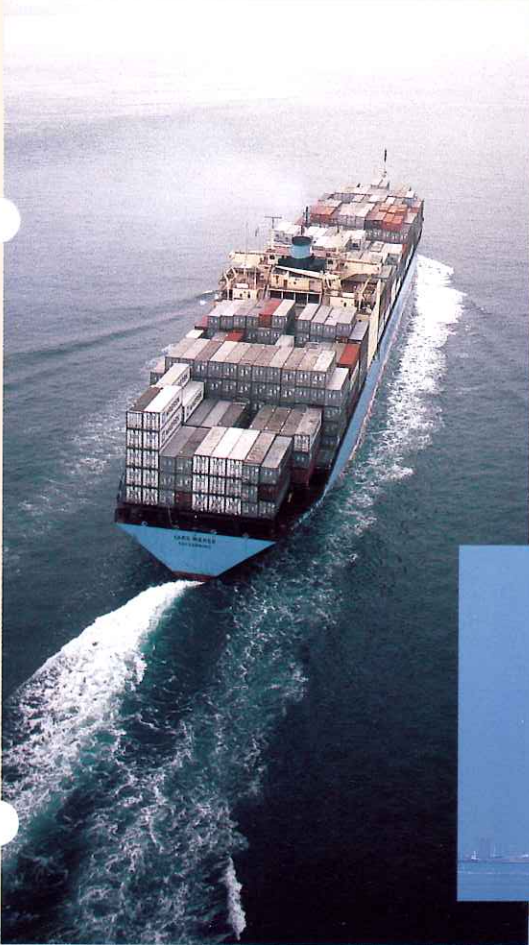


JRC MARINE RADAR/ ARPA (AUTOMATIC RADAR PLOTTING AID) SYSTEMS JMA-9000/9000-CA Series

Latest radar signal processing provides accurate navigational data and displays.



JMA-9000/9000-CA28" Radar/ARPA Series

JRC is renowned for bringing customers high performance and reliability through consistently high-grade technology. JRC now presents the JMA-9000/9000-CA series. This series is a newly developed X/S-band, 2/3-unit, 25/30 kW radar system that conforms to IMO (International Maritime Organization) specifications. The JMA-9000/9000-CA series has been developed specifically with high performance and ease-of-use in mind.

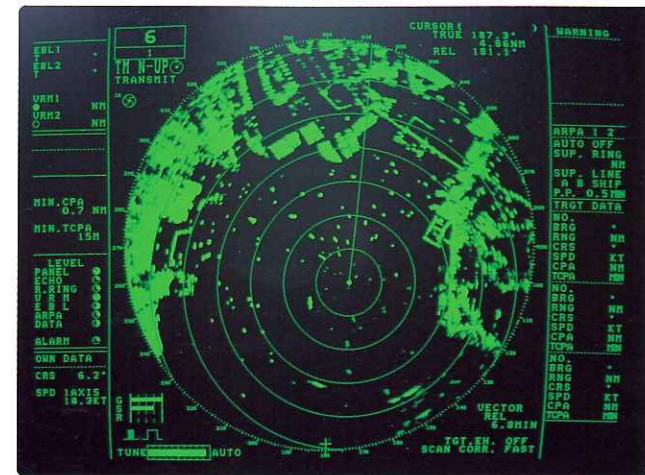
Images displayed on the 28" display are enhanced by a high-sensitivity, high-resolution raster scanning system and state-of-the-art radar signal processing technology. This not only makes images sharper and easier-to-view, but also improves the capability to distinguish between sea surface reflection and target objects even in close to medium distances.

FEATURES

- **28" high-resolution raster scanning system achieves a large, clear and easy-to-view display.**

Non-interlaced, high-resolution (1000 vertical lines) raster scanning is used to display images on the high-brightness 28" flat display. This means that you are assured of high-resolution images even at close distances.

The size of displayed characters has been made larger for easier viewing. This means that two or more personnel can observe the screen at the same time without the need of a hood even during daylight hours. This facilitates ship operations while monitoring the screen, improving operating efficiency.



- **Up-to-date signal processing technology enables target detection.**

A wide dynamic range transceiver and the latest signal processing technology suppresses sea or rain clutter. Images are displayed in 16 gradations so that target objects are detected more reliably. Automation of STC and FTC also facilitates operations.

- **Easy operation**

Knobs and buttons for carrying out major operations have been limited to simplify the operation panel, and less often used controls are provided in menus.

Operations using simple, color-coded buttons and EBL (electronic cursor) with large knobs are very simple. This means that you can respond quickly in emergencies.

Moreover, tuning and suppression of sea/rain clutter have been automated to facilitate operation. When the radar system is being operated by two or more personnel, individual operator's preferences can be stored and called up (built-in personal code function).

- **Extensive range of functions**

WAKES (ship track display)
NAV line display
TM (true motion display)
Head-up/north-up/course-up display
Own ship's track display
Plot function
Guard ring function

- **Lighter equipment and lower power consumption**

Equipment has been designed so that wind force can utilize the S-band antenna radiant section (patent pending). This reduces the amount of motor output consumption by half. Equipment has also been made lighter (in-house comparison).

- **Easy connection with external equipment**

An interface for connecting navigation systems (e.g. GPS, NS, loran), sub-display units and radar buoys is built-in as part of the standard specification.

- **Inter switch built into display unit (option)**

Separate units are no longer required, reducing installation space. Also, radar switching operations have been facilitated as they are now carried out on the display unit.

- **Performance monitor (option)**

Reduced radar performance (e.g. drops in transmitter output or reception sensitivity) can be monitored on the display.



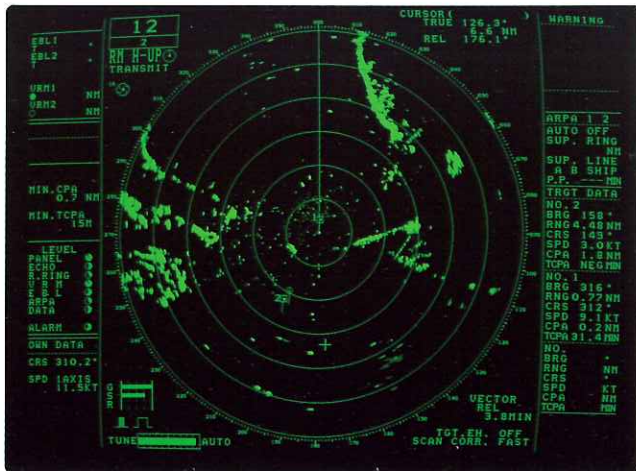
ARPA FUNCTIONS

• Acquisition and tracking of 40 targets

Up to 40 targets can be automatically or manually selected, and automatically tracked. The tracking range can be set up to 32 miles for monitoring wide areas. Also, tracking performance has been improved by a newly developed tracking algorithm.

• Extensive range of display modes

This radar system supports true or relative motion display in the image display mode, and true or relative vectors can be displayed in each of the head-up/north-up/course-up display modes.



• Visual and audible notification of dangerous situations

Safe ships (○) and dangerous ships (△) are displayed on screen in response to preferred safety limits (Min. CPA/TCPA) set by the user. Also, if there is the danger of a collision, a warning buzzer will sound to inform personnel of the danger.

• Display of other ships's and own ship's data

True bearing, distance, true course, speed, CPA, TCPA for up to three targets, and course and speed data for your own ship are displayed simultaneously, so that you can easily check other ships's and your own ship's conditions.

• Trial operation functions (own ship's speed, course change, etc.)

Changes in your own ship's speed and course can be simulated even in the true or relative vector modes. Simple operation displays the simulation results on screen, ensuring safe ship operation.

• Built-in monitoring of collision avoidance system and self-diagnostic program

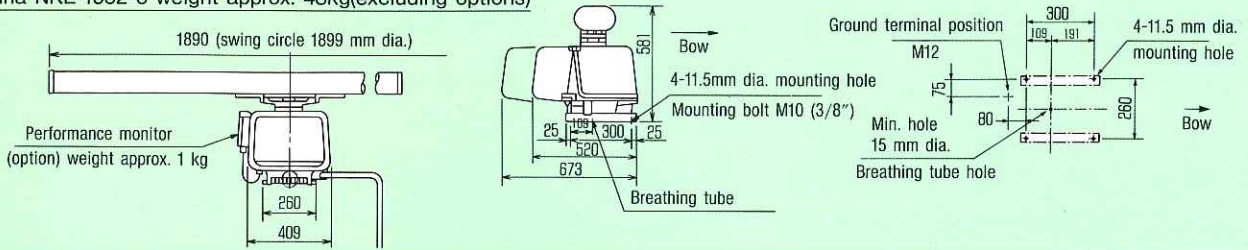
All system functions are monitored at all times. If there functions are impaired, this is indicated on screen by a flashing display and a warning sound. System functions can also be tested easily during regular operation.



SYSTEM DIAGRAMS

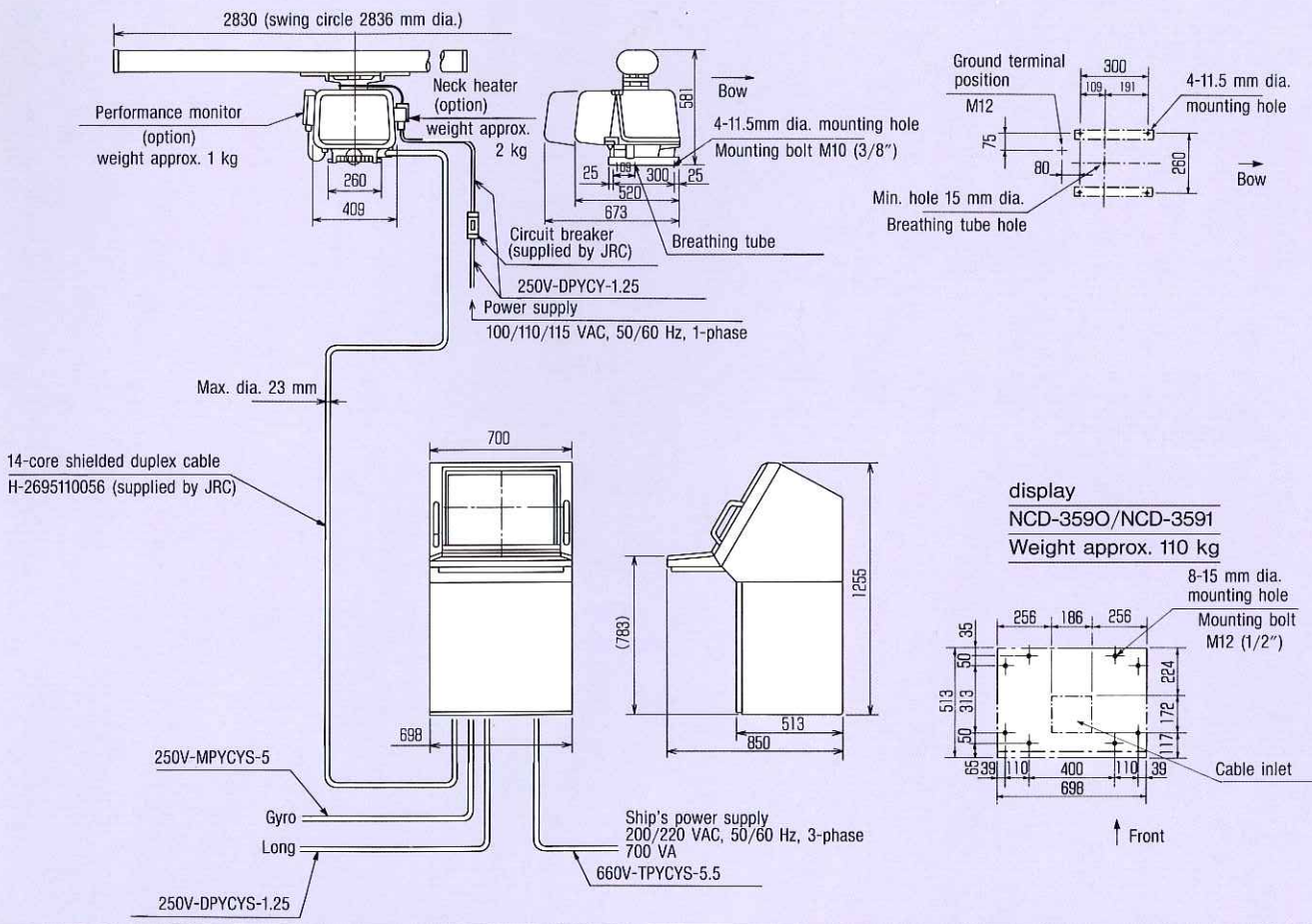
● JMA-9252-6/6CA

Antenna NKE-1052-6 weight approx. 48kg(excluding options)



● JMA-9252-9/9CA

Antenna NKE-1052-9 weight approx. 53 kg (excluding options)



Antenna



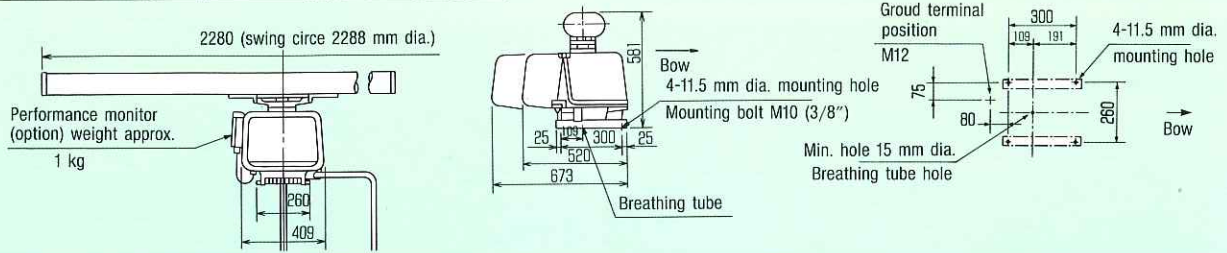
NKE-1052-6 (6-foot type)



NKE-1052-9 (9-foot type)

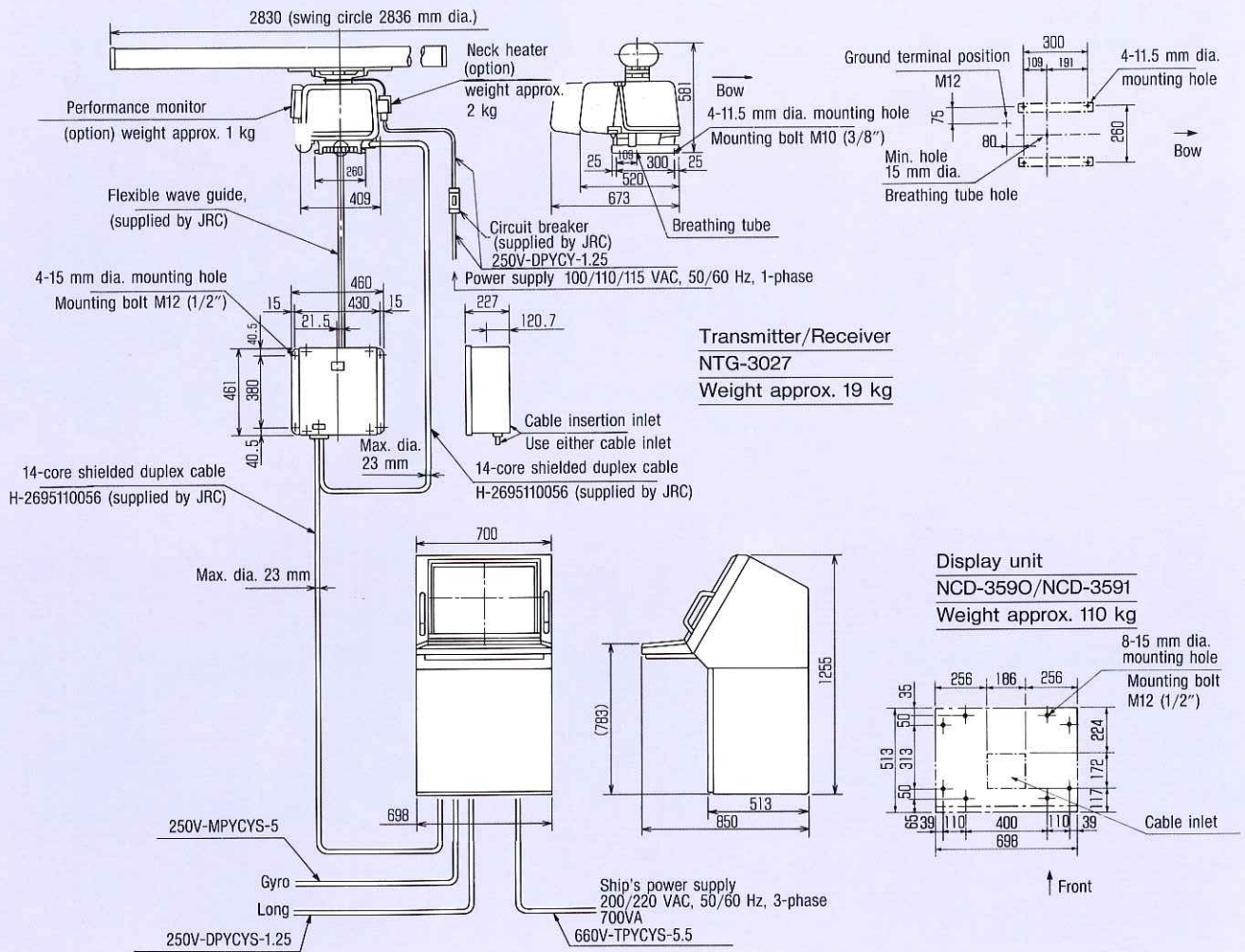
● JMA-9253-7/7CA

Antenna NKE-1059-7 weight approx. 43 kg (excluding options)



● JMA-9253-9/9CA

Antenna NKE-1059-9 weight approx. 45.5kg (excluding options)



Antenna

Transmitter/Receiver

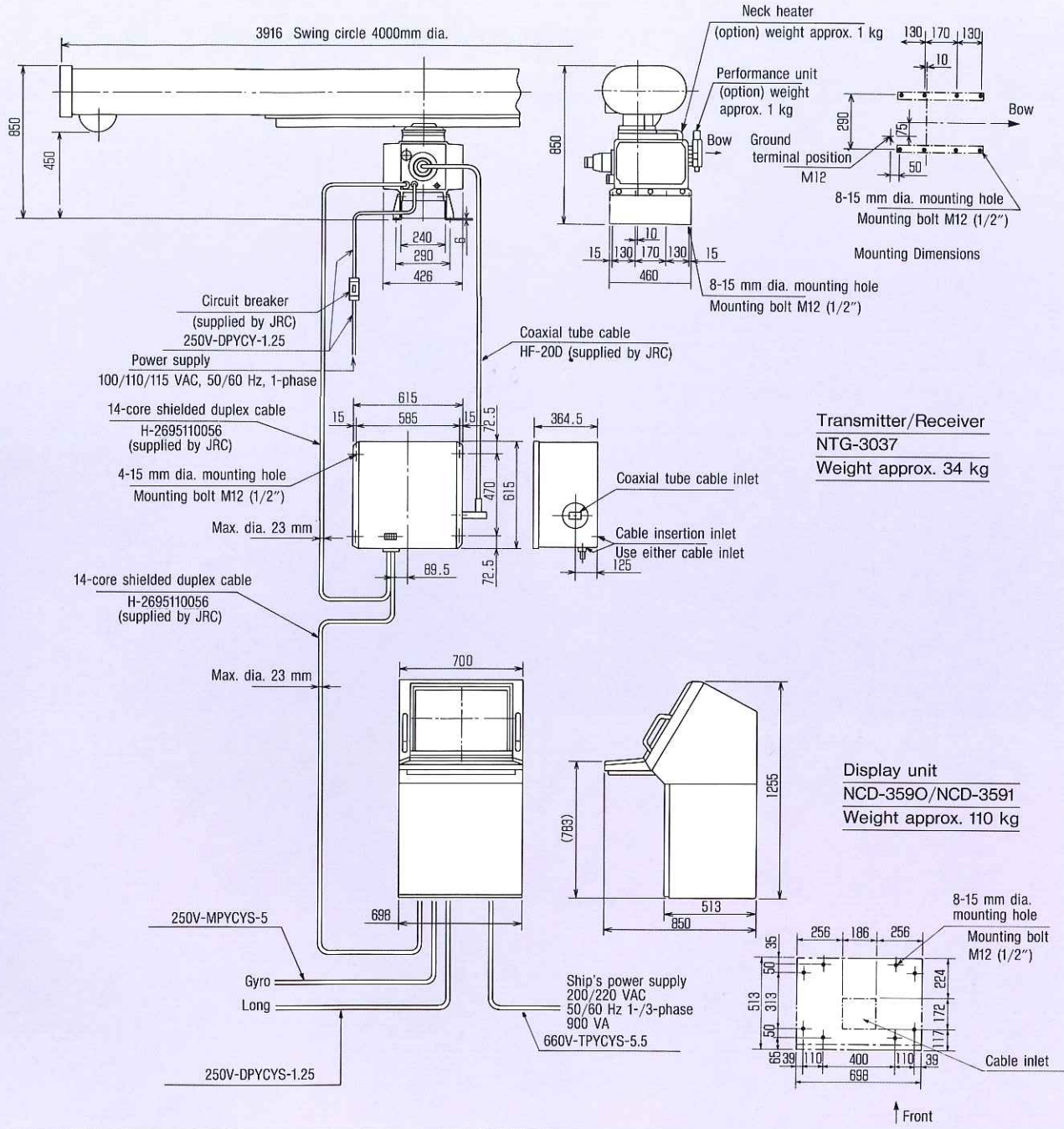


NKE-1059-7 (7-foot type) NKE-1059-9 (9-foot type)

NTG-3027

● JMA-9303-CA

Antenna NKE-1079 weight approx. 145 kg (excluding options)



Antenna



NKE-1079 (12-foot type)

Transmitter/Receiver



NTG-3037

SPECIFICATIONS

Model	Specifications	Antenna	Transmitter/Receiver	Display	Power Supply
JMA-9252-6 (-9252-6CA)	X band 6-feet 25 kW 28" (ARPA)	NKE-1052-62F Beam width: H1.2°, V25° Transmission frequency: 9410MHz Rotation speed: 26rpm(60Hz), 21rpm(50Hz) Weight: 48kg Dimensions: 1890(W) × 581(H) × 520(D)mm	(Transceiver is built into antenna owing to 2-unit system.) Pulse width: 0.07, 0.10, 0.15, 0.2, 0.3, 0.6, 1.2μs	NCD-3590 (NCD-3591 in case of ARPA) 28" raster scan 1024-line high-resolution B/W CRT Range scale: 0.25 to 120mm TM/RM North-up/head-up/course-up Route display (when navigation system is connected) Weight: 110kg Dimensions: 700(W) × 1255(H) × 850(D) (ARPA specifications) Conforming to IMO A422 Acquisition: Automatic/manual Number of targets: 40 max. Tracking range: 32nm Target data read: 3targets simultaneously	200/230 VAC, 50/60 Hz, 3-phase, 700VA However, 100/110/115 VAC, 50/60 Hz, 1-phase also is possible, In this case, the following antenna models are used. NKE-1052-61 NKE-1052-91 NKE-1059-71 NKE-1059-91
JMA-9252-9 (-9252-9CA)	X band 9-feet 25kW 28" (ARPA)	NKE-1052-92F Beam width: H0.8°, V25° Transmission frequency: 9410MHz Rotation speed: 26rpm(60Hz), 21rpm(50Hz) Weight: 53kg Dimensions: 2830(W) × 581(H) × 520(D)mm			
JMA-9253-7 (-9253-7CA)	X band 7-feet 25kW 28" (ARPA)	NKE-1059-72F Beam width: H1.0°, V25° Rotation speed: 26rpm(60Hz), 21rpm(50Hz) Weight: 43kg Dimensions: 2280(W) × 581(H) × 520(D)mm	NTG-3027 Transmission frequency: 9410MHz Output: 25kW Pulse width: 0.07, 0.10, 0.15, 0.2, 0.3, 0.6, 1.2μs Weight: 19kg Dimensions: 460(W) × 461(H) × 227(D)mm		
JMA-9253-9 (-9253-9CA)	X band 9-feet 25 kW 28" (ARPA)	NKE-1059-92F Beam width: H0.8°, V25° Rotation speed: 26rpm(60Hz), 21rpm(50Hz) Weight: 45.5kg Dimensions: 2830(W) × 581(H) × 520(D)mm			
JMA-9303 (-9303-CA)	S band 12-feet 30kW 28" (ARPA)	NKE-1079-2F Beam width: H1.9°, V30° Rotation speed: 26rpm(60Hz), 21rpm(50Hz) Weight: 145kg Dimensions: 3916(W) × 850(H) × 460(D)mm	NTG-3037 Transmission frequency: 3050MHz Output: 30kW Pulse width: 0.07, 0.10, 0.15, 0.2, 0.3, 0.6, 1.2μs Weight: 34kg Dimensions: 615(W) × 615(H) × 365(D)mm		200/220/230 VAC, 50/60Hz, 3-phase, 900VA However, 100/110/115 VAC, 50/60 Hz, 1-phase also is possible, In this case, the following antenna model is used. NKE-1079-1

External Input Signals

Ship's speed signal (log): pulsed (100, 200, 400, 800 P/nm), sync (90, 180, 360 x/nm), NMEA0183 (2-axis operation possible)
Gyro signal: stepped (360, 180, 90p), sync (90x, 180x, 360x),
navigation unit, own ship's position
(JRC/NEMA0183: GLL, RMA, RMC, GGA)

Option

Inter switch (max. 3 connectable)
NQE-3015J
Performance monitor
NJU-63 for s band radar
NJU-64 for x band radar

For further information, contact:



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ISO 9001

Certificate No. JQA-0591 Certificate No. FM 30249



15EM