

## MDC-1860/1810/1820

- *An 18-inch flat screen radar from KODEN!*
- *Best suited for ocean going mid-size vessel.*
- *Select from 6 kW, 12 kW or 25 kW power output, 4 ft or 6 ft type aerial.*

MDC-1860: 4 ft / 6 ft, 6 kW, Open Antenna  
MDC-1810: 4 ft / 6 ft, 12 kW, Open Antenna  
MDC-1820: 4 ft / 6 ft, 25 kW, Open Antenna

CE 0682



### FEATURES

#### • Flat screen

A non-reflection, 18-inch high-resolution flat panel display provides a flicker free non-fading picture, minimizing operator's eye fatigue. The display color can be changed for daytime or nighttime operation.

#### • Hands-free operation

Newly developed auto tuning and video processing system sets the operator free from cumbersome adjustments such as setting up tuning, STC, gain, etc. With a hands free operation the navigator can concentrate on other tasks on the bridge.

#### • High definition picture

High definition is available even on the short-range scales, 1/2 NM down to 1/8 NM. This is a powerful feature for harbor and docking operations.

#### • Collision assessment

Using the built-in EPA (Electronic Plotting Aid) function other ship's movement is displayed in vector form. This feature provides a direct and logical assessment of collision risk and urges the operator to take early maneuvering operations.

#### • Picture offset to any point

The picture can be offset to any point within 2/3 of the screen radius to gain more viewing range.

#### • Map functions

Artificial lines and marks can be created and overlaid on the radar screen to represent coastlines, boundaries, etc.

#### • Alarm zone

A fan-shaped zone is created to monitor and alert the operator that ships are coming in and leaving a specified area. This feature becomes part of the ATA (Automatic Tracking Aid) functions when the optional ATA module is fitted.

#### • Monitor display (Option)

An external monitor display can be fitted on request, providing multiple radar operations from different stations on board the ship, one on the bridge the other in the captain's cabin for instance.

#### • Analog RGB output

Radar picture can be supplied to an external monitor or a VDR (Voyage Data Recorder) through the connector at the display's rear panel.

#### • Serial interface

The IEC 61162-1 serial interface is fitted to connect external navigation devices to display navigational information such as ship's position, speed, course, etc.

#### • Tracking data output

With the ATA module installed, all tracked ship's data can be output to an external device such as an electronic plotter unit.

## SPECIFICATIONS

### Antenna unit

	MDC-1860	MDC-1810	MDC-1820
Aerial length	4 feet / 6 feet		
Peak power output	6 kW	12 kW	25 kW
Frequency	9410 ± 30 MHz		
Beam width	Horizontal 1.8°/1.2° Vertical 22°		
Side lobes	Within ± 10° Better than -23 dB Outside ± 10° Better than -30 dB		
Rotation	24 rpm		
Transmission pulse	6 kW / 12 kW		25 kW
width	S (Short pulse)	0.08 μs / 4000 Hz	
	M1 (Medium 1 pulse)	0.25 μs / 2000 Hz	
	M2 (Medium 2 pulse)	0.5 μs / 1000 Hz	
	L (Long pulse)	1.0 μs / 500 Hz	
IF center frequency	60 MHz		
IF bandwidth	15 MHz (S, M1) / 3 MHz (M2, L)		
Noise figure	Better than 6 dB		
Operation in wind	100 knots as relative		
Water proofing grade	IPX6 (IEC 60529)		

### Display unit

Display device	18 inch high resolution color LCD
Effective diameter	269 mm
Resolution	1280 x 1024 pixels
Video level	8 levels
Presentation modes	Head-up, North-up*, Course-up* and True motion*
Range scales (nm)	1/8, 1/4, 1/2, 3/4, 1.5, 3, 6, 12, 24, 48, 64, 72(12 kW), 96(25 kW)
Rings interval (nm)	1/16, 1/16, 1/8, 1/4, 1/2, 1, 2, 4, 8, 12(12 kW), 16(25 kW)
Off-centering	Sweep origin can be moved to any point within 2/3 of the screen radius.
Trail display interval	Every scan, 15 sec, 30 sec, 1 min, 3 min, 6 min, 12 min and OFF
Alarm	Entry alarm (alarm range (Minimum 0.5 nm), depth and bearing can be varied)
EPA	Up to 10 targets can be plotted, 5 points for one target each
ATA (Option)	Display of acquired/track data of up to 10 targets and Guard Zone are available. Display of guard zone is also available (any alarm range, width and bearing can be set).
Data available for EPA and ATA	Speed, course, CPA, TCPA, distance, bearing and age (time elapsed since the first plot, applicable to EPA only).
Minimum detectable range	20 meters at 1/8 nm range
Range resolution	20 meters at 1/8 nm range
Range data accuracy	7 meters or 1% of the range scale selected, whichever is the greater.
Bearing data accuracy	±1° maximum
Navigation data display	Data of own ship's position (latitude/longitude)
Input data format	IEC 61162-1 / NMEA 0183 ver. 2.3 (BWC, GGA, GLC, GLL, HDT, RMB, RTE, VBW, VDR, VHW, VTG, WPL)
Power supply	21.6 VDC to 41.6 VDC (24 V / 32 V, -10%, +30%)
Power consumption	170 W nominal at 24 VDC input

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

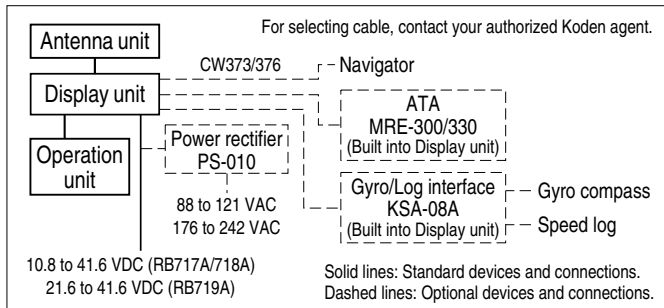
### ATA module MRE-300 (Option)

Acquisition	Manual
Tracking	Automatic
Number of targets tracked	Up to 10 targets
Numerical data output	Distance, bearing, speed, course, CPA and TCPA
Alarm	Collision alarm and lost alarm
On screen display	Symbols (acquired target, tracked target, target with data display and lost target), target number and vectors.
Display mode	Relative True
Tracking distance range	Up to 40.0 nm
ATA data output	To be taken via the DATA 1 connector on the display rear panel. Signal level: RS422, Data format: IEC 61162-1

### Environmental conditions

	Antenna	Display
Operating temperature	-25°C to +55°C	-15°C to +55°C
Storage temperature	+70°C	
Humidity	93% ± 3% at +40°C	

## CONNECTIONS



## EQUIPMENT LIST

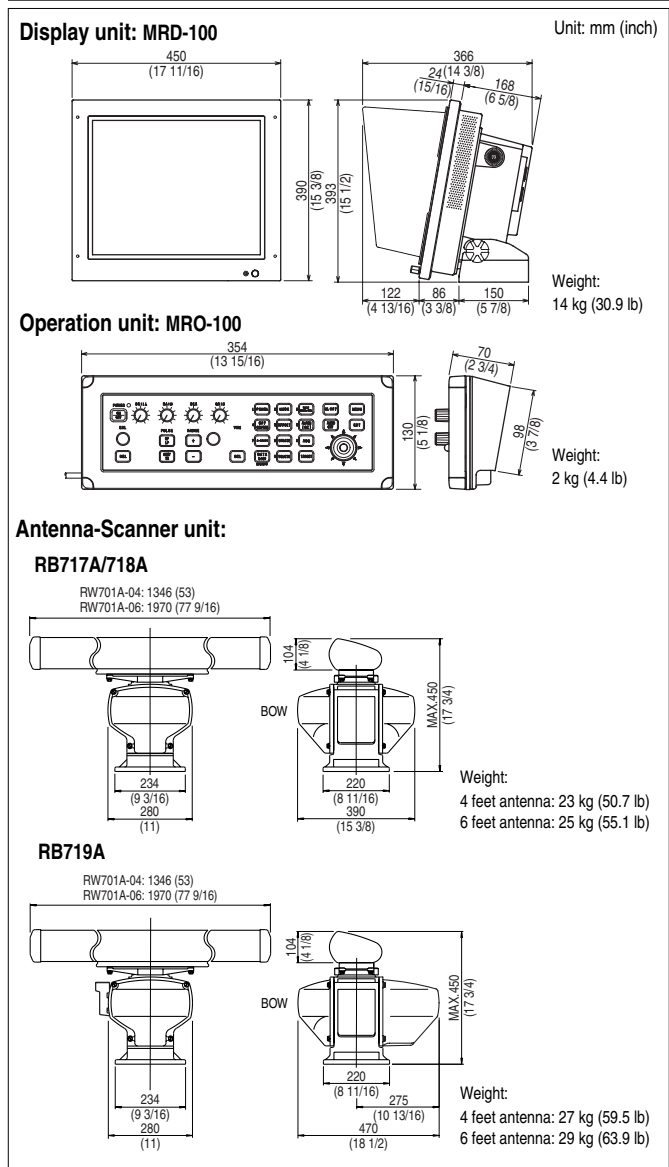
### Standard equipment

Antenna unit	Aerial	RW701A-04	4 feet
		RW701A-06	6 feet
	Transceiver	RB717A	6 kW
		RB718A	12 kW
RB719A		25 kW	
Display unit	MRD-100		
Operation unit	MRO-100		
Connecting cable	242J159098B	15 m (49 3/16 ft) with connectors on both ends	
DC power cable	CW-256-2M	3 m (16 3/8 ft) with 5-pin connector one end	
Spare parts kit	MRD-100.SP		
Installation material	M12-BOLT.KIT	For antenna unit	
	MRD-100.KIT	For display unit	
Operation manual	MDC-1800SER.OM.E		

### Optional items

ATA	MRE-300	Auto
	MRE-330	Manual
Gyro interface	KSA-08A	Built into display unit
AIS interface	AIS-100	Built into display unit
Navigator connecting cable	CW-376-5M	With 6-pin connector one end flying leads other end
Power Rectifier	PS-010	With 2 spare fuses (5 A)
AC power cable	VV-2D8-3M	Flying leads on both ends
Connecting cable	242J159098C-20M	20 m with connector attached on both ends
	242J159098D-30M	30 m with connector attached on both ends

## DIMENSIONS AND WEIGHT



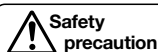
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**Safety precaution**

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

For details, please contact: