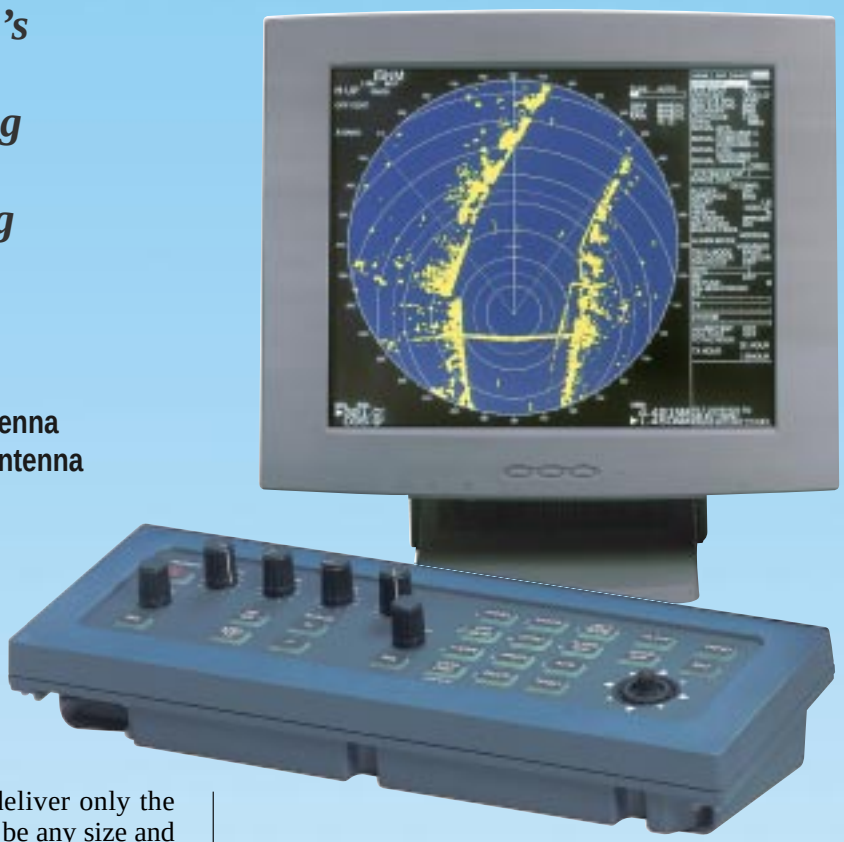
KODEN

Black Box
Marine Radar

# MDC-1841BB/1840BB

- *Display selected from user's choice*
- *Flexible installation suiting your needs*
- *Best suited for ocean going mid-size vessels*



**MDC-1841BB: 2 ft, 4 kW, Radome Antenna**
**MDC-1840BB: 3 ft / 4 ft, 4 kW, Open Antenna**

CE 0191

## *FEATURES*

**• Free choice display**
Unlike conventional radar systems we deliver only the antenna and control box. The display can be any size and any type, as long as the resolution grade is SXGA.
KODEN'S BLACK BOX COLOR RADAR is a COTS based system where the choice is yours!

**• Hands-free operation**
A 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 a built-in EPA (Electronic Plotting Aid) 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**
Within 2/3 of the screen radius, the picture can be offset to any point on the screen 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 user-definable fan-shaped zone provides monitoring and alerting functions for ships entering and leaving the 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 locations 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 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

| | | | |
|---|---|---|---|
| Model | | MDC-1841BB | MDC-1840BB |
| Aerial length | | 2 feet (radome) | 3 feet / 4 feet |
| Peak power output | | 4 kW | |
| Frequency | | 9410 ± 30 MHz | |
| Beam width | Horizontal | 3.9° | 2.5°/1.8° |
| | Vertical | 25° | 22° |
| Rotation | | 24 or 48 rpm | 24 or 48 rpm (24 VDC or more) |
| Pulse length / PRF | S | 0.08 µs / 2000 Hz | |
| | M | 0.25 µs / 1500 Hz | |
| | L | 0.8 µs / 600 Hz | |
| IF center frequency | | 60 MHz | |
| Noise figure | | 6.5 dB or less | |
| Operation temperature | | -25℃ to +55℃ (-13℉ to +131℉) | |
| Operation in wind (relative) | | 100 knots | |

### Processor unit

| | |
|---|---|
| Display device | Any size, any type, resolution must be SXGA grade |
| Effective diameter | 269 mm for 18-inch display, subject to change according to the display size |
| Resolution | 1280 x 1024 pixels (SXGA) |
| Video level | 8 levels |
| Presentation modes | Head-up, North-up, Course-up, True motion |
| Range scales (nm) | 1/8, 1/4, 1/2, 3/4, 1.5, 3, 6, 12, 24, 36, 48 |
| Rings interval (nm) | 1/16, 1/16, 1/8, 1/4, 1/2, 1, 2, 4, 6, 8 |
| 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 | 70 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 unput |

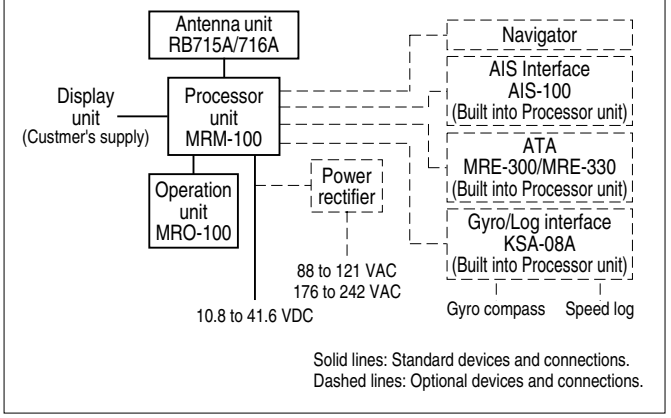
### ATA module (Option)

| | |
|---|---|
| Acquisition | MRE-300 / Manual, MRE-330 / Auto and 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 Processor unit. Signal level: RS422, Data format: IEC 61162-1 |

### Environmental conditions

| | Antenna | Processor unit |
|---|---|---|
| Operating temperature | -25℃ to +55℃ | -15℃ to +55℃ |
| Storage temperature | +70℃ | |
| Humidity | 93 % ±3 % at +40℃ | |

## CONNECTIONS




## EQUIPMENT LIST

### Standard equipment

| | | | |
|---|---|---|---|
| Antenna unit | Aerial | RB715A | 2 feet, MDC-1841BB |
| | | RW701A-03 | 3 feet, MDC-1840BB |
| | | RW701A-04 | 4 feet, MDC-1840BB |
| | Transceiver | RB716A | MDC-1840BB |
| Processor unit | | MRM-100 | |
| Operation unit | | MRO-100 | |
| Connecting cable | | 242J159098B-15M | 15 m (49 3/16 ft) with connectors on both ends |
| DC power cable | | CW-256-3M | 3 m (16 3/8 ft) with 5-pin connector one end |
| RGB cable | | CW-560-2M | For Processor unit |
| Spare parts kit | | SP-100 | |
| Installation material | | M12-BOLT.KIT | For antenna unit |
| Operation manual | | MDC-1800SER.OM.E | |

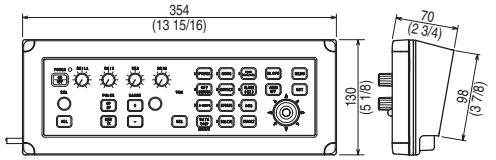
### Options

| | | |
|---|---|---|
| ATA | MRE-300/MRE-330 | Built into processor unit |
| Gyro interface | KSA-08A | Built into processor unit |
| AIS interface | AIS-100 | Built into processor unit |
| Rectifier | PS-010 | With 2 spare fuses (5 A) |
| AC power cable | VV-2D8-3M | Flying leads on both ends |
| Connecting cable in extra length | 242J159098C-20M | 20 m with connector attached on both ends |
| | 242J159098D-30M | 30 m with connector attached on both ends |

## DIMENSIONS AND WEIGHT

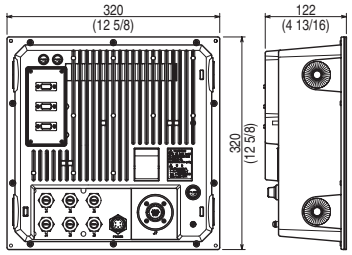
Unit: mm (inch)

**Operation unit: MRO-100**




Weight:
2 kg (4.5 lb)

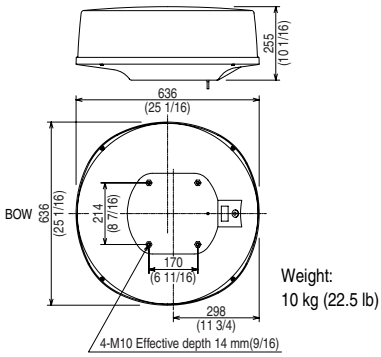
**Processor unit: MRM-100**




Weight:
5.5 kg (12.1 lb)

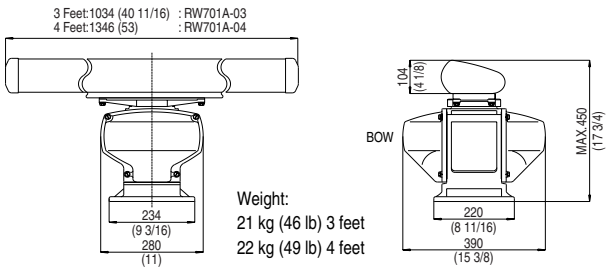
**Antenna unit**

**RB715A**




Weight:
10 kg (22.5 lb)

**RB716A**




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

• Design and specifications are subject to change without notice.


KODEN Koden Electronics Co., Ltd.

Tamagawa Office:
2-13-24 Tamagawa, Ota-ku, Tokyo, 146-0095 Japan
Tel: +81-3-3756-6501 Fax: +81-3-3756-6509
Uenohara Office:
5278 Uenohara, Uenohara-shi, Yamanashi, 409-0112 Japan
Tel: +81-554-20-5860 Fax: +81-554-20-5875

overseas@koden-electronics.co.jp

**www.koden-electronics.co.jp**


**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:

06.03 Printed in Japan