

18-inch Color LCD  
Marine Radar

# MDC-1810P/1820P

- *An 18-inch flat screen IMO radar from KODEN!*
- *Fully compliant with IMO carriage requirements for ships up to 10,000 gross tons.*
- *Best suited for ocean going mid-size vessel.*
- *Select from 12 kW or 25 kW power output, 4 ft or 6 ft type aerial.*

MDC-1810P: 4 ft / 6 ft, 12 kW

MDC-1820P: 4 ft / 6 ft, 25 kW



## 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.

### • Built-in performance monitor

This is a mandatory item for an IMO radar system. To reduce customers' cost, we developed a new low cost yet highly reliable performance monitor, which is supplied as standard.

### • 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 (Video Data Recorder) through the connector at the display's rear panel.

### • Serial interface

The IEC 61162-1 serial interface is fitted to connect an external navigation device 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-1810P                                                           | MDC-1820P                      |
| Aerial length            | 4 feet / 6 feet                                                     |                                |
| Peak power output        | 12 kW                                                               | 25 kW                          |
| Frequency                | 9410 ± 30 MHz                                                       |                                |
| Beam width               | Horizontal 1.8°/1.2°<br>Vertical 22°                                |                                |
| Side lobes               | Within ± 10° Better than -23 dB<br>Outside ± 10° Better than -30 dB |                                |
| Rotation                 | 24 rpm                                                              |                                |
| Transmission pulse width | 12 kW                                                               | 25 kW                          |
| S (Short pulse)          | 0.08 μs / 4000 Hz                                                   | 0.08 μs / 2000 Hz              |
| M1 (Medium 1 pulse)      | 0.25 μs / 2000 Hz                                                   | 0.3 μs / 1300 Hz               |
| M2 (Medium 2 pulse)      | 0.5 μs / 1000 Hz                                                    | 0.6 μs / 800 Hz                |
| L (Long pulse)           | 1.0 μs / 500 Hz                                                     | 1.2 μs / 500 Hz, 400 Hz(96 nm) |
| 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 (IEC60529)                                                     |                                |

### 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.

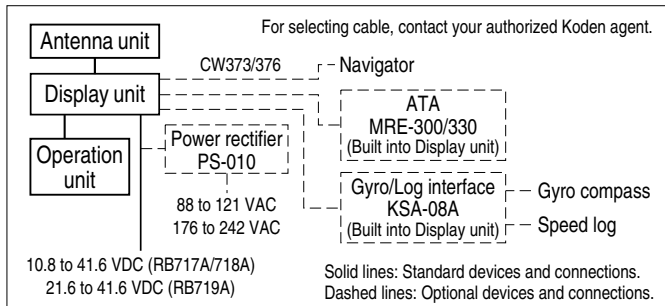
### ATA module MRE-300 (Option)

|                           |                                                                                                                  |
|---------------------------|------------------------------------------------------------------------------------------------------------------|
| Acquisition               | Manual                                                                                                           |
| Tracking                  | Automatic                                                                                                        |
| Number of targets tracked | Up to 10 targets                                                                                                 |
| Numerical data output     | Distance, bearing, speed, 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 and 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.<br>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

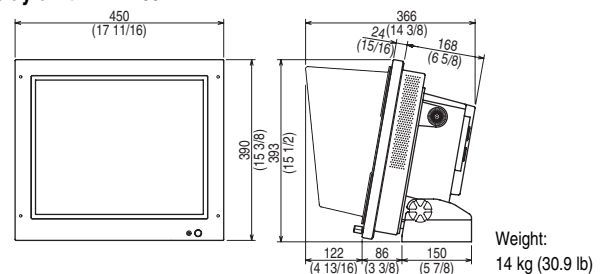
|                       |        |                    |                                                |
|-----------------------|--------|--------------------|------------------------------------------------|
| Antenna unit          | Aerial | RW701A-04          | 4 feet                                         |
|                       |        | RW701A-06          | 6 feet                                         |
| Transceiver           |        | RB718AP            | 12 kW                                          |
|                       |        | RB719AP            | 25 kW                                          |
| Display unit          |        | MRD-100P           | with Hood                                      |
| Operation unit        |        | MRO-100            |                                                |
| Connecting cable      |        | 242J159098B-15M    | 15 m (49 3/16 ft) with connectors on both ends |
| DC power cable        |        | CW-256-2M          | 2 m (6 9/16 ft) with 5-pin connector one end   |
| Spare parts kit       |        | RF725A/MRD-100.SP  |                                                |
| Installation material |        | M12-BOLT.KIT       | For antenna unit                               |
|                       |        | RF725A/MRD-100.KIT | For display unit                               |
| Operation manual      |        | MDC-1800SER.OM.E   |                                                |

### Optional items

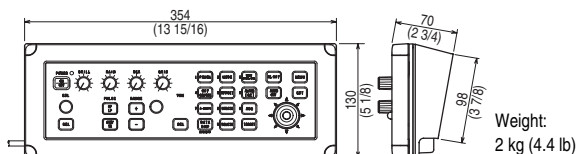
|                            |                 |                                                     |
|----------------------------|-----------------|-----------------------------------------------------|
| ATA                        | MRE-300         | Built into display unit                             |
| AIS interface              | AIS-100         | Built into display unit                             |
| Navigator connecting cable | CW-375          | With 6-pin connector attached on both ends          |
|                            | CW-376          | With 6-pin connector one end flying leads other end |
| Rectifier                  | PS-010          | With 2 spare fuses (5 A)                            |
| AC power cable             | VV-2D8          | Flying leads on both ends                           |
| Connecting cable           | 242J159098C-20M | 20 m with connector attached on both ends           |
| in extra length            | 242J159098D-30M | 30 m with connector attached on both ends           |

## DIMENSIONS AND WEIGHT

### Display unit: MRD-100P

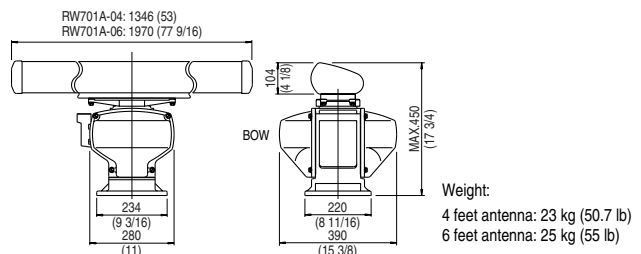


### Operation unit: MRO-100

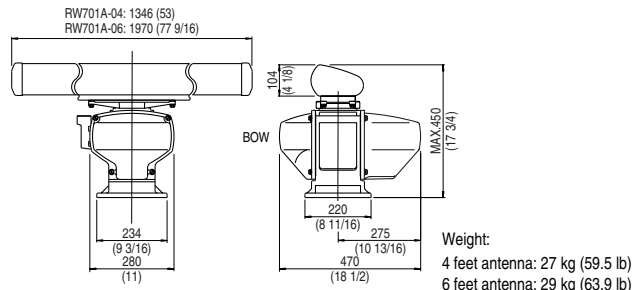


### Antenna-Scanner unit:

#### RB718AP



#### RB719AP



• Design and specifications are subject to change without notice.

# KODAN

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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: