

KODEN

WITH GRAPHIC DISPLAY
GPS/DGPS NAVIGATOR

KGP-913/913D



High performance and accuracy, compact and easy-to-operate.

With all these features, the KGP-913/913D is ideal for pleasure craft and fishing boats.

FEATURES

- **Differential GPS (KGP-913D only)**

Thanks to a built-in beacon receiver, it can be used as a high-accuracy differential GPS navigator. Beacon stations all over the world are pre-installed (in countries where differential beacons are located).

- **Easy-to-operate**

"Fix anywhere" capability automatically fixes your position at turn on. A user-friendly menu makes operation easy from the very start.

- **Easy-to-see display**

An easy-to-see LCD with backlight, displays various information for navigation. For current position indication, Loran C LOPs are also available for those who have been using a Loran C-type navigator.

- **Graphic display**

Two types of graphic displays lead you to your destination.

- **Navigational data**

Displays of lat/long, boat speed and heading, average speed, average bearing, passed time, distance/bearing to waypoint, cross track error, course deviation, time to go, total time/distance to destination, DOP value, present date/time (UTC or LTC), GPS satellite status, DGPS status and MOB indication are all selectable.

- **Position memory**

Two hundred waypoints (which can be named or commented) and 200 event memories for storing the position of wrecks, reefs and fishing spots with one key press.

- **Route navigation**

A total of 400 stored waypoints can be used to create up to 20 routes. A route may be taken in forward or reverse order.

- **Cross track error and course deviation**

In navigation mode, indication of track error to the destination with distance (cross track error) and angle (course deviation) in addition to speed and bearing are shown.

- **Alarm capability**

Audible and visual alarms of cross track error, course deviation, waypoint proximity, anchor watch drift and DGPS are available for power saving and hazard prevention.

- **MOB (Man Over Board) display**

In case of emergency, the Man Over Board function automatically stores the position where the emergency has occurred, providing continuous update of distance and bearing to that position, making recovery quick and easy.

- **Flexible data output**

NMEA-0183 output for interfacing with other devices onboard.

- **Plotter function**

Your vessel's track history (up to 2,000 points) and course line to the destination are simultaneously displayed.

SPECIFICATIONS

GPS receiver section (KGP-913/913D common)

Receiving frequency	1575.42 MHz ± 1 MHz	
Receiving channel	Digital 11-channel parallel/sequential	
Receiving code	C/A code	
Sensitivity	Better than -130 dBm (elevation angle: 5° or over)	
Tracking speed	200 knots maximum	
Accuracy	10 meters RMS (DGPS ON), 100 m 2DRMS (DGPS OFF)	
(PDOP: 3 or less)	Velocity	0.1 knot RMS (DGPS ON)

Note: Accuracy is subject to change in accordance with DoD civil GPS user policy.

Beacon receiver section (KGP-913D only)

Receiving frequency	283.5 to 325.0 kHz
Channel separation	500 Hz step
Modulation	MSK: 50, 100, 200 bit/second
Sensitivity	2.5 µV/m (at BA-02)
Signal detection (S/N)	Better than 6 dB
Dynamic range	92 dB

Display section (KGP-913/913D common)

Display	LCD with backlight (128 x 64 dots, effective picture area: 85.71 x 54.35 mm)
Display mode	NAV1, NAV2, NAV3, PLOT, MOB (Man Over Board), MENU
Position data display	Latitude/longitude in increments of 0.0001 minute, converted Loran C LOP, converted Loran A LOP or converted Decca LOP
Track display	Display range: 0.025, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20 nm (sm, km)
Usable ground	Within 80° in latitude
Plotting interval	10, 20, 30 seconds, 1, 3, 5 minutes, 0.1, 0.5, 1 nm (sm, km)
Plotting capacity	2,000 points
Navigational display	Speed, course, velocity made good/course made good/elapsed time, altitude, distance/bearing/cross track error/CDI/time to go to waypoint, total time to go and distance on route, DOP value, present time (UTC or LTC), satellite status, beacon receiving status, distance/bearing between two points, MOB display
Instant (event) memory	200 points (incl. one MOB point)
Waypoint memory	200 points (usable as waypoint)
Route memory	20 routes (Max. 400 waypoints) reverse trail possible
Alarm	Arrival proximity, cross track error, CDI, anchor watch, DGPS, GPS
Position compensation	Latitude/longitude, Loran C LOP, Loran A LOP, Decca LOP or Datum
Magnetic compensation	Auto or manual
Parameters	Loran C LOP/Loran A LOP/Decca LOP conversion, memory of waypoints and name (up to 10 letters), selection of measuring unit (nm, km, sm), antenna height, averaging (smoothing) factor, positioning mode (2D or 3D automatic selection), selection and registration of beacon station
Output data format (KGP-913: NMEA-0183 only)	NMEA-0183 (AAM, APB, BOD, BWC, DCN, GGA, GLC, GLL, GSA, GSV, GTD, MSS, ODA, RMB, RMC, Rnn, SGR, SNU, VTG, WDC, WPL, XTE, and ZDA), NMEA1, NMEA2, CIF, SHIPMATE 0183
Data out interval	1 second (CIF, SHIPMATE, and NMEA1), 3 seconds (NMEA2), and 1 to 99 seconds selectable (NMEA 0183)
Memory protection	By built-in battery
Power supply	10.8 to 41.6 VDC
Power consumption	4.8 W or less (KGP-913D), 3.3 W or less (KGP-913), at 24 VDC
Operating temperature	Display unit: -15° to +55°C (5° to 131°F) Antenna unit: -25° to +55°C (-22° to 131°F)

Display section (KGP-913D only)

Differential	ON, OFF, AUTO
Beacon station selection	Auto (requires position information) or manual
Beacon station data	User entry (20 stations), beacon almanac data (10 stations), ROM (built-in stations around the world)
Operating temperature	Antenna coupler: -25° to +55°C (-22° to 131°F)

EQUIPMENT LIST

Standard Equipment List (KGP-913/913D common)

Display unit		With vinyl cover and mounting bracket	1
Antenna unit	GA-08 (GA-07)	For GPS reception, with antenna cable Connected to GA-08/BNC connector	1
Antenna cable	GA-08L (GA-07L)	For GPS reception, with antenna cable Connected to GA-08L/BNC connector	15 m (49 3/16 ft)
DC power cable	CW-241	With a connector, waterproof cap	1.8 m (5 15/16 ft)
Fuse	F-7161, 2A	For spare	1
Truss tapping screw	TPT 5 x 20U	For mounting bracket	2
Operation manual			1

Standard Equipment List (KGP-913D only)

Antenna coupler	BA-02	For beacon reception, with antenna cable Connected to BA-02/BNC connector	1
Antenna cable	BA-02L	For beacon reception, with antenna cable Connected to BA-02L/BNC connector	15 m (49 3/16 ft)

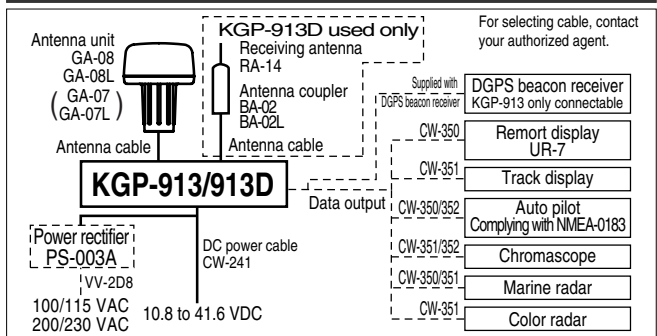
Options

Remote display	UR-7	With power and connecting cable	1.3 kg (2.9 lb)
Connecting cable	CW-350	With 6-pin and BNC connectors	5 m (16 3/8 ft)
	CW-351	With 6-pin connectors	5 m (16 3/8 ft)
	CW-352	With 6-pin connector and lugs	5 m (16 3/8 ft)
Power Rectifier	PS-003A	With two 5A fuses	2.8 kg (6.2 lb)
AC power cable	VV-2D8	Both end plain for power rectifier	3 m (9 13/16 ft)
Flush mount kit	FMK-1	Flush mount frame with screws	
Antenna holder	RAH-29	Ratchet mount	0.68 kg (1.5 lb)

Options (KGP-913D only)

Receiving antenna	RA-14	2.45 m, whip	0.3 kg (0.67 lb)
H-field loop antenna	BA-03	With antenna cable Connected to BA-03/BNC connector	1.4 kg (3.1 lb) 10 m (32 13/16 ft)
Antenna cable	BA-03L	With antenna cables Connected to BA-03L/BNC connector	1.6 kg (3.6 lb) 15 m (49 3/16 ft)
	BA-03S	With antenna cables Connected to BA-03S/BNC connector	0.99 kg (2.2 lb) 0.5 m (1 5/8 ft)
GPS/H-field beacon antenna	GBA-01	With antenna cables Connected to GBA-01/BNC connector	1.9 kg (4.2 lb) 10 m (32 13/16 ft)
Antenna cable	GBA-01L	With antenna cables Connected to GBA-01L/BNC connector	2.2 kg (4.9 lb) 15 m (49 3/16 ft)
	GBA-01S	With antenna cables Connected to GBA-01S/BNC connector	1.1 kg (2.5 lb) 0.5 m (1 5/8 ft)
Antenna extension cable	CW-826	With N-P/BNC connectors For BA-03S/GBA-01S	0.5 m (1 5/8 ft)
	RG-10UY	With N-J connectors For BA-03S/GBA-01S	20 m (66 ft)
	RG-10UY	With N-J connectors For BA-03S/GBA-01S	30 m (98 7/16 ft)

CONNECTION



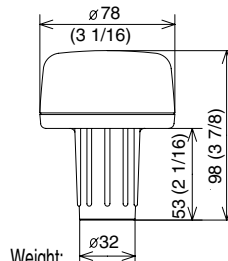
DIMENSIONS AND WEIGHT

Display unit



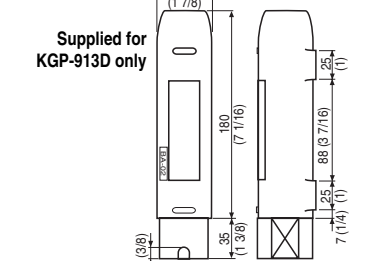
KGP-913: 0.86 kg (1.9 lb), KGP-913D: 0.96 kg (2.1 lb)

Antenna unit (GPS) GA-08/08L



Weight:
0.19 kg (0.42 lb)
0.62 kg (1.4 lb) including cable (10 m)
0.81 kg (1.8 lb) including cable (15 m)

Antenna coupler (beacon) BA-02/02L



Weight: 0.4 kg (0.89 lb)
0.85 kg (1.9 lb) including cable (10 m)
1.2 kg (2.7 lb) including cable (15 m)

* Specifications subject to change without notice.

KODEN

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Certified to ISO 9001 (TUV PRODUCT SERVICE)



To ensure proper and safe use of the equipment, please carefully read and follow the instructions in the OPERATION MANUAL.

FOR DETAILS, PLEASE CONTACT:

KODEN

7-INCH, HIGH-RESOLUTION COLOR LCD RADAR

MDC-721/741/740

*Ultimate choice
for navigation!*

*High quality compact radar,
offering crisp and clear picture.*

MDC-721: 1.2 ft, 2 kW, Radome

MDC-741: 2 ft, 4 kW, Radome

MDC-740: 3 ft/4 ft, 4 kW, Open Antenna



FEATURES

• Semi-3D display

Radar echoes are shown as realistic visual impressions. The amplitude of echo is determined by its signal strength and is painted on the Mercator type coordinate. The semi-3D display is shown together with normal radar screen.

• Auto gain and clutter controls as standard

Using the AUTO key, your radar settings are automatic for the gain and rain/sea clutter. The radar's computer expertly sets Gain, STC, and FTC levels, allowing the operator to concentrate on other chores. Previously, these features were found only in larger and more expensive radar systems.

• High speed antenna

You can select your antenna rotation speed to 48 rpm via the menu. A vital feature for fast moving ship navigating congested waters, rivers, canal, etc.

• ATA option

The Automatic Tracking Aid feature is available as an option. Using this option your radar tracks up to 10 targets, providing the latest collision avoidance information in vector form.

• Semi-continuous range scales

Closely separated range scales are available via the menu. The scale value increases or decreases by approximately 10 % of the range in use. This feature is quite essential for the navigation in congested waters, which requires constant vigilance.

• On screen Multi-languages

Fifteen languages are available as standard and can be selected via the menu. These include; Chinese, Danish, English, French, German, Greek, Italian, Japanese, Korean, Norwegian, Portuguese, Russian, Spanish, Swedish, and Turkish.

• One-key-one-function plus menu operation

Six dedicated key switches are provided for fundamental radar controls, such as range scale, brilliance, Gain, STC and FTC. Plus, a variety of additional functions are also available via the menu.

• User defined keys

Frequently used functions can be assigned to seven user-defined keys. Available functions total 28, and are assorted in 4 groups. You can customize this radar to your own operational needs.

• Rotary control

One large rotary control is provided for quick and easy operation controlling EBL, VRM, Gain, STC and FTC. No more cumbersome key controls are needed, such as, up and down, right and left.

• Splash proof display

The display unit can be installed even in a place where water splash protection is not good such as, the fly bridge, open deck, etc.

SPECIFICATIONS

Antenna unit

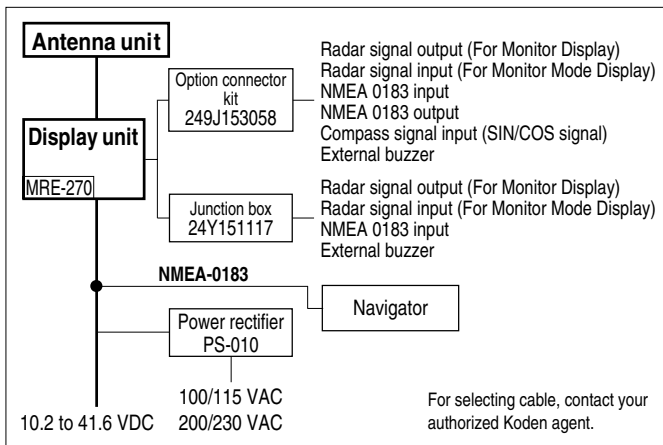
Model	MDC-721	MDC-741	MDC-740
Aerial	1.2 feet (radome)	2 feet (radome)	3 feet/4 feet (Open scan)
Peak power output	2 kW	4 kW	
Transmitting frequency	9445 ± 30 MHz	9410 ± 30 MHz	
Beam width	Horizontal 6.0° Vertical 25°	3.9°	2.5° (3 feet)/1.8° (4 feet) 22°
Rotation	24 rpm ± 20%	24 or 48 rpm	24 or 48 rpm (24 VDC or more)
Pulse length (μsec)/	S 0.12 / 2000	0.08/2,000	
PRF (Hz)	M 0.3 / 1,500 L 0.8 / 600	0.25/1,500	0.8/600
IF center frequency	60 MHz		
Noise figure	6.5 dB or less		
Operating temperature	- 25° to + 55 °C (- 13° to 131 °F)		
Operation in wind (relative)	100 knots		

Display unit

Display	7-inch color LCD (TFT)
Resolution	640 x 480 pixels
Video level	4 levels
Indication system	PPI, PPI + semi-3D, ALL PPI
Presentation modes	Head up, *north up, **course up, ***true motion
Range scales (nm)	0.125 0.25 0.5 0.75 1.5 3 6 12 24 (36) (48)
Rings interval (nm)	0.0625 0.125 0.25 0.5 1.0 2.0 4.0 8.0 (12.0) (12.0) (36)/(12.0): MDC-741, (48)/(12.0): MDC-740
Off-center	Can be 100% off-centered over the full range
Echo trail interval	Continuous, 15, 30 sec., 1, 3, 6 min.
Alarm	IN and OUT alarms
Minimum range	Better than 25 m on 0.125 nm range
Range discrimination	Better than 25 m
Range accuracy	Better than 8 m (26 feet) or 0.9 % of the maximum range of the scale in use, whichever is the greater
Bearing accuracy	Better than ± 1°
Navigation data display	Boat position (Latitude/longitude), bearing and speed
Other functions	Gain, STC, FTC, auto tuning, heading marker off, Interference rejection, target expansion, zoom, two VRMs, two EBLs (0.1° step), floating EBL/VRM, cursor position (latitude/longitude), parallel cursor, bearing (true/relative), distance unit (nm/km), signal processing, location memory, intermittent transmission
Input data format	NMEA-0183 (BER, BEW, BPI, BWC, BWR, DBT, DPT, GGA, GLL, HDG, HDM, HDT, HSC, MTW, RMA, RMB, RMC, VHW, VTG, XTE)
Power supply	10.2 to 41.6 VDC
Power consumption	45 W/(MDC-721)/55 W/(MDC-741)/70 W/(MDC-740) or less
Operating temperature	0° to + 55 °C (32° to 131 °F)

* North up, **course up mode : Bearing data from an electric compass, a gyro compass, a gyro compass or a navigator is required.
*** True motion : Speed data from a speed log, and Bearing data from an electric compass, a gyro compass or a navigator is required.

CONNECTIONS



EQUIPMENT LIST

Standard equipment

Antenna unit	RB714A	1.2 feet, MDC-721	1
	RB715A	2 feet, MDC-741	
Aerial	RW701A-03	3 feet, MDC-740	
	RW701A-04	4 feet, MDC-740	
Transceiver	RB716A	MDC-740	
Display unit	MRD-99	With hard cover	
Connecting cable	242J160680A	With two connectors, MDC-721	10 m (32 13/16 ft)
	242J158055A	With two connectors, MDC-741	
	242J159098A	With two connectors, MDC-740	
DC power cable	242J158054	With a connector and one end plain	2 m (6 9/16 ft)
Spare parts kit			1 set
Installation materials			1 set
Operation manual			1

Note: Other cable length selections available : 15 m, 20 m, 30 m.

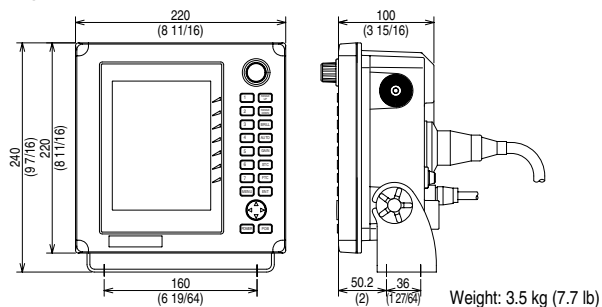
Option

ATA module kit	MRE-270	With connecting cable
Option connector kit	249J153058	
Junction box	24Y151117	For external connection, with 1.5 m cable
Power rectifier	PS-010	With two 5 A fuses
AC power cable	VV-2D8	3 m (9 13/16 ft), both ends plain

DIMENSIONS AND WEIGHT

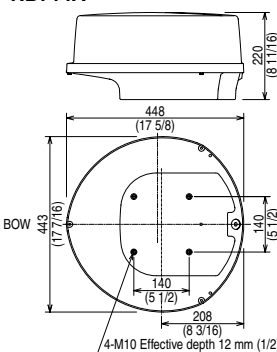
Display unit MRD-99

Unit: mm (inch)

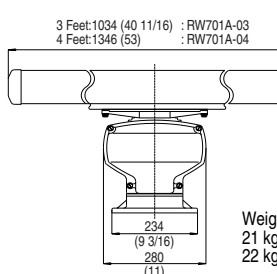


Antenna unit

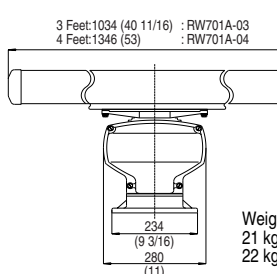
RB714A



RB715A



RB716A



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