• 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.

**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.
Environmental conditions

Antenna Display

- Operating temperature: -25°C to 65°C
- Storage temperature: -15°C to 65°C
- Humidity: 93% relative at 40°C

CONNECTIONS

For selecting cable, contact your authorized Kodan agent.

SPECIFICATIONS

Antenna unit

<table>
<thead>
<tr>
<th>MDC-1810P</th>
<th>MDC-1820P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerial length</td>
<td>14 feet / 4.27 m</td>
</tr>
<tr>
<td>Peak power output</td>
<td>12 kW / 25 kW</td>
</tr>
<tr>
<td>Frequency</td>
<td>810 to 30 MHz</td>
</tr>
<tr>
<td>Beamwidth</td>
<td>Horizontal: 8.1°, Vertical: 2°</td>
</tr>
<tr>
<td>Side lobes</td>
<td>Width: ±10°, Verb. Better than -23 dB</td>
</tr>
<tr>
<td>Notation</td>
<td>24 rpm</td>
</tr>
<tr>
<td>Transmission power</td>
<td>12 kW / 25 kW</td>
</tr>
<tr>
<td>Pulse width</td>
<td>Short pulse: 3.75 μs / 400 Hz</td>
</tr>
<tr>
<td>IF center frequency</td>
<td>60 MHz</td>
</tr>
<tr>
<td>IF bandwidth</td>
<td>15 MHz (51/2, 2 MHz (2, L))</td>
</tr>
<tr>
<td>Noise figure</td>
<td>Better than 20 dB</td>
</tr>
<tr>
<td>Operation in wind</td>
<td>100 knots as relative</td>
</tr>
<tr>
<td>Water proofing grade</td>
<td>IPX6 (IEC60529)</td>
</tr>
</tbody>
</table>

Display unit

- Display device: 18 inch high resolution color (LLU)
- Effective diameter: 268 mm
- Resolution: 1280 x 1024 pixels
- Video level: 4 levels
- Presentation modes: Head-Up, North-up, Course-up, True Motion
- Range scales (nm): 1/8, 1/4, 1/2, 3/4, 1, 2, 4, 8, 12, 12/2, 48, 96 (62/24 kHz, 96/24 kHz)
- M/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
- Minimum detectable range: 20 meters at 1/8 nm range
- Range resolution: 20 meters at 1/8 nm range
- Range data accuracy: 1 meter 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: CIC 610, B17-1(B18M-1218), 350 (0093, VDR, VHF, WPL)
- Power supply: 21.6 V to 41.6 V (21.6 V to 32 V, -10%, +30%)
- Dimensions and weight:
  - For antenna: 220 (11)" x 220 (11)" x 220 (11)"
  - For display: 130 (5)" x 130 (5)" x 130 (5)"
- Required power consumption: 170 W nominal at 24 VDC input
- Power supply: 21.6 VDC to 41.6 VDC (24 V/32 V, -10%, +30%)
- Input data format: IEC 61162-1/NMEA-0183 version 2.3 (BWC, GGA, GLC, GLL, HDT, RMB, RTE, VBU, VDR, VHF, WPL)
- Bearing data accuracy: ±1° maximum
- Number of targets tracked: Up to 10 targets
- Number of tracks: Automatically
- On-screen display: Symbols (acquired target, tracked target, target with data display and alarm)
- ATA (Option): Display of track data of up to 10 targets and Guard Zone are available. Display of guard zone is also available. (4 alarm range, width, and bearing can be set)
- Data available for EPA: 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: 1 meter or 1% of the range scale selected, whichever is the greater
- Bearing data accuracy: ±1° maximum

EQUIPMENT LIST

Standard equipment

- Antenna unit: RW7101A-04 (4 feet antenna)
- Transceiver: RF7181AP (12 kW)
- Display unit: MRD-100P with hood
- Operation unit: MRO-100
- Connecting cable: 2417159001-15M with connectors on both ends
- No power cable: CW-256-2M
- Spare parts kit: RF715000-KIT for display unit
- Installation material: (M2-SD1X1, KIT) for antenna unit
- Installation material: RF715000-KIT-01 for display unit

Optional items

- ATA: MPE-300 (Built into display unit)
- AIS interface: MPE-300 (Built into display unit)
- Navigator connecting cable: CW-375 With 5-pin connector attached on both ends
- Radar Connecting cable: CW-376 With 4-pin connector one end, flying leads other end

DIMENSIONS AND WEIGHT

Display unit: MRD-100P

- Unit: mm (inch)
- Weight: 14 kg (30.9 lb)

Operation unit: MRO-100

- Unit: mm (inch)
- Weight: 2 kg (4.4 lb)

Antenna-Scanner unit:

- Unit: mm (inch)
- Weight: 4 feet antenna: 23 kg (50.7 lb)
- 6 feet antenna: 25 kg (55 lb)

For details, please contact:

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