

JMR-5410-4X/4XH/6X/6XH
JMR-5425-6XH/7X/9X
JMR-5430-S
JMR-5472-S
JMR-5482-S/SH

**MARINE RADAR
EQUIPMENT**

NCD-2315
NCD-2316

**NAVIGATION
INFORMATION
DISPLAY**

**RADAR IMAGE LAN
DISTRIBUTION
FUNCTION**

**INSTRUCTION
MANUAL**



Japan Radio Co., Ltd.

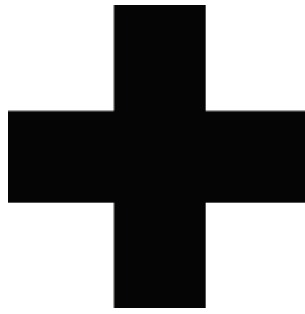
PREFACE

Thank you for purchasing the JRC Multi Function Display JMR-5400 Series and NCD-2315 / 2316 Series.

This equipment meets the performance standards of the IMO (International Maritime Organisation), and serves to improve safety.

- This document is an instruction manual for the radar image LAN distribution function of the JMR-5400 series / NCD-2315 / 2316 series.
- For the best operation, read this manual thoroughly before use.
- Keep this manual in a convenient place for future reference.
Make use of this manual when experiencing operation difficulties.
- The LCD of this equipment uses thin film transistors (TFT). If some pixels on the screen are not clear, the colour is different, or the screen is brighter than usual, it is not because of defect, instead it is because of inherent characteristic of the TFT display technology.
- The information in this manual is subject to change without notice at any time.

● Safety Cautions ●



Cautions for High Voltage

High voltages, ranging from several hundreds to tens of thousands of volts, are used in electronic apparatus, such as radio and radar instruments. These voltages are totally harmless in most operations. However, touching a component inside the unit is very dangerous. (Any person other than authorized service engineers should not maintain, inspect, or adjust the unit.)

High voltages on the order of tens of thousand volts are most likely to cause instant deaths from electrical shocks. At times, even voltages on the order of several hundred volts could lead to electrocution. To defend against electrical shock hazards, don't put your hand into the inside of apparatus.

When you put in a hand unavoidably in case of urgent, it is strongly suggested to turn off the power switch and allow the capacitors, etc. to discharge with a wire having its one end positively grounded to remove residual charges. Before you put your hand into the inside of apparatus, make sure that internal parts are no longer charged. Extra protection is ensured by wearing dry cotton gloves at this time. Another important precaution to observe is to keep one hand in your pocket at a time, instead of using both hands at the same time. It is also important to select a secure footing to work on, as the secondary effects of electrical shock hazards can be more serious. In the event of electrical shocks, disinfect the burnt site completely and obtain medical care immediately.

Precautions for Rescue of Victim of Electric Shock

When a victim of electric shock is found, turn off the power source and ground the circuit immediately. If this is impossible, move the victim away from the unit as quick as possible without touching him or her with bare hands. He or she can safely be moved if an insulating material such as dry wood plate or cloth is used.

It is necessary to perform first aid immediately.

Breathing may stop if current flows through the respiration centre of brain due to electric shock. If the electric shock is not large, breathing can be restored by artificial respiration. A victim of electric shock looks pale and his or her pulse may become very weak or stop, resulting in unconsciousness and rigidity at worst.

● Emergency Measures ●

Method of First-Aid Treatment

☆Precautions for First-Aid Treatments

Apply artificial respiration to the person who collapsed, minimising moving as much as possible avoiding risks. Once started, artificial respiration should be continued rhythmically.

- (1) Refrain from touching the patient carelessly as a result of the accident; the first-aider could suffer from electrical shocks by himself or herself.
- (2) Turn off the power calmly and certainly, and move the patient apart from the cable gently.
- (3) Call or send for a physician or ambulance immediately, or ask someone to call doctor.
- (4) Lay the patient on the back, loosening the necktie, clothes, belts and so on.
- (5)
 - (a) Feel the patient's pulse.
 - (b) Check the heartbeat by bringing your ear close to the patient's heart.
 - (c) Check for respiration by bringing your face or the back of your hand to the patient's face.
 - (d) Check the size of patient's pupils.
- (6) Opening the patient's mouth, remove artificial teeth, cigarettes, chewing gum, etc. if any. With the patient's mouth open, stretch the tongue and insert a towel or the like into the mouth to prevent the tongue from being withdrawn into the throat. (If the patient clenches the teeth so tight that the mouth won't open, use a screwdriver or the like to force the mouth open and then insert a towel or the like into the mouth.)
- (7) Wipe off the mouth to prevent foaming mucus and saliva from accumulating.

★ Treatment to Give When the Patient Has a Pulse Beating but Has Ceased to Breathe

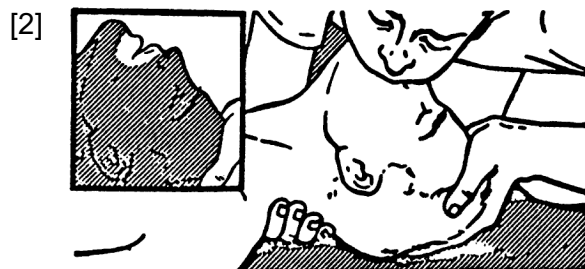
* Performing mouth-to-mouth artificial respiration

- (1) Bend the patient's face backward until it is directed to look back. (A pillow may be placed under the neck.)
- (2) Pull up the lower jaw to open up the airway. (To spread the airway)
- (3) Pinching the patient's nose, breathe deeply and blow your breath into the patient's mouth strongly, with care to close it completely. Then, move your mouth away and take a deep breath, and blow into his or her mouth. Repeat blowing at 10 to 15 times a minute (always with the patient's nostrils closed).
- (4) Continue artificial respiration until natural respiration is restored.
- (5) If the patient's mouth won't open easily, insert a pipe, such as one made of rubber or vinyl, into either nostril. Then, take a deep breath and blow into the nostril through the pipe, with the other nostril and the mouth completely closed.
- (6) The patient may stand up abruptly upon recovering consciousness. Keep the patient lying calmly, giving him or her coffee, tea or any other hot drink (but not alcoholic drink) to keep him or her warm.

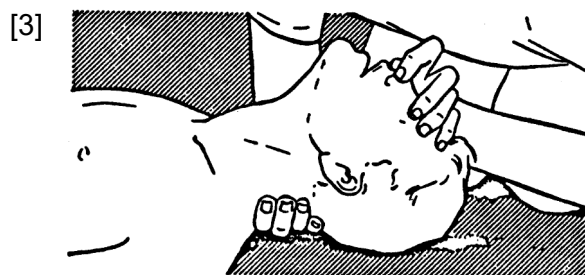
Mouth-to-mouth artificial respiration with the patient's head lifted



- (1) Lift the back part of the patient's head. Support the forehead with one of your hand and the neck with the other hand. → [1].
Many patients will have their airways opened by lifting their head in this way to ease mouth-to-mouth artificial respiration.



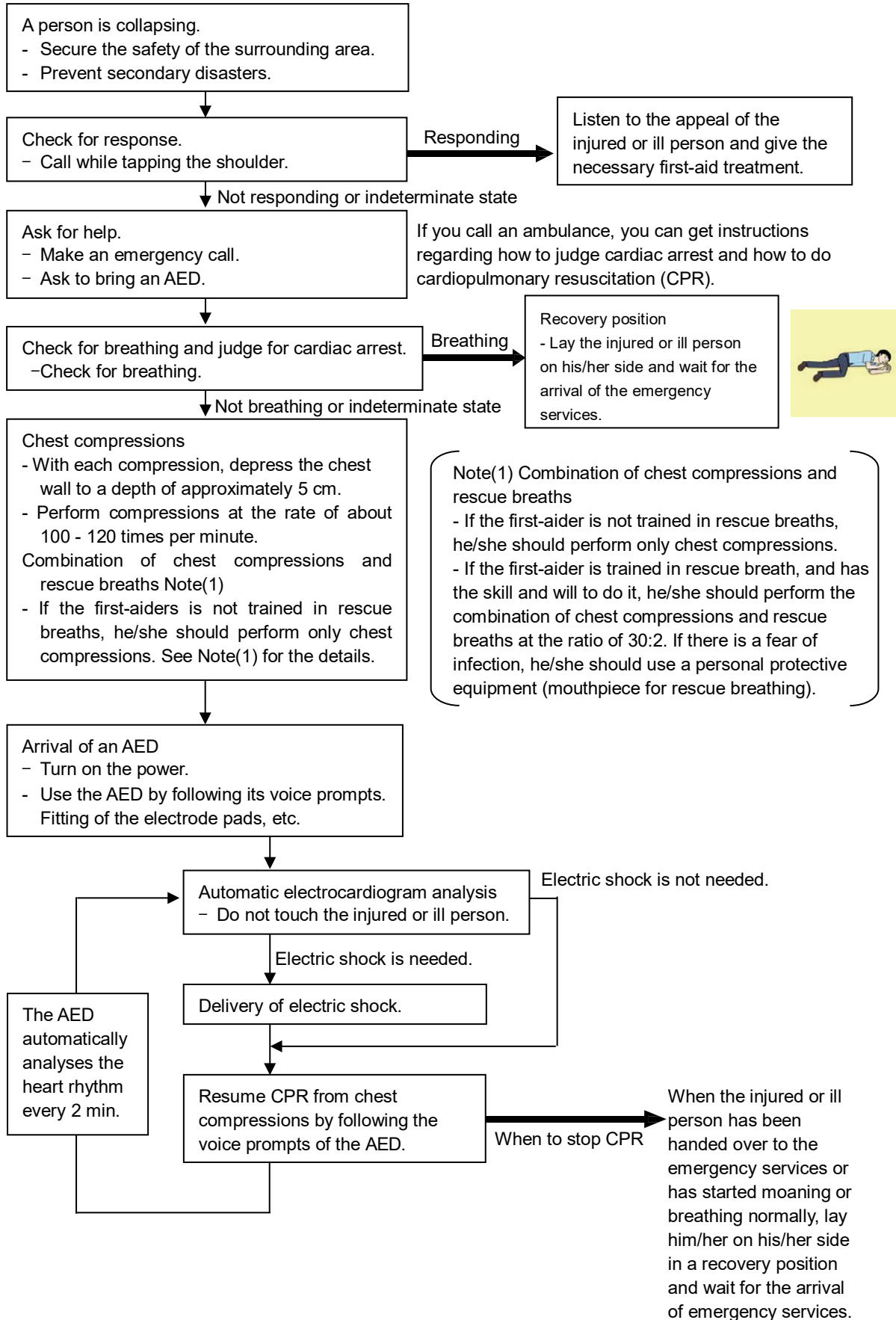
- (2) Closing the patient's mouth with your mouth, press your cheek against the patient's nose → [2].
Alternatively, hold the patient's nose with your finger to prevent air leak → [3].



- (3) Blowing air into the patient's lungs. Blow air into the patient's lungs until chest is seen to rise. The first 10 breaths must be blown as fast as possible.

Fig. 1 Mouth-to-mouth artificial respiration

Flow of Cardiopulmonary Resuscitation (CPR)



Specific Procedures for Cardiopulmonary Resuscitation (CPR)

1. Check the scene for safety to prevent secondary disasters

- Do not touch the injured or ill person in panic when an accident has occurred. (Doing so may cause electric shock to the first-aiders.)
- Do not panic and be sure to turn off the power. Then, gently move the injured or ill person to a safe place away from the electrical circuit.



2. Check for responsiveness

- Tap the shoulder of the injured or ill and shout in the ear saying, "Are you OK?"
- If the person opens his/her eyes or there is some response or gesture, determine it as "responding." But, if there is no response or gesture, determine it as "not responding."

3. If responding

- Give first-aid treatment.

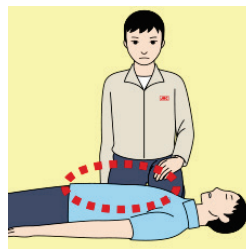
4. If not responding

- Ask for help loudly. Ask somebody to make an emergency call and bring an AED.
 - Somebody has collapsed. Please help.
 - Please call an ambulance.
 - Please bring an AED.
 - If there is nobody to help, call an ambulance yourself.

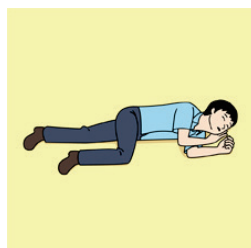


5. Check for breathing

- Look to see if the chest and abdomen of the injured or ill person are rising and falling.



- If the injured or ill person is breathing, place him/her in the recovery position and wait for the arrival of the emergency services.
 - Position the injured or ill person on his/her side.

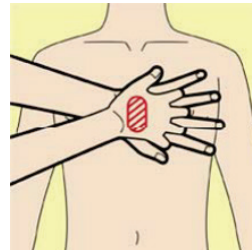
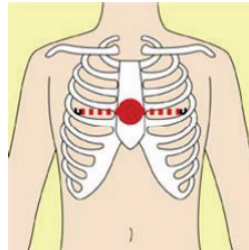


6. Cardiopulmonary resuscitation (CPR) (combination of chest compressions and rescue breaths)

a) Chest compressions

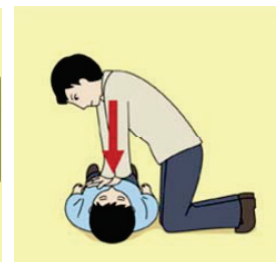
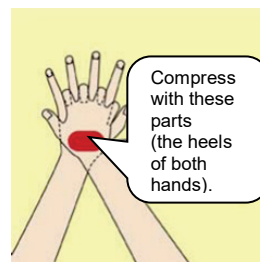
1) Position of chest compressions

- Position the heel of one hand in the center of the chest, approximately between the nipples, and place your other hand on top of the one that is in position.



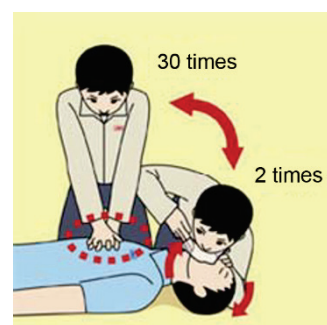
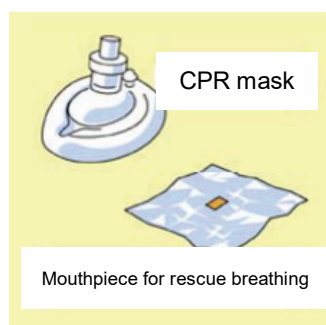
2) Perform chest compressions

- Perform 30 times uninterrupted chest compressions at the rate of about 100 - 120 times per minute, while locking your elbows positioning yourself vertically above your hands.
- With each compression, depress the chest wall to a depth of approximately 5 cm.



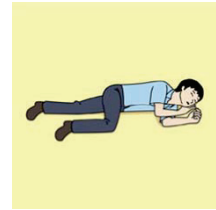
b) Combination of 30 times chest compressions and 2 times rescue breaths

- 1) If the first-aiders is not trained in rescue breaths, he/she should perform only chest compressions.
- 2) If the first-aiders is trained in rescue breath, and has the skill and will to do it, he/she should perform 30 chest compressions, then give 2 rescue breaths.
- 3) If there is a fear of infection, he/she should use a personal protective equipment (mouthpiece for rescue breathing).
- 4) Continuously perform the combination of 30 chest compressions and 2 rescue breaths without interruption.
- 5) If there are two or more first-aiders, alternate with each other approximately every two minutes (five cycles) without interruption.



7. When to stop cardiopulmonary resuscitation (CPR)

- a) When the injured or ill person has been handed over to the emergency services
- b) When the injured or ill person has started moaning or breathing normally, lay him/her on his/her side in a recovery position and wait for the arrival of emergency services.



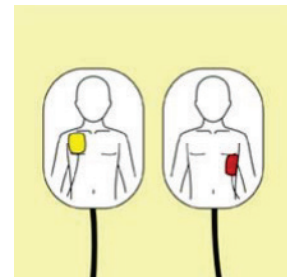
8. Arrival and preparation of an AED

- a) Place the AED at an easy-to-use position.
If there are multiple first-aiders, continue CPR until the AED becomes ready.
- b) Turn on the power to the AED unit. Depending on the model of the AED, you may have to push the power on button, or the AED automatically turns on when you open the cover.
- c) Follow the voice prompts of the AED.



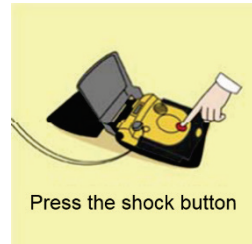
9. Attach the electrode pads to the injured or ill person's bare chest

- a) Remove all clothing from the chest, abdomen, and arms.
- b) Open the package of electrode pads, peel the pads off and securely place them on the chest of the injured or ill person, with the adhesive side facing the chest. If the pads are not securely attached to the chest, the AED may not function. Paste the pads exactly at the positions indicated on the pads. If the chest is wet with water, wipe dry with a dry towel and the like, and then paste the pads. If there is a pacemaker or implantable cardioverter defibrillator (ICD), paste the pads at least 3cm away from them. If a medical patch or plaster is present, peel it off and then paste the pads. If the injured or ill person's chest hair is thick, paste the pads on the chest hair once, peel them off to remove the chest hair, and then paste new pads.
- c) Some AED models require to connect a connector by following voice prompts.
- d) The electrode pads for small children should not be used for children over the age of 8 and for adults.



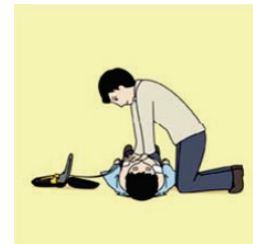
11. Electric shock (defibrillation)

- a) If the AED determines that electric shock is needed, the voice prompt saying, "Shock is needed" is issued and charging starts automatically.
- b) When charging is completed, the voice prompt saying, "Press the shock button" is issued and the shock button flashes.
- c) The first-aider must get away from the injured or ill person, make sure that no one is touching him/her, and then press the shock button.
- d) When electric shock is delivered, the body of the injured or ill person may jerk.



12. Resume chest compressions

- a) Resume chest compressions by following the voice prompts of the AED.
 - With each compression, depress the chest wall to a depth of approximately 5 cm.
 - Perform compressions at the rate of about 100 - 120 times per minute.

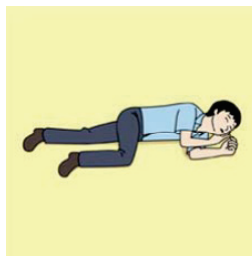


13. Automatic electrocardiogram analysis

- a) When 2 minutes have elapsed since you resumed cardiopulmonary resuscitation (CPR), the AED automatically analyzes the electrocardiogram.
- b) If you suspended CPR by following voice prompts and AED voice prompt informs you that shock is needed, give electric shock again by following the voice prompts. If AED voice prompt informs you that no shock is needed, immediately resume CPR.

14. When to stop CPR (Keep the electrode pads on.)

- a) When the injured or ill person has been handed over to the emergency services
- b) When the injured or ill person has started moaning or breathing normally, lay him/her on his/her side in a recovery position and wait for the arrival of emergency services.



● Pictorial Indication ●

Meanings of Pictorial Indication

Various pictorial indications are included in this manual and are shown on this equipment so that you can operate them safely and correctly and prevent any danger to you and / or to other persons and any damage to your property during operation. Such indications and their meanings are as follows.

Please understand them before you read this manual:

 DANGER	This indication is shown where incorrect equipment operation due to negligence may cause death or serious injuries.
 WARNING	This indication is shown where any person is supposed to be in danger of being killed or seriously injured if this indication is neglected and this equipment is not operated correctly.
 CAUTION	This indication is shown where any person is supposed to be injured or any property damage is supposed to occur if this indication is neglected and this equipment is not operated correctly.

Examples of Pictorial Indication



Electric Shock

The △ mark represents CAUTION (including DANGER and WARNING).

Detailed contents of CAUTION ("Electric Shock" in the example on the left) is shown in the mark.



Disassembling
Prohibited



The ⊘ mark represents prohibition.

Detailed contents of the prohibited action ("Disassembling Prohibited" in the example on the left) is shown in the mark.



Disconnect
the power
plug



The ● mark represents instruction.

Detailed contents of the instruction ("Disconnect the power plug" in the example on the left) is shown in the mark.

Warning Label

There is a warning label on the top cover of the equipment. Do not try to remove, break or modify the label.

● Precautions upon Equipment Operation ●

 DANGER	
	Never attempt to check or repair the inside of the equipment. Checking or repair by an unqualified person may cause a fire or an electric shock. Contact our head office, or a nearby branch or local office to request servicing.
	Never remove the cover of this equipment. Touching the high-voltage section inside will cause an electric shock.
	Do not attempt to disassemble or tamper with this equipment. Otherwise, a fire, an electric shock, or a malfunction may occur.
	When conducting maintenance, make sure to turn the main power off. Failure may result in electric shock.
	Turn off all the main powers before cleaning the equipment. Make sure to turn it off since voltage is still outputted from the rectifier even after the indicator and the radar are turned off. Failure may result in equipment failure, or death or serious injury due to electric shock.
	When conducting maintenance work on the radar antenna, make sure to turn all the main powers off. Failure may result in electric shock or injuries.
	Make sure to turn off the radar antenna safety switch. Failure may result in injuries caused by physical contact with the rotating radar antenna.

WARNING



When turning off the power supply, do not hold down the power button of the operation unit.
Otherwise, a trouble may occur due to termination failure.



Never directly touch the internal components of the radar antenna or indicator. Direct contact with these high-voltage components may cause electric shock. For maintenance, inspection, or adjustment of equipment components, consult with our branch office, branch shop, sales office, or our distributor in your district.



Do not get close to the radiant section of the radar antenna. It is a rotating part, and it may cause injuries if it suddenly starts rotating and consequently hits the body. The radiant section be installed at a high place such as on the roof of the wheelhouse, on the flying bridge, on the trestle, or on the radar mast so that no one can get close to it.



Microwave radiation level of the radar antenna

Keep away from the radar antenna during transmission.

Microwaves are generated from the front centre of the radiant section of the radar antenna at the levels indicated in the table below. Exposure to microwaves at close range can result in injury (especially damage to eyes).

System	50 W/m ²	20 W/m ²	2.5 W/m ²
NKE-2103	n/a	26cm	123cm
NKE-2255	5cm	81cm	162cm
NKE-1130	11cm	76cm	181cm
NKE-2632	1.4cm	3.1cm	209.8cm
NKE-1632	1.5cm	3.3cm	128.4cm



Make sure to install the radar antenna at a place higher than human height. Direct exposure to electromagnetic wave at close range will have adverse effects on the human body.



When it is necessary to get close to the radar antenna for maintenance or inspection purposes, make sure to turn the power switch of the display unit to "OFF" or "STBY".
Direct exposure to electromagnetic waves at close range will have adverse effects on the human body.



When conducting maintenance work, make sure to turn off the power so that the power supply to the equipment is completely cut off.
Some equipment components can carry electrical current even after the power switch is turned off, and conducting maintenance work may result in electric shock, equipment failure, or accidents.

WARNING



When cleaning the display screen, do not wipe it too strongly with a dry cloth. Also, do not use gasoline or thinner to clean the screen. Failure will result in damage to the screen surface.



Do not change Initial Level/Area Offset unless absolutely necessary. Incorrect adjustment will result in deletion of nearby target images and thus collisions may occur resulting in death or serious injuries.



Confirm computer virus does not exist in USB flash memory beforehand when reading and writing of the file by using USB flash memory. Influences other equipment when the display unit is infected with the virus, and it may cause a breakdown.



Do not remove USB flash memory while the access lamp (in USB flash drive) is flashing. Data may be damaged when the USB flash memory is inserted or removed while accessing it, and it may cause a breakdown.



Confirm computer virus does not exist in external storage media beforehand when reading and writing of the file by using external storage media. Influences other equipment when the display unit is infected with the virus, and it may cause a breakdown.



In case water or a metal object gets inside the equipment, turn off the power immediately, unplug the power supply cable from an electric outlet, and contact our head office, or a nearby branch or local office to request servicing. Keeping the equipment in operation under such condition may cause a fire, an electric shock or a malfunction.



In case you find smoke, unusual odor or extreme high heat coming from the equipment, turn off the power immediately, unplug the power supply cable from an electric outlet, and contact our head office, or a nearby branch or local office to request servicing. Keeping the equipment in operation under such condition may cause a fire or an electric shock.



Do not use the offset function during navigation. If the equipment is used with the offset value entered as the own ship position (deviated from the actual position), accidents may result.

WARNING



Change of the colour of the Day/Night button, particularly the use of the [Night] colour, may interfere with the recognition of display information.
Confirm display information can be recognised.



When moving the dialogue box, move to the position that does not cover the operation area. If the dialogue box covers the operation area, it may interfere the recognition of the display information.



In the short distance range, do not set the sea clutter suppression function so that all reflections from the sea are suppressed. This suppresses not only the echo from waves, etc., but also the echo from floating objects such as ships or dangerous objects, etc., and obstructs their detection.
When using the sea clutter suppression function, always make the best suppression setting.



Do not set the rain/snow clutter suppression setting to an excessive level, because not only the echo from rain or snow but also the echo from floating objects such as ships or dangerous objects, etc., and obstructs their detection.
When using the rain/snow clutter suppression function, always make the best suppression setting.



When setting a guard zone, make sure to properly adjust gain, sea-surface reflection suppression level, and rain/snow reflection suppression level so that the optimal target images are always on the radar screen. The guard zone alarm will not be activated for targets undetected by the radar, and it may result in accidents such as collisions.



Since these alarms may include some errors depending on the target tracking conditions, the navigation officer himself should make the final decision for ship operations such as collision avoidance.
Making the final navigation decision based only on the alarm may cause accidents such as collisions.



Do not turn off the power during Backup/Restore.
Otherwise, a function may fail, and an accident may occur.



Do not turn off the power supply during recovery of C drive image.
Otherwise, a function fault occurs, causing an accident.



Specify the power source type, taking into account the ship's mains. In the case of using the ship's mains of 440VAC, it may be necessary as a step-down transformer. Improper order or using may result in a fire or accidents.

WARNING



The reference target function is to be used if the own ship's speed cannot be displayed normally due to trouble such as a speed sensor malfunction. Do not use the reference target function except in emergencies.



Do not set as a reference target a large radar echo such as a land target. The vectors of the speed and other tracking targets will not be displayed correctly and may cause an accident.



Do not set as a reference target a sailing ship. The vectors of the speed and other tracking targets will not be displayed correctly and may cause an accident.



Do not use own speed based on reference target tracking for relative speed and CPA/TCPA calculation of AIS targets because the response of own speed is slower than actual own ship's speed change and it may cause a big error on the collision judgement of AIS targets.

CAUTION



Use the radar only as a navigation aid.
The final navigation decision must always be made by the operator him/herself.
Making the final navigation decision based only on the radar display information may cause accidents such as collisions or running aground.



A malfunction as the screen is disordered or unshown may occur if the power in the ship is instantaneously interrupted during operation of the radar. In this case, the power should be turned on again.



The simulation function is used exclusively for deciding whether or not target tracking is properly operating. Therefore, never use this function unless you wish to check target tracking operations.
Note especially that, if this function is used during actual navigation, simulated targets are displayed and may become confused with other actual targets. Therefore, never use this function during actual navigation.



Optimal values have been set for VD Level and Constant; therefore, never change their values unless absolutely necessary. Failure may result in accidents that would lower target tracking performance.



When replacing magnetrons, make sure to shut off the main power and let the equipment stand for more than 5 minutes to discharge the high-voltage circuit.
Failure may result in electric shock.



Make sure to take off your watch when your hand must get close to the magnetron.
Failure may result in damage to the watch since the magnetron is a strong magnet.



Do not make any adjustments during navigation.
Failure may result in adverse effects on the radar function which may lead to accidents or equipment failure.



Do not change the quantization level settings unless absolutely necessary. If set at an inappropriate value, the acquisition of target tracking function and the tracking function deteriorate, and this may lead to accidents.



Do not use or leave the equipment under direct sunlight for a long time or in the temperatures above 55°C.
Otherwise, a fire or a malfunction may occur.



Do not place a glass or cup containing water, etc., or a small metal object on this equipment.
If water or such object gets inside, a fire, an electric shock, or a malfunction may occur.

CAUTION



Do not touch the equipment with hands or gloves wet with water. Otherwise, an electric shock or a malfunction may occur.



- Do not place any object on the operation panel.
In particular, if a hot object is placed on the operation panel, it can cause deformation of the surface of the operation panel.
- Do not apply any undue shock on the operation panel, trackball and dials. Otherwise, a malfunction may result.



Make sure that the main power is turned off before inspection or replacement of parts.
Otherwise, an electric shock, a fire, or a malfunction may occur.



Since the image within the previous observation range is displayed by expanding/contracting for the period from immediately after switching of the observation range from the next image updating, do not use this image for navigation.
If this image is used for navigation, an accident may occur.



In the case of turning on the power under the condition of low temperature, do pre-heat more than 30 minutes.
Otherwise, an operation failure may occur and an accident may occur.



Normally, use the automatic tuning mode.
If you use the manual tuning mode, an accident may be caused by a transmission/reception problem.
Use the manual tuning mode only when you cannot get the best tuning conditions in the automatic tuning mode.



Always keep the sensitivity adjusted to the best condition.
If you raise the sensitivity excessively, the visibility of the target will be reduced by unwanted signals including receiver noise and pseudo image. This may cause an accident.
If the sensitivity is reduced excessively, detection of a target such as a ship or hazardous material will be interrupted.



Adjust the preset of the observation scene according to the oceanographic condition, with the thorough understanding of the features of the radar signal processing setting. The optimum radar performance may not be able to be demonstrated due to the contents of the changed setting or the oceanographic condition at that time.



Information is displayed in addition to a warning or a caution in the alert status area.
Information is used to report operation errors and so on to the users.
Unlike other alerts, no detail display is provided for Information.

CAUTION



Never changes or modifications the equipment by user with not expressly approved method. Otherwise, the party responsible for compliance could void the user's authority to operate the equipment.



This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Glossary

AIO	: Admiralty Information Overlay published by United Kingdom Hydrographic Office (UKHO).
AIS	: Automatic Identification System
AZ	: Acquisition/Activation zone
Anti-clutter rain	: Rain/snow clutter suppression
Anti-clutter sea	: Sea clutter suppression
AZI	: AZImuth stabilisation mode
BCR/BCT	: Bow Crossing Range/Bow Crossing Time
Chart Maintenance	: Software to manage the charts. Imports and updates the charts.
C-MAP MAX*1	: Digital chart data by C-MAP
CTS	: Course To Steer. Heading command.
COG	: Course Over the Ground
C UP	: Course up. Own ship's course is pointed to the top centre of the radar display.
CCRP	: Consistent Common Reference Point. The own ship position, to which all horizontal measurements such as target range, bearing, relative course, relative speed, CPA or TCPA are referenced, typically the conning position of the bridge.
CORREL	: CORRELation
CPA/TCPA	: Distance to the Closest Point of Approach/Time to the Closest Point of Approach.
CTW	: Course Through Water. The direction of the ship's movement through the water
DIST	: Distance
DNV	: Det Norske Veritas
DRIFT	: The current velocity for manual correction or the current speed on the horizontal axis of the 2-axis log is displayed.
EBL	: Electronic Bearing Line
ETA	: Estimated Time of Arrival
ENH	: Enhance
GPS	: Global Positioning System
HDG	: Heading. Ship's heading
HL	: Heading Line
HSC	: High Speed Craft. Vessels which comply with the definition in SOLAS for high speed craft
H UP	: Head up. Own ship's heading line is always pointed to the top centre of the radar display.
IHO	: International Hydrographic Office
IMO	: International Maritime Organisation
IR	: Radar Interference Rejecter
ISW	: InterSWitch unit
LMT	: Local Mean Time
LON	: Longitude
LAT	: Latitude

LP	: Long Pulse
MED	: Marine Equipment Directive. Request standard for standardisation of marine equipment within the EU region
MFD	: The formal name is Multi Function Display. The navigation support functions such as RADAR, ECDIS, CID, and AMS can be executed by switching.
MMSI	: Maritime Mobile Service Identity
MOB	: Man Over Board
MON	: Performance MONitor
MP	: Medium Pulse
newpec	: Electronic navigational chart by Japan Hydrographic Association
NM	: Nautical Mile 1 nm=1852 m
N UP	: The north is always pointed to the top centre of the radar display. (North up)
P0N	: Unmodulated pulse, which is a type of transmission radio wave. While it is a type of radio wave usually used by radars equipped with magnetrons, radio waves with a short pulse length are used also by solid-state radars for short-range detection.
PI	: Parallel Index line
Past positions	: Equally time-spaced past position marks of a tracked or AIS target and the own ship.
POSN	: POSition
PRF	: Pulse Repetition Frequency. The number of radar pulses transmitted each second.
PROC	: PROCess. Radar signal processing function
Q0N	: A type of radio wave with intra-pulse frequency modulation. It is used for solid-state pulse compression radars.
RL	: Rhumb Line
RR	: Range Rings
Relative vector	: A predicted movement of a target relative to own ship's motion
RM	: Relative Motion. A display on which the position of own ship remains fixed, and all targets move relative to own ship.
RM(R)	: Relative Motion. Relative Trails
RM(T)	: Relative Motion. True Trails
ROT	: Rate Of Turn. Change of heading per time unit
Route	: A set of waypoints
RPU	: RADAR Processing Unit
SOG	: Speed Over the Ground
SART	: Search And Rescue Transponder
SET	: The current direction for manual correction or the current speed on the horizontal axis of the 2-axis log is displayed.
SLC	: Serial LAN Interface Circuit
SP	: Short Pulse
STAB	: STABilisation
STW	: Speed Through Water
TCPA	: Time to Closest Point of Approach to own ship

TM	: True Motion. A display across which the own ship and targets move with their own true motions.
To WPT	: To Waypoint (To WPT)
Trails	: Tracks displayed by the radar echoes of targets in the form of an afterglow
Trial manoeuvre	: A graphical simulation facility used to assist the operator to perform a proposed manoeuvre for navigation and collision avoidance purposes
True vector	: A vector representing the predicted true motion of a target, as a result of input of the course and speed of the own ship
TT	: Target Tracking
TTG	: Time To Go. Time to next waypoint.
TXRX	: Transmitter-Receiver Unit
UTC	: Universal Time, Coordinated
VRM	: Variable Range Marker
VDR	: Voyage Data Recorder
WOL	: Wheel Over Line
WPT	: Waypoint
XTD	: Cross Track Distance
XTL	: Cross Track Limit
Activated target	: A target representing the automatic or manual activation of a sleeping AIS target for the display of additional information
Associated target	: A target simultaneously representing a tracked target and a AIS target which are decided as the same
Chirp	: A type of transmission waveform with intra-pulse frequency modulation used by solid-state radars. Its radio wave type is classified as Q0N.
Clutter	: Unwanted reflections on a radar screen, from sea surface, rain or snow.
Display	: Screen displayed on the LCD
Frequency deviation range	: The range of variation of the Q0N frequency used for transmission waves of a solid-state radar. Generally, the greater the frequency deviation range, the higher the resolution in the range direction.
Interswitch Unit	: A device to switch over two or more radar display units and two or more radar antennas
Leg	: Line between two consecutive waypoints
Lost AIS target	: A target symbol representing the last valid position of an AIS target before the reception of its data was lost, or its last dead-reckoned position.
Lost tracked target	: One for which target information is no longer available due to poor, lost or obscured signals.
Power amplifier	: A radio frequency amplifier circuit consisting of semiconductor elements used for solid-state radars. It employs a high frequency, high power FET.
Primary	: Main positioning sensor
Pulse compression	: Correlation processing performed when a transmitted chirp signal is received by a solid-state radar after reflecting off the target. This processing gain enables the radar to have necessary detection capability even when a transmission power is low.

Radar beacon	: A navigation aid which responds to the radar transmission and generates radio wave
Range	: An area of the chart displayed on the screen. Represented by one half of the length of the chart display screen.
Range side lobe	: False image that is generated as a result of pulse compression processing in the solid-state radar when there is a large target such as a large ship in the vicinity.
Reference target	: A fixed target specified to calculate the speed over the ground
Rubber band	: Border that indicates the selected range.
Scale	: The display scale
Sea state	: The average height of the wave expressed by dividing into several classes.
Sleeping AIS target	: A target indicating the presence and orientation of a vessel equipped with AIS
Spot depth	: Numeric representation of depth
SSR: Solid State Radar	: Radar that uses semiconductor elements instead of magnetron, which requires periodic replacement. It is built with a system that ensures necessary detection capability even when a transmission output is low, by using chirp signals with a long pulse length upon transmission and performing pulse compression upon reception

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Notations

Operation notations

Trackball operations on the operation panel are expressed as follows.

Operation	Notation
Click the left button.	Click Example: Click on the object.
Double-click the left button.	Double-click Example: Determine the drawing by double-click.
Click the right button	Click the right mouse button Example: Display the context menu by clicking the right mouse button.

Button notations

The buttons and dialogue boxes on the screen are expressed as follows.

Button type	Notation
Button with button name indicated	Example:  → [AUTO] (automatic) button
Button with an indication other than the button name such as an icon	Shown as follows. Example:  → Day/Night button

Menu notations

A series menus are expressed as follows.

Type	Notation
Operation of menu	[Menu] button → User Map → File Operation
Position of menu	[User Map] – [File Operation]

Contents

PREFACE	i
Safety Cautions	ii
Emergency Measures	iii
Pictorial Indication	x
Precautions upon Equipment Operation	xi
Glossary	xix
 Section 1 Overview of the Function	 1-1
1.1 What is the Radar Image LAN Distribution Function?	1-1
1.2 Features and Restrictions of the Function	1-2
1.3 Configuration	1-5
 Section 2 Common Operations	 2-1
2.1 Turning ON/OFF the Radar Image Distribution Function	2-1
2.2 Checking Scanner Information	2-2
 Section 3 Simple ISW (LAN) Function	 3-1
3.1 Enabling the Function	3-1
3.2 Failure Countermeasures	3-4
3.3 Screen Structure	3-5
3.4 Operation Restrictions Other Than Those on the Top Screen	3-11
 Section 4 Target Tracking	 4-1
4.1 Features and Restrictions	4-1
4.2 TT Function	4-3
4.3 Setting target tracking	4-6
4.4 Track Function	4-17
4.5 Highlighting TT/AIS Symbols	4-19
4.6 Trial Manoeuvring	4-21
 Section 5 Installation Setting and Checking (Supported by Service)	 5-1
5.1 Installation Setting Menu	5-1
5.2 Enabling the Function	5-2
5.3 Setting a Network	5-3
5.4 Checking the Network Communication Status	5-5

Section 6	Failures and After-Sale Services	6-1
6.1	Failure Detection	6-1
6.2	Countermeasures for Failures	6-2
6.3	Troubleshooting	6-3
6.4	After-Sale Services	6-13
Appendix A	Interconnection Diagram for Radar Video LAN Distribution	A-1
A.1	Interconnection Diagram	A-1
A.2	Interconnection Diagram	A-2
Appendix B	Alert List	B-1
B.1	Alarms	B-2
B.2	Warnings	B-2
B.3	Cautions	B-2
B.4	Informations	B-2
B.5	List of Alert Icons	B-3
Appendix C	Menu List and Materials	C-1
C.1	Menu List	C-1
C.2	Software Licence Agreement	C-15
C.3	Font Licence Agreement	C-16
C.4	IPA Font Licence Agreement v1.0	C-17

Section 1 Overview of the Function

1.1 What is the Radar Image LAN Distribution Function?

The radar image LAN distribution function distributes the radar images that are generated by partially processing the signals under the display unit to which a scanner is connected via the dedicated JRC LAN and enables the display of the images on the display unit on the receiving side. This function realizes simple interswitching.

Memo

- Dedicated LAN is necessary to use the radar image LAN distribution function and the function cannot be shared with general-purpose LAN to which a PC is connected or sensor data LAN.
- A STP (Shielded Twisted Pair) cable graded category 5e or higher is necessary as the LAN cable to be used by the radar image LAN distribution function.
- To connect three or more radars or a navigation information display, SENSOR LAN unit NQA-2443A, which is available as a JRC option, is necessary.
- Up to eight display units (masters) that are controlling scanners are allowed to participate in the network.
More than eight display units (slaves) are allowed to participate in the network if they are not controlling scanners even if the scanners are connected.
- A navigation information display is classified as a “display unit without scanner” in the following description.

1.2 Features and Restrictions of the Function

1.2.1 Simple ISW (LAN) function

Memo

The following is the minimum necessary configuration to realize this function.

- Display unit (master) that is controlling a scanner: 1 unit or more
- Display unit (slave) that is not controlling a scanner: 1 unit or more

[Features]

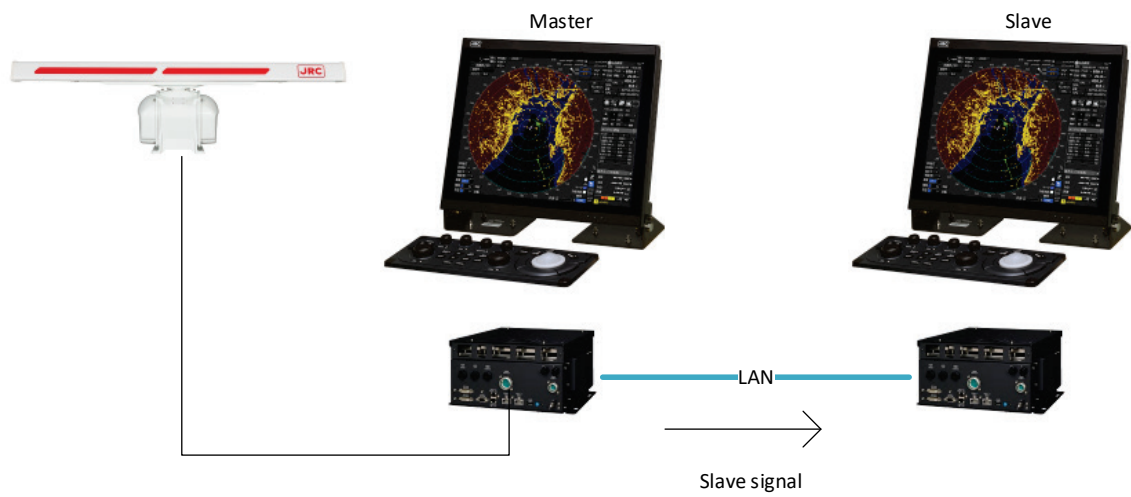
- A display unit that is not controlling a scanner or a display unit without a scanner functions as a slave and a radar that functions as a master can be selected from the radars that participate in the network.

A slave display unit receives radar images that are received by a selected master radar via LAN and can display the images on its own screen.

- A display unit on the slave side can display images with the display range different from that of the radar image distribution source.
- If the system comprises up to two units, the function can be used by connecting two display units with a LAN cable (up to 100m).

[Restrictions]

- A display unit on the slave side cannot perform scanner control (for instance tuning control) and signal processing (for instance, gain, sea clutter suppression, rain and snow clutter suppression, and interference rejection) scanner control of the radar on the master side. These controls are allowed on the display units on the master side only and display units on the slave side follow the settings on the master side.
- Availability of display of echo images on a display unit on the slave side is determined by the display range on the slave side and the transmission pulse rate (pulse width setting) on the master side.
 - This means, for instance, that when SP1 is set on the master side, the display range on the slave side is restricted to the range from 0.125NM - 3NM.
- When the images on the master side can no longer be displayed within the current display range on the slave side due to the change of the transmission pulse rate (pulse width setting) on the master side, the display range on the slave side is automatically changed to the nearest display range within which images on the master side can be displayed.
 - This means, for instance, that when MP1 is set on the master side and the setting of the master side is changed to SP1 while the display range on the slave side is set to MP1, the display range on the slave side is changed forcibly from 6NM to 3NM.

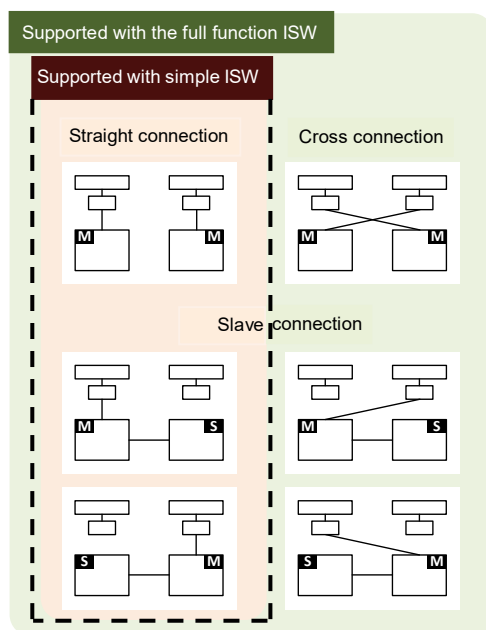


The following three types of interswitches (ISW) are available for the JMR-5400 Series and NCD-2315/2316.

- Full function ISW: NQE-3141-4A/8A *Optional unit
- Simple ISW (analog)
- Simple ISW (LAN) *Function that is described in this manual.

The scope of the function restrictions in the use of each interswitch is shown below.

* **M** in the diagram below indicates a display unit on the master side and **S** indicates a display unit on the slave side.



	Full function ISW NQE-3141-4A/8A	Simple ISW (Analog)	Simple ISW (LAN)
Scanner control by any display unit	✓		
Slave image display by multiply display units	✓		✓*1
Degree of freedom of signal processing adjustments by a display unit on the slave side	✓	✓	
Degree of freedom of the display change by a display unit on the slave side	✓	✓*2	✓*2
Target tracking by a display unit on the slave side	✓	✓	✓*3

*1 A system comprising 3 units or more requires a SENSOR LAN unit NQA-2443A.

*2 Determined according to the pulse width setting under which the display unit on the master side is operating

*3 Displays the tracking result on the display unit on the master side.

1.3 Configuration

The following tables list the components and the manuals.

Component list

Name	Model	Quantity	Remarks
LAN cable	-	1 (minimum)	To be arranged by the shipyard.
			Must be STP (shield twisted pair) cable graded Cat5e or higher
			The number of cables required depends on the number of units to be connected to the network.
SENSOR LAN unit	NQA-2443A	1 (Note: Remarks)	Optional
			A SENSOR LAN unit is required when 3 or more units are connected to the network (No SENSOR LAN unit is required when only up to two units are connected).
			Up to 16 units can be connected to one SENSOR LAN unit.
			The version must be A or higher (NQA-2443 without a version number cannot be used).

Manual list

Comprehensive model name	Title	Code	Remarks
JMR-5400 Series	Instruction manual (Japanese)	7ZPRD0944*1	Included in the package
	Instruction manual	7ZPRD1001*1	This manual
	Radar Image LAN Distribution function (Japanese)		Optional
	Installation Manual (Japanese)	7ZPRD0947*1	Included in the package
	Field Service Manual (Japanese)	7ZPRD0948*1	Optional

*1 A revision symbol (A, B, C ~) is added at the end of each code.

Comprehensive model name	Title	Code	Remarks
NCD-2315/2316 Navigation Information Display	Instruction manual (Japanese)	7ZPRD0946*1	Included in the package
	Instruction manual	7ZPRD1001*1	This manual
	Radar Image LAN Distribution function (Japanese)		Optional
	Installation Manual (Japanese)	7ZPRD0947*1	Included in the package
	Field Service Manual (Japanese)	7ZPRD0948*1	Optional

*1 A revision symbol (A, B, C ~) is added at the end of each code.

Section 2 Common Operations

2.1 Turning ON/OFF the Radar Image Distribution Function

Memo

- Network setting must be performed before enabling the radar image distribution function. The installer is requested to perform the setting by referencing “Section 5 Installation Setting and Checking” of this manual.
- This setting is required for both the display units on the master side that distribute images and the display units on the slave side that receive images.

The following three types of functions of this equipment cannot be used concurrently.

- Radar image distribution function *Function described in this manual
- Small target highlight
- 2nd PPI display (26-inch monitor version only)

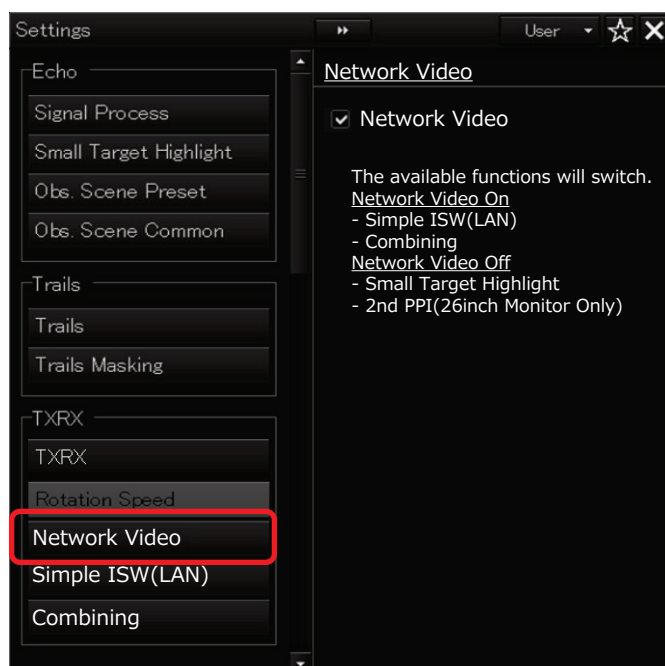
The radar image distribution function must be set to ON to use the radar image distribution function.

- 1 Select the “Menu” button at the top right corner of the screen.**
- 2 Select “Settings”.**
- 3 Select “Network Video”.**
- 4 Set the “Network Video” checkbox to ON.**

Memo

When “Small Target Highlight” is ON, the “Network Video” checkbox cannot be set to ON. “Small target highlight” must be set to OFF according to the instructions on the popup menu.

When the “Network Video” checkbox is ON, “Small Target Highlight” and “2nd PPI” cannot be set to ON. To use any of these functions, the “Network Video” checkbox must be set to OFF.



2.2 Checking Scanner Information

The information monitoring function on the common information window enables the checking of the information of the scanner and the display unit of the radar that are currently connected to the network. Select an optimum radar unit to be used as the master of simple ISW (LAN) on the display unit (display unit on the slave side) that receives images based on the information.

For the details of the common information window, refer to the JMR-5400 Series and NCD-2315/2316 Navigation Information Display Instruction Manual, “2.3 Common Information Window”.

1 Click on the page change button on the initial display window.

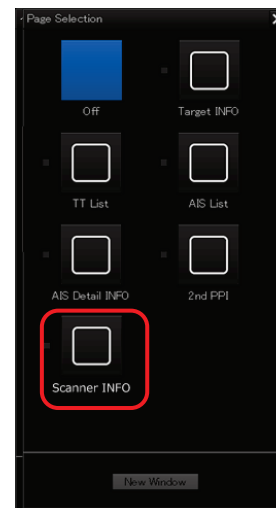
The contents are empty at the initial display.

When the page change button,  is clicked on, a “Page Selection” dialog is displayed.

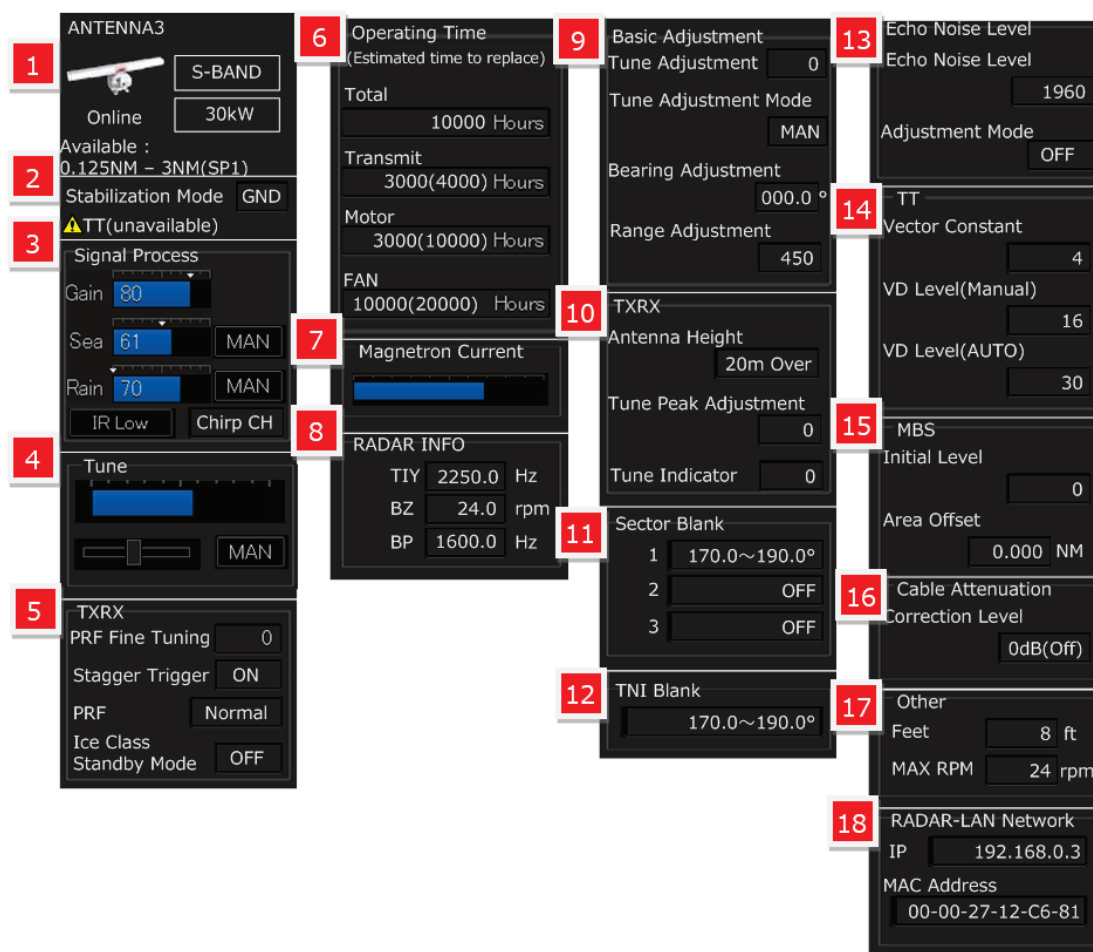
2 Select “Scanner INFO” from the Page Selection dialog.

The following information items are displayed as the “Scanner INFO” list items.

The values that are indicated in the list are examples only and are different from the values under the actual user environment.



Listed items



Contents of the listed items

No.	Item	Contents									
1	Scanner basic information panel	Displays the basic information of the scanner.									
2	Stabilization mode information panel	Displays the stabilization mode information of the display unit.									
3	Signal processing information panel	Displays the signal processing information of the display unit.									
4	Tuning information panel	Displays the information on coarse tuning and fine tuning of the scanner.									
5	Scanner information panel	Displays the information made available by selecting "Settings" → "Scanner".									
6	Operating time information panel	Displays the information made available by selecting "Maintenance Inspection" → "Operating Time".									
7	Magnetron current information panel	Displays the information made available by selecting "Maintenance Inspection" → "Diagnosis" → "Magnetron Current".									
8	Radar information panel	Displays the information made available by selecting "Maintenance Inspection" → "Diagnosis" → "Radar Information".									
9	Basic adjustment information panel	Displays the information made available by selecting "Installation Setting" → "Adjustment" → "Basic Adjustment".									
10	TXRX information panel	Displays the information made available by selecting "Installation Setting" → "Adjustment" → "TXRX".									
11	Sector blank information panel	Displays the information made available by selecting "Installation Setting" → "Adjustment" → "Sector Blank".									
12	TNI blank information panel	Displays the information made available by selecting "Installation Setting" → "Adjustment" → "TNI blank".									
13	Echo noise adjustment information panel	Displays the information on "Installation Setting" → "Adjustment" → "Echo Noise Level".									
14	TT information panel	Displays the information made available by selecting "Installation Setting" → "Adjustment" → "TT".									
15	MBS information panel	Displays the information on "Installation Setting" → "MBS" → "Basic Adjustment".									
16	Cable attenuation correction information panel	Displays the information made available by selecting "Installation Setting" → "Adjustment" → "Cable Attenuation Correction Level".									
17	Other information panel	Displays the information that cannot be classified into any of the items 1 to 6. [Display contents] <table> <tr> <th>Detail item</th><th>Contents</th><th>Value range</th></tr> <tr> <td>Feet</td><td>Antenna length</td><td>Unknown/4ft/6ft/7ft/8ft/12ft</td></tr> <tr> <td>MAX RPM</td><td>Antenna rotational frequency</td><td>Unknown/24rpm/48rpm</td></tr> </table>	Detail item	Contents	Value range	Feet	Antenna length	Unknown/4ft/6ft/7ft/8ft/12ft	MAX RPM	Antenna rotational frequency	Unknown/24rpm/48rpm
Detail item	Contents	Value range									
Feet	Antenna length	Unknown/4ft/6ft/7ft/8ft/12ft									
MAX RPM	Antenna rotational frequency	Unknown/24rpm/48rpm									
18	RADAR-LAN Network information panel	Displays the information made available by selecting "Installation Setting" → "Installation" → "System Configuration Information" → "RADAR-LAN Network".									

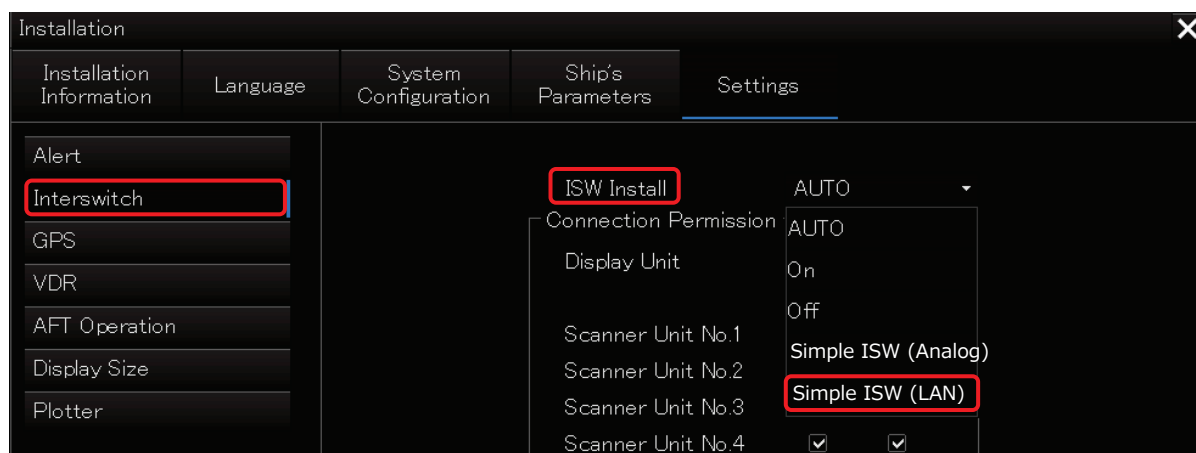
Section 3 Simple ISW (LAN) Function

3.1 Enabling the Function

To use the simple ISW (LAN) function, simple ISW (LAN) must be enabled on the Interswitch menu.

Memo

The ON/OFF setting of the simple ISW (LAN) function is permitted by the installer only.
(Refer to Section 5, Installation Setting and Checking, of this manual.)
Incorrect settings may impose adverse effects on the radar system.



When the simple ISW (LAN) function is enabled, the Interswitch button is displayed on the screen as shown below.

This button is used to switch the scanner mode to the master/slave status and also to display the radar system status.

In the example shown below, one display unit is in the master status that can control the scanner named [ANTENNA1].

When own display unit is a slave unit, [ANTENNA 1 Slave] is displayed. This means that the display unit is in slave status, which cannot control the scanner named [ANTENNA1] and can only receive images sent from the scanner named [ANTENNA1], which are distributed from the display unit on the master side.

This system status is displayed permanently on the top screen while the simple ISW (LAN) function is enabled.

A scanner name can be set from the display unit to which the scanner is directly connected.



3.1.1 Registering the Scanners to Be Used and Registering the Scanners Used by Setting

Simple ISW (LAN) allows the switching of the image source scanner to be used by pressing the Interswitch button.

Since up to 8 scanners can be connected to a network, it takes time to switch a scanner when there are unused scanners.

To reduce the switching time, there is a method for registering/de-registering a scanner in advance that is to be switched whenever the Interswitch button is pressed.

For instance, by this setting, two scanners, "Antenna 1" and "Antenna 8" can be inter-switched with one operation such as "Antenna1 → Antenna 8 → Antenna 1" while, without this setting, multiple operations are required such as "Antenna 1 → Antenna 2 → Antenna 8 → Antenna 1".



3.1.1.1 Registering the scanner of own display unit

Register whether the scanner that is directly connected to own display unit is to be used.

This setting is necessary also for the display unit (navigation information display) that does not have own scanner.

1 Select [Menu] button → [Settings] → [Simple ISW (LAN)].

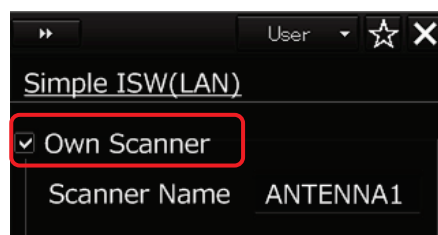
A Simple ISW (LAN) menu is opened.

2 Set the [Own Scanner] checkbox to ON/OFF.

- ON:
Own scanner is registered in the list of scanners to be switched by the Interswitch button.

- OFF:
Own scanner is de-registered from the list of scanners to be switched by the Interswitch button.

When [Own Scanner] is set to OFF, the display unit operates in slave status only.



3.1.1.2 Registering scanners of a different display unit

1 Select [Menu] button → [Settings] → [Simple ISW (LAN)].

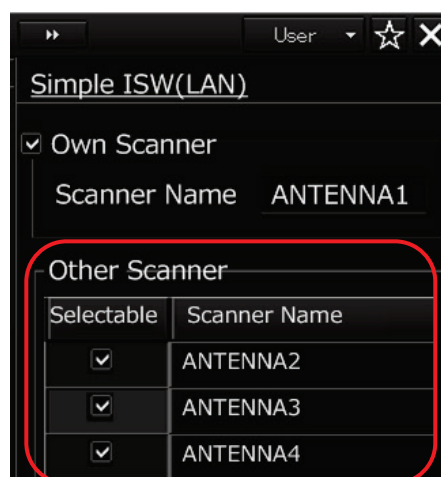
The Simple ISW (LAN) menu is opened.

A list of scanners of the master display units that are currently connected to the network is displayed in the [Other Scanner] list box.

2 Set the [Other Scanner] checkbox to ON/OFF.

- ON:
The scanner that is set to ON is registered in the list of the scanners to be switched by the Interswitch button.

- OFF:
The scanner that is set to OFF is de-registered from the list of the scanners to be switched by the Interswitch button.



3.1.2 Changing a scanner name

The simple ISW (LAN) function allows the change of the scanner name that is directly connected to own display unit among the scanner names that are displayed in the [Other Scanner] list box or Interswitch button.

- 1 Select [Menu] button → [Settings] → [Simple ISW (LAN)].

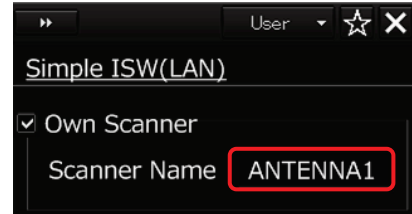
A Simple ISW (LAN) menu is opened.

- 2 Select the [Scanner Name] text box of [Own Scanner].

A software keyboard is displayed.

- 3 Enter a scanner name from the software keyboard.

Up to 8 alphanumeric characters can be entered.



Memo

To identify each scanner, input of a unique name is advisable for a scanner within the same network.

To facilitate identification of a scanner, it is recommended to include the transmission band S/X, transmission output, or antenna length in the name.

3.2 Failure Countermeasures

This section describes the countermeasures for a failure occurring in a part of the equipment that configures the network while the simple ISW (LAN) function is used.

When there are two radars that can control a scanner, the simple ISW (LAN) function allows the use of one radar as a master radar and the display unit of the other radar as a slave for the master radar.

At the failure of a master radar, the display unit on the slave side is able to reset own scanner to an independently operable state any time through manual operation.

* This is restricted only to the case where a scanner is directly connected to the display unit on the slave side. The display unit itself on the slave side must not have any fault.

Memo

When network communication shutdown is detected, the display unit on the slave side automatically resets the scanner that is directly connected to the display unit to an independently operable state.

The following section describes the procedure for resetting a scanner of a display unit in the slave status to an independently operable state.

3.2.1 Procedure for resetting to an independently operable state 1

- 1 When the display unit is in the [Transmit] mode, set it to the [Standby] mode by pressing the [Transmit/Standby] button.**

The Interswitch button cannot be used in [Transmit] mode.

Set the display unit to a [Standby] mode.

- 2 Change the mode of own display unit from a slave status to a master status by pressing the Interswitch button on the screen.**

Transmission becomes available after completion of scanner preheat.

When the mode of the display unit cannot be changed to a master status, the following checkbox may be set to OFF.

[Menu] button → [Settings] → [Simple ISW (LAN)] → [Own Scanner] checkbox

After setting the checkbox to ON, change the mode of the display unit to a master status by using the Interswitch button.

3.2.2 Procedure for resetting to an independently operable state 2

- 1 Select the [Menu] button on the top right corner of the screen.**
- 2 Select the [Settings].**
- 3 Select [Network Video].**
- 4 Set the [Network Video] checkbox to OFF.**

The Interswitch button disappears from the screen and the display unit is set a state where own scanner is used forcibly.

Transmission is enabled after completion of scanner preheat.

3.3 Screen Structure

This section describes the contents of each section of the screen when simple ISW (LAN) function is enabled.

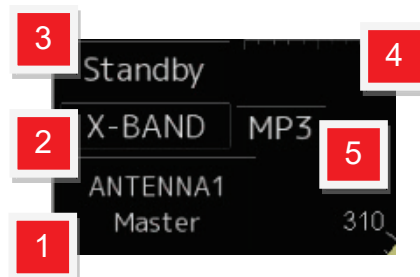
The following sections cover the description of a display unit on the slave side only. The description of a display unit on the master side is the same as that provided in JMR-5400 Series and NCD-2315/2316 Navigation Information Display Instruction Manual.

3.3.1 Radar system information

This section describes the “Radar system information” section at the top left corner of PPI.

Memo

There are some operation restrictions in the “radar system information” section for the display unit on the slave side of simple ISW (LAN).

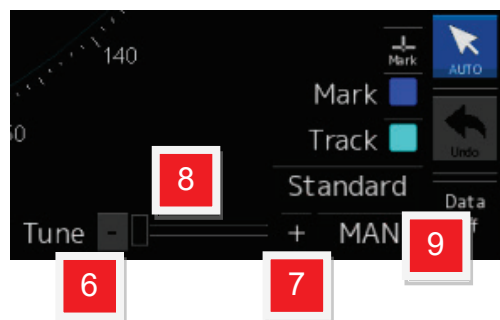


No.	Item	Contents
1	Interswitch (ISW) button	Switches the display unit for the scanner to a Master/Slave status. When there are multiple scanners connected to the network, the scanner to be used as the source of the image that is displayed is switched whenever the button is pressed. [Example] - When two scanners are connected, the mode is switched in the following sequence. [Master]→[Slave]→[Master] - When three scanners are connected, the mode is switched in the following sequence. [Master]→[Slave 1]→[Slave 2]→[Master] [Remarks] Even if the scanner is in the [Standby] mode or the connection disabled state (Offline), the scanner is not skipped from the sequence.
2	Transmission band display label	Displays the transmission band of the scanner that is selected by using the ISW button.
3	Standby/Transmission switching button	Switches to ON/OFF the display of the images received from the scanner that is selected by using the ISW button. A display unit on the slave side cannot control standby/transmission for the scanner. [Remarks] When the selected scanner is in the [Standby] mode or the connection is disabled, the display cannot be set to ON.
4	Tuning bar	Displays the tuning indication value of the scanner that is selected by using the ISW button. A display unit on the slave side cannot perform tuning for the scanner.
5	Pulse width button	Displays the transmission pulse width of the scanner that is selected by using the ISW button. A slave display unit cannot change the pulse width of the scanner.

This section describes the “radar system information” at the bottom right corner of PPI.

Memo

There are some operation restrictions on the radar system information section of a display unit on the slave side of simple ISW (LAN).

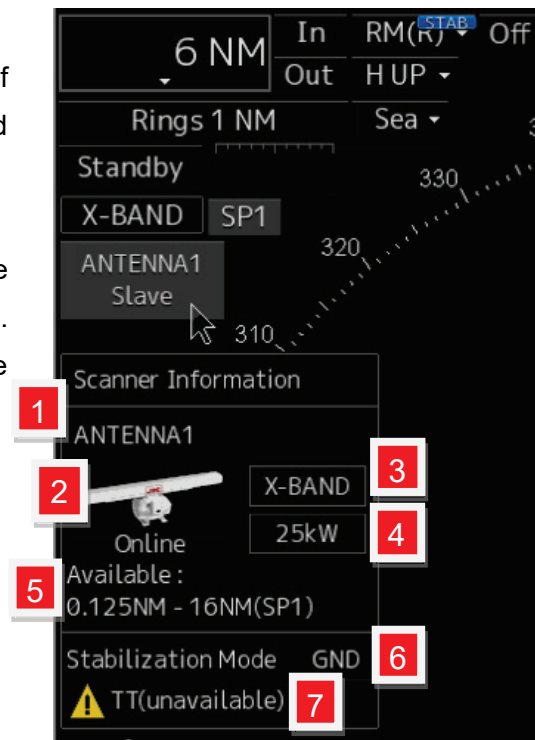


No.	Item	Contents
6	Fine tuning - button	Display is disabled since scanner fine tuning cannot be set for the scanner from the slave display unit.
7	Fine tuning + button	Display is disabled since scanner fine tuning cannot be set for the scanner from the slave display unit.
8	Fine tuning slider	Displays the setting of the fine tuning of scanner that is selected by using the ISW button. Fine tuning cannot be set for a scanner from a slave display unit.
9	Fine tuning mode toggle button	Displays the manual/automatic setting of fine tuning of the scanner that is selected by using the ISW button. The manual/automatic setting of fine tuning for a scanner cannot be changed from a slave display unit.

3.3.2 Scanner information

When own display unit is in slave status, information of the scanner that is currently selected can be checked by placing the mouse over the Interswitch button.

The display contents are updated when the mouse button is pressed after the mouse-over is released. Even if the scanner information is changed, the current display contents are not updated while they are displayed.



No.	Item	Contents
1	Scanner name label	Displays the name of the scanner that is selected by using the ISW button.
2	Transmission status label	Displays the connection status of the scanner that is selected by using the ISW button. [Display contents] Online Available/Online Unavailable
3	Transmission band label	Displays the transmission band of the scanner that is selected by using the ISW button. [Display contents] Unknown/S band/X band
4	Transmission output label	Displays the transmission output of the scanner that is selected by using the ISW button. [Display contents] Unknown/4kW/6kW/10kW/25kW/30kW/50kW/60kW/solid-state
5	Information display label	Displays the contents according to the condition of the transmission status label. ● Transmission status label: Available Displays the pulse width of the scanner that is selected by using the ISW button and available display range for the slave displays unit. [Display contents] Displayable range: "Minimum range" NM – "Maximum range" NM ("pulse width") ● Transmission status label: Unavailable Displays the reason for the connection unavailability. [Display contents] Network failure/Standby/Preheat
6	Stabilization mode panel	Displays the stabilization mode of the display unit on the master side (image distribution side). [Display contents] Ground/Sea
7	Warning label	Displays a warning when the TT (target acquisition) information that is calculated by the display unit on the master side cannot be used due to the inconsistency of the stabilization modes between the display unit on the master side (image distribution side) and the display unit on the slave side (own). [Display contents] TT (unavailable)

3.3.3 Range and mode information

Memo

There are restrictions in the range change operation on a slave display unit of simple ISW (LAN).



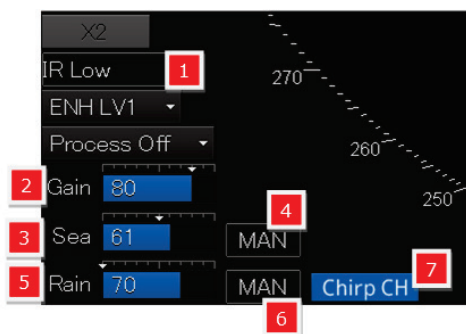
No.	Item	Contents
1	Range change button	Changes the display range. When images can no longer be displayed on the display unit on the slave side due to the display range based on the pulse width on the master display unit, the display range on the display unit on the slave side is forcibly change to the one closest to the source range. [Example] When the displayable range is changed from 3NM to 24NM while the display unit on the slave side is using the 0.125NM range, the range is forcibly changed to 3NM.
2	In button	Reduces the observation range by 1 level. The minimum displayable range on the display unit on the slave side is restricted according to the pulse width setting on the master side.
3	Out button	Increases the observation range by 1 level. The maximum displayable range on the display unit on the slave side is restricted according to the pulse width setting on the master side.
4	Stabilization mode combo box	Switches the stabilization mode to Ground/Sea. The setting of the stabilization mode is shared regardless of whether it is a display unit on the simple ISW (LAN) master side or slave side among the display units that are connected to the network of the radar image distribution function. [Remarks] • The data that is used for the TT true vector operation varies depending on the setting of the stabilization mode. In the Ground setting, COG/SOG is used and in the Sea setting, HDG/STW is used. • The display unit containing a COG/SOG sensor data abnormality cannot share the stabilization mode in the Ground setting.

3.3.4 Radar signal information

Memo

On a display unit on the slave side of simple ISW (LAN), the setting values cannot be changed by using the combo box, button, slider or a dial equivalent to the slider of the “radar signal information” section.

The settings of the display unit on the slave side are forcibly matched to the settings on the master side and only display is enabled for the setting values.



No.	Item	Contents
1	IR adjustment combo box	Displays the setting value of the interference rejection function.
2	Gain adjustment (Gain) slider	Displays the value set by the reception gain dial.
3	Sea clutter rejection (Sea) slider	Displays the value set by the sea clutter rejection dial.
4	Sea clutter rejection mode toggle button	Displays the manual/automatic setting of sea clutter rejection.
5	Rain clutter rejection (Rain) slider	Displays the value set by the rain clutter rejection dial.
6	Rain clutter rejection mode toggle button	Displays the manual/automatic setting of rain clutter rejection.
7	Chirp CH button	Displays the ON/OFF setting of the chirp channel function. ON/OFF of the chirp channel function is displayed only when the connected scanner is a solid state scanner (NKE-1632/NKE-2632).

3.3.5 Other vessel information

Memo

In simple ISW (LAN), a CPA limit value and a TCPA limit value are shared among the display units on a network regardless of whether the display units are on the master side or the slave side.



No.	Item	Contents
1	CPA limit value input box	Changes the CPA limit value. The setting of the CPA limit value of the display units that are connected to a network of the radar image distribution function is shared regardless of whether the display units are on the simple ISW (LAN) master side/slave side.
2	TCPA limit value input box	Changes the TCPA limit value. The setting of the TCPA limit value of the display units that are connected to a network of the radar image distribution function is shared regardless of whether the display units are on the simple ISW (LAN) master side/slave side.

3.4 Operation Restrictions Other Than Those on the Top Screen

There are some restrictions for display units on the slave side of simple ISW (LAN) other than the operation restrictions on the top screen.

The settings regarding the operation restrictions on display units on the slave side follow the setting of display units on the master side except for some items.

3.4.1 Menu operation restrictions

No.	Target menu item	Operation procedure	Operation
1	[Automatic Dynamic Range Control] checkbox	[Settings] → [Signal Processing] → [Automatic Dynamic Range Control] checkbox	Results in invalid display.
2	Image processing switching	[Settings] → [Signal Processing] → [Image processing switching]	Only [OFF/Range fix] can be selected. [Automatic] selection unavailable.
3	[SART] detection checkbox	[Settings] → [Signal processing] → [SART] detection checkbox	Results in invalid display.
4	Scanner	[Settings] → [Scanner]	Results in selection unavailable.
5	Scanner rotational frequency	[Settings] → [Scanner RPM]	Results in selection unavailable.
6	TT test	[Settings] → [TT Test]	Results in selection unavailable.
7	Trial	[TT/AIS] → [Trial]	Results in selection unavailable.
8	Scanner operating time	[Maintenance Inspection] → [Operating Time] → [Antenna Operating Time]	Results in invalid display.
9	Magnetron current	[Maintenance Inspection] → [Diagnosis] → [Magnetron Current]	Results in selection unavailable.
10	Radar information	[Maintenance Inspection] → [Diagnosis] → [Radar Information]	Results in selection unavailable.
11	Vector tracking performance	[Installation Setting] → [Adjustment] → [TT] → [Vector Tracking Performance]	Results in invalid display.
12	Quantization level (manual)	[Installation Setting] → [Adjustment] → [TT] → [Quantization Level (Manual)]	Results in invalid display.
13	Quantization level (automatic)	[Installation Setting] → [Adjustment] → [TT] → [Quantization Level (Automatic)]	Results in invalid display.
14	Sector blank	[Installation Setting] → [Adjustment] → [Sector Blank]	Results in selection unavailable.
15	MBS	[Installation Setting] → [Adjustment] → [MBS]	Results in selection unavailable.

3.4.2 Other restrictions

Memo

Settings on a menu can be displayed on display units on the slave side of simple ISW (LAN), however, some settings are not reflected in the radar operation.

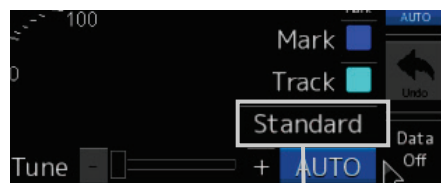
A display unit of the JMR-5400 Series is provided with the “Observation scene selection” button on the screen. By using this button, the target observation scene can be changed and the setting suitable for each sea condition can be retrieved instantly.

(For the details of selection of an observation scene, refer to the JMR-5400 Series Instruction manual and NCD-2315/2316 Navigation Information Display Instruction Manual, “5.3.7 Adjusting to the optimum image”.)

A total of 12 types of observation scenes are available and the settings of each observation scene can be preset. Items that can be preset are divided into 6 setting dialogs and displayed in the editing pane.

(For the details of preset of an observation scene, refer to the JMR-5400 Series Instruction manual and NCD-2315/2316 Navigation Information Display Instruction Manual, “13.4 Preset of observation scenes”.)

For display units on the slave side of simple ISW (LAN), no restrictions are applied to the operations of “Observation scene selection button” and “Observation scene preset”, however, some of the preset contents that are retrieved are not reflected in the radar operation. Most of the settings that are not reflected follow the settings of the display unit on the master side. The use of some functions is completely disabled.



Observation scene selection button



Observation scene items

[Operation procedure]

Open the preset screen of the observation scene by performing the following menu operations.

[Menu] button → [Settings] → [Observation Scene Preset]

The observation scene preset setting contents of the following items are not reflected for slave display units of simple ISW (LAN).

Setting dialog	Setting item	Setting contents
Page 1	Interference rejection	Sets the interference rejection function. The setting on the slave side follows the setting of the master side.
Page 1	Sea	Switches between Manual (MAN) and Automatic (AUTO). The setting on the slave side follows the setting on the master side.
Page 1	Rain	Switches between Manual (MAN) and Automatic (AUTO). The setting on the slave side follows the setting on the master side.

Setting dialog	Setting item	Setting contents
Page 2	"All the setting items"	Select a pulse width of each display range. The display unit on the slave side cannot control the scanner of the display unit on the master side.
Page 3	Automatic dynamic range control	When this item is enabled, the dynamic range is adjusted automatically. The function cannot be enabled from the slave side regardless of the setting on the master side.
Page 4	Image processing switching	Enables specification of a zone and the setting of the image processing mode in the inside zone and outside zone. Display units on the slave side cannot use the setting value "AUTO" regardless of the setting on the master side.
Page 5	Gain offset	Sets a gain offset. The setting on the slave side follows the setting on the master side.
Page 5	PRF	Sets the operation mode of the transmission repetition frequency of the transmitter. Display units on the slave side cannot control the scanners on the display units on the master side.
Page 5	Antenna height	Sets an antenna height. The setting on the slave side follows the setting on the master side.

Section 4 Target Tracking

This Section describes the Target Tracking (TT: referred to as “TT” henceforth) function in the radar image distribution function.

Memo

The description of target tracking itself is omitted from this manual.

For the contents of target tracking, refer to the JMR-5400 Series Instruction manual or “Section 6 Target Tracking and AIS” of the NCD-2315/2316 Navigation Information Display Instruction Manual.

4.1 Features and Restrictions

4.1.1 Common

The following features and restrictions are applied to all the radar display units and navigation information displays that participate in the network of the radar image distribution function regardless of the use or non-use of the simple ISW (LAN) function.

[Features]

- Specific TT operation that is performed on one of the display units that are participating in the network is equally reflected in all the display units that are currently participating in the network. Applicable TT operations and related operations are listed below.
 - Manual acquisition indication
 - Acquisition release indication (individual acquisition release and global acquisition release)
 - Automatic acquisition zone (AZ) specification
 - CPA/TCPA limit setting value
 - Stabilization mode setting (Ground/Sea)

Memo

If the mode is ground stabilisation, SOG/COG is used for own ship's information.

If the mode is sea stabilisation, STW (speed through the water)/HDG (heading) is used for own ship's information.

[Restrictions]

- The display units that are participating in the network cannot release the operation sharing among the display units that are described in [Features]. To release the operation sharing, the network participation itself must be released.
- The presence or absence of the TT option must be consistent among the radars and display units that are participating in the network. When the presence and absence of the option are mixed among the display units on the network, the operation sharing that is described in [Features] is not available.
- The stabilization mode cannot be shared with the display unit with abnormal sensor data.

If almost the same settings (for instance, CPA/TCPA limit setting values) are changed under multiple display units simultaneously, the integrity of the setting values may be lost temporarily among the display units. In this case, the integrity of the setting values among all the display units is regained as the time progresses.

4.1.2 Simple ISW (LAN) Function

In addition to the contents that are described in “4.1.1 Common”, the following features and restrictions are applied to the master side and the slave side (multiple display units may exist on the slave side) of simple ISW (LAN).

[Features]

- Information on the target that is acquired by the display unit that is specified as the master (symbol, vector, and numeric data) can be displayed on the display units on the slave side.
- When receiving the information on the consort ship that is specified by the master, the display unit on the slave side can display the information in highlight mode. In addition, the consort ship that is set on the slave side can be displayed in highlight mode.

[Restrictions]

- When a sensor data abnormality occurs and the stabilization modes do not match between the master side and the slave side (data cannot be shared), true vector display cannot be selected on the slave side. (Relative vector display is allowed.)

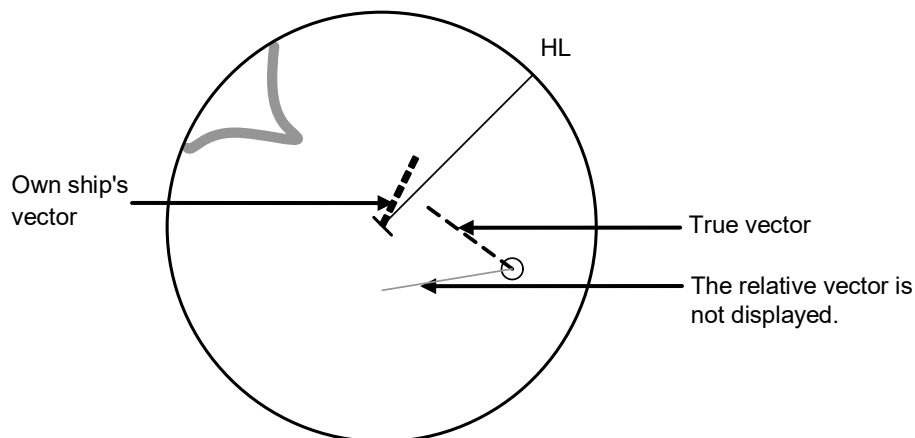
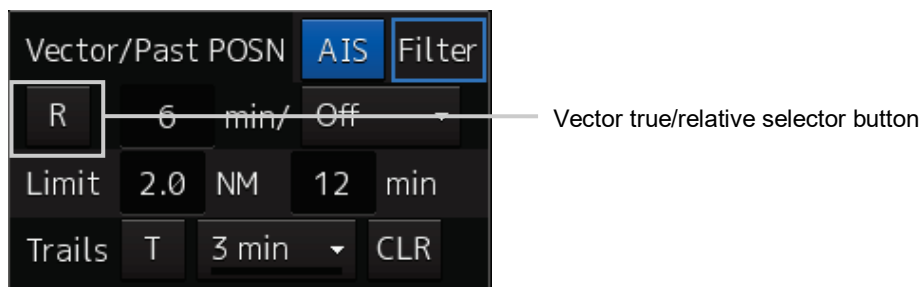
4.2 TT Function

4.2.1 Vector mode

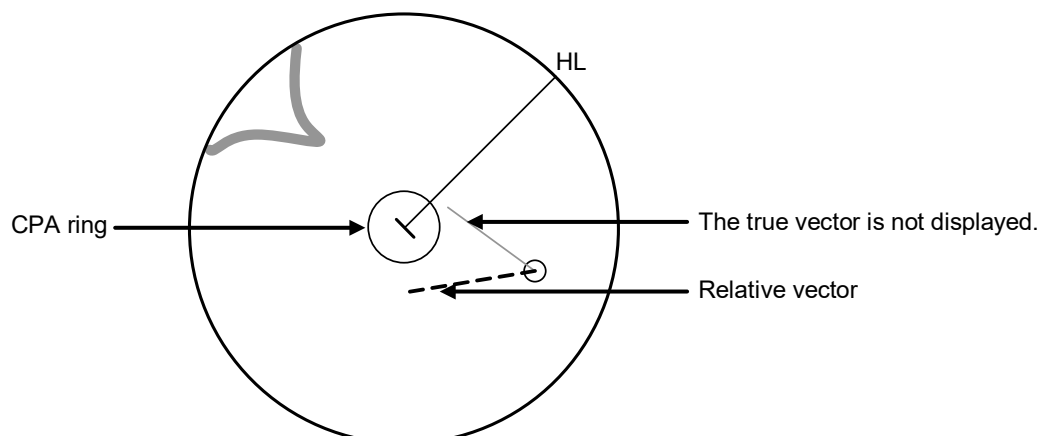
Whenever the true/relative vector mode is clicked on, the mode is switched between [True (T)] and [Relative (R)].

Memo

The true/relative vector mode setting is not shared among the display units that participate in the network.



Example of True Vector Mode



Example of Relative Vector Mode

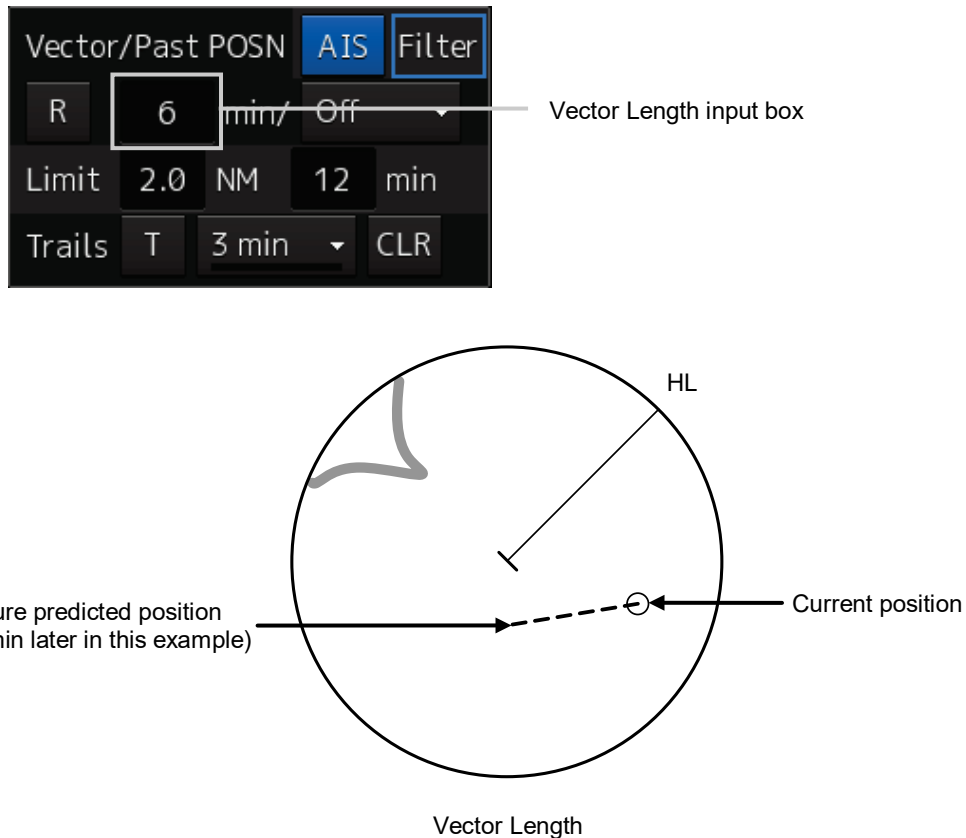
4.2.2 Vector length

The Vector Length of a target is proportional to its speed, and the vector time can be switched in a range of 1 to 120 minutes.

The following figure shows an example in which the Vector Length is set to 6 min, and the tip of the vector represents the target's position expected to reach 6 minutes later.

Memo

The Vector Length setting is not shared among the display units that participate in the network.



4.2.3 Collision decision criteria

Collision decision criteria are set based on CPA and TCPA.

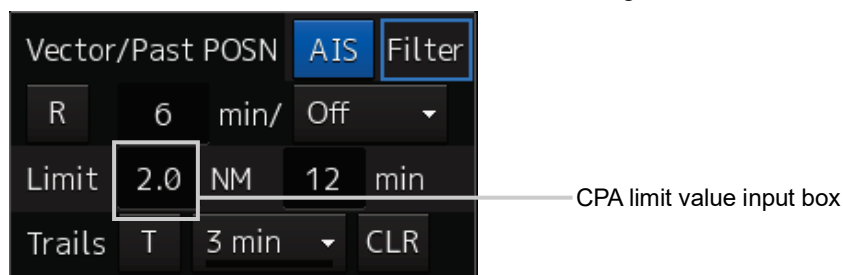
Memo

CPA/TCPA limit values are shared among all the display units that participate in the network regardless of the master-slave relationship.

However, when the value is set to CPA=0NM/TCPA:0min, the limit value is not shared.

4.2.3.1 CPA limit

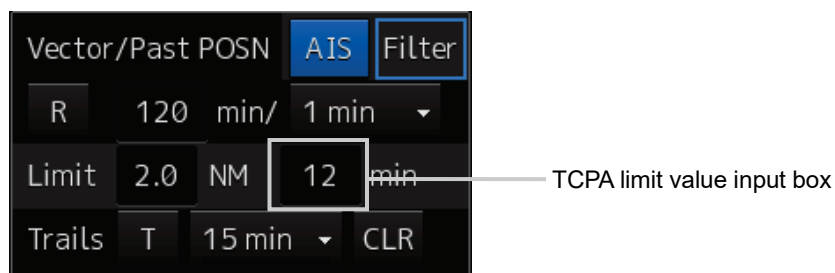
Set the CPA limit in the unit of 0.1 NM within the range from 0.0 NM to 9.9 NM.



4.2.3.2 Setting TCPA limit

- 1 Click on the TCPA limit value input box in the other ship information window.

Set the TCPA limit in the unit of 1 min within the range from 0 min to 99 min.



4.2.4 CPA ring

The CPA ring is rendered as a red circle with the own ship centred and the CPA limit set distance used as the radius.

Memo

The CPA ring display ON/OFF setting is not shared among the display units that participate in the network.

[Operation procedure]

Open the TT/AIS target setting screen by performing the following menu operations.

[Menu] button → 08. Display → 07. Other ship

- 1 Check 01. [CPA Ring (Relative mode only)].

The CPA ring is shown.

Memo

When True is specified for the vector mode, [CPA Ring (in Relative Vector mode only)] cannot be selected.

4.3 Setting target tracking

The Target Tracking function automatically tracks the acquired targets and records and displays the course and speed of the targets as vector. Alerts can also be output based on the set collision decision criteria (CPA and TCPA).

4.3.1 Target acquisition

The methods for acquiring targets include AUTO Acquisition (automatic acquisition) mode and ACQ MANUAL (manual acquisition) mode.

Both modes can also be used concurrently.

Memo

As the common content between automatic acquisition and manual acquisition, the information as to whether the number of targets that are being tracked reached the maximum number (30 targets or 100 targets when the TT option is available) is shared among all the display units that participate in the network regardless of the master-slave relationship.

Therefore, when the number of targets reached the maximum (for instance, 30 targets) in one of the display units, the system assumes that this number of targets has been reached in all the display units even if the numbers have not reached the maximum in any other display unit (for instance, 10 targets).

The constraints that are applied to the acquisition operations after the number of targets reached the maximum are described below. However, the same constraints are applied regardless of the participation or non-participation in the network.

[Constraints]

- If manual acquisition is made in a state in which the number of targets being tracked has reached the maximum number of targets, the target with the lowest danger level among the targets that have been captured thus far automatically is erased successively.
- When all the targets that are tracked are for manual acquisition and the number has reached the maximum number of targets, no further acquisition is allowed.

4.3.1.1 AUTO acquisition (automatic acquisition) mode

By setting up and enabling the automatic acquisition/activation zone (AZ), targets intruding into the AZ can automatically be acquired/tracked and at the same time, a target acquisition alarm can be issued.

Memo

The setting for enabling/disabling automatic acquisition/activation zone (AZ) is shared among all the display units that participate in the network regardless of the master-slave relationship.

To enable automatic acquisition/activation zone (AZ)

[Operation procedure]

Open the target acquisition alarm setup screen by performing the following menu operations.

[Menu] button → 09. Alert → 02. Target acquisition alarm

- 1 Enable the automatic acquisition/activation zone (AZ) by checking 01. [Use AZ1] or 02. [Use AZ2].**

Automatic acquisition/activation zone (AZ) includes AZ1 and AZ2.

To enable AZ1, check 01. [Use AZ].

To enable AZ2, check 02. [Use AZ].

To disable automatic acquisition/activation zone (AZ)

[Operation procedure]

Open the target acquisition alarm setup screen by performing the following menu operations.

[Menu] button → 09. Alert → 02. Target acquisition alarm

- 1 Disable the automatic acquisition/activation zone (AZ) by clearing the check of 01. [Use AZ1] or 02. [Use AZ2].**

AZ can be enabled or disabled by using the [AZ] key on the operation unit also.

4.3.1.2 ACQ manual (manual acquisition) mode

Memo

A manual acquisition indication (instruction for acquiring a target of the specified position) is shared among all the display units that participate in the network regardless of the master-slave relationship.

For instance, when the network involves display units A and B and manual acquisition operation is performed for any target by display unit A, manual acquisition processing is performed by display unit B also for any target of the same position from own ship. However, tracking may not be possible depending on the gain of the display unit and other processing adjustments.

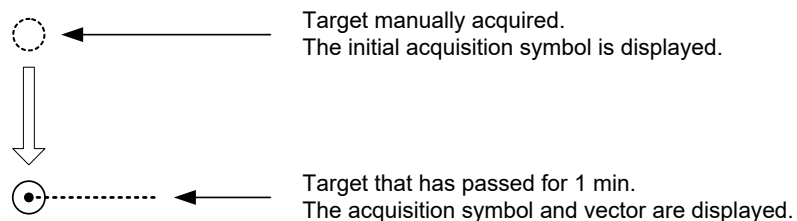
It must be noted that only the [Manual acquisition indication] is shared, not the tracking contents.

To acquire the tracked target in the manual acquisition mode

- 1 Set the cursor mode to the AUTO mode.**
- 2 Place the cursor on the target to be acquired and then click on.**

The target is acquired and the initial acquisition symbol is displayed.

The vector is displayed within 1 minute.

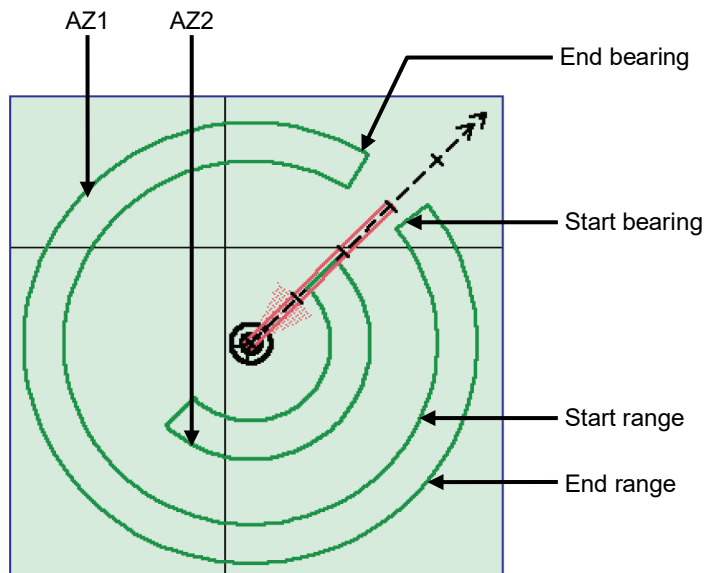


4.3.2 Setting up the automatic acquisition/activation zone (AZ)

Auto acquisition/activation zone has the shape of sector set up according to the angle and distance as shown in the following figure.

Memo

The setting of automatic acquisition/activation zone (AZ) is shared among all the display units that participate in the network regardless of the master-slave relationship.



Example of AUTO acquisition/activation zone (AZ)

AUTO acquisition/activation zone (AZ) is set up using the following three methods.

Here, the explanation covers (1) only. For other details, refer to the JMR-5400 Series Instruction manual or “6.5.2 Setting an automatic acquisition/activation zone (AZ)” of the NCD-2315/2316 Navigation Information Display Instruction Manual.

- (1) Set by selecting [Alert] - [Target acquisition alarm].
- (2) Use the cursor.
- (3) Use the EBL/VRM dial.

4.3.2.1 Using [Target acquisition alarm] dialogue box in the [Alert] menu

[Operation procedure]

Open the target acquisition alarm setup screen by performing the following menu operations.

[Menu] button → 09. Alert → 02. Target acquisition alarm

- 1** To set up AZ1, select the 01. [Use AZ1] check box. To set up AZ2, select the 02. [Use AZ2] check box.
- 2** To set up [Use AZ1], click on the 03. [1] tab. To set up [Use AZ2], click on the 04. [2] tab. Their respective setting items are displayed.
- 3** Select 06. [Start Bearing], 07. [End Bearing], 08. [Start Range], and 09. [End Range] of AZ and enter the information from the numeric value input keyboard.

4.3.3 Tracked target information display

Memo

The setting of tracked target information is not shared among the display units that participate in the network.

Displaying numerical value data

- 1 Set the cursor mode to the AUTO mode.**

- 2 Click on the target of tracking whose numerical value is to be displayed.**

Numeric data for the specified target is displayed in the information monitoring window.

The symbol display is changed to "⊙". The target data will remain on the radar display until the target is lost and its vector disappears, or until another target is designated.

If a target with the mark "⊙" is designated, only its true bearing and range appear until its vector appears.

Cancellation of numeric data display

- 1 Set the cursor mode to the AUTO mode.**

- 2 Place the cursor on the tracked target to cancel numeric value display and then click on.**

The numeric value disappears.

4.3.4 Erasing unwanted tracked targets

If the vectors and symbols of the unwanted tracked targets remain displayed, the radar screen may become difficult to view. In such a case, unwanted tracked targets can be erased from the radar screen using the following method.

Memo

Erasing of a tracked target (acquisition release indication) is shared among all the display units that participate in the network regardless of the master-slave relationship.

To erase one target

- 1 Place the cursor on the tracked target to be cancelled and then right-click.**
The context menu is displayed.
- 2 Click on the [Cancel TT] on the context menu.**
The vector symbol of the tracked target disappears and only the radar image remains.

To erase multiple targets

- 1 Place the cursor on the tracked target to be cancelled and then right-click.**
The context menu is displayed.
- 2 Click on the [Cancel TT mode] on the Context menu.**
The cursor changes to the selection cursor.
- 3 Place the cursor on another target to be cancelled and then click on.**
- 4 Repeat the operation in step 3.**
The vector symbols of the clicked tracked targets disappear and only the radar image remains.
Finish the cancel TT mode by clicking the right mouse button.

To erase all targets

- 1 Place the cursor on the tracked target to be cancelled and then right-click.**
The context menu is displayed.
- 2 Click on the [Cancel All TT] on the context menu.**
The vector symbols of all the tracked targets disappear and only the radar image remains.

Memo

If all targets are cancelled, the tracking of all targets will stop; thus, automatic acquisition or manual acquisition must be performed newly. Unless necessary, do not cancel all targets.

4.3.5 Displaying target ID No.

A target ID number is a value displayed beside the acquisition symbol when a target is acquired.

A target ID number 1 to 30 is automatically assigned to each target in acquisition order. Once a target ID number is assigned, it identifies the target until the target is lost or the target acquisition is cancelled.

Memo

- The ID number is always displayed for only targets with which numeric data is displayed.
- The target ID number display setting is not shared among the display units that participate in the network.

[Operation procedure]

Open the TT/AIS target setup screen by performing the following menu operations.

[Menu] button → 08. Display → 07. Other ship

1 Select an ID number display method from the 10. [TT target number] list.

- 01. [Off]: Hides target ID numbers.
- 02. [On]: Displays target ID numbers.
- 03. [TT track]: Displays ID numbers of only targets set for track of other ships.
- 04. [Ship's name]: If the ship's name has been input in the [TT target information] dialogue, the ship's name is displayed. If the ship's name has not been input, the identification number is displayed.

Memo

If there are many tracking targets and their symbol display is confusing, set Target Number Display to off to view the radar display easily.

4.3.6 Editing tracked target properties

The tracked target property such as tracked target ID name can be arbitrarily edited for individual tracked targets acquired.

The [TT target information] dialogue is used for editing.

Memo

- Tracked target property editing is not shared among the display units that participate in the network.
- The setting is necessary in individual display units even if they are in the simple ISW (LAN) master-slave relationship.

4.3.6.1 Adding tracked target ID name

An ID name can be added to the tracked target acquired.

1 Right-click the cursor on the tracked target.

The context menu is displayed.

2 Click on [Property] on the context menu.

The [TT target information] dialogue box appears

3 Click on the [Ship's name] input box or ▼.

The input method varies with the selected item.

: Enter a new name.

When selected, the ship name (Name) entry window opens.

Enter a ship name of up to 15 characters.



: The names registered as templates are displayed in a list.

Select a name from the list.

To register ship names as templates

1 Click on the [Edit Template] button in the [TT target information] dialogue.

The [Template] dialogue is opened.

2 Enter the ship name to be registered as a template in the input text box.

3 Click on the [Register] button.

The entered ship name is registered in the template list.

4 Repeat steps 2 and 3, and register necessary ship names.

To cancel unwanted ship name registration

1 Check the ship's name whose registration is to be cancelled on the template list in the [Template] dialogue.

2 Click on the [Delete] button.

The checked ship name is deleted from the template list.

4.3.6.2 Setting track colour of tracked target

The track colour of tracked target is set.

1 Right-click on the cursor at the tracked target.

2 Click on the [Property] on the context menu.

The [TT target information] dialogue box appears.

3 Select a track colour from the [Other ship's track colour] list.

The selection items are as follows.

Off, No.1-Colour, No.2-Colour, ... , No.10-Colour, No.11 to 20-Colour, No.21 to 30-Colour, ..., No.91 to 100-Colour

* In [Colour], the track colour name that was set by selecting menus, [Display] - [Other ship's colour] - [Plot] tab is displayed.

4.3.7 Setting target for which ground is fixed to a reference target

By tracking the target for which ground is fixed and setting it to a reference target, the speed of the own ship can be obtained and displayed.

Memo

- The reference target setting is not shared among the display units that participate in the network.
- When the use of a reference target is set in the display unit on the master side of simple ISW (LAN), the use of TT by the display units on the slave side is disabled.
- A reference target cannot be enabled by the display units on the slave side of simple ISW (LAN).

WARNING



The reference target function is to be used if the own ship's speed cannot be displayed normally due to trouble such as a speed sensor malfunction. Do not use the reference target function except in emergencies.



Do not set as a reference target a large radar echo such as a land target. The vectors of the speed and other tracking targets will not be displayed correctly and may cause an accident.



Do not set as a reference target a sailing ship. The vectors of the speed and other tracking targets will not be displayed correctly and may cause an accident.



Do not use own speed based on reference target tracking for relative speed and CPA/TCPA calculation of AIS targets because the response of own speed is slower than actual own ship's speed change and it may cause a big error on the collision judgement of AIS targets.

- 1 Acquire the ground-fixed target.**
- 2 Click the right button on the acquired target.**
A context menu is displayed.
- 3 Click on [Property] in the context menu.**
The [TT target information] dialogue is opened.
- 4 To set the target to a reference target, check [Other ship's reference].**
To not set the target to a reference target, uncheck [Other ship's reference].
- 5 Select [TGT] from the COG/SOG source combo box in the own ship information at the top right corner of the screen.**
The ship speed is automatically calculated from the reference target and is displayed as the COG/SOG speed.
When a reference target is set, the symbol display changes to “ ”.

4.3.8 Operation test for target tracking

CAUTION



Simulation is a function for determining if the target tracking function is working correctly or not. Accordingly, this function should be used only to check for the target tracking function operation.

In particular, if this mode is used during navigation, a pseudo target will appear on the radar screen and cannot be easily identified from the real target. This may cause such an accident as collision. Do not use this mode during the navigation.

The following operation test and checking are performed to check the operation of target tracking as required. The [TT Test] dialogue is used for operation.

Memo

- The operation test setting of the target tracking function is not shared among the display units that participate in the network.
- An operation test for the target tracking function cannot be set in the display units on the slave side of ISW (LAN).

[Operation procedure]

Open the Target Tracking Test dialogue by performing the following operations.

[Menu] button → 10. Settings → 13. TT Test

4.3.8.1 [Test Video]

Test Video is used to check whether the video signals under target acquisition and tracking are input to and processed in the target detection circuit normally.

Normally, it is sufficient to just check that the VDIN of the Test Video is displayed.

Memo

- Test Video may not be displayed for a target which is not yet acquired or tracked. Test Video may not be displayed either if the [Gain] dial or [Sea Clutter] dial is not properly adjusted.
- The Test Video setting cannot be shared among the display units that participate in the network.
- Test Video cannot be set in the display units on the slave side of simple ISW (LAN).
- Even if Test Video is enabled on the master side, Test Video images cannot be checked on the display units of the slave side of simple ISW (LAN).

Enabling Test Video

1 Select test video to be displayed from the 01. [Test Video] combo box.

The selected test video is displayed in the rearward of the radar image.

If any target displayed clearly in the normal radar display is not displayed in the Test Video mode, the target detection circuit of the Target Tracking unit may have a trouble.

To cancel test video

1 Select 01. [Off] from the 01. [Test Video] combo box.

Test Video display turns off.

4.3.8.2 [Simulator]

Pseudo-targets are generated in certain known positions to check whether the target tracking units are operating normally. Since the pseudo-targets move depending on known parameters, the values for these pseudo-targets can be compared with the known value if the pseudo-targets are acquired and tracked, and displayed. Thus, it can be checked if the system is operating normally.

Memo

- The simulator setting is not shared among the display units that participate in the network.
- Display units on the slave side of simple ISW (LAN) cannot execute a simulation mode.
However, when simulation mode is executed on the master side, the simulated image is displayed on the slave side also.

Enabling a simulator

- 1 Click on the Standby/Transmit selector button for radar system information to place the radar in the standby state.**

The button indication changes to [Standby].

- 2 Select simulator scenario from the 02. [Simulator] combo box.**

List of target tracking simulator/scenario

Memo

When the simulator is operating, set 0° as the heading bearing

- 3 Click on the Standby/Transmit selector button to place the radar in the transmission state.**

The button indication changes to [Transmit].

The simulator turns on, the pseudo-target is generated, and the letter "X" appears on the lower side of the radar screen and near the pseudo-target to indicate that simulation mode is being executed.

Memo

When a simulation mode is executed on the master side of simple ISW (LAN), character "X" is displayed on the slave side also.

To cancel simulation

- 1 Click on the Standby/Transmit selector button to place the radar in the standby state.**

The button indication changes to [Standby] to enter transmission preparation state.

- 2 Select 01. [Off] from the 02. [Simulator] combo box in the [TT Test] dialogue.**

TT Simulator display turns off.

4.3.8.3 [Gate Display]

The gate displays an area monitoring a target using the TT function. This equipment allows the gate size to change automatically according to target range and size. The gate size can be checked using the following function.

Memo

- The gate display setting is not shared among the display units that participate in the network.
- Gate Display cannot be set in the display units on the slave side of simple ISW (LAN).
- Even if Gate Display is enabled on the master side, Gate Display cannot be checked on the display units on the slave side of simple ISW (LAN).

1 Select the 03. [Gate Display] checkbox.

When [Gate Display] is selected, the gate is displayed.

When [Gate Display] is cleared, the gate is not displayed.

2 Set the cursor mode to the AUTO mode.

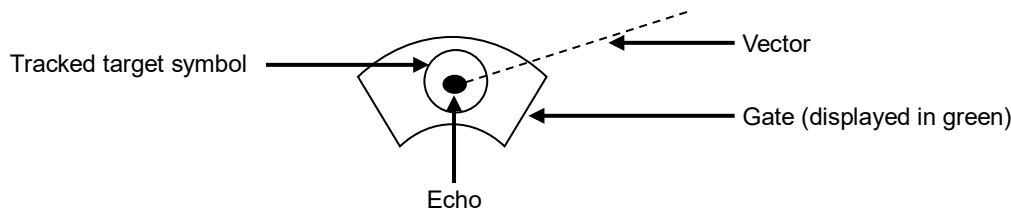
3 Click on the target of tracking whose numerical value is to be displayed.

Numeric data for the specified target is displayed in the information monitoring window.

The numeric value for the target is displayed, and the gate is displayed in green around the target tracking symbol.

Memo

The Target Tracking can display the gate of two targets simultaneously.



4.3.8.4 [Status display]

The status of the TT function is displayed.

Memo

Statuses cannot be displayed on the display units on the slave side of simple ISW (LAN).

1 Check the display of [Status display].

[Vector constant]	: Vector response
[VD level mode (manual)]	: Using quantization level on manual acquisition
[VD level (manual)]	: Quantization level on manual acquisition
[VD level (automatic)]	: Quantization level on automatic acquisition
[Gate size]	: Size of gate used for tracking
[Tracked]	: Number of targets currently acquired

4.4 Track Function

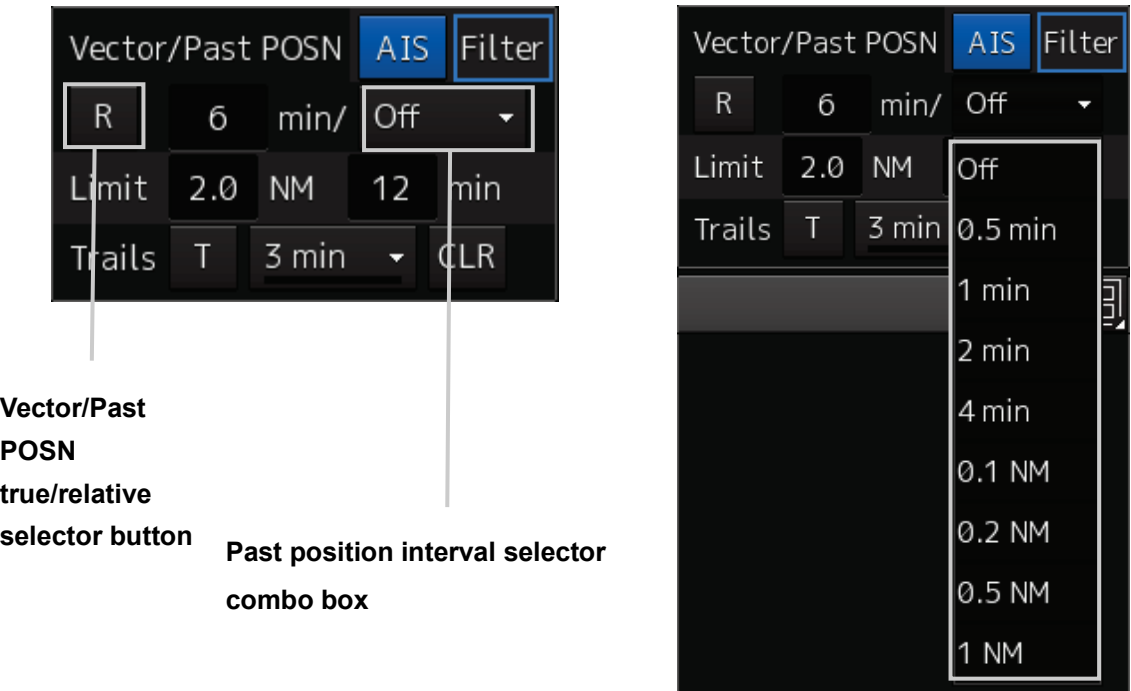
4.4.1 Setting the past position

The past position function can display up to ten past positions of a target under tracking. The past position display interval can be set to specified time intervals of 0.5, 1, 2, or 4 minutes, or specified range intervals of 0.1, 0.2, 0.5, or 1 NM.

Memo
The Past Position setting is not shared among the display units that participate in the network.

- 1 Select the track display interval time from the past position interval selector combo box for other ship information at the upper right of PPI.

The past position is set.



[Off]: Tracks are not displayed.
[Numeric]: Tracks are displayed at intervals of the specified value.

When [Off] is displayed, the track display function is turned off.
The track mode operates in conjunction with the vector mode, and a true or relative track is displayed.
In relative vector mode, the relative tracks of the target are displayed.
In true vector mode, true tracks that are calculated from the relative bearing, range, own ship's course, and speed are displayed.

Memo
When the target is acquired, past position of traced target is start plot. When the AIS target is displayed, past position of AIS target is start plot. If the past position plotted time or range is short, the indicated past position duration may not have achieved the specified time or range.

4.4.2 Setting the other ship's tracks

This function makes settings for the tracks of tracked targets.

This equipment can display the tracks of up to 30 target ships.

Memo

A composite mode must be applied to display other ship's tracks.

Although other Ship's Tracks can be set in radar mode, the images cannot be displayed.

Memo

The Other Ship's Tracks setting is not shared among the display units that participate in the network.

The following other ship's tracks setting items are available.

- Tracked target colour setting
- Other ship's tracks function ON/OFF setting
- Other ship's tracks display ON/OFF setting
- Other ship's tracks colour setting
- Other ship's tracks display interval setting
- Erasing other ship's tracks
- Saving and retrieving other ship's tracks

For the details, refer to the JMR-5400 Series Instruction Manual or "6.8.2 Setting other ship's tracks" of the NCD-2315/2316 Navigation Information Display Instruction Manual.

4.5 Highlighting TT/AIS Symbols

TT/AIS symbols can be highlight them.

This section describes highlighting display of TT symbols only. For AIS symbol highlighting display, refer to the JMR-5400 Series Instruction Manual or “6.12 Highlighting TT/AIS Symbols” of the NCD-2315/2316 Navigation Information Display Instruction Manual.

[Operation procedure]

Open the highlighting setup screen by performing the following menu operations.

[Menu] button → 06. TT/AIS → 04. Other ship's highlighting display

4.5.1 Highlighting TT/AIS Symbols by specifying search criteria

Memo

The condition setting relating to TT/AIS symbol highlighting display is not shared among the display units that participate in the network.

1 Check 01. [Highlight according to the following search criteria].

2 Check the items you want to make highlighted.

Each checkbox item is operable and selectable with the ten-key No.

02. [TT/AIS] tab

No.	Item
04	Transit Direction
06	TCPA (MIN-MAX)
09	CPA (MIN-MAX)
12	SOG (MIN-MAX)
15	Same Fleet

3 Specify search conditions for the checked items.

02. [TT/AIS] tab

No.	Item	Setting
05	Transit Direction	Select a transit direction to be highlighted from the combo box. 01. North run, 02. North East run, 03. East run, 04. South East run, 05. South run, 06. South West run, 07. West run, 08. North West run, 09.Parallel run, 10. Reverse run
07	TCPA (MIN)	Specify the minimum and maximum values in the range between 1 to 99 min.
08	TCPA (MAX)	
10	CPA (MIN)	Specify the minimum and maximum values in the range between 0.1 to 9.9 NM.
11	CPA (MAX)	
13	SOG (MIN)	Specify the minimum and maximum values in the range between 0.0 to 1022.0 kn.
14	SOG (MAX)	
16	Consort Ship (link)	Select a consort ship to be highlighted by linking. For setting the consort ship preset, refer to the next page, “Setting Consort Ship Preset”.

4.5.2 Setting consort ship preset

As described in “4.5.1 Highlighting TT/AIS Symbols by specifying search criteria”, a consort ship can be specified at the highlighting display of TT symbols.

Memo

- The consort ship preset contents that are set in the display unit on the master side of ISW (LAN) of simple ISW (LAN) are shared among the display units on the slave side among the display units that participate in the network
- Separate from the consort ship preset setting that is shared, consort preset for 20 ships can be set independently in the display units on the slave side. In this case, the consort ship preset contents that are set on the slave side are not shared with the display unit on the master side.
- The consort ship preset setting that is set on the AIS tab is not shared.

[Operation procedure]

Open the consort ship preset setup screen by performing the following menu operations.

[Menu] button → 10. Settings → 12. Consort ship preset

01. [TT] tab

No.	Setting items	Setting contents
-	No.	Displays the consort ship number. The number is between 1 and 20.
-	Target number	Specify the Target ID of the TT that is specified for the consort ship. When the TT option is available, a number between 1 and 100 can be specified and when the TT option is not available, a number between 1 and 30 can be specified.
03	Delete	Deletes the Target ID of the selected consort ship number. The Target ID to be deleted can be selected on the checkbox next to the number.

02. [AIS] tab

No.	Setting items	Setting contents
-	No.	Displays the consort ship number. The consort ship number is between 1 and 20.
-	MMSI	Specify the MMSI that is specified for the consort ship.
03	Delete	Deletes the MMSI of the selected consort ship number. The MMSI to be deleted can be selected on the checkbox next to the number.

4.6 Trial Manoeuvring

Memo

- Trial manoeuvring is to simulate own ship's course and speed in the conditions that the course and speed of a target ship are unchanged as they are. The situation is different from any actual ship manoeuvring, so set values with large margins to CPA Limit and TCPA Limit.
- During trial, the CPA/TCPA (TT) alarm cannot be approved. To approve the alarm, terminate the trial.

Memo

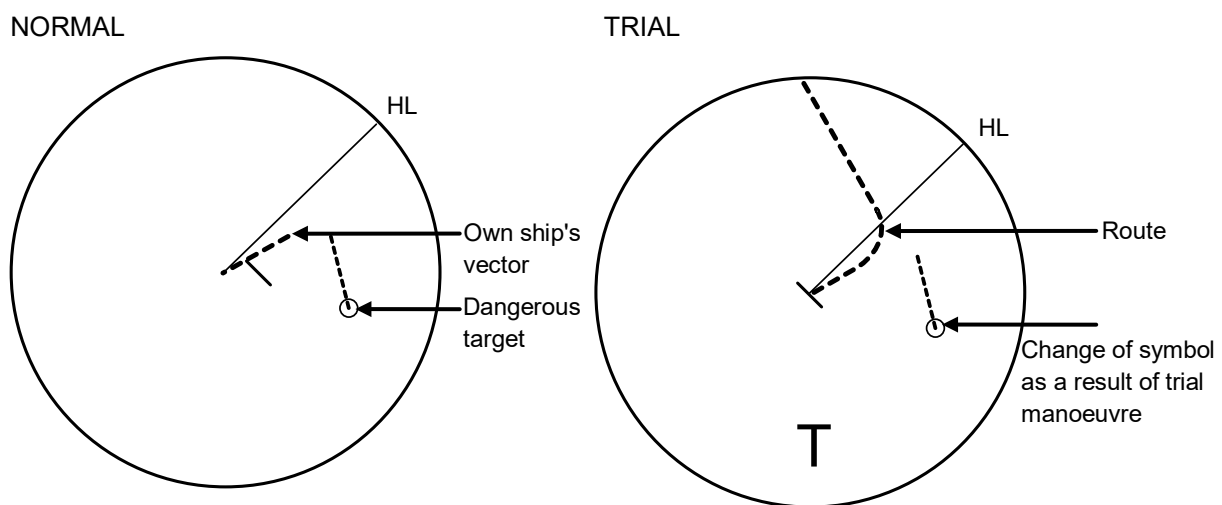
- The setting of trial manoeuvring is not shared among the display units that participate in the network.
- Trial manoeuvring and its setting cannot be performed in the display units on the slave side of ISW (LAN). Manoeuvring by the display unit that directly controls the scanner is necessary to perform a trial.

4.6.1 Outline of trial manoeuvring

The trial manoeuvring is the function of simulating own ship's course and speed for collision avoidance when a dangerous target appears. When the own ship's course and speed are entered in manual mode, the trial manoeuvring function checks if pre-acquired or pre-activated targets are dangerous.

Trial manoeuvring in the true vector mode

If the own ship's vector mode is the true vector mode, the own ship's vector is calculated according to the own ship's trial speed and trial course as well as the own ship's dynamic characteristic, and the result is displayed as the own ship's expected course. The following figures show an example of veering to the left: the dangerous target at front right has changed to a safe target as a result of trial manoeuvre. The tracked target information indicates the current CPA and TCPA values regardless of the result of simulation.

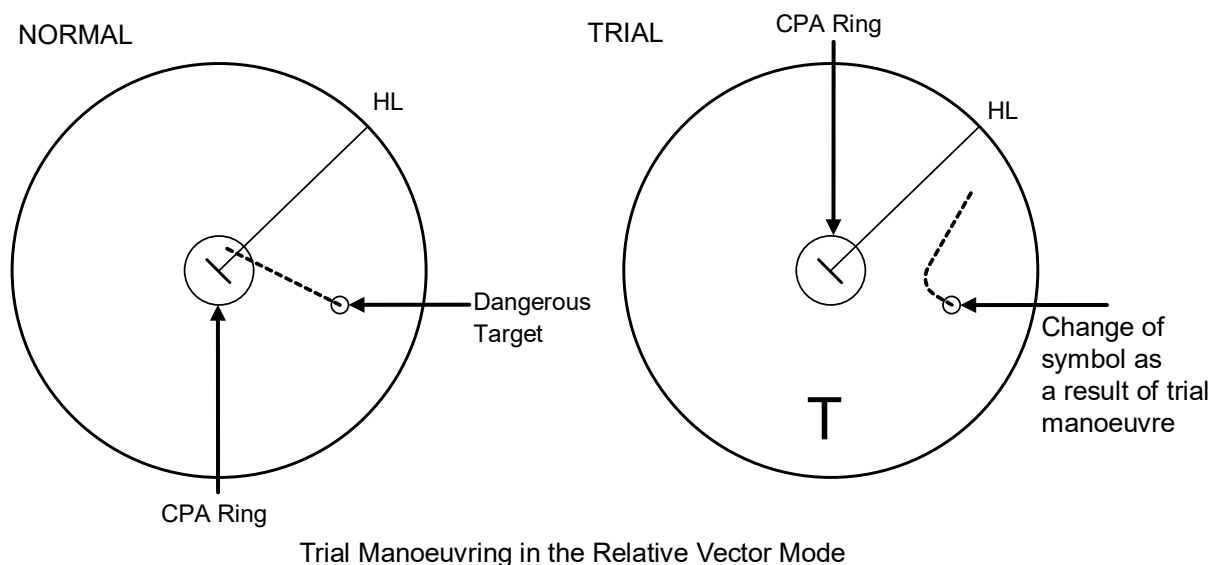


Trial Manoeuvring in the True Vector Mode

Trial manoeuvring in the relative vector mode

If the own ship's vector mode is the relative vector mode, an expected relative course of the target is displayed in relation to the own ship's expected course when in the true vector mode.

In the following [Normal] diagram, the target vector is a dangerous target that cuts across the CPA ring.



The [Trial] diagram that is shown above shows that the relative vector of the target has changed as shown in the Figure as a result of simulation (course and speed) in the previous section, so that the symbol colour/monochrome is changed into "White", a safe target.

Irrespective of the simulation results, the current CPA and TCPA values are shown in the tracked target information just like when the true vector mode is active.

The course change of own ship is displayed as a dotted-line.

Better information is provided by using the trial relative vector mode when sea stabilisation mode is active.

4.6.2 Performing a trial manoeuvre

Memo

- Trial manoeuvre and its setting are not shared among the display units that participate in the network.
- Trial manoeuvre and its setting cannot be performed on the display units on the slave side of simple ISW (LAN). A manoeuvre on the display unit that directly controls the scanner is necessary to perform a trial.

Executing trial manoeuvre

[Operation procedure]

Open the Trial (Trial Manoeuvre) screen by performing the following menu operations.

[Menu] button → 06. TT/AIS → 05. Trial

1 Select the 01. [Trial Function] checkbox.

The trial function is turned on.

When Trial Function is set to On, the character "T" blinks at the bottom of the own ship display field in the radar display and means a trial manoeuvre.

2 Click on the 02. [Bearing] and 03. [Speed] boxes and enter setting values.

Memo

[Bearing] can be set up by turning the [EBL] dial and [Speed] by turning the [VRM] dial.

3 Set other characteristics.

04. [Vector time]: Vector time (1 to 120 min)
05. [Trial time]: Time until trial manoeuvring is started (0 to 30 min)
06. [Own ship's dynamic trait]: A dialogue for setting a dynamic trait of own ship is displayed. For the setting of [Own Ship's Dynamic Trait], refer to the JMR-5400 Series Instruction Manual or NCD-2315/2316 Navigation Information Display Instruction Manual, "13.11 Setting Own Ship's Dynamic Trait".

To finish trial operation:

1 Clear the 01. [Trial Function] checkbox.

Section 5 Installation Setting and Checking (Supported by Service)

This Section describes the methods of checking and maintenance of radar adjustments and installation that are performed by a person in charge of service through the service menus at the installation of this equipment.

CAUTION



Adjustments must not be performed during navigation.

Any adjustments may affect the radar functions, causing an accident or a failure.

5.1 Installation Setting Menu

The installation setting menu comprises three submenus, adjustment, installation, and maintenance inspection. A password is necessary to display an installation setting menu.

[Operation procedure]

1 Select the [Menu] button.

2 Select [Code Input].

A password input screen is opened.

3 Enter a password in the password input screen and verify the input by pressing [Enter].

Enter a password for the installation setting extended menu.

When the password is unavailable, refer to “Section 4 Installation” of the 5400 Series, Navigation Information Display Installation Guide.

4 Select the [Menu] button.

[Installation Setting] is added inside of the menu. When the [Installation Setting] button is added, the button remains displayed until the display is returned to the mode selection screen.

5 Select [Installation Setting].

Submenu items, [Adjustments], [Installation], and [Maintenance Inspection], are displayed.

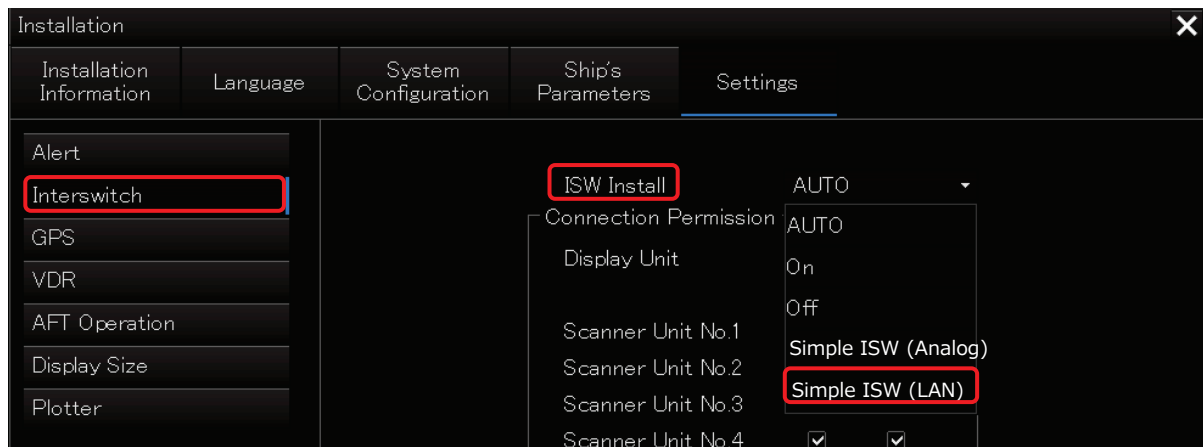
Select one of the items according to the purpose.

5.2 Enabling the Function

To use the simple ISW (LAN) function, simple ISW (LAN) must be enabled on the Interswitch menu.

Memo

The ON/OFF setting of the simple ISW (LAN) function is permitted by the installer only.
(Refer to Section 5, Installation Setting and Checking, of this manual.)
Incorrect settings may impose adverse effects on the radar system.



When the simple ISW (LAN) function is enabled, the Interswitch button is displayed on the screen as shown below.

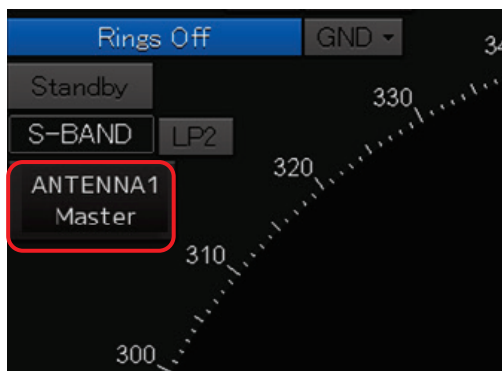
This button is used to switch the scanner mode to the master/slave status and also to display the radar system status.

In the example shown below, one display unit is in the master status that can control the scanner named [ANTENNA1].

When own display unit is a slave unit, [ANTENNA 1 Slave] is displayed. This means that the display unit is in slave status, which cannot control the scanner named [ANTENNA1] and can only receive images sent from the scanner named [ANTENNA1], which are distributed from the display unit on the master side.

This system status is displayed permanently on the top screen while the simple ISW (LAN) function is enabled.

A scanner name can be set from the display unit to which the scanner is directly connected.



5.3 Setting a Network

Use the “Installation” dialog or radar adjustments of this equipment.

Correct settings in the “RADAR-LAN network” dialog are necessary to use the radar image distribution function.

[Operation procedure]

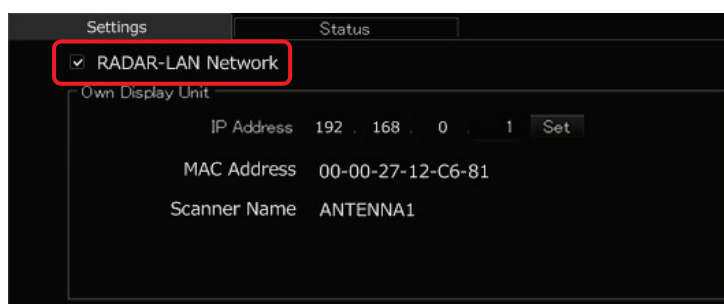
Open the “RADAR-LAN Network” dialog by performing the following menu operations.

- 1 Select [Menu] button → [Installation Setting] → [Installation].
- 2 Select [System Configuration Information]
- 3 Select [RADAR-LAN Network]
- 4 Select [Settings] tab.

5.3.1 Enabling the network connection

- 1 Set the RADAR-LAN Network checkbox to ON.

When this checkbox is set to OFF, the system is completely shut off from the network of the radar image distribution function.



5.3.2 Setting a link-up mode

Set a method for connecting to the network.

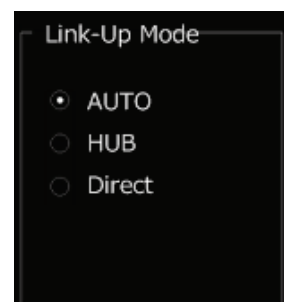
[Operation procedure]

- 1 Check the [Link-Up Mode] group box.
- 2 Select a most suitable communication mode from [AUTO]/[HUB]/[Direct] according to the environment of the network to which the equipment is connected.

[AUTO] Select this mode when the network environment of the equipment is unknown. It may take a long time to link up.

[HUB] Select this mode when equipment units are mutually connected via the SENSOR LAN unit (NQA-2443A).

[Direct] Select this mode when equipment units are directly connected with a LAN cable without using a SENSOR LAN unit (NQA-2443A).



5.3.3 Changing the IP address of own display unit

IP addresses, MAC addresses, and scanner names of own display unit and other display units are displayed in the [Own Display Unit] group box and the [Network Confirmation] group box. The IP address of own display unit and the IP addresses of other display units must be mutually unique. The following descriptions are based on the precondition that non-duplication of IP addresses has been confirmed among own display unit and other display units prior to this setting. In reality, when no duplication is detected from the IP addresses in the initial state, change of the IP address is not required.

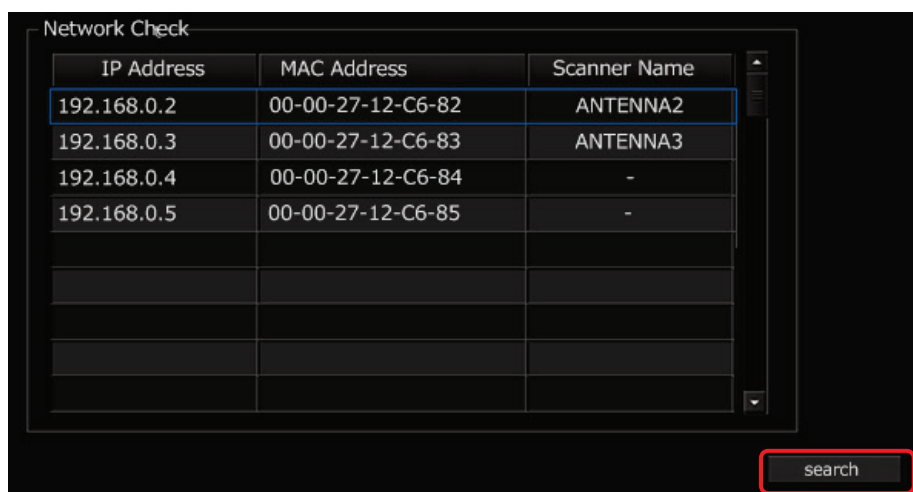
Memo

Perform this setting in the state in which power is supplied to all the equipment units that are expected to be connected to the network of the radar image distribution function and the equipment units that participate in [RADAR-LAN Network].

When IP address duplication occurs during radar operation, a network abnormality occurs, disabling correct display of radar images.

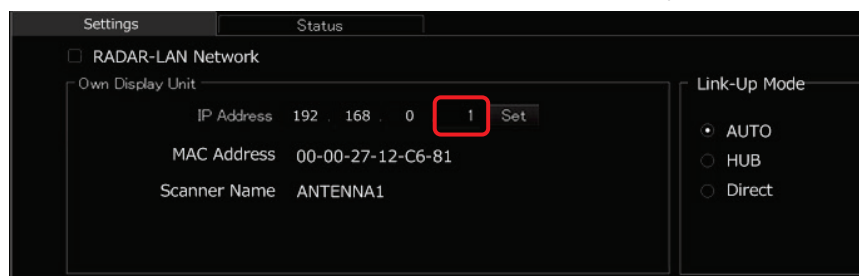
[Operation procedure]

- 1 Search the IP addresses of the other equipment units that are connected to the network by pressing the [Search] button.



- 2 Select the [Own Display Unit] input box.

Only the 4th Octet can be set since the settings of 1st to 3rd Octet are fixed (192.168.0). When the input box is selected, a numeric value input keyboard is displayed.



- 3 Check the contents of the [Link-Up Mode] group mode of the [Settings] tab that was searched in Step 1 and set an IP address that has not been used. Specifiable values are between 1 and 100.
- 4 Confirm the IP address that is input by pressing the [Set] button on the right side of the IP address 4th Octet.

5.4 Checking the Network Communication Status

Network communication statuses can be checked by using the radar image distribution function.

Memo

When the checking result of the communication status does not indicate 1000BASE-T for the value of [Ethernet Information Label] and [Link-Up status] is displayed in red, the radar image distribution function cannot be used correctly. In this case, the network setting must be re-checked. If there is no problem in the setting, the equipment or the cable may be faulty.

[Operation procedure]

- 1 Select [Menu] button → [Installation Setting] → [Installation].
- 2 Select [System Configuration Information].
- 3 Select [RADAR-LAN Network]
- 4 Select [Status] tab.

Settings		Status	
1 Status INFO			
Common			
IP	239.0.16.1	Tx Success	1234
Port	56001	Tx Failure	0
		Rx Success	12345
		Rx Failure	0
2 Sweep INFO			
Tx		Rx1	Rx2
IP	239.0.17.1	IP	239.0.17.2
Port	57001	Port	57002
Success	123456	Success	123456
Failure	0	Failure	0
3 TT INFO			
Tx		Rx1	Rx2
IP	239.0.18.1	IP	239.0.18.2
Port	58001	Port	58002
Success	1234	Success	1234
Failure	0	Failure	0
4 Control INFO			
IP	239.0.19.1	Request Tx	12
Port	56001	Response Rx	12
		Link-Up	1000Base-T
			5 6
		7 Update	8 Clear

Memo

To update the values that are displayed by selecting the [Status] tab, it is necessary to press the [Update] tab or switch control from the [Settings] tab to the [Status] tab.

The values are not updated by simply changing the communication contents,

No.	Item	Contents
1	Status information group box	Indicates that the information is related to status communication.
2	Sweep information group box	Indicates that information is related to sweep data communication.
3	TT information group box	Indicates that the information is related to TT data communication.
4	Control information group box	Indicates that the information is related to control communication.
5	Ethernet information label	Indicates under which standard of Ethernet the system is linked up. [Value range] - /10Base-T/100Base-TX/1000Base-T
6	Link-Up status	Indicates whether link-up is established. [Remarks] Displayed in green only when link-up is established with 1000Base-T. Displayed in red when link-up is established with other than 1000Base-T.
7	Update button	Updates values. [Remarks] Values are updated when the [Update] button is pressed or the control is switched from the [Settings] tab to the [Status] tab.
8	Clear button	Clears the count value.

Section 6 Failures and After-Sale Services

6.1 Failure Detection

Semiconductor circuits can be considered to be almost free from defective semiconductors and/or performance deterioration except when there are design and inspection errors, or external and human induced causes. Generally, the causes of comparably frequent failures include line disconnection due to humidity of the high resistor, failure of the variable resistor as well as contact failures of switches and relays.

In addition to faulty parts, faulty adjustments (especially faulty tuning) or faulty maintenance (especially faulty cable contact) occasionally make up causes of failures; thus, it is effective to reinspect or readjust these items.

6.1.1 About alerts

Failures can be detected from alerts.

For details on alerts, please refer to "Appendix B, Alert List."

6.1.2 Alert description

For a description of alerts to be displayed, please refer to "Appendix B, Alert List."

6.2 Countermeasures for Failures

Because radar equipment is composed of complex circuits, please ask a qualified technician for repair or instructions regarding countermeasures in case of failure.

Note that failures may be caused by the following causes, so check them during inspection or repair of failure.

- Contact failure in terminal blocks of cables between equipment
 - a) Contact failure in terminal blocks
 - b) Cable terminal treatment failure - In contact with other grounded terminal
 - c) Cable disconnection
- Contact failure of connectors inside equipment

6.3 Troubleshooting

When this equipment does not operate correctly, check the following points before asking for repairs. Consult with your nearest subsidiary company, branch office, or sales office if the problem does not get solved even after checking and correcting these points, or if there are any abnormally locations other than the following items.

Symptom	Cause	Action
The power is not supplied. Alternatively, the equipment does not start even if the Power button of the operation unit is pressed.	The DC power supply is not connected.	Connect the DC power supply.
	The AC power supply is not connected to the rectifier when rectifier NBA-5111 is used.	Connect the AC power supply.
	The main power supply at the front of the processing unit (NDC-1678) is not set to ON.	Set the main power supply to ON by lifting the lever of the breaker.
	The DC power supply is not within the specified voltage range.	Connect the DC power supply within the specified voltage range.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The power supply circuit of the processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.
	The operation unit (NCE-5794)/optional operation unit (NCE-5605) is faulty.	Make a request to the distributor for repair.
The power is not supplied to the monitor.	The display unit is not activated.	Activate the display unit.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The display (NWZ-208/NWZ-214) is faulty.	Make a request to the distributor for repair.
Although the power is supplied to the monitor, the screen is not displayed.	The brightness of the monitor is set to the minimum level.	Adjust the brightness of the monitor to the appropriate level.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The display (NWZ-208/NWZ-214) is faulty.	Make a request to the distributor for repair.
The brightness of the monitor cannot be adjusted.	The display (NWZ-208/NWZ-214) is faulty.	Make a request to the distributor for repair.
The trackball or the option keyboard cannot be operated.	The internal wiring is faulty.	Make a request to the distributor for repair.
	The operation unit (NCE-5794)/optional operation unit (NCE-5605/NCE-5625) is faulty.	Make a request to the distributor for repair.

Symptom	Cause	Action
The trackball does not move smoothly.	The trackball is dirty.	Clean the trackball.
Although the power is supplied and the screen is displayed, the display is frozen, disabling display of the mode selection screen.	The processing unit (NDC-1678) is abnormal.	Make a request to the distributor for repair.
Some menus cannot be selected on the mode selection screen.	The device licence has not been installed.	Request repair or additional arrangement to the supplier and install the licence.
The cursor is not displayed correctly.	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.
Characters/symbols are not displayed correctly.	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.
Position information (GPS) is not displayed.	The communication is not set correctly.	Set the communication correctly.
	The power supply for the GPS equipment is not turned on.	Turn on the power supply for the GPS equipment.
	The GPS equipment does not perform positioning.	Check the state of the GPS equipment.
	The connection with the GPS equipment is abnormal.	Check the connection with the GPS equipment. When GPS equipment is connected to the serial LAN interface circuit, check if the LED of the corresponding port is lit at data reception.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.
	The power is not supplied to the serial LAN interface circuit (CMH-2370) inside of junction box NQE-1143. (Case where the GPS equipment is connected to junction box NQE-1143)	Turn on the power supply for the serial-LAN interface circuit.
	The serial LAN interface circuit (CMH-2370) inside of junction box NQE-1143 is faulty. (Case where the GPS equipment is connected to the serial LAN interface circuit)	Make a request to the distributor for repair.

Symptom	Cause	Action
AIS information is not displayed.	The communication is not set correctly.	Set the communication correctly.
	The power supply for the AIS equipment is not turned on.	Turn on the power supply for the AIS equipment.
	The AIS equipment does not perform positioning.	Check the state of the AIS equipment.
	The connection with the AIS equipment is abnormal.	Check the connection with the AIS equipment. When AIS equipment is connected to the terminal board circuit (CQD-2322), check if the LED of the corresponding port is lit at data reception.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.
	The power is not supplied to the serial LAN interface (CMH-2370) inside of junction box NQE-1143. (Case where the AIS equipment is connected to junction box NQE-1143)	Turn on the power supply for the serial-LAN interface circuit.
	The power is not supplied to the serial LAN interface (CMH-2370) inside of junction box NQE-1143. (Case where the AIS equipment is connected to junction box NQE-1143)	Make a request to the distributor for repair.
The azimuth of the Gyro compass is not displayed. Alternatively, the azimuth rotation direction is not displayed correctly.	The communication is not set correctly.	Set the communication correctly.
	The power supply for the Gyro compass equipment is not turned on.	Turn on the power supply for the Gyro compass equipment.
	The connection with the Gyro compass equipment is abnormal.	Check the connection with the Gyro compass equipment. When Gyro compass equipment is connected to the terminal board circuit (CQD-2322), check if the corresponding LED is lit at signal reception.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.

Symptom	Cause	Action
Log is not displayed or the values are not displayed correctly.	The communication is not set correctly.	Set the communication correctly.
	The power supply for the log equipment is not turned on.	Turn on the power supply for the log equipment.
	The connection with the log equipment is abnormal.	Check the connection with the log equipment. When log equipment is connected to the terminal board circuit (CQD-2322), check if the corresponding LED blinks at signal reception.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.
Rudder angles are not displayed. Alternatively, the values are not displayed correctly.	The communication is not set correctly.	Set the communication correctly.
	The power supply for the rudder angle indicator is not turned on.	Turn on the power supply for the rudder angle indicator.
	The connection with the rudder angle indicator is abnormal.	Check the connection with the rudder angle indicator. When a rudder angle indicator is connected to the terminal board circuit (CQD-2322), check if the LED of the corresponding port is lit at data reception.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.
Wind direction/wind speed (anemoscope/anemometer) data is not displayed	The communication is not set correctly.	Set the communication correctly.
	The power supply for the anemoscope/anemometer is not turned on.	Turn on the power supply for the anemoscope/anemometer.
	The connection with the anemoscope/anemometer is abnormal.	Check the connection with the anemoscope/anemometer. When an anemoscope/anemometer is connected to the terminal board circuit (CQD-2322), check if the LED of the corresponding port is lit at data reception.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.

Symptom	Cause	Action
Water depth values are not displayed.	The communication is not set correctly.	Set the communication correctly.
	The power supply for the echo sounder is not turned on.	Turn on the power supply for the echo sounder.
	The connection with the echo sounder is abnormal.	Check the connection with the echo sounder. When an echo sounder is connected to the terminal board circuit (CQD-2322), check if the LED of the corresponding port is lit at data reception.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.
Sensor signals are not displayed.	The communication is not set correctly.	Set the communication correctly.
	The power supply for the sensor equipment is not turned on.	Turn on the power supply for the sensor equipment.
	The connection with the sensor equipment is faulty.	Check the connection with the sensor equipment. Check if the LED of the corresponding port of the terminal board circuit (CQD-2322) is lit at data reception.
	When a sensor is connected to junction box NQE-1143, the power is not supplied to the serial LAN interface (CMH-2370) inside of junction box NQE-1143.	Turn on the power supply for the serial-LAN interface circuit.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.
	The serial LAN interface circuit (CMH-2370) inside of junction box NQE-1143 is faulty.	Make a request to the distributor for repair.

Symptom	Cause	Action
Contact signals are not output.	The power supply for the serial-LAN interface circuit (CMH-2370) is not turned on. (Case where contact signal output is acquired from the serial-LAN interface circuit)	Turn on the power supply for the serial-LAN interface circuit.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.
The radar antenna is not acknowledged.	The connection with the radar antenna is abnormal.	Check the connection with the radar antenna.
	Power is not supplied from the power supply unit to the radar antenna.	Check the power supply wiring of the interface circuit (CMH-2452) from the power supply unit. Check the power supply connection inside of the radar antenna. [Memo] For checking wiring inside of the radar antenna, always request the work to the specialized service person. Before starting the work, turn off the power supply of the display unit. Otherwise, an unexpected accident may occur.
	The radar antenna is faulty.	Make a request to the distributor for repair.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.
The power is not supplied to the radar antenna.	The connection with the radar antenna is abnormal.	Check the connection with the radar antenna.
	The connection with the radar antenna is abnormal and overcurrent protection is functioning in the power supply unit.	Check the connection with the radar antenna and remove the cause of short-circuit.
	The 24V DC output fuse is blown out.	After removing the cause of the fuse blowout, replace the fuse. The fuse is F2.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The power supply (NDB-945) inside of the processing unit is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.

Symptom	Cause	Action
The preheat count down of the radar antenna is not displayed.	The connection with the radar antenna is abnormal.	Check the connection with the radar antenna.
	The safety switch of the radar antenna is set to OFF.	Set the safety switch of the radar antenna to ON. [Memo] For operating the safety switch of the radar antenna, always request the work to the specialized service person. Before starting the work, turn off the power supply of the display unit. Otherwise, an unexpected accident may occur.
	A solid-state radar antenna is connected.	Preheat count-down is not displayed for a solid-state radar antenna.
	The radar antenna is faulty.	Make a request to the distributor for repair.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.
The radar antenna does not rotate even if the [TX/ST-BY] button is pressed.	The connection with the radar antenna is abnormal.	Check the connection with the radar antenna.
	The safety switch of the radar antenna is set to OFF.	Set the safety switch of the radar antenna to ON. [Memo] For operating the safety switch of the radar antenna, always request the work to the specialized service person. Before starting the work, turn off the power supply of the display unit. Otherwise, an unexpected accident may occur.
	Power is not supplied from the power supply unit to the radar antenna.	Check the power supply wiring from the power supply unit (NBD-945) inside the processing unit to the interface circuit (CMH-2452). Check the power supply connection inside of the radar antenna. [Memo] For checking the wiring inside of the radar antenna, always request the work to the specialized service person. Before starting the work, turn off the power supply of the display unit. Otherwise, an unexpected accident may occur.

Symptom	Cause	Action
The radar antenna does not rotate even if the [TX/ST-BY] button is pressed.	The 24VDC output fuse is blown out.	After removing the cause of the fuse blowout, replace the fuse. The fuse is F3.
	The motor driver circuit inside of the radar antenna is not set correctly. (When NKE-1632, NKE-2632, or NKE-2632-H is connected as the radar antenna.)	Set the motor driver circuit correctly. [Memo] For setting the motor driver circuit, always request the work to the specialized service person. Before starting the work, turn off the power supply of the display unit. Otherwise, an unexpected accident may occur.
	The radar antenna rotation unit is frozen.	De-freeze the frozen section by using the neck heater option.
	Strong wind of relative wind velocity exceeding 100kt (about 51.5m/s) is blowing.	When strong wind of relative wind velocity exceeding 100kt is blowing, the radar antenna does not rotate due to the protection function.
	The radar antenna is faulty.	Make a request to the distributor for repair.
	The interface circuit (CMH-2452) is faulty.	Make a request to the distributor for repair.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The power supply unit (NDB-945) inside of the processing unit is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.
No radar image is displayed.	The connection with the radar antenna is abnormal.	Check the connection with the radar antenna.
	The GAIN value is set to the minimum.	Set a proper value for GAIN.
	The SEA/RAIN value is set to the maximum.	Set a proper value for SEA/RAIN.
	The magnetron is deteriorated significantly. (Case where a radar antenna that uses a magnetron is connected)	Replace the magnetron. [Memo] For magnetron replacement, always request the work to the specialized service person. Before starting the work, turn off the power supply of the display unit. Otherwise, an unexpected accident may occur.
	The radar antenna is faulty.	Make a request to the distributor for repair.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The power supply (NDB-945) inside of the processing unit is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.

Symptom	Cause	Action
Radar images cannot be tuned.	The magnetron is deteriorated significantly. (Case where a radar antenna that uses a magnetron is connected)	Replace the magnetron. [Memo] For magnetron replacement, always request the work to the specialized service person. Before starting the work, turn off the power supply of the display unit. Otherwise, an unexpected accident may occur.
	Coarse tuning adjustment has not been performed correctly.	Perform coarse tuning adjustment correctly.
	A solid-state radar antenna is connected.	Tuning bar is not displayed for a solid-state radar antenna.
The azimuth of the radar image is not displayed correctly.	Azimuth is not set correctly.	Set the azimuth correctly.
	CCRP is not set correctly.	Set CCRP correctly.
	The GPS radar antenna position is not set correctly.	Set the GPS radar antenna position correctly.
The range of the radar image is not displayed correctly.	The range is not set correctly.	Set the range correctly.
	CCRP is not set correctly.	Set CCRP correctly.
	The GPS radar antenna position is not set correctly.	Set the GPS radar antenna position correctly.
Interswitch does not function.	Power for the interswitch is not turned on.	Turn on the power for the interswitch.
	The connection with the interswitch is abnormal.	Check the connection with the interswitch.
	The interswitch is faulty.	Make a request to the distributor for repair.
	The terminal board circuit (CQD-2322) is faulty.	Make a request to the distributor for repair.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.
If the power supply is turned off, the trail data is cleared without being stored.	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.

Symptom	Cause	Action
Radar images cannot be superimposed.	The connection with the radar antenna is abnormal.	Check the connection with the radar antenna.
	The connection with the radar indicator is abnormal.	Check the connection with the radar indicator.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The processing unit (NDC-1678) is faulty.	Make a request to the distributor for repair.
The following popup window is displayed. System has detected an error. Turn the power off and on again.	A communication error occurred.	Close the popup window and after checking that there is no problem even if the power of this equipment is turned off, turn off the power once and turn on the power again.
The following popup window is displayed. Marine VHF radio does not respond. Check the connection with the equipment.	The power supply for the VHF or HUB is not turned on. There is a problem with the connection of a VHF LAN cable.	Check the power supply of the VHF or HUB. Check the connection of a LAN cable.

6.4 After-Sale Services

6.4.1 About the retaining period of service parts

The retaining period of the performance-critical parts for servicing this product (parts required to maintain the functionality of the product) is 10 years after the discontinuation of production.

6.4.2 When requesting a repair

If you suspect a failure, please read "16.3 Troubleshooting" thoroughly and check the unit again.

If you still detect abnormality, stop using the product and contact your sales representative, our sales department, nearest branch office or sales office.

- **Repair during the warranty period:** If a failure occurs in the course of using the product correctly according to the explanations and instructions in the Instruction Manual, your sales representative or our company shall repair the product at no charge. However, repairs of failures caused by misuse, negligence, or act of God such as natural disasters and fire shall be chargeable.
- **If the warranty period has expired:** If functionality can be recovered by repair, repair shall be made by the request of the customer for a fee.
- **Please provide the following information:**
 - Product name, model name, manufacturing date, serial number
 - Description of abnormality (as detail as possible) (Please refer to the next page "Radar Failure Checklist.")
 - Business name or organisation name, address, phone number

6.4.3 Recommendation of inspection and maintenance

Although it depends on the usage state, performance may deteriorate by change in parts over time, Separately from regular care, inspection and maintenance are recommended.

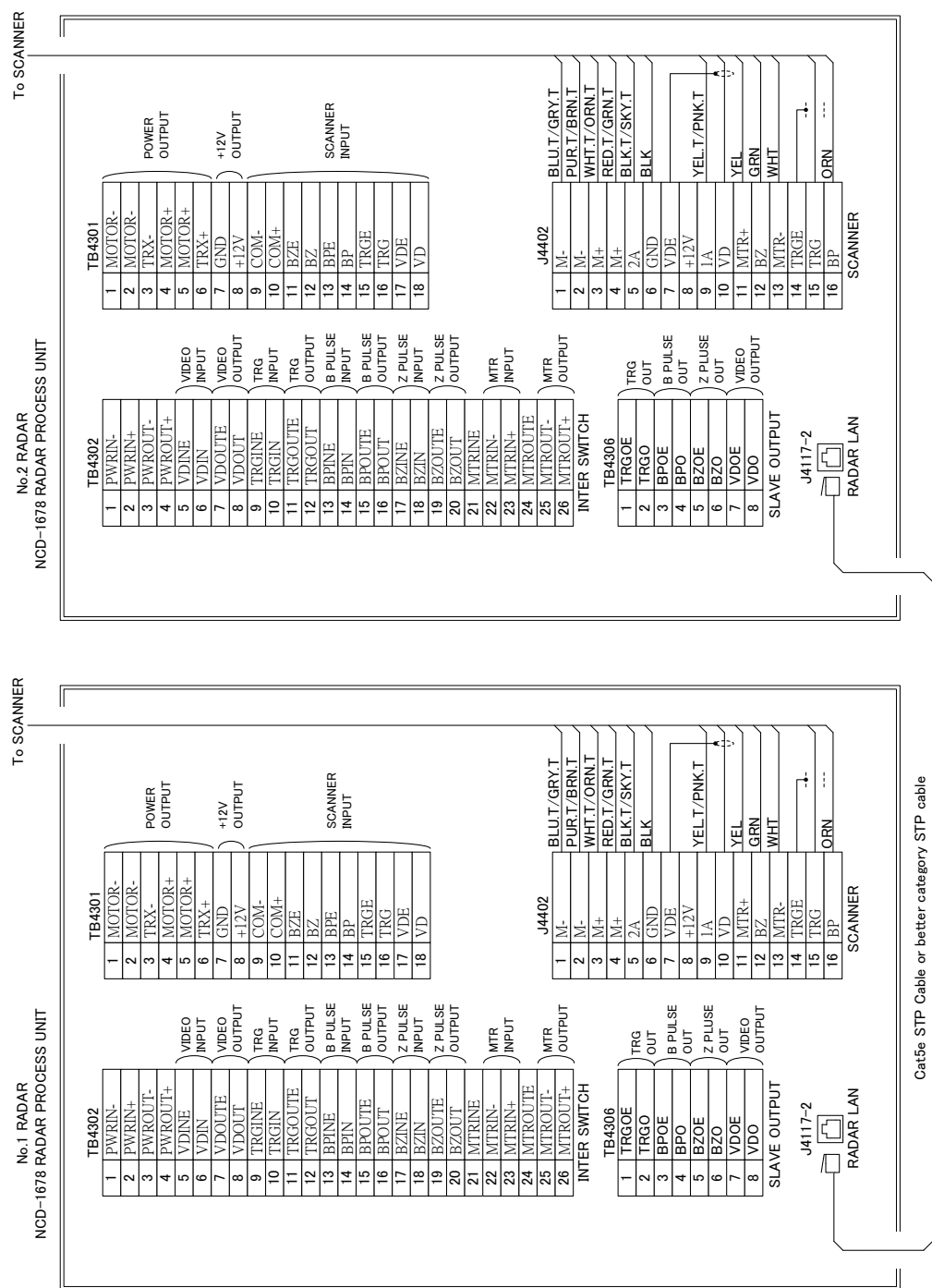
Regarding inspection and maintenance, please contact your sales representative, our sales department, nearest branch office or sales office.

Please note that there is a charge for inspection and maintenance.

If you have questions regarding after-sale services, please inquire your sales representative, our sales department, nearest branch office or sales office.

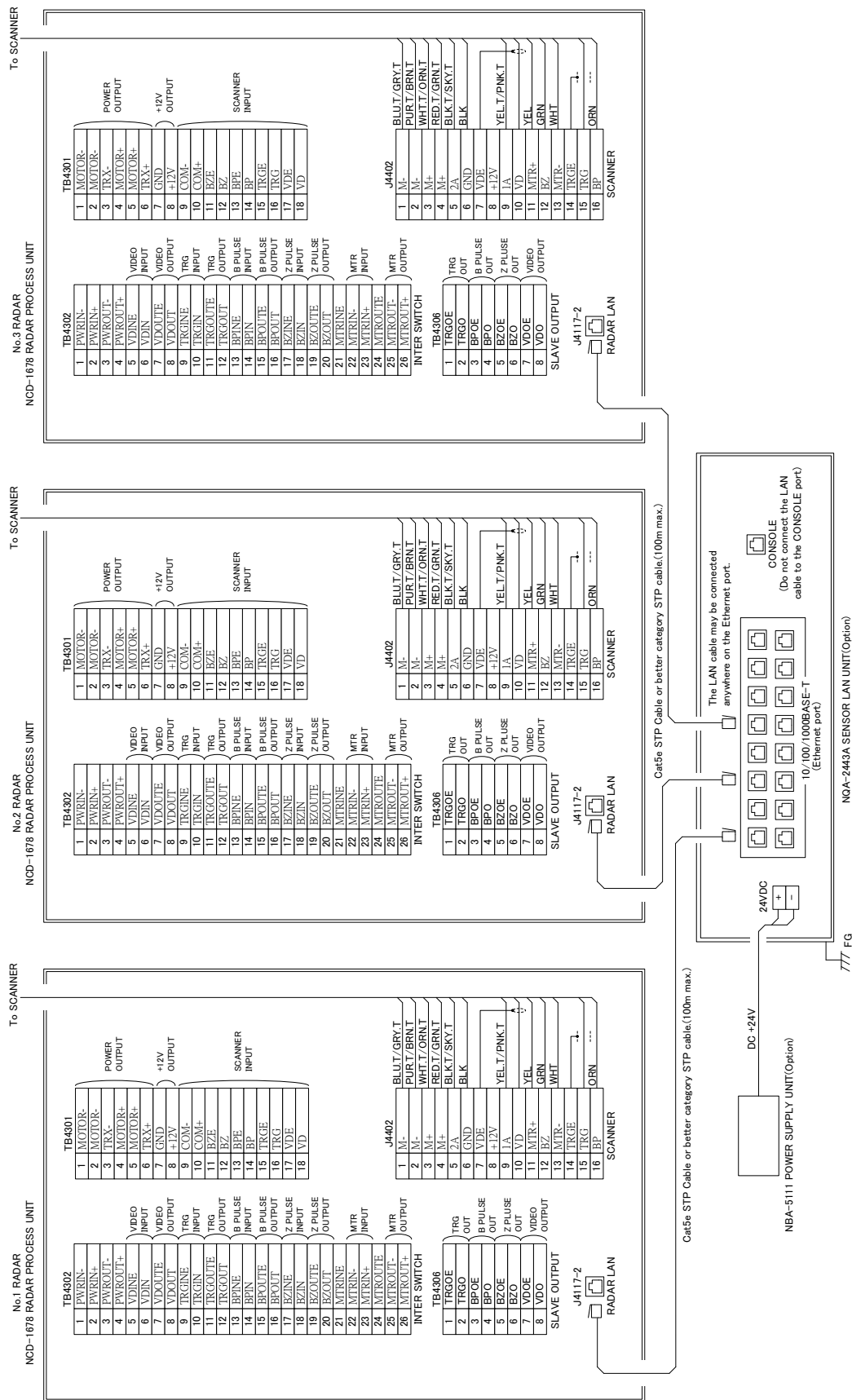
Appendix A Interconnection Diagram for Radar Video LAN Distribution

A.1 Interconnection Diagram (2 units connected)



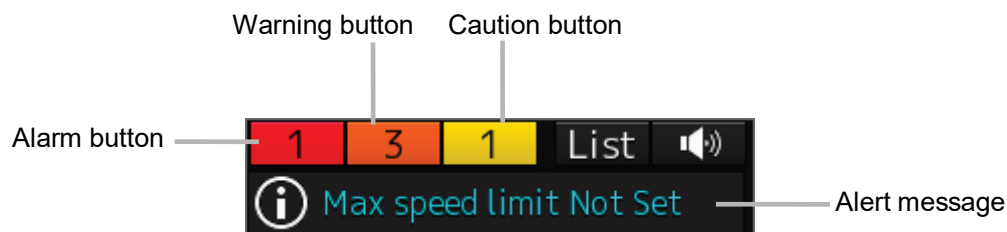
A.2 Interconnection Diagram

(3 or more units connected)



Appendix B Alert List

When an alert occurs, alert information is displayed in the alert notification area.



The numbers displayed in the buttons indicate the number of such alerts that have occurred.

Memo

The alert button of a category that has not occurred will not be displayed.

The display colours of alert messages are defined as follows according to the type and seriousness of alerts.

Alert Type	Alert Class (Seriousness)	Display Colour	Alert Display Status	Alert Sound
Alarms (An alert indicating a state asking sailors to pay immediate attention and take immediate action.)	Alarms	Red	Before alarm acknowledgement: Blinking After alarm acknowledgement: Lighting	Present (repetitive)
Warnings (An alert indicating that the state has changed, which although is not immediately dangerous, but may become so in the near future if no action is taken. Warnings are alerts displayed for preventing possible future hazardous states.)	Warnings	Orange	Before alarm acknowledgement: Blinking After alarm acknowledgement: Lighting	Present (once)
Cautions (Although these are neither alarms nor warnings, these alerts indicate that it is necessary to pay more than normal attention to cautions, statuses, or to the supplied information.)	Cautions	Yellow	Lighting	No sound
No Alarm	Information	Blue	Lighting for 5 seconds	Present (once)
	-	Green	-	-

The list of alert messages by alert type is shown below.

B.1 Alarms

There are no messages corresponding to alert in the alert class about radar image distribution function.

B.2 Warnings

Message	Explanation
ISW TT(unavailable)	【Operation】 TT is unavailable. 【Occurrence condition】 A slave side display unit fail to receive TT data communication from a master side display unit and is timeout.
RADAR Proc. Unit2(Program Load Failed, DSP2)	【Operation】 All communication is stopped about the radar image distribution, a display unit becomes an independent operation. A slave side display unit of a simple ISW(LAN) cannot be set to the transmission state. 【Occurrence condition】 Fail to transfer DSP program at startup.
RADAR Proc. Unit2(Communication error, DSP2)	【Operation】 All communication is stopped about the radar image distribution, a display unit becomes an independent operation. A slave side display unit of a simple ISW(LAN) cannot be set to the transmission state. 【Occurrence condition】 A timeout occurs on the interface between the DSP and the host.

B.3 Cautions

Message	Explanation
RADAR-LAN (Link-Speed)	【Operation】 The radar image distribution function is stopped. Stand-alone is operated. 【Occurrence condition】 The LAN communication speed is link up at a low speed other than 1000Base-T.
RADAR-LAN (Link-Down)	【Operation】 The radar image distribution function is stopped. Stand-alone is operated. 【Occurrence condition】 Valid the LAN communication in [RADAR-LAN] of [SERVICE], however not link up.
RADAR-LAN (IP Duplication)	【Operation】 The radar image distribution function is stopped. Stand-alone is operated. 【Occurrence condition】 IP address is duplicated in the network.
RADAR-LAN (Sweep Tx Failed)	【Operation】 The operation is not restricted. 【Occurrence condition】 The number of error of sweep distribution for a certain period of time has exceeded the specified rate.
RADAR-LAN (TT Option Mismatch)	【Operation】 TT of all display unit in the network of RADAR-LAN including stabilization mode is not shared. * It is not limited to the master-slave relationship of a simple ISW. 【Occurrence condition】 From the status information there is a display unit with different maximum TT acquisition numbers on the internet.

B.4 Information

Message	Explanation
ISW (Offline)	【Operation】 Normal image display is unavailable in a slave side display unit. 【Occurrence condition】 A slave side display unit of a simple ISW (LAN) stops receiving the distributed image data because of communication buffer abnormality. A slave side display unit of a simple ISW (LAN) cannot receive an image continuously and is timeout
Available Range Changed	【Operation】 Display range in a slave side display unit is forcibly changed. 【Occurrence condition】 A slave side display unit of a simple ISW (LAN) detects a pulse width change on a master side display unit of the video distribution source.
ISW (Network Video Off)	【Operation】 A slave side display unit cannot receive an image. 【Occurrence condition】 A slave side display unit of a simple ISW (LAN) detects that the setting of [Network Video] is OFF on a master side display unit of the video distribution source.
ISW TT(unavailable)	【Operation】 A slave side display unit cannot use TT information. 【Occurrence condition】 A slave side display unit of a simple ISW (LAN) detects a display unit with different maximum TT acquisition numbers on the internet. A slave side display unit detects that the stabilization mode ground / water settings are different from a master side display unit.

B.5 List of Alert Icons

The alert icons displayed in the alert status area are listed below.

No	Name of alert icon	Functional outline	Alert icon
1	Active – unacknowledged alarm	A flashing red triangle. A symbol of loudspeaker in the middle of the triangle.	
2	Active – silenced alarm	A flashing red triangle. A symbol as in icon number 1 with a prominent diagonal line above it.	
3	Active – acknowledged alarm	A red triangle. An exclamation mark in the middle of the triangle.	
4	Active - responsibility transferred alarm	A red triangle. An arrow pointing towards the right in the middle of the triangle.	
5	Rectified – unacknowledged alarm	A flashing red triangle. A tick mark in the middle of the triangle.	
6	Active - unacknowledged warning	A flashing yellowish orange circle. A symbol of loudspeaker in the middle of the circle.	
7	Active – silenced warning	A flashing yellowish orange circle. A symbol as in icon number 6 with a prominent diagonal line above it.	
8	Active – acknowledged warning	A yellowish orange circle. An exclamation mark in the middle of the circle.	
9	Active - responsibility transferred warning	A yellowish orange circle. An arrow pointing towards the right in the middle of the circle.	
10	Rectified – unacknowledged warning	A flashing yellowish orange circle. A tick mark in the middle of the circle.	
11	Caution	A yellow square. An exclamation mark in the middle of the square.	
a	Aggregation	A plus sign. To be presented together with icons number 1 to 11	
b	Acknowledge not allowed for alarm	A red triangle with a cross in the middle of triangle. To be presented together with icons number 1, 2 and 5.	
c	Acknowledge not allowed for warning	A yellowish orange circle with a cross in the middle of circle. To be presented together with icons number 6, 7 and 10.	

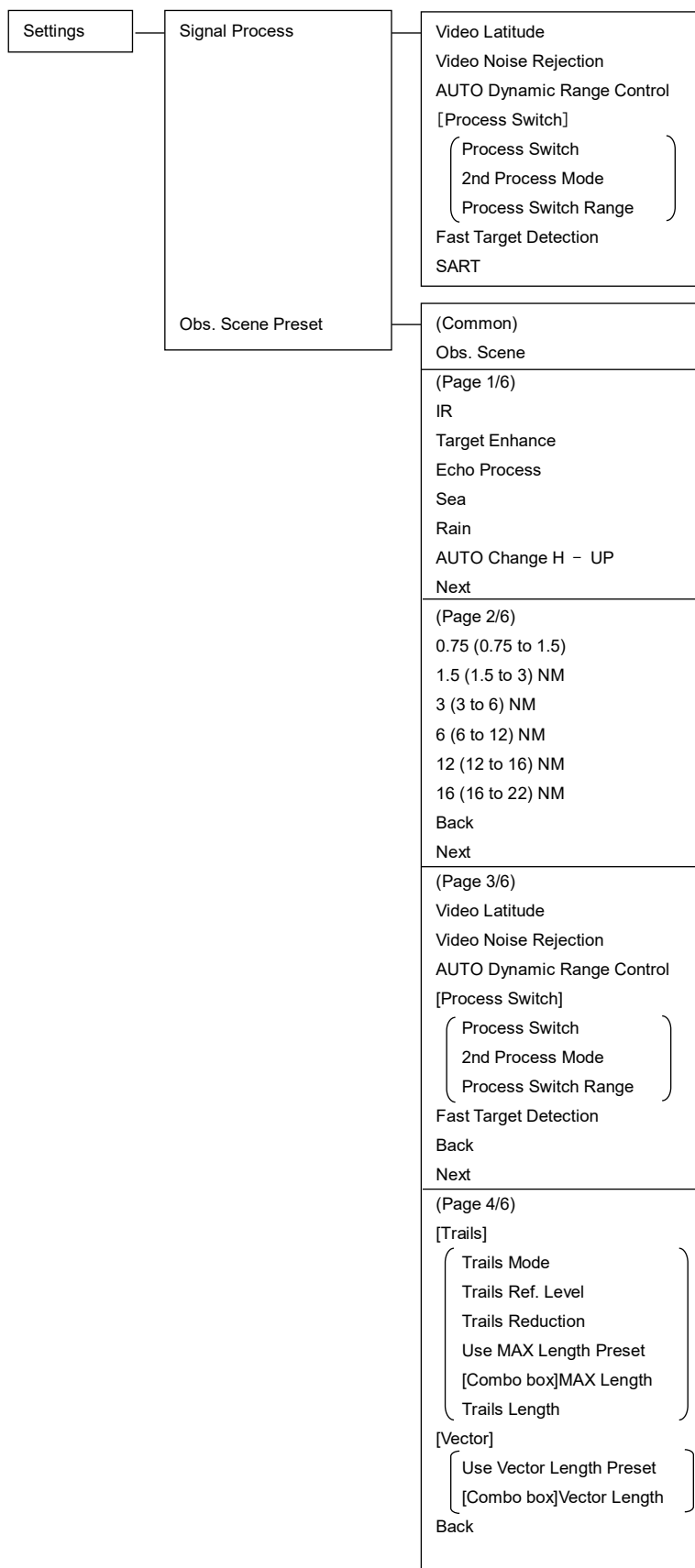
Appendix C Menu List and Materials

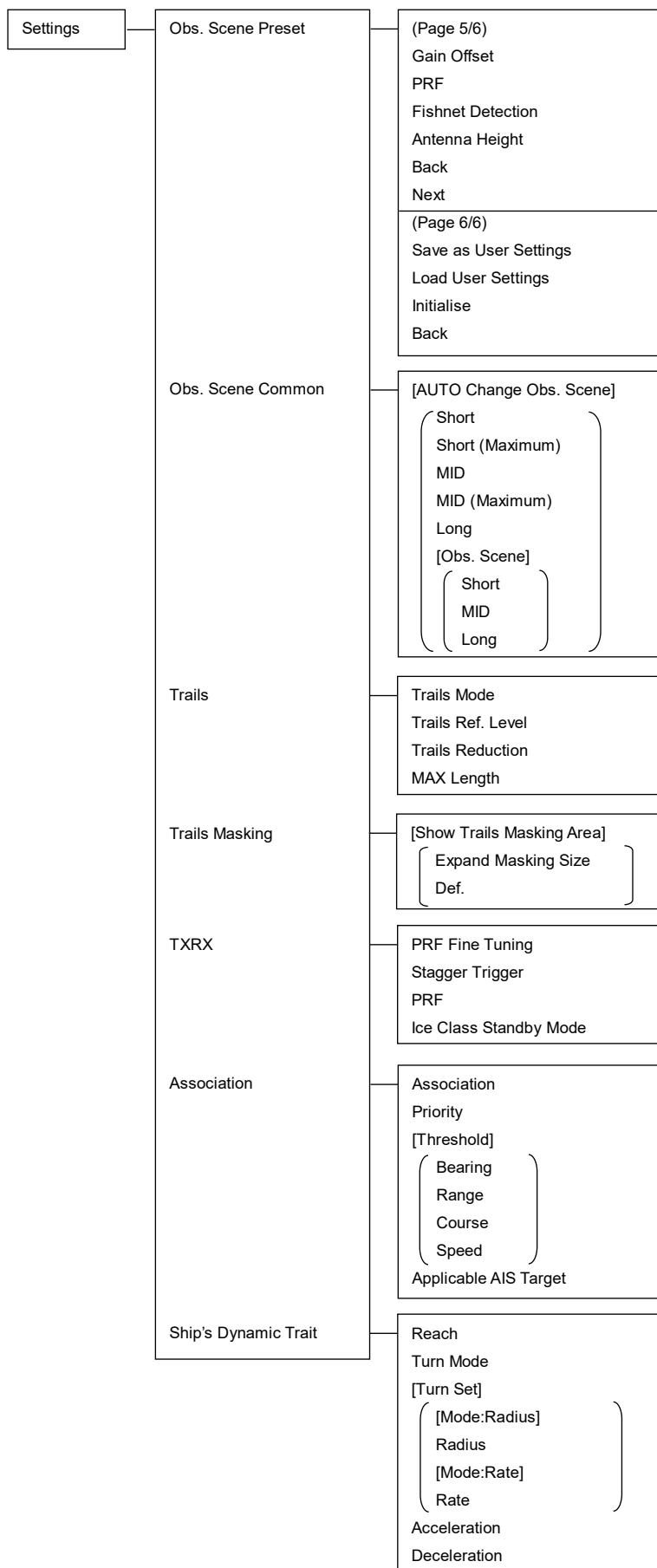
C.1 Menu List

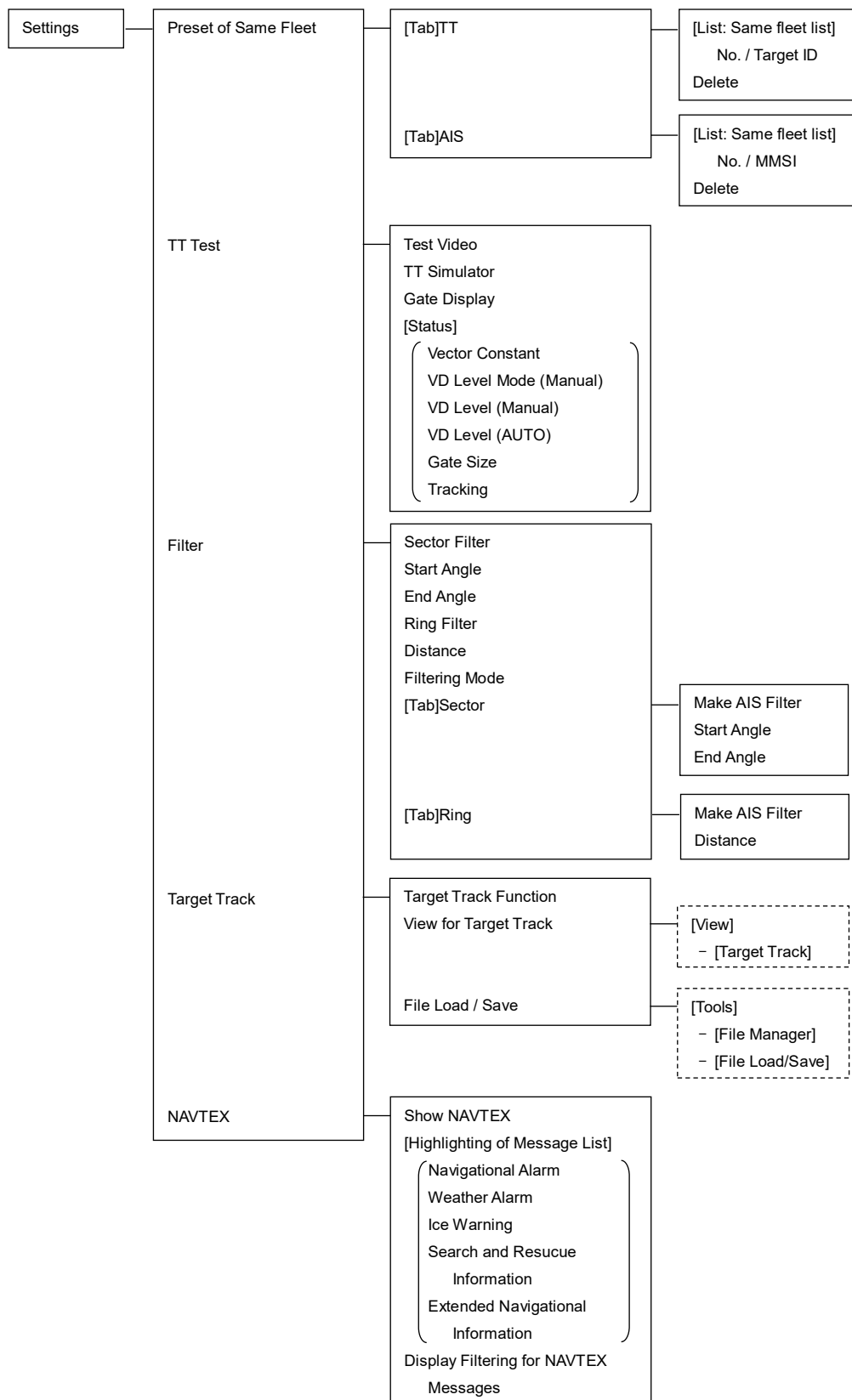
This section shows the menus and dialogue items of this equipment by target menu.

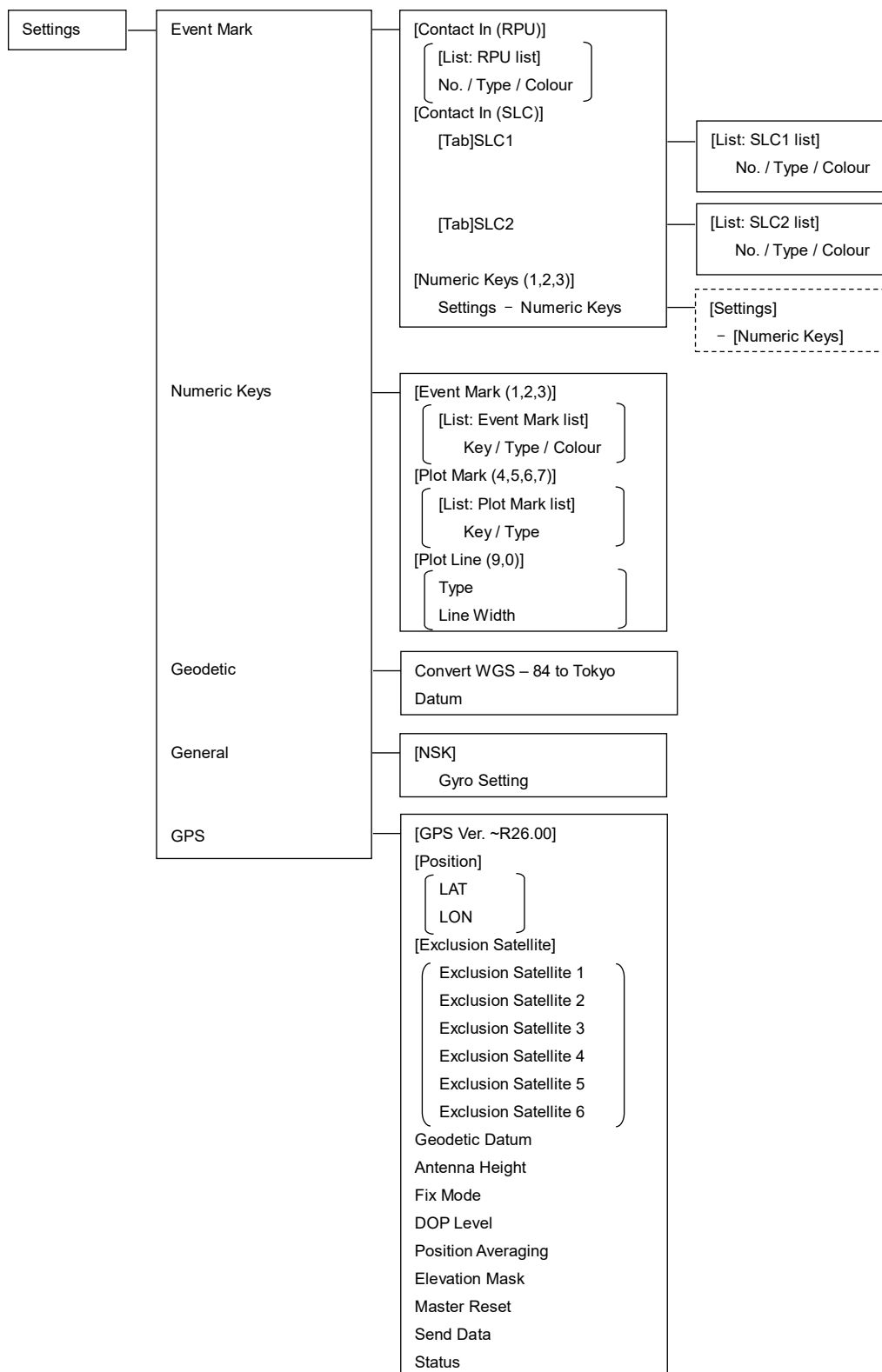
- * Items that are enclosed by a frame of broken lines indicate the dialogue and window names that are displayed by selecting the relevant menu.

C.1.1 Settings

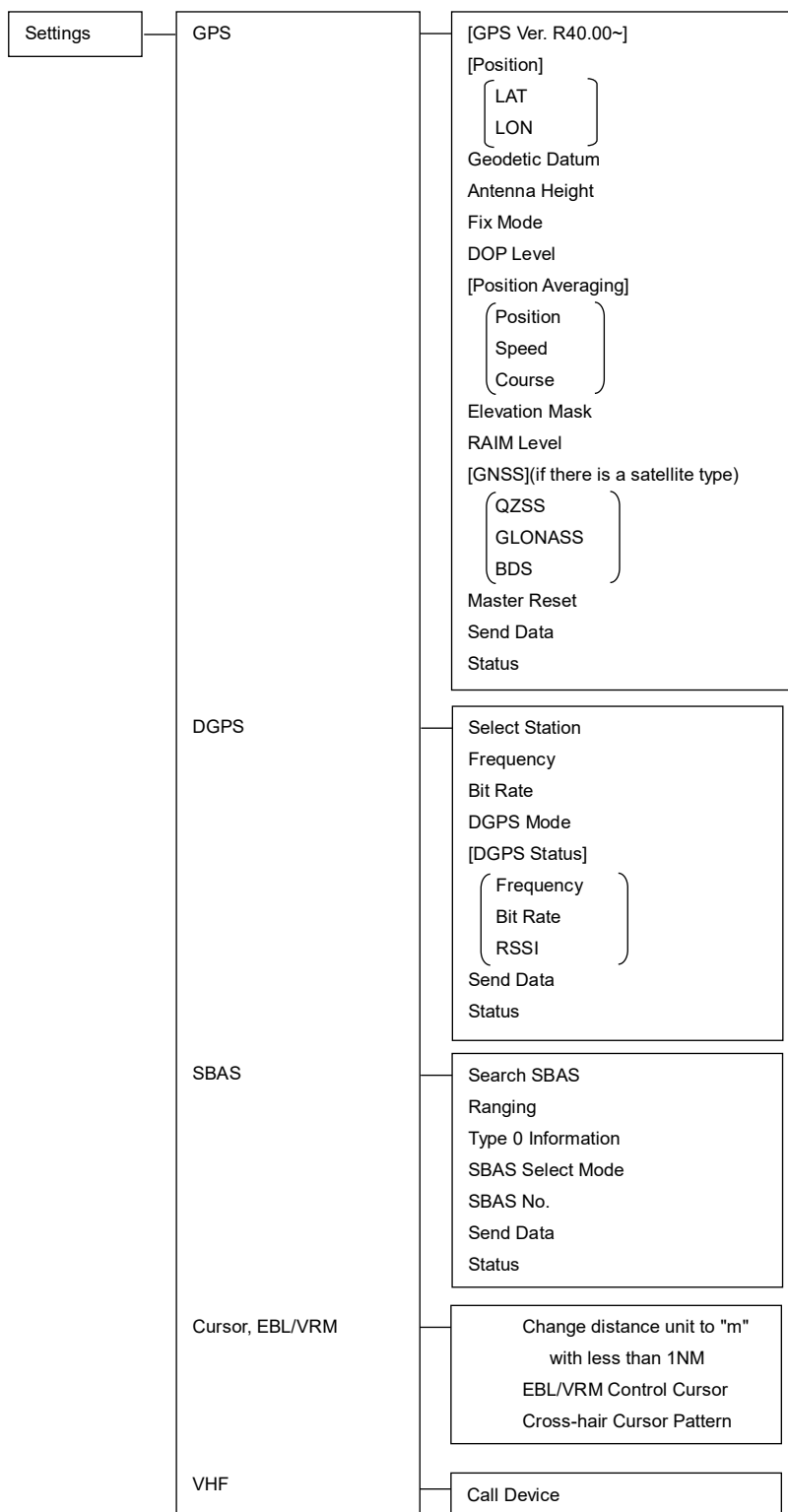


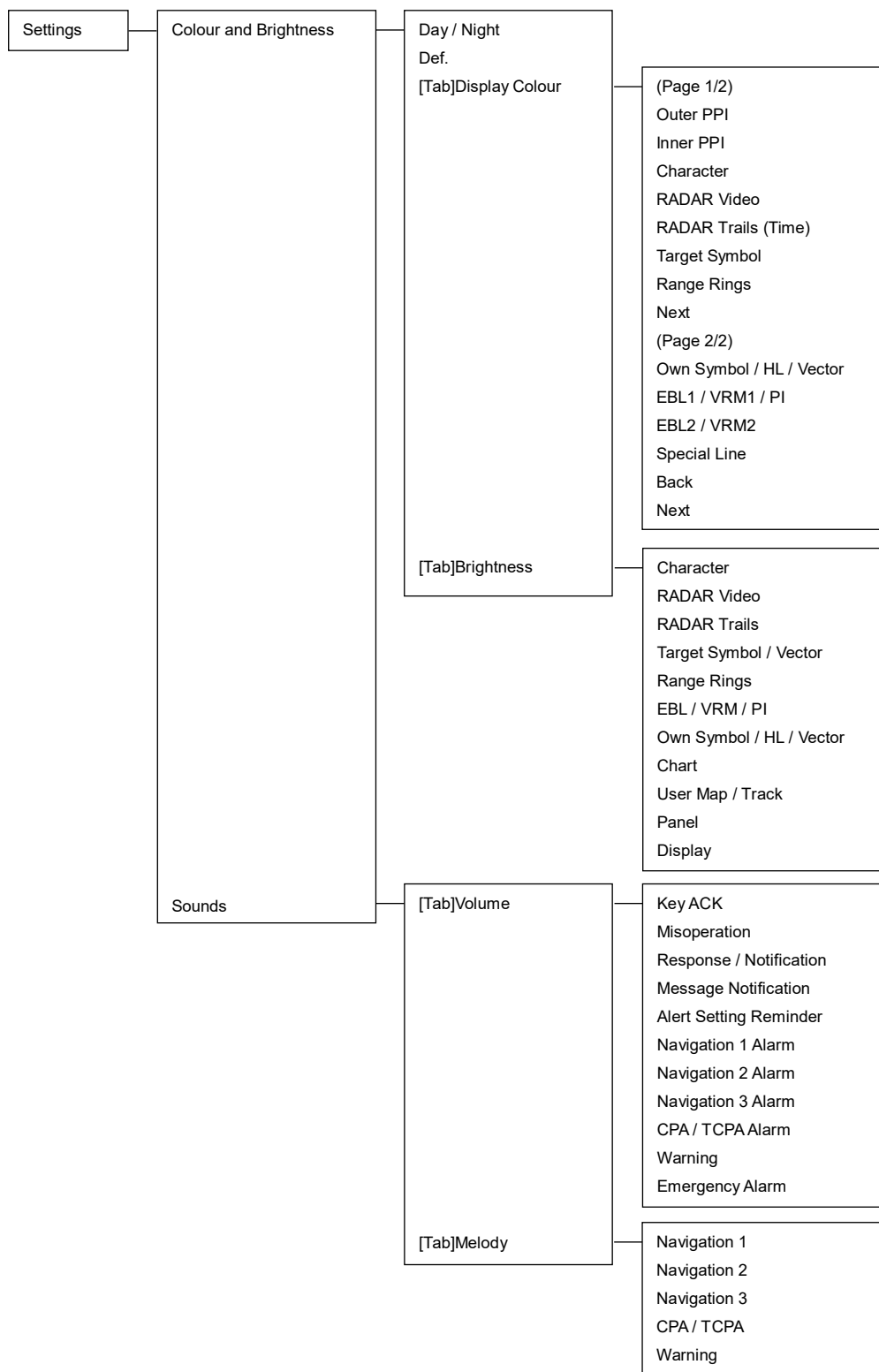


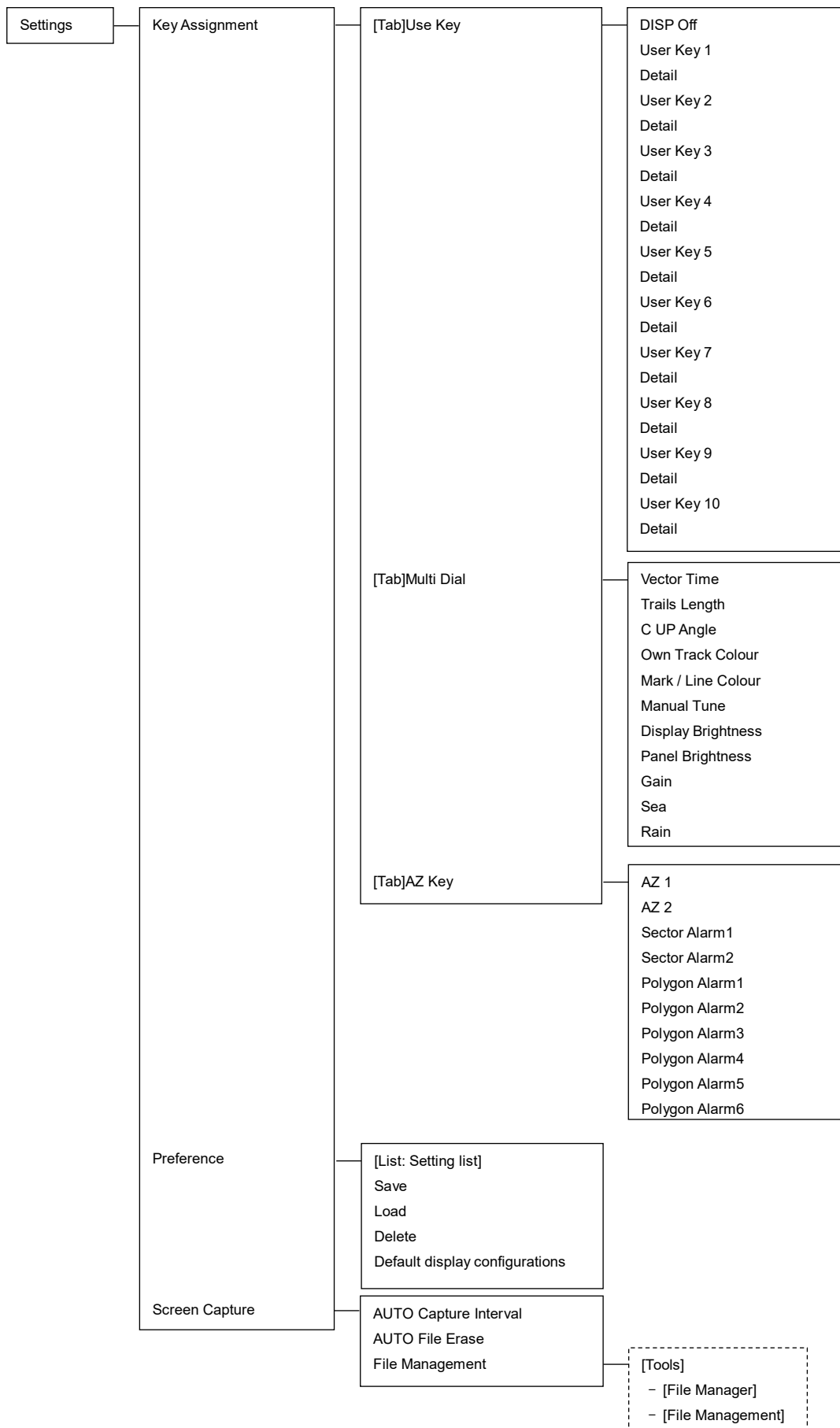




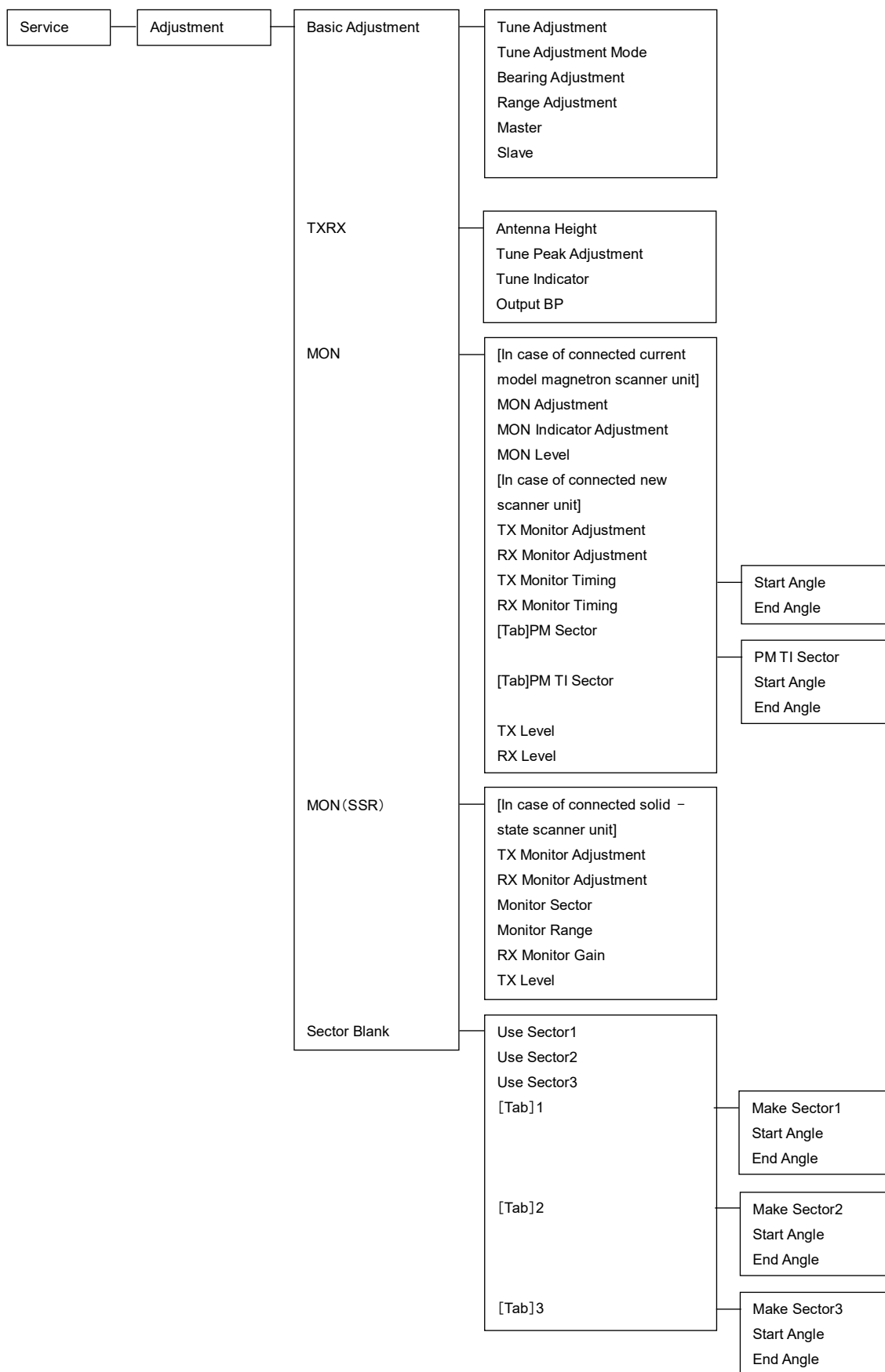
Settings	GPS	[GPS Ver. R26.01~R30.99] [Position] [LAT] [LON] [Exclusion Satellite] [Exclusion Satellite 1] [Exclusion Satellite 2] [Exclusion Satellite 3] [Exclusion Satellite 4] [Exclusion Satellite 5] [Exclusion Satellite 6] Geodetic Datum Antenna Height Fix Mode DOP Level Position Averaging Elevation Mask Master Reset Send Data Status
		[GPS Ver. R31.00~R38.99] [Position] [LAT] [LON] Geodetic Datum Antenna Height Fix Mode DOP Level Position Averaging Elevation Mask Master Reset Send Data Status
		[GPS Ver. R39.00~R39.99] [Position] [LAT] [LON] Geodetic Datum Antenna Height Fix Mode DOP Level Position Averaging Elevation Mask RAIM Level Master Reset Send Data Status

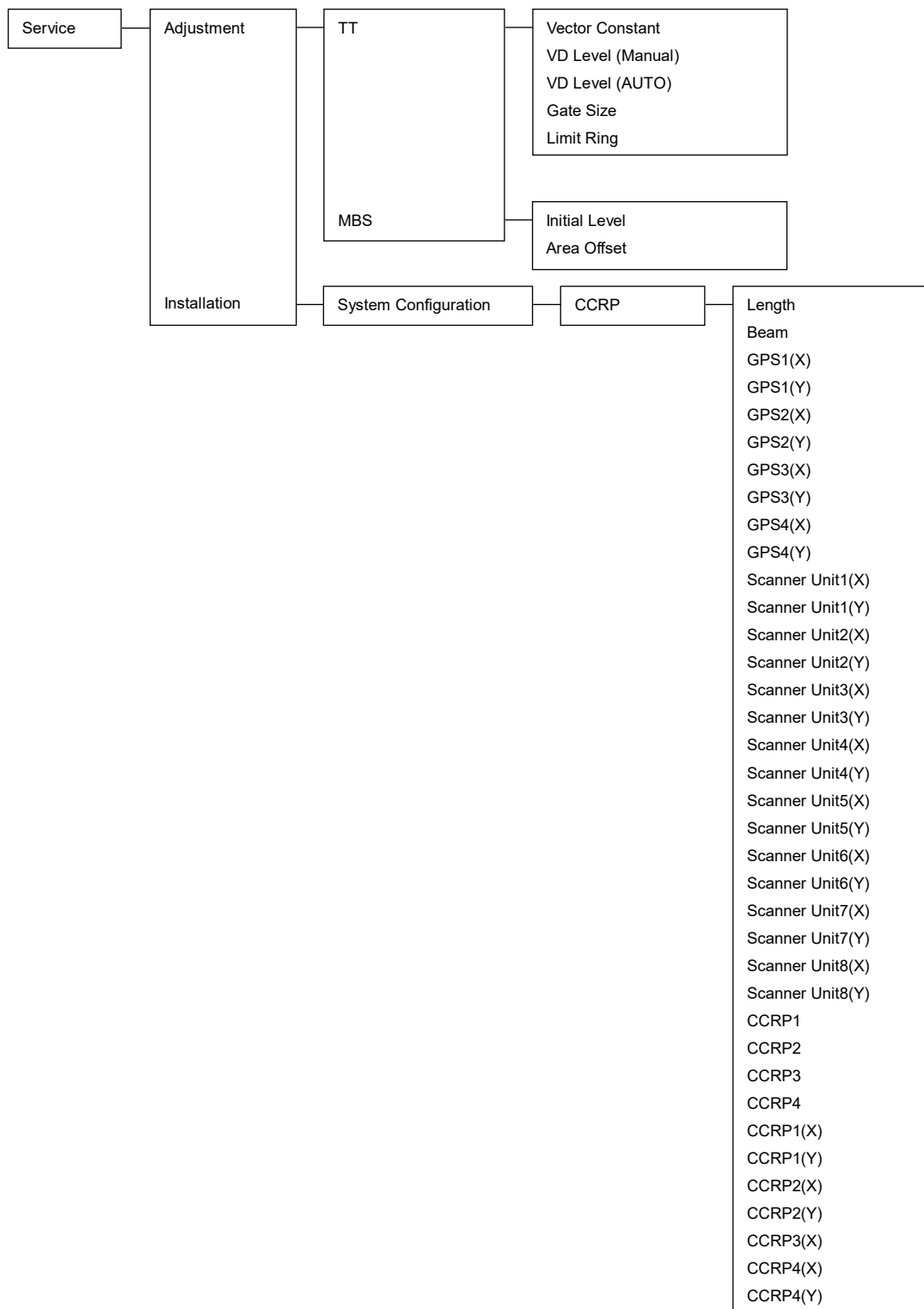


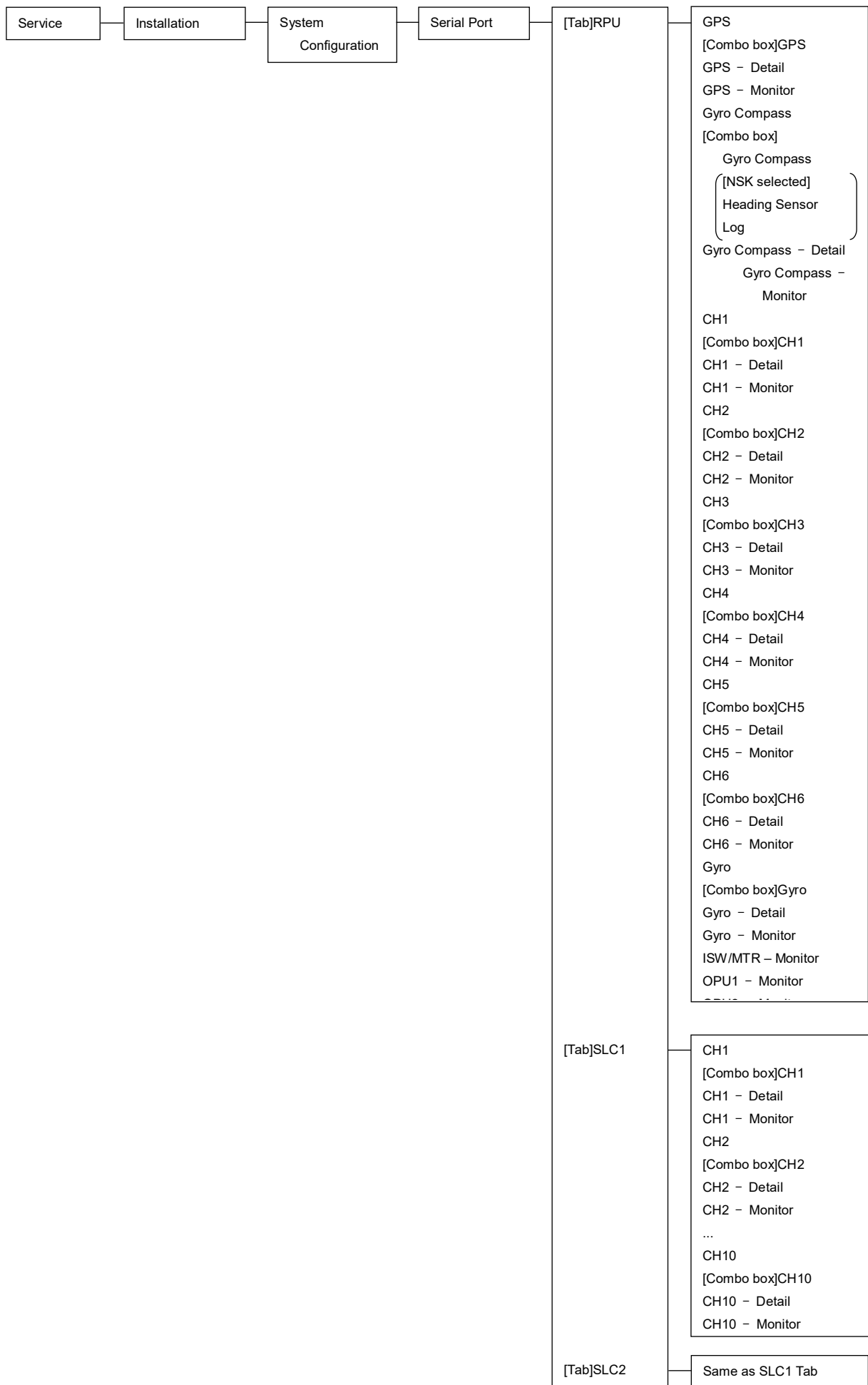


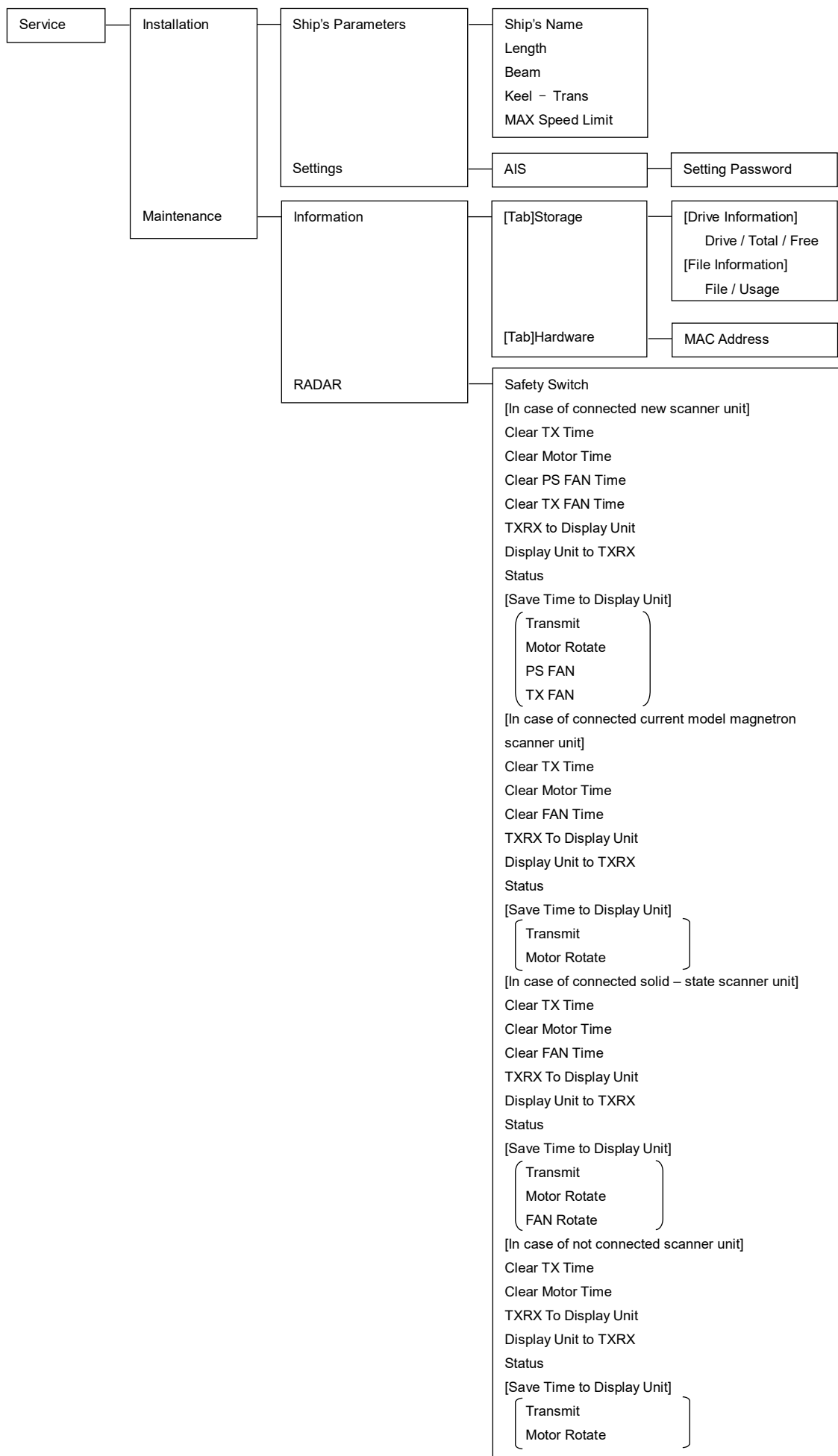


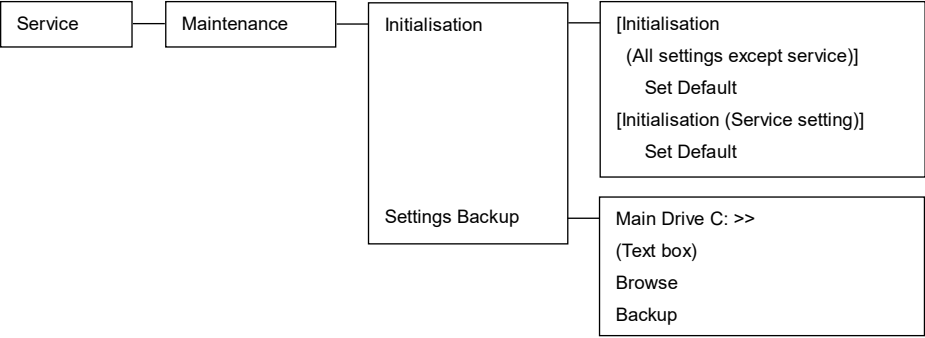
C.1.2 Service











C.2 Software Licence Agreement

This Software Licence Agreement is made and entered between the user who purchased a product of JMR – 5400 series and Japan Radio Co., Ltd. (hereinafter referred to as "JRC") with regard to the Licence to use the software in the product series.

- You have purchased a device that uses software licence from Microsoft Licence in the U.S. to JRC. The software which was developed by Microsoft installed in the device along with the printed documentation attached to it and its online or electronic documents (hereinafter collectively referred to as the "Software") are protected by international laws and conventions in relation to the protection of intellectual properties.

The licenced Software has not been sold to you and all rights in and to the Software are reserved.

- **If you do not agree to execute this Licence Agreement, you will not be allowed to use the device or copy the Software. If you do not agree to the provisions and terms hereof, you are requested to immediately inform us of your intention to return the device before you start to use it so that JRC can repay you the amount you have paid for it. By using the Software in the state as installed in the device or in any other way, you agree to the provisions of this Licence Agreement (or confirm your prior agreement).**

- **Conditions of the Licence shall be stipulated as follows:**

- **The Software shall only be licenced for the use in the state as installed in the device you have purchased.**
- **Indemnification: The Software itself is not free from defects. JRC has defined on its own account how to use the Software installed in JRC's devices. For this reason, Microsoft trust JRC to conduct sufficient tests to determine whether the Software is suitable for such usage as a prerequisite for the use of the Software.**
- **The Software is provided with no warranties whatsoever: The Software is provided as is and with all faults. You shall bear all the risks whether you can obtain satisfactory quality, performance and accuracy and it shall be your responsibility to make efforts to ensure those including eliminating errors. In addition, there is no warranty in the event of prevention from using the Software or in the case of infringement of any right arising from using the Software. Even if you can have any warranty in relation to the device or the Software, such warranty is not the one provided by Microsoft, and therefore such warranty shall not bind either Microsoft.**
- **Java support: The Software may include support of programs written in the Java language. The Java technology is not free from defects and is not designed or manufactured for the purpose of use or resell as online controlling equipment for the use in any dangerous environment requiring preparation of safety device in case of an emergency such as in operation of nuclear device, navigation or telecommunication system for aircrafts, air traffic control, life support machine or weapon systems in which failure of the Java technology may directly lead to an event which causes death or serious injury or environmental damage. This statement of disclaimer of liability is the obligation of Microsoft under the contract between Microsoft and Sun Microsystems.**

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- **Limitation of Liability:** Except to the extent prohibited by law, Microsoft shall not be liable for any indirect damages, special damages, consequential damages or incidental damages arising from or in relation to the performance or use of the Software. This limitation of liability shall apply even in the case any remedy for damages may not fulfill its essential purpose. In any event, Microsoft shall not be liable for any damages exceeding the amount equal to 250 US\$.
 - **Restriction of reverse engineering, decompiling and disassembling:** Except in cases explicitly permitted by applicable laws regardless of the restriction hereunder, you shall not reverse engineer, decompile or disassemble the Software.
 - **Export control:** You acknowledge that the country of origin of the Software is the United States of America. You agree to comply with export control laws and regulations of the United States of America as well as both domestic laws of the United States of America and international laws applicable to the Software including regulations issued by the U.S. Government or other governments in relation to end users, end use and country of destination.

For additional information on export of the Software, refer to the website: <http://www.microsoft.com/en-us/exporting/default.aspx>.

C.3 Font Licence Agreement

This product uses Migu font (<http://mix-mplus-ipa.sourceforge.jp/migu/>) to display characters on the screen. Migu font data is distributed from the URL stated above. Migu font is distributed in compliance with "IPA Font Licence Agreement v1.0" (http://ipafont.ipa.go.jp/ipa_font_Licence_v1.html). This product loaded with the Migu font is also in compliance with "IPA Font Licence Agreement v1.0." You may use this product under the agreement to the provisions of "IPA Font Licence Agreement v1.0." You have the right to change the font used for the display of this product from Migu font to IPA font. However, there is no need to change the Migu font to IPA font in the specifications of this product. Moreover, this product is designed to provide the display which is optimized for using Migu font. Note that using IPA font for the display may cause a problem of compatibility of font data with regard to the form of some characters resulting in degradation of the display on the screen. If you desire to change from Migu font to IPA font, consult with our service agent.

The typefaces included herein are solely developed by DynaComware Taiwan Inc.

C.4 IPA Font Licence Agreement v1.0

The Licencor provides the licenced Program (as defined in Article 1 below) under the terms of this Licence Agreement ("Agreement"). Any use, reproduction or distribution of the licenced Program, or any exercise of rights under this Agreement by a Recipient (as defined in Article 1 below) constitutes the Recipient's acceptance of this Agreement.

Article 1 (Definitions)

In this Agreement, the following terms set forth in each item shall be defined as therein.

1. "Digital Font Program" shall mean a computer program containing, or used to render or display fonts.
2. "Licenced Program" shall mean a Digital Font Program licenced by the Licencor under this Agreement.
3. "Derived Program" shall mean a Digital Font Program created as a result of a modification, addition, deletion, replacement or any other adaptation to or of a part or all of the licenced Program, and includes a case where a Digital Font Program newly created by retrieving font information from a part or all of the licenced Program or Embedded Fonts from a Digital Document File with or without modification of the retrieved font information.
4. "Digital Content" shall mean products provided to end users in the form of digital data, including video content, motion and/or still pictures, TV programs or other broadcasting content and products consisting of character text, pictures, photographic images, graphic symbols and/or the like.
5. "Digital Document File" shall mean a PDF file or other Digital Content created by various software programs in which a part or all of the licenced Program becomes embedded or contained in the file for the display of the font ("Embedded Fonts"). Embedded Fonts are used only in the display of characters in the particular Digital Document File within which they are embedded, and shall be distinguished from those in any Digital Font Program, which may be used for display of characters outside that particular Digital Document File.
6. "Computer" shall include a server in this Agreement.
7. "Reproduction and Other Exploitation" shall mean reproduction, transfer, distribution, lease, public transmission, presentation, exhibition, adaptation and any other exploitation.
8. "Recipient" shall mean anyone who receives the licenced Program under this Agreement, including one that receives the licenced Program from a Recipient.

Article 2 (Grant of Licence)

The Licencor grants to the Recipient a Licence to use the licenced Program in any and all countries in accordance with each of the provisions set forth in this Agreement. However, any and all rights underlying in the licenced Program shall be held by the Licencor. In no sense is this Agreement intended to transfer any right relating to the licenced Program held by the Licencor except as specifically set forth herein or any right relating to any trademark, trade name, or service mark to the Recipient.

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1. The Recipient may install the licenced Program on any number of Computers and use the same in accordance with the provisions set forth in this Agreement.
 2. The Recipient may use the licenced Program, with or without modification in printed materials or in Digital Content as an expression of character texts or the like.
 3. The Recipient may conduct Reproduction and Other Exploitation of the printed materials and Digital Content created in accordance with the preceding Paragraph, for commercial or non – commercial purposes and in any form of media including but not limited to broadcasting, communication and various recording media.
 4. If any Recipient extracts Embedded Fonts from a Digital Document File to create a Derived Program, such Derived Program shall be subject to the terms of this agreement.
 5. If any Recipient performs Reproduction or Other Exploitation of a Digital Document File in which Embedded Fonts of the licenced Program are used only for rendering the Digital Content within such Digital Document File then such Recipient shall have no further obligations under this Agreement in relation to such actions.
 6. The Recipient may reproduce the licenced Program as is without modification and transfer such copies, publicly transmit or otherwise redistribute the licenced Program to a third party for commercial or non – commercial purposes (“Redistribute”), in accordance with the provisions set forth in Article 3 Paragraph 2.
 7. The Recipient may create, use, reproduce and/or Redistribute a Derived Program under the terms stated above for the licence d Program: provided, that the Recipient shall follow the provisions set forth in Article 3 Paragraph 1 when Redistributing the Derived Program.

Article 3 (Restriction)

The Licence granted in the preceding Article shall be subject to the following restrictions:

1. If a Derived Program is Redistributed pursuant to Paragraph 4 and 7 of the preceding Article, the following conditions must be met:
 - (1) The following must be also Redistributed together with the Derived Program, or be made available online or by means of mailing mechanisms in exchange for a cost which does not exceed the total costs of postage, storage medium and handling fees:
 - (a) a copy of the Derived Program; and
 - (b) any additional file created by the font developing program in the course of creating the Derived Program that can be used for further modification of the Derived Program, if any.
 - (2) It is required to also Redistribute means to enable recipients of the Derived Program to replace the Derived Program with the licenced Program first released under this Licence (the "Original Program"). Such means may be to provide a difference file from the Original Program, or instructions setting out a method to replace the Derived Program with the Original Program.
 - (3) The Recipient must licence the Derived Program under the terms and conditions of this Agreement.
 - (4) No one may use or include the name of the licenced Program as a program name, font name or file name of the Derived Program.
 - (5) Any material to be made available online or by means of mailing a medium to satisfy the requirements of this paragraph may be provided, verbatim, by any party wishing to do so.

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2. If the Recipient Redistributes the licenced Program pursuant to Paragraph 6 of the preceding Article, the Recipient shall meet all of the following conditions:
 - (1) The Recipient may not change the name of the licenced Program.
 - (2) The Recipient may not alter or otherwise modify the licenced Program.
 - (3) The Recipient must attach a copy of this Agreement to the licenced Program.
 3. This licenced program is provided by the licensor “as is” and any expressed or implied warranty as to the licenced program or any derived program, including, but not limited to, warranties of title, non – infringement, merchantability, or fitness for a particular purpose, are disclaimed. In no event shall the licensor be liable for any direct, indirect, incidental, special, extended, exemplary, or consequential damages (including, but not limited to; procurement of substituted goods or service; damages arising from system failure; loss or corruption of existing data or program; lost profits), however caused and on any theory of liability, whether in contract, strict liability or tort (including negligence or otherwise) arising in any way out of the installation, use, the reproduction or other exploitation of the licenced program or any derived program or the exercise of any rights granted hereunder, even if advised of the possibility of such damages.
 4. The Licensor is under no obligation to respond to any technical questions or inquiries, or provide any other user support in connection with the installation, use or the Reproduction and Other Exploitation of the licenced Program or Derived Programs thereof.

Article 4 (Termination of Agreement)

1. The term of this Agreement shall begin from the time of receipt of the licenced Program by the Recipient and shall continue as long as the Recipient retains any such licenced Program in any way.
2. Notwithstanding the provision set forth in the preceding Paragraph, in the event of the breach of any of the provisions set forth in this Agreement by the Recipient, this Agreement shall automatically terminate without any notice. In the case of such termination, the Recipient may not use or conduct Reproduction and Other Exploitation of the licenced Program or a Derived Program: provided that such termination shall not affect any rights of any other Recipient receiving the licenced Program or the Derived Program from such Recipient who breached this Agreement.

Article 5 (Governing Law)

1. IPA may publish revised and/or new versions of this Licence. In such an event, the Recipient may select either this Agreement or any subsequent version of the Agreement in using, conducting the Reproduction and Other Exploitation of, or Redistributing the licenced Program or a Derived Program. Other matters not specified above shall be subject to the Copyright Law of Japan and other related laws and regulations of Japan.
2. This Agreement shall be construed under the laws of Japan.

アスベストは使用しておりません
Not use the asbestos

For further information, contact:



Since 1915

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ISO 9001, ISO 14001 Certified