

# SEAVANS

Integrated Bridge System

TOKIMEC INC.

## MARINE RADAR BR-3440



**TOKIMEC**

# Discover the performance of the BR-3440. An advanced new multi-functional radar. The BR-3440 is a futuristic marine radar system designed with the needs of next-generation bridge systems in mind.

The built-in ARPA which conforms to IMO standards offers extensive support for the gathering of navigation area information, for assessing of the information, accurately reading conditions and for making navigational decisions.

Radar system without ARPA can also be selected. The BR-3440 is the key to providing safe navigation and reducing manning in ship operation.

## Features

### ● Clear high-grade screen

- The latest signal processing technology is used to moderately reduce the sea, rain and snow clutter, and provide operators with accurate image.
- The high-resolution display provides easier-to-view images in both short and long ranges.

### ● Ergonomic panel layout

- To increase user-friendliness the basic operations are designed to be controlled from the switches and control knobs on the operation panel.
- Track ball-based, interactive menus are provided to call up the various functions to speed up and simplify operation.

### ● Extensive ARPA functions

- The newly developed dangerous area of collision (DAC) display provides easy confirmation of the safety course.
- ARPA information output function is also standard feature.

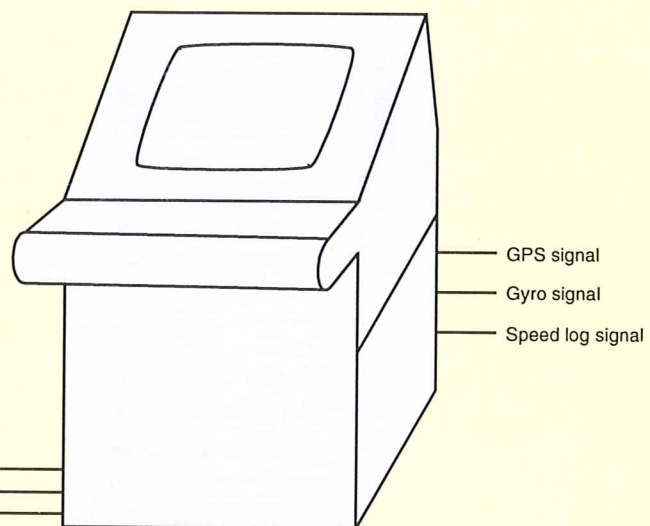
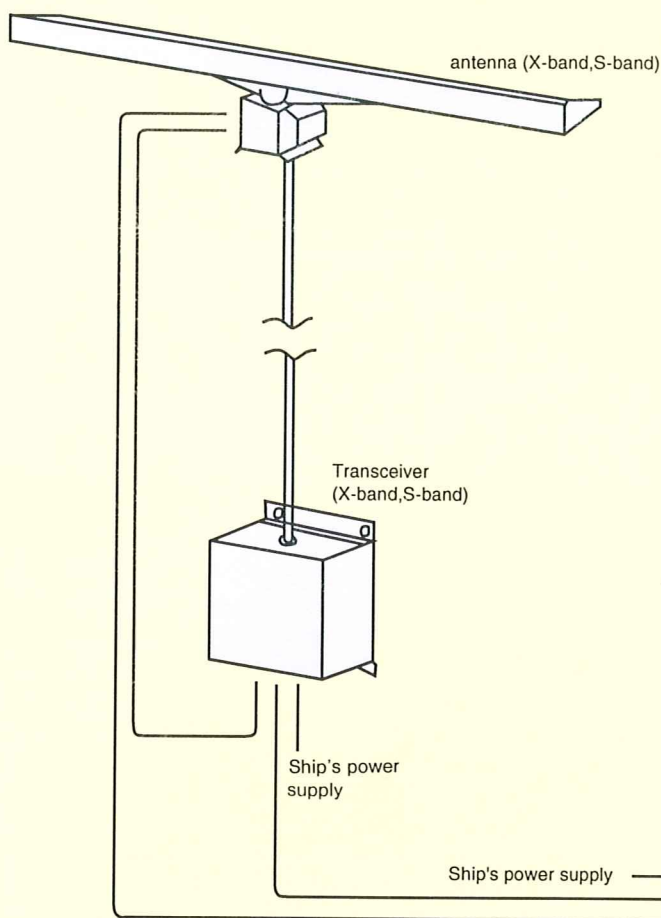
### ● Adaptable to integrated bridge systems

- In addition to functioning as a sensing system for a centralized ship management, an optional BR-3440 function allows operators to confirm safety course on the screen before altering course.
- The BR-3440 is equipped with all the necessary features for supporting centralized bridge monitoring for Integrated bridge systems.

### ● Extensive Options

- Plotter : records and display own ship's track, possible to display with radar images.
- Chart interface : superimposes electronic reference chart (ERC) when accompanied by plotter.
- Pilot control unit : allows setting of auto pilot courses on operation panel, enables automatic course-holding.
- Adaptive interface : connects other radar systems for use as ARPA-equipped remote display unit.
- NAV line : offers display editing and recording of navigation lines on the screen.
- Radar interswitch : switching unit to be used when two radar systems are installed.
- Performance monitor: available in active and passive models, used to check the performance of radar system both transmitting and receiving sides.

**Configurational outline**



**Model**

**BR-3440 MA-X 5 9**

3440: effective diameter of 340 mm

MA: monochrome with ARPA  
 M: monochrome without ARPA  
 CA: color with ARPA

7: 7-foot antenna (X-band)  
 9: 9-foot antenna (X-band)  
 14: 14-foot antenna (S-band)

2: 25 kW (X-band)  
 5: 50 kW (X-band)  
 3: 30 kW (S-band)  
 6: 60 kW (S-band)

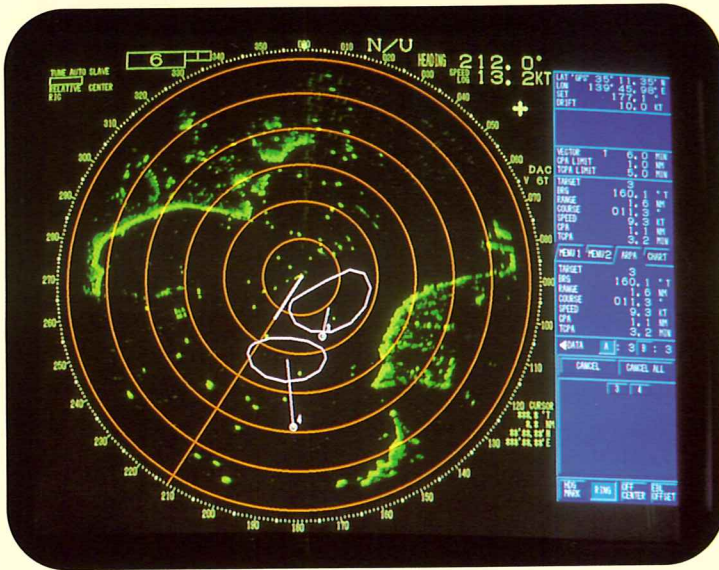
X: X-band  
 S: S-band

## Specification

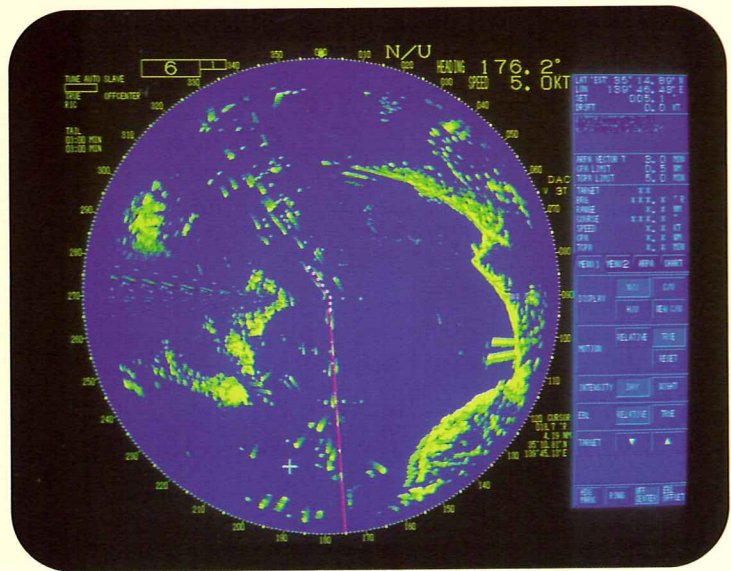
Function	Model	X-band							S-band				
		BR-3440CA -X57 BR-3440MA-X57 BR-3440M -X57	BR-3440CA -X59 BR-3440MA-X59 BR-3440M -X59	BR-3440CA -X27 BR-3440MA-X27 BR-3440M -X27	BR-3440CA -X29 BR-3440MA-X29 BR-3440M -X29	BR-3440CA -S614 BR-3440MA-S614 BR-3440M -S614	BR-3440CA -S314 BR-3440MA-S314 BR-3440M -S314						
Display type	raster scan PPI												
CRT	BR-3440 CA effective dia. 340mm or more, color BR-3440 MA effective dia. 340mm or more, monochrome (green) BR-3440 M effective dia. 340mm or more, monochrome (green)												
Bearing display	head-up, north-up, course-up												
Range scale (nm)	0.125	0.25	0.5	0.75	1.5	3	6	12	24	36	48	96	
Range ring interval (nm)	0.05	0.05	0.1	0.25	0.25	0.5	1	2	4	6	8	16	
Range accuracy	±1 % of scale in use or 35 m, whichever is the greater												
Variable range ring (nm)	0~96												
Variable range ring accuracy	±1 % of scale in use or 35 m, whichever is the greater												
Range discrimination	40 m or less (30 m when minimum pulse width is used)												
Minimum detectable range	30 m or less												
Bearing discriminator	1.5° or less (X-band 7-foot) 1.4° or less (X-band 9-foot) 1.9° or less (S-band 14-foot)												
Bearing accuracy	better than 1.0°												
Resolution	horizontal 1280 x vertical 1024 dots												
Refresh	60 Hz non-interlace												
Video display	process video (8 level gradations)												
Bearing cursor	2 (EBL1 and EBL2) 4-digit numerical display EBL2 is also used for offset/parallel (within PPI screen)												
Manual plotting	electronic mark display (max. 20 points)												
Bearing graduation	Indication of 360° in 1° step on CRT, bold at every 5°, numerical indication at every 10°												
Bearing input	360X or 90X synchro signal, step(1step = 1/6°) signal selectable by dip switch or serial signal of TOKIMEC specification (RS422)												
True motion display function	operative in 0.125~96 nm range (up to 70 % of effective radius can be set in 0.125~48 nm ranges, whereas about 1 nm in 96 nm range)												
Controls	Power, ON/Standby, Range ±, Dimmer, Alarm, EBL1, EBL2, EBL control, VRM1, VRM2, VRM control, TUNE, GAIN, SEA, RAIN, BRIGHTNESS and CONTRAST other items selected from menu using track-ball cursor and SET switch.												

Function	Model	X-band				S-band	
	BR-3440CA -X57 BR-3440MA -X57 BR-3440M -X57	BR-3440CA -X59 BR-3440MA -X59 BR-3440M -X59	BR-3440CA -X27 BR-3440MA -X27 BR-3440M -X27	BR-3440CA -X29 BR-3440MA -X29 BR-3440M -X29	BR-3440CA -S614 BR-3440MA -S614 BR-3440M -S614	BR-3440CA -S314 BR-3440MA -S314 BR-3440M -S314	
<b>Antenna</b>							
	<b>Beam width</b> horizontal (degree) vertical (degree)	1.0 21	0.8 21	1.0 21	0.8 21	1.8 25	1.8 25
	<b>Sidelobe level</b>	within $\pm 10^\circ$ of main beam -27 dB or less out of $\pm 10^\circ$ of main beam -30 dB or less					
	<b>Rotations</b>	0.367s <sup>-1</sup> (22min <sup>-1</sup> )					
<b>Transmitter</b>							
	<b>Frequency</b>	9375 MHz $\pm$ 30 MHz		9410 MHz $\pm$ 30 MHz		3050 MHz $\pm$ 25 MHz	
	<b>Output peak</b>	50 kW		25 kW		60 kW	30 kW
	<b>Repetition frequency and pulse width</b>	Range scale (nm) 0.125 ~ 0.5 0.75 ~ 1.5 3 6 ~ 12 24 ~ 96		Repetition frequency (Hz) 3200 3200 1600 1600 800		Pulse width ( $\mu$ s) 0.06 0.15 0.3 0.5 1.0	
<b>Receiver</b>							
	<b>RF and IF amplification</b>	microwave integrated circuit (MIC) and logarithmic amplifier					
	<b>Intermediate frequency</b>	60 MHz					
	<b>Intermediate frequency and band width</b>	24 MHz (at pulse width 0.06 or 0.08 $\mu$ s) 10 MHz (at pulse width 0.15 or 0.3 $\mu$ s) 5 MHz (at pulse width 0.5 or 1.0 $\mu$ s)					
	<b>Noise figure</b>	better than 6dB, over all					
	<b>Tuning method</b>	automatic frequency control (AFC) and manual with bar graph					
<b>Power supply</b>							
	<b>Power supply and power Consumption</b>	transceiver unit (w/antenna) AC 100/110/115 V or 220 V 3 $\phi$ 50/60 Hz display section (image processor) AC 100/110/115 V or 220 V 1 $\phi$ 50/60 Hz 1.5 kVA (X-band no wind) or 1.8 kVA (S-band no wind)					
	<b>Power supply variation</b>	$\pm$ 10 % of rated input					
<b>Certification standards</b>							
		Minister of Posts and Telecommunications, class 1 radar (with radar plotting function)					
<b>ARPA</b>							
	<b>Target</b>	acquisition: up to 20 targets, automatic with guard ring or manual Tracking: 0.1~36 nm (range scale 3~96 nm) 0.1~24 nm (range scale 0.125~1.5 nm) ARPA data: target identify mark 1,2,3...20 vector (1~60 min. true or relative), DAC, history tail (5 points at 1~6 minutes interval, true and relative) numerical display of range, true bearing, true course, true speed, CPA and TCPA					
	<b>Alarm</b>	visual and audible THREAT, LOST target, sense of failure					
	<b>Trial manoeuvre</b>	simulation function, how the relation to the target varies when own ship will be changed (informed with T mark)					

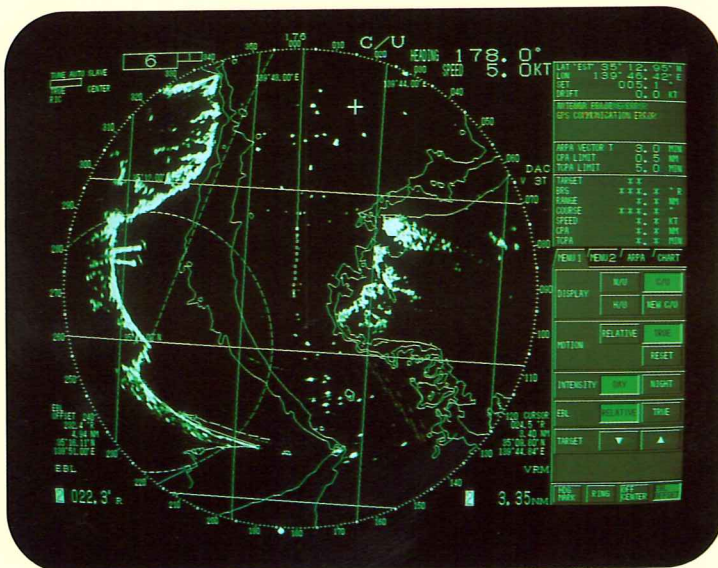
Sample display



DAC display



Echo trail display

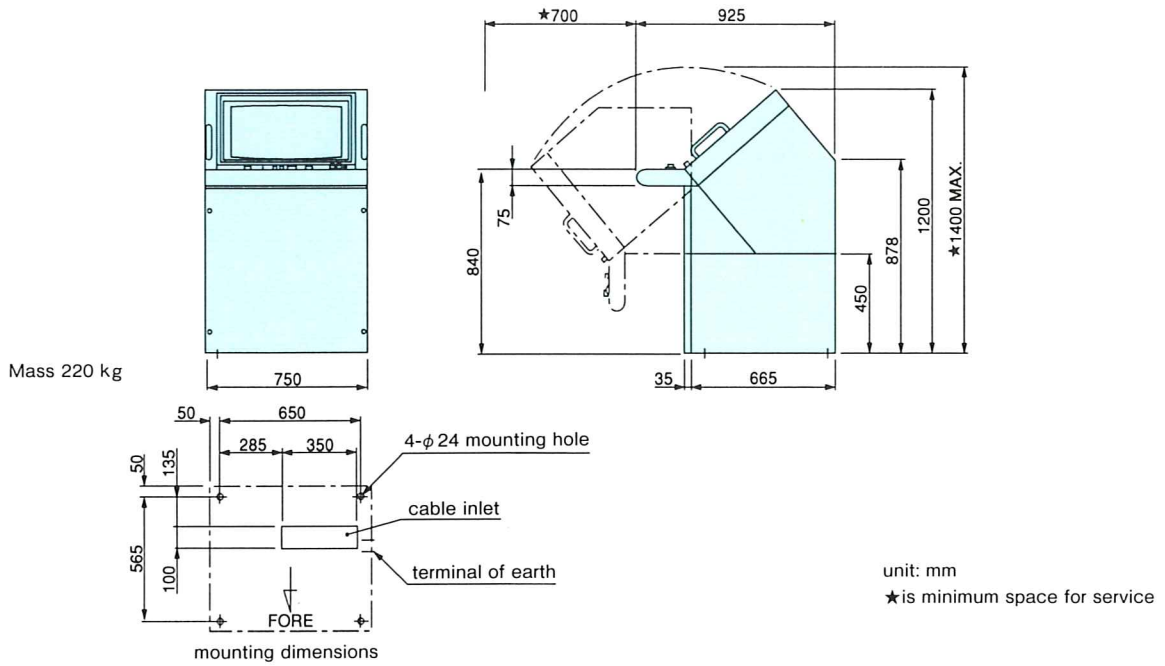


plotter (in course up mode) with chart display

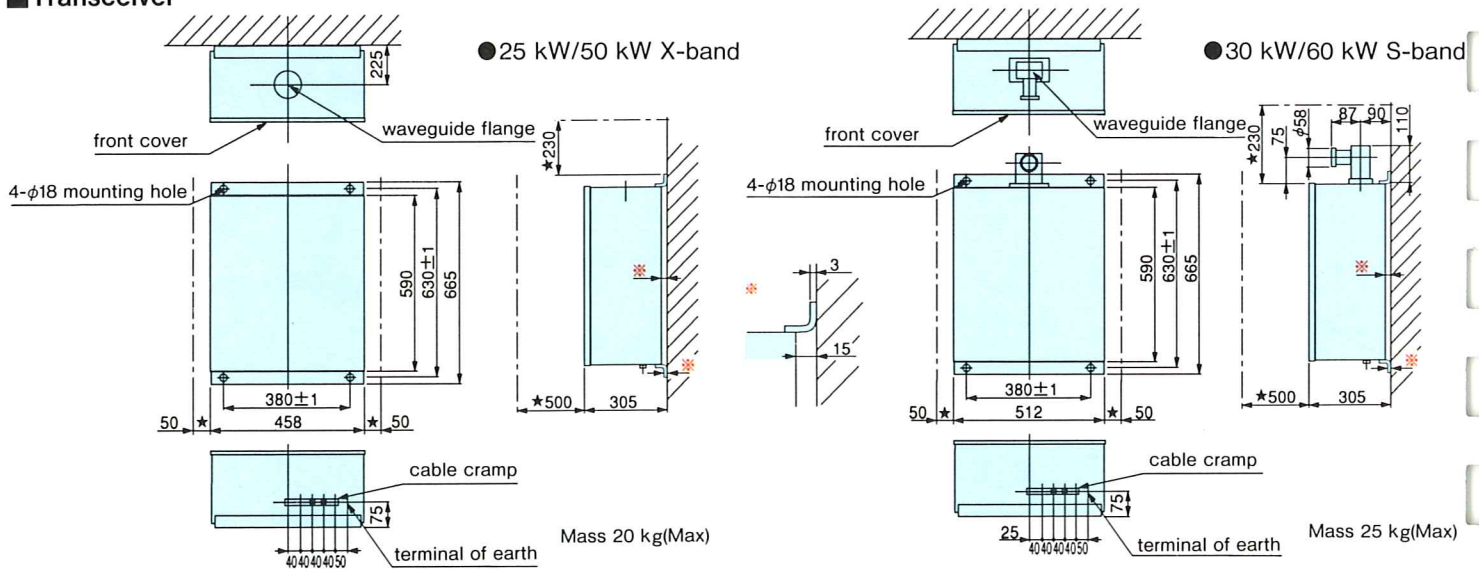


**Outline drawing**

■ **Display**



■ **Transceiver**



Before operating this equipment, you should first thoroughly read the operation manual.

Design and specifications are subject to change without prior notice, and without any obligation on the part of the manufacturer.

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