIPMATE0183 are also available		
NMEA input/output port(s)	2	1	
Power supply	10.8 to 31.2 VDC	10.8 to 41.6 VDC	
Power consumption (at 24 VDC)	4.5 W or less	3.3 W or less	4.8 W or less
Environmental:			
Water protection	IPX4 (Display unit), IPX6 (Antenna unit)		
Operating temperature	-15°C to +55°C (Display unit), -25°C to +55°C (Antenna unit)		

Display unit:
KGP-920 / 913 / 913D

Unit: mm (inch)



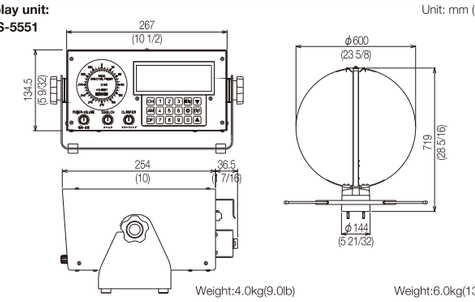
KGP-920: 0.86 kg (1.9 lb)
KGP-913: 0.86 kg (1.9 lb)
KGP-913D: 0.96 kg (2.1 lb)

NEW

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 range	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 range		Same as receiving frequency range
Mode		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
Input data format and sentence		NMEA0183 (HDT, HDM, VHW, HDG, HCC, OSD)
NMEA input port(s)		1
Power supply		21.6 to 31.2VDC
Power consumption (at 24VDC)		2A or less
Environmental:		
Water protection		Antenna : IPX 4, Receiver irdicator : IPX 0
Operating temperature		Antenna: -25°C to +55°C, Receiver-Indicator: -10°C to +55°C

Display unit:
KS-5551

Unit: mm (inch)

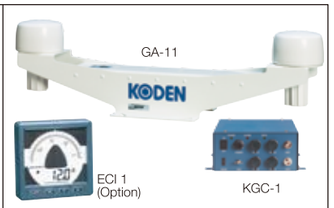


Weight:4.0kg(9.0lb)

Weight:6.0kg(13.5lb)

GPS Compass Features

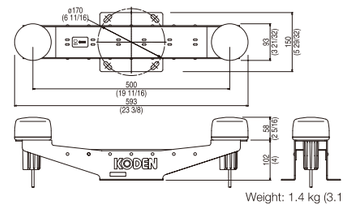
- Precise 2D heading and positioning data to Radar, Sonar, Plotter and AIS
- SBAS (WAAS / EGNOS) enabled
- NMEA0183 interface with provision for external RTCM SC-104 differential corrections
- Indicator ECI-1 as option for heading presentation in analog and digital format



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 format and sentence		IEC61162-1/ NMEA 0183 (HDT, ROT, GGA,VTG, GLL ZDA, GSA, GSV, RMC, PKODA PKODG1, PKODG7)
NMEA output data port(s)		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:		
Water protection	GPS Antenna	IPX6
	Processor Unit	IPX0
Operating temperature	GPS Antenna	-25°C to +55°C
	Processor Unit	-15°C to +55°C

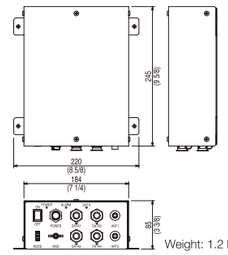
GPS antenna GA-11

Unit: mm (inch)



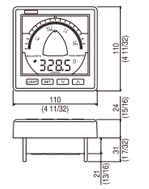
Weight: 1.4 kg (3.1 lb)

Processor unit KGC-1



Weight: 1.2 kg (2.6 lb)

Indicator ECI 1 (Option)



Weight: 0.27 kg (0.6 lb)

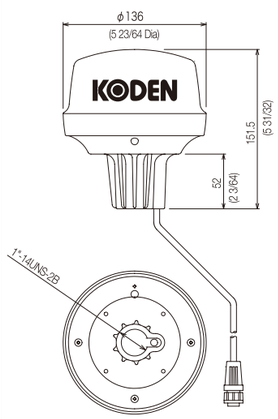
DGPS Sensor / GPS Sensor Features

- Parallel 18-channel
- SBAS (WAAS / EGNOS) enabled
- Beacon receiver built-in for a highly-accurate 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 format 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:			
Water protection		IPX6 (IEC60945)	
Operating temperature		-25°C to +55°C	

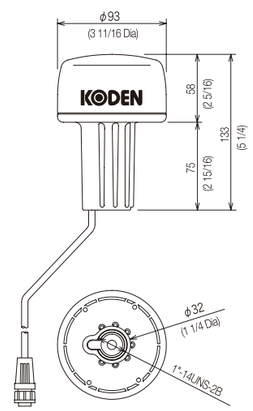
Unit: mm (inch)

KBG-3



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

GPS-20A



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