

# 7.1 Operation Tests



## CAUTION

Periodically perform operation tests and promptly investigate any problems you discover. When performing tests, be particularly careful of high voltage, and beware of causing malfunctions due to measurement errors or inattention during measurement. It is extremely effective to keep notes of the results of tests and refer to them at the time of the next test.

The system has a self-diagnosis function for inspecting the operating status inside the system.

Open the test menu and perform self-diagnosis.

## Procedures

- 1) **Select the menu options shown below to open the test menu.**

Main

→ 9. Test Menu

- 2) **Select the menu options shown below to open the test menu.**

|                       |                               |
|-----------------------|-------------------------------|
| 1. Self Test          | 1. Self-diagnosis function    |
| 2. Monitor Test       | 2. Monitor test               |
| 3. Keyboard Test      | 3. Operation panel test       |
| 4. MON Display        | 4. Performance monitor        |
| 5. System Alarm Log   | 5. Error logging display      |
| 6. System Information | 6. System information display |
| 7. Magnetron Current  | 7. Magnetron current display  |

- 3) **The content of the test appears.**

During transmission, the magnetron current appears as a bar graph.

The normal values for each type of transmission equipment is as shown below (measured in the 48 nm range).

10kW : 4th to 6th

25kW : 6th to 9th

30kW : 6th to 9th

## 7.1.1 Self-diagnosis function (self test)

Tests the memory, scanner unit, and communication line.

|                   |                                      |
|-------------------|--------------------------------------|
| 1. Memory Test    | 1. Display unit internal memory test |
| 2. TXRX Test      | 2. Scanner unit test                 |
| 3. Line Test      | 3. Communication line test           |
| 4. Supply Voltage | 4. Power supply voltage test         |

### 1) Display unit internal memory test (Memory Test)

Tests the operating status of the built-in memory.

|              |                |
|--------------|----------------|
| 1. SDRAM     | SDRAM test     |
| 2. SRAM      | SRAM test      |
| 3. FLASH ROM | Flash ROM test |
| 4. GRAPHIC   | Graphic test   |

If there is no problem, "OK" appears; , there is a problem, "NG" appears.

### 2) Scanner unit test (TXRX Test)

Tests the signal from the scanner unit.

|               |  |
|---------------|--|
| Safety Switch | Scanner unit safety switch test          |
| AZI Pulse     | Scanner unit rotation signal test        |
| HL Pulse      | Ship heading signal test                 |
| MH Current    | Modulator high voltage load current test |
| Trigger       | Radar trigger signal test                |
| Video         | Radar image test                         |

If there is no problem, "OK" appears; , there is a problem, "NG" appears.

When the system is on standby, \*\* appears.

### 3) Communication line test (Line Test)

Tests the communication with optional equipment and external navigation equipment.

|          |   |
|----------|---|
| TXRX     | Transmitter-receiver unit connection test |
| SIG.PROC | Signal process circuit connection test    |
| TT       | Target tracking unit connection test      |
| GYRO I/F | GYRO I/F unit connection test             |
| ISW      | Inter switch connection test              |

If there is no problem, "OK" appears; , there is a problem, "NG" appears.

The status display for any unconnected device is blank.

### 4) Power supply voltage test (Supply Voltage)

Tests the voltage of the internal power supply.

| Item    | Normal value |
|---------|--------------|
| 12V     | 11.4 - 12.6V |
| 5V      | 4.75 - 5.25V |
| 3.3V    | 3.14 - 3.46V |
| Battery | 2.5V or more |



## 7.1.2 Display test (Monitor Test)

Tests the display. The test patterns appear on the display.

|             |  |
|-------------|--|
| 1. Pattern1 | All white  |
| 2. Pattern2 | 1280 × 1024 dot black ground with white frame                            |
| 3. Pattern3 | 2 square frames, 2 circles, and 13 crosses (white lines on black ground) |
| 4. Pattern4 | Screen filled with 9 dot x 9 dot "H" (white letter on black ground)      |

|             |                              |
|-------------|------------------------------|
| 5. Pattern5 | Grayscale (16 gradations)    |
| 6. Pattern6 | Color bar                    |
| 7. Pattern7 | VDR test pattern             |
| 8. Pattern8 | Color spec, ied in RGB shown |

Pressing any key returns the display to the normal screen.

If the test patterns do not appear, there is a problem with the monitor.

### 7.1.3 Operating unit test (Keyboard Test)

Tests the operation panel knobs and switches.

|                |                               |
|----------------|-------------------------------|
| 1. Key Test    | 1. Key test                   |
| 2. Buzzer Test | 2. Buzzer test                |
| 3. Light Test  | 3. Operation panel light test |

#### 1) **Key Test**

Tests the operation panel knobs and switches.

As you press each key, check that the color of the key of the operation panel displayed on the screen is reversed and the name of the key appears.

#### 2) **Buzzer Test**

Tests the buzzer of the operation panel.

The buzzer sounds.

After a set period of time, the buzzer automatically goes off.

#### 3) **Light Test**

Tests the light in the operation panel.

The light in the operation panel gets progressively brighter in four stages.

## 7.1.4 Performance Monitor (MON Display)

Shows the status of the performance monitor.

|                      |                                    |
|----------------------|------------------------------------|
| * Transmitter System | Tests the transmitter attenuation. |
|                      | Attenuation Value                  |
| * Receiver System    | Tests the receiver attenuation.    |
|                      | MON Pattern Range                  |
|                      | Attenuation Value                  |



### CAUTION

When checking the transmitter attenuation, read the values one minute after opening this menu item.

### Procedures

- 1) Turn the "VRM" knob to place the VRM at the farthest edge of the performance monitor pattern.

The receiver attenuation appears for the Attenuation Value of the Receiver System.

## 7.1.5 System alarm log display (System Alarm Log)

When a system error occurs, the error name is shown with the color reversed.

In addition, errors that have been cleared appear in a timeline.

Pressing the **Clear** button on the log display screen clears the alarm log.

## 7.1.6 System information display (System Information)

Shows system information such as magnetron usage time and program version information.

|                              |   |                                      |
|------------------------------|---|--------------------------------------|
| * Indicator Ver. **. **      | Display unit program version              |                                      |
| * TXRX Ver. **. **           | Transmitter-receiver unit program version |                                      |
| * System No. No. **. **      | Display unit system number                |                                      |
|                              |   |                                      |
| * TX Time                    |   |                                      |
|                              | X-Band **** hours                         | X band transmitter transmitting time |
|                              | S-Band **** hours                         | S band transmitter transmitting time |
| * Motor Time **** hours      | Scanner unit motor usage time             |                                      |
| * TXRX Total Time **** hours | Transmitter-receiver unit usage time      |                                      |
| * Total Time **** hours      | Display unit usage time                   |                                      |

In a normal transmitter-receiver unit, TX TIME shows either X band or the S band transmitting time. Both appear in the two-frequency transmitter-receiver unit.

## 7.2 Error Message List

### 7.2.1 Scanner unit / transmitter-receiver unit error messages

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#### 7.2.1.1 TXRX(SSW Off)

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##### [1] Content

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The safety switch in the scanner unit is off. Transmission is impossible when the safety switch is off.

##### [2] Problem location

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##### [2]-1 Scanner unit safety switch

- Turn on the safety switch.
- Check safety switch S101.

##### [2]-2 Scanner unit installation cable

- For the three-unit type, check the scanner unit installation cable.  
TB103/TB203 +12V and C2
- For the NKE-2103, check the scanner unit internal cable.

W102, WS101

##### [2]-3 CMC-1205R in the transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)

- Check the insertion status of J1105 in CMC-1205R
- Replace CMC-1205R. (see 4.1.2.10, 4.1.4.9, 4.1.6.8, 4.2.2.5 and 4.2.3.5 )

##### [2]-4 CME-363: Modulator circuit for NKE-2103

- Check the insertion status of J202 and J210 in CME-363

##### [2]-5 NRG-610: Receiver unit for NKE-2103

- Check the insertion status of J301 in CAE-529-1

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#### 7.2.1.2 TXRX(MHV)

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##### [1] Content

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There is a problem with the high voltage power supply for the modulation circuit in the transmitter-receiver unit.

It is possible that the power supply circuit or the modulation circuit is faulty.

**[2] Problem location**

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- [2]-1 CPA-264 in transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)**
  - Check the insertion status of J2102 and J2101 in modulation circuit CPA-264.
  - Replace CPA-264. (see 4.1.2.7, 4.1.4.6, 4.1.6.5, 4.1.7.5, 4.2.2.2 and 4.2.3.2)
- [2]-2 CBD-1682A in transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)**
  - Check the insertion status of J1002 in power supply circuit CBD-1682A.
  - Replace CBD-1682A (see 4.1.4.8, 4.1.6.7, 4.1.7.6, 4.2.2.4 and 4.2.3.4)
- [2]-3 CMC-1205R in transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)**
  - Check the insertion status of P1111 in CMC-1205R.
  - Replace CMC-1205R. (see 4.1.2.10, 4.1.4.9, 4.1.6.8, 4.2.2.5 and 4.2.3.5 )
- [2]-4 CME-363: Modulator circuit for NKE-2103**
  - Check the insertion status of J202 and J205 in CME-363
  - Replace CME-363. (see 4.1.7.5)
- [2]-5 NRG-610: Receiver unit for NKE-2103**
  - Check the insertion status of J302 in CAE-529-1.
- [2]-6 CBD-1783: Power supply circuit for NKE-2103**
  - Check the insertion status of J1002 in CBD-1783.
  - Replace CBD-1783. (see 4.1.7.6)
- [2]-7 Internal cable in transmitter-receiver unit**
  - Check the cables in the transmitter-receiver unit.  
W003, W107, W201 (NKE-1125/2254/1130, NTG-3225/3230)  
W102, W104 (NKE-2103)

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**7.2.1.3 TXRX(Reverse)**

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**[1] Content**

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In the case of the radiator is subjected to external force of wind (corresponding wind speed is greater than 51.5m/s) that exceed the ability to drive the scanner unit, the scanner unit stop to drive the motor. Because a built-in overload protection circuit is activated. If the the scanner unit rotates by the wind in a counterclockwise direction, the TXRX[Reverse] alarm will be appeared, and stop the transmit the radar.

The radar transmit normally when the wind has calm down, the equipment is not faulty.

If the radar cannot transmit when the wind has calm down, there is a problem with the motor driving system in the scanner unit. In this case, check below.

**[2] Problem location**

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- [2]-1 Relay filter circuit CSC-656 in scanner unit**
  - Check the wiring of the power supply for the motor.



- Replace CSC-656. (see 4.1.2.11 and 4.1.4.5 )
- [2]-2 Motor driver 7EPRD0034(for 220VAC)/7EPRD0035(for 100VAC)**
  - Check the wiring of the power supply for the motor.
  - Replace 7EPRD0034/7EPRD0035. (see 4.1.2.4, 4.1.3.3, 4.1.4.4, 4.1.5.3 and 4.1.6.4 )
- [2]-3 Motor in the scanner unit**
  - See the Section 7.2.1.9.

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#### 7.2.1.4 TXRX(Heater)

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##### [1] Content

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There is a problem with the power supply for the magnetron heater in the transmitter-receiver unit.

It is possible that the power supply circuit, T/R control circuit CMC-1205R or modulation circuit is faulty.

##### [2] Problem location

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- [2]-1 CPA-264 in transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)**
  - Check the insertion status of J2102 and J2103 in modulation circuit CPA-264.
  - Replace CPA-264. (see 4.1.2.7, 4.1.4.6, 4.1.6.5, 4.1.7.5, 4.2.2.2 and 4.2.3.2)
- [2]-2 CBD-1682A in transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)**
  - Check the insertion status of J1003 in power supply circuit CBD-1682A.
  - Replace CBD-1682A. (see 4.1.4.8, 4.1.6.7, 4.1.7.6, 4.2.2.4 and 4.2.3.4)
- [2]-3 CMC-1205R in transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)**
  - Check the insertion status of P1111 in CMC-1205R.
  - Replace CMC-1205R. (see 4.1.2.10, 4.1.4.9, 4.1.6.8, 4.2.2.5 and 4.2.3.5 )
- [2]-4 CME-363: Modulator circuit for NKE-2103**
  - Check the insertion status of J202, J205 and J206 in CME-363
  - Replace CME-363. (see 4.1.7.5)
- [2]-5 NRG-610: Receiver unit for NKE-2103**
  - Check the insertion status of J302 in CAE-529-1.
- [2]-6 CBD-1783: Power supply circuit for NKE-2103**
  - Check the insertion status of J1002 and J1003 in CBD-1783.
  - Replace CBD-1783. (see 4.1.7.6)
- [2]-7 Internal cable in transmitter-receiver unit**
  - Check the cables in the transmitter-receiver unit.  
W003, W107, W201 (NKE-1125/2254/1130, NTG-3225/3230)  
W102, W103, W104 (NKE-2103)

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## 7.2.1.5 TXRX(Video)

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### [1] Content

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There is a problem with the radar video signal output of the transmitter-receiver unit.

If TXRX (MHV) or TXRX (Heater) appears, address the problem there first.

This message can appear even when the transmitter is not operating. Therefore, first check the magnetron current in the test menu to check whether the transmission function is operating properly or not.

If there is a problem with the transmission function, it is possible that there is a fault in modulation circuit, power supply circuit, or T/R control circuit CMC-1205R.

If the transmission function is operating properly, it is possible there is a problem with the receiver.

### [2] Problem location

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- [2]-1 CPA-264 in transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)**
- Check the insertion status of J2102 and J2103 in modulation circuit CPA-264.
  - Replace CPA-264. (*see 4.1.2.7, 4.1.4.6, 4.1.6.5, 4.1.7.5, 4.2.2.2 and 4.2.3.2*)
- [2]-2 CBD-1682A in transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)**
- Check the insertion status of J1003 in power supply circuit CBD-1682A.
  - Replace CBD-1682A. (*see 4.1.4.8, 4.1.6.7, 4.1.7.6, 4.2.2.4 and 4.2.3.4*)
- [2]-3 CMC-1205R in transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)**
- Check the insertion status of J1111, J1103 in CMC-1205R.
  - Replace CMC-1205R. (*see 4.1.2.10, 4.1.4.9, 4.1.6.8, 4.2.2.5 and 4.2.3.5*)
- [2]-4 NRG-162A, NRG-229 in transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)**
- Check the insertion status of J101 in receivers NRG-162A and NRG-229.
  - Check the insertion status of J1109 and J1110 in CMC-1205R.
  - Replace NRG-162A. (*see 4.1.4.10, 4.1.6.9 and 4.2.2.7*)
  - Replace NRG-229. (*see 4.1.2.12 and 4.2.3.7*)
- [2]-5 CME-363: Modulator circuit for NKE-2103**
- Check the insertion status of J201, J205 and J206 in CME-363
  - Replace CME-363. (*see 4.1.7.5*)
- [2]-6 NRG-610: Receiver unit for NKE-2103**
- Check the insertion status of J301 in CAE-529-1.
  - Replace NRG-610. (*see 4.1.7.7*)
- [2]-7 CBD-1783: Power supply circuit for NKE-2103**
- Check the insertion status of J1002 and J1003 in CBD-1783.

- Replace CBD-1783. (see 4.1.7.6)

#### [2]-8 Internal cable in transmitter-receiver unit

- Check the cables in the transmitter-receiver unit.

W003, W005, W104, W001 (NKE-1125/2254/1130, NTG-3225/3230)

W102, W103, W104 (NKE-2103)

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### 7.2.1.6 TXRX(Trigger)

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#### [1] Content

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There is a problem with the trigger signal output from the transmitter-receiver unit.

It is possible there is a problem with the T/R control circuit CMC-1205R.

#### [2] Problem location

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##### [2]-1 CMC-1205R in transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)

- Replace CMC-1205R. (see 4.1.2.10, 4.1.4.9, 4.1.6.8, 4.2.2.5 and 4.2.3.5 )

##### [2]-2 CME-363: Modulator circuit for NKE-2103

- Check the insertion status of J202 in CME-363

##### [2]-3 NRG-610: Receiver unit for NKE-2103

- Check the insertion status of J302 in CAE-529-1.
- Replace NRG-610. (see 4.1.7.7)

##### [2]-4 Installation cable for Scanner unit

- Check the installation cable.

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### 7.2.1.7 TXRX(Fan1)

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#### [1] Content

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There is a problem with the modulator cooling fan in the transmitter-receiver unit.

#### [2] Problem location

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##### [2]-1 Fan (modulator) (NKE-1125/2254/1130, NTG-3225/3230)

- Check the insertion status of J1113 in CMC-1205R
- Replace B103(NKE-1130) or B201(NKE-1125, NKE-2254). (see 4.1.2.6, 4.1.4.13 and 4.1.6.12)

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### 7.2.1.8 TXRX(Fan2)

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#### [1] Content

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There is a problem with the motor cooling fan in the transmitter-receiver unit.

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#### [2] Problem location

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##### [2]-1 Fan (motor and motor driver) (NKE-1125/2254/1130, NTG-3225/3230)

- Check the insertion status of J1114 in CMC-1205R
- Replace B104(NKE-1130) or B202(NKE-1125, NKE-2254) (*see 4.1.2.5, 4.1.4.12 and 4.1.6.11*)

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### 7.2.1.9 TXRX(Motor)

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#### [1] Content

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There is a problem with the motor in the scanner unit.

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#### [2] Problem location

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##### [2]-1 Motor in the scanner unit

- Check the wiring of the motor.
- Replace motor B101 (The model name of motor B101 varies with the scanner unit.) (*see 4.1.2.3, 4.1.3.2, 4.1.4.3, 4.1.5.2, 4.1.6.3 and 4.1.7.3*)

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### 7.2.1.10 TXRX(AZI)

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#### [1] Content

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The antenna rotation signal is not being output from the scanner unit. When this message appears, radar transmission is forcibly stopped.

There are two possible cases: 1) the motor is not rotating, and 2) the rotation signal is not being output. First, check that the motor is rotating.

If the motor is not rotating and wind blow very strong, it remains possible that the motor driving system has not a problem. If the radiator is subjected to external force of wind (corresponding wind speed is greater than 51.5m/s) that exceed the ability to drive the scanner unit, the scanner unit stop to drive the motor. Because a built-in overload protection circuit is activated. In this case, the alarm is appeared, but the equipment is not faulty. The radar transmit normally when the wind has calm down less than or equal to 51.5m/s.(*see 2.3.1, 7.2.1.3*)

If the motor is not rotating, it is possible that there is a problem with the motor, relay circuit CSC-656, the installation cable, power supply circuit CBD-1661 in the display unit, or AC / DC converter NBA-5135 in the display unit.

If the motor is rotating, it is possible there is a problem with the encoder or T/R control circuit CMC-1205R.

## [2] Problem location

### [2]-1 Scanner unit installation cable (NKE-1125/1129/2254/1130/1139)

- Check the scanner unit installation cable.

TB103/TB203  $\phi A, \phi B$   
 TB104/TB204 VERR/E  
 TB103/TB202 U1/V1

- Check the installation cable. (NKE-2103)

### [2]-2 Display unit NBA-5135

- If the scanner unit is NKE-2103/2254, check the input/output of NBA5135.

TB521 U/V: Ship' s mains voltage  
 TB522 +/- : DC24V

Check fuse F501 of NBA-5135 and replace it , it is blown.(see 4.3.3.13)

Replace NBA-5135.(see 4.3.3.12)

### [2]-3 Motor in the scanner unit

- Check the wiring of motor B101.
- Replace motor B101. (The model name of motor B101 varies with the scanner unit.)(see 4.1.2.3, 4.1.3.2, 4.1.4.3, 4.1.5.2, 4.1.6.3 and 4.1.7.3 )

### [2]-4 Scanner unit encoder

- Check the wiring of encoder B102.
- Replace encoder B102. (The model name of encoder B102 varies with the scanner unit.)(see 4.1.2.13, 4.1.3.4, 4.1.4.11, 4.1.5.4, 4.1.6.10 and 4.1.7.8 )

### [2]-5 CMC-1205R in transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)

- Check the insertion status of J13 in CMC-1205R.
- Replace CMC-1205R. (see 4.1.2.10, 4.1.4.9, 4.1.6.8, 4.2.2.5 and 4.2.3.5 )

### [2]-6 CSC-656 in transmitter-receiver unit (NKE-1125/1129/2254/1130/1139)

- Check that all the connectors for CSC-656 are inserted.
- Replace CSC-656. (see 4.1.2.11 and 4.1.4.5 )

### [2]-7 CBD-1661 in display unit

- Check the U1/V1 connection on CBD-1661.
- Replace CBD-1661 ( , the relay in CBD-1661 is damaged).(see 4.3.3.1)

### [2]-8 CME-363: Modulator circuit for NKE-2103

- Check the insertion status of J201 and J208 in CME-363
- Replace CME-363. (see 4.1.7.5)

### [2]-9 NRG-610: Receiver unit for NKE-2103

- Check the insertion status of J301 in CAE-529-1.
- Replace NRG-610. (see 4.1.7.7)

**[2]-10 CBD-1783: Power supply circuitt for NKE-2103**

- Check the insertion status of J1002 and J1003 in CBD-1783.
- Replace CBD-1783. (see 4.1.7.6)

**[2]-11 Internal cable for Scanner unit**

- Check the internal cable.(NKE-2103)

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## 7.2.1.11 TXRX(HL)

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**[1] Content**

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The antenna's reference point signal is not being output from the scanner unit. When this message appears, radar transmission is forcibly stopped.

There are two possibilities: 1) the motor is not rotating and 2) the reference point signal is not being output.

First, check that the motor is rotating.

If the motor is not rotating, it is possible there is a fault in the motor, relay circuit CSC-656, installation cable, display unit power supply circuit CBD-1661, or AC/DC converter NBA-5135 in the display unit.

If the motor is rotating, it is possible that there is a fault in the encoder or T/R control circuit CMC-1205R.

**[2] Problem location**

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**[2]-1 Scanner unit installation cable (NKE-1125/1129/2254/1130/1139)**

- Check the scanner unit installation cable.

TB103/TB203 φA,φB  
 TB104/TB204 VERR/E  
 TB103/TB202 U1/V1

**[2]-2 Display unit NBA-5135**

- If the scanner unit is NKE-2103/2254, check the input/output of NBA5135.

TB521 U/V: Ship' s mains voltage  
 TB522 +/- : DC24V  
 Check fuse F501 of NBA-5135 and replace it , it is blown.(see 4.3.3.13)

- Replace NBA-5135. (see 4.3.3.12)

**[2]-3 Motor in the scanner unit**

- Check the wiring of motor B101.
- Replace motor B101. (The model name of motor B101 varies with the scanner unit.)(see 4.1.2.3, 4.1.3.2, 4.1.4.3, 4.1.5.2, 4.1.6.3 and 4.1.7.3 )

**[2]-4 Scanner unit encoder**

- Check the wiring of encoder B102.

- Replace encoder B102. (The model name of encoder B102 varies with the scanner unit.)(see 4.1.2.13, 4.1.3.4, 4.1.4.11, 4.1.5.4, 4.1.6.10 and 4.1.7.8 )
- [2]-5 CMC-1205R in transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)**
  - Check the insertion status of J13 in CMC-1205R.
  - Replace CMC-1205R. (see 4.1.2.10, 4.1.4.9, 4.1.6.8, 4.2.2.5 and 4.2.3.5 )
- [2]-6 CSC-656 in transmitter-receiver unit (NKE-1125/1129/2254/1130/1139)**
  - Check that all the connectors for CSC-656 are inserted.
  - Replace CSC-656. (see 4.1.2.11 and 4.1.4.5 )
- [2]-7 CBD-1661 in display unit**
  - Check the U1/V1 connection on CBD-1661.
  - Replace CBD-1661 (, the relay in CBD-1661 is damaged).(see 4.3.3.1)
- [2]-8 CME-363: Modulator circuit for NKE-2103**
  - Check the insertion status of J202 and J208 in CME-363
  - Replace CME-363. (see 4.1.7.5)
- [2]-9 NRG-610: Receiver unit for NKE-2103**
  - Check the insertion status of J302 in CAE-529-1.
  - Replace NRG-610. (see 4.1.7.7)
- [2]-10 Internal cable for Scanner unit**
  - Check the internal cable. (NKE-2103)

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### 7.2.1.12 TXRX(Data)

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#### [1] Content

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There is a problem in the communication between the display unit and the transmitter-receiver unit. When this message appears, radar is not transmitted.

It is possible that there is a problem in the cable between the display unit and the transmitter-receiver unit or that power is not being applied to the transmitter-receiver unit.

First, check the voltage of the power supply applied to the transmitter-receiver unit (+48V/+48VG) to identify the cause of problem.

If power control unit (PCU) NQE-3167 is being used, it is possible that there is a problem with the PCU installation cable or the PCU itself.

#### [2] Problem location

---

- [2]-1 CQD-2097 in display unit**
  - Check the wiring of TB4101 in terminal board circuit CQD-2097.  
TB4101 +48V/+48VG  
MTR+/MTR-
  - Check the installation cable. (NKE-2103)

- Replace CQD-2097. (*see 4.3.3.9*)
- [2]-2 Transmitter-receiver unit / Scanner unit installation cable**
  - Check the installation cable of the transmitter-receiver unit or the scanner unit.  
TB201 MTR+/MTR-  
TB203 +48V/+48VG、
- [2]-3 CBD-1661 in display unit**
  - Check power supply circuit CBD-1661.  
CQD-2097: TB4101 +48V/+48VG
  - Replace CBD-1661. (*see 4.3.3.1*)
- [2]-4 CMC-1205R in transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)**
  - Check that all the connectors for CMC-1205R are inserted.  
TB101 MTR+/MTR-, J1103
  - Replace CMC-1205R. (*see 4.1.2.10, 4.1.4.9, 4.1.6.8, 4.2.2.5 and 4.2.3.5*)
- [2]-5 CBD-1682A in transmitter-receiver unit (NKE-1125/2254/1130, NTG-3225/3230)**
  - Check that each connector for power supply circuit CBD-1682A is inserted.  
J3 1A/2A : DC48V, J1003
  - Replace CBD-1682A. (*see 4.1.4.8, 4.1.6.7, 4.1.7.6, 4.2.2.4 and 4.2.3.4*)
- [2]-6 CME-363: Modulator circuit for NKE-2103**
  - Check the insertion status of J201 and J205 in CME-363
  - Replace CME-363. (*see 4.1.7.5*)
- [2]-7 NRG-610: Receiver unit for NKE-2103**
  - Check the insertion status of J301 in CAE-529-1.
  - Replace NRG-610. (*see 4.1.7.7*)
- [2]-8 CBD-1783: Power supply circuit for NKE-2103**
  - Check the insertion status of J1002 in CBD-1783.
  - Replace CBD-1783. (*see 4.1.7.6*)
- [2]-9 Internal cable for Scanner unit**
  - Check the internal cable. (NKE-2103)



## 7.2.2 Display unit error messages

---

### 7.2.2.1 Keyboard(Data) Keyboard(Data2)

---

#### [1] Content

---

There is a problem with the communication of the operating unit. (Data) and (Data2) indicate the communication status of the main operating unit and the sub operating unit, respectively.

It is possible there is a problem in the operating unit, an operating unit cable is damaged, a problem with the terminal block circuit, or there is a problem in the radar process circuit.

You can check the communication status of the operating unit from the terminal board circuit monitor LEDs OPE1 and OPE2.

#### [2] Problem location

---

##### [2]-1 CCK-976 in operation unit

- Check the insertion status of J6401 in operating circuit CCK-976.
- Rpelace CCK-976. (*see 4.3.4.4*)
- Replace NCE-5163. (*see 4.3.4.1*)

##### [2]-2 CQD-2097 in display unit

- Check the insertion status of J4311 and J4312 in terminal board circuit CQD-2097.
  - J4311 : Main operation unit
  - J4312 : Sub operation unit
- Replace CQD-2097. (*see 4.3.3.9*)

##### [2]-3 CDC-1324 in display unit

- Check the installation status of radar process circuit CDC-1324.
  - Is it securely contained in the radar process unit rack?*
- Rpelace CDC-1324. (*see 4.3.3.2*)

---

### 7.2.2.2 ISW(Data)

---

#### [1] Content

---

There is a problem in communication with the inter switch unit.

It is possible there is a problem with the inter switch unit, damage to the inter switch cable, a problem with the terminal board circuit, or a problem with the radar process circuit.

It is possible the power for the inter switch unit is not turned on.

You can check the status of communication with the inter switch unit from the terminal board circuit operation monitor LED TRX.

This LED is also used for scanner unit communication.

## [2] Problem location

### [2]-1 CCL-304R in ISW unit

- Check the status of inter switch circuit CCL-304R.
- Check the inter switch cable.  
TB901, TB902, TB903, TB904
- Replace NQE-3141-2A/4A.

### [2]-2 CQD-2097 in display unit

- Check the insertion status of J4306, J4307, and J4308 in the terminal block circuit board CQD-2097.
- Check the inter switch cable.  
TB4201
- Replace CQD-2097. (*see 4.3.3.9*)

### [2]-3 CDC-1324 in display unit

- Check the installation status of radar process circuit CDC-1324.  
Is it securely contained in the radar process unit rack?
- Replace CDC-1324. (*see 4.3.3.2*)

---



---

## 7.2.2.3 PROC(Trigger)

---

### [1] Content

There is a problem with the trigger signal from the scanner unit.

If TXRX (Trigger) or TXRX (Data) appears, resolve that problem first.

It is possible there is damage to the scanner unit installation cable, the terminal block circuit board, or the radar process circuit.

If the inter switch is in use, it is possible that the inter switch cable or the inter switch unit is damaged.

## [2] Problem location

### [2]-1 CQD-2097 in display unit

- Check the insertion status of J4301, J4302, and J4303 in the terminal block circuit board CQD-2097.
- Check the insertion status of J4306, J4307, and J4308 in the terminal block circuit board CQD-2097.
- Check the scanner unit installation cable.

TB4101

- Replace CQD-2097. (see 4.3.3.9)

**[2]-2 CCL-304R in ISW unit**

- Check the status of inter switch circuit CCL-304R.
- Check the inter switch cable.

TB901, TB902, TB903, TB904

- Replace NQE-3141-2A/4A.

**[2]-3 CDC-1324 in display unit**

- Check the installation status of radar process circuit CDC-1324.  
Is it securely contained in the radar process unit rack?
- Replace CDC-1324. (see 4.3.3.2)

---

## 7.2.2.4 PROC(AZI)

---

**[1] Content**

---

There is a problem with the antenna rotation signal from the scanner unit.

If TXRX (AZI) or TXRX (Data) is shown, resolve that problem first.

It is possible that the scanner unit installation cable is damaged or that there is a problem with the terminal block circuit board or the radar process circuit board.

If the inter switch is in use, it is possible that the inter switch cable is damaged or that the inter switch unit is faulty.

**[2] Problem location**

---

**[2]-1 CQD-2097 in display unit**

- Check the insertion status of J4301, J4302, and J4303 in the terminal block circuit board CQD-2097.
- Check the insertion status of J4306, J4307, and J4308 in the terminal block circuit board CQD-2097.
- Check the scanner unit installation cable.

TB4101

- Replace CQD-2097. (see 4.3.3.9)

**[2]-2 CCL-304R in ISW unit**

- Check the status of inter switch circuit CCL-304R.
- Check the inter switch cable.

TB901, TB902, TB903, TB904

- Replace NQE-3141-2A/4A.

**[2]-3 CDC-1324 in display unit**

- Check the installation status of radar process circuit CDC-1324.  
Is it securely contained in the radar process unit rack?
- Replace CDC-1324. (see 4.3.3.2)

---

---

## 7.2.2.5 PROC(HL)

---

---

### [1] Content

---

There is a problem with the antenna rotation signal from the scanner unit.

If TXRX (AZI) or TXRX (Data) is shown, resolve that problem first.

It is possible that the scanner unit installation cable is damaged or that there is a problem with the terminal block circuit board or the radar process circuit board.

If the inter switch is in use, it is possible that the inter switch cable is damaged or that the inter switch unit is faulty.

---

### [2] Problem location

---

#### [2]-1 CQD-2097 in display unit

- Check the insertion status of J4301, J4302, and J4303 in the terminal block circuit board CQD-2097.
- Check the insertion status of J4306, J4307, and J4308 in the terminal block circuit board CQD-2097.
- Check the scanner unit installation cable.
  - TB4101
- Replace CQD-2097. (*see 4.3.3.9*)

#### [2]-2 CCL-304R in ISW unit

- Check the status of inter switch circuit CCL-304R.
- Check the inter switch cable.
  - TB901, TB902, TB903, TB904
- Replace NQE-3141-2A/4A.

#### [2]-3 CDC-1324 in display unit

- Check the installation status of radar process circuit CDC-1324.
  - Is it securely contained in the radar process unit rack?
- Replace CDC-1324. (*see 4.3.3.2*)

---

---

## 7.2.2.6 PROC(Video)

---

---

### [1] Content

---

There is a problem with the radar video signal from the scanner unit.

If TXRX (Video) or TXRX (Data) appears, resolve that problem first.

It is possible that the scanner unit installation cable is damaged or that there is a problem with the terminal block circuit board or the radar process circuit board.

If you are using the inter switch, it is possible that the inter switch cable is damaged or that there is a problem with the inter switch unit.

## [2] Problem location

### [2]-1 CQD-2097 in display unit

- Check the insertion status of J4301, J4302, and J4303 in the terminal block circuit board CQD-2097.
- Check the insertion status of J4306, J4307, and J4308 in the terminal block circuit board CQD-2097.
- Check the scanner unit installation cable.  
TB4101
- Replace CQD-2097. (see 4.3.3.9)

### [2]-2 CCL-304R in ISW unit

- Check the status of inter switch circuit CCL-304R.
- Check the inter switch cable.  
TB901, TB902, TB903, TB904
- Replace NQE-3141-2A/4A.

### [2]-3 CDC-1324 in display unit

- Check the installation status of radar process circuit CDC-1324.  
Is it securely contained in the radar process unit rack?
- Replace CDC-1324. (see 4.3.3.2)

---



---

## 7.2.2.7 PROC(INT)

---

### [1] Content

There is a problem with the processing reference pulse signal in the radar process circuit.

If TXRX (Trigger), TXRX (Data) or PROC (Trigger) is shown, resolve that problem first.

It is possible that the scanner unit installation cable is damaged, or that there is a problem with the terminal block circuit board or radar process circuit board.

If you are using the inter switch, it is possible that the inter switch cable is damaged or that there is a problem with the inter switch unit.

## [2] Problem location

### [2]-1 CQD-2097 in display unit

- Check the insertion status of J4301, J4302, and J4303 in the terminal block circuit board CQD-2097.

- Check the insertion status of J4306, J4307, and J4308 in the terminal block circuit board CQD-2097.
- Check the scanner unit installation cable.  
TB4101
- Replace CQD-2097. (see 4.3.3.9)

**[2]-2 CCL-304R in ISW unit**

- Check the status of inter switch circuit CCL-304R.
- Check the inter switch cable.  
TB901, TB902, TB903, TB904
- Replace NQE-3141-2A/4A.

**[2]-3 CDC-1324 in display unit**

- Check the installation status of radar process circuit CDC-1324.  
Is it securely contained in the radar process unit rack?
- Replace CDC-1324. (see 4.3.3.2)

---



---

### 7.2.2.8 Fan(Power)

---

**[1] Content**

---

There is a problem with the cooling fan for the power supply circuit in the display unit.

**[2] Problem location**

---

**[2]-1 CBD-1661 fan in display unit**

- Replace the fan for power supply circuit CBD-1661.

---



---

### 7.2.2.9 Fan(LCD)

---

**[1] Content**

---

There is a problem with the cooling fan for the display of the monitor unit.

**[2] Problem location**

---

**[2]-1 Fan in monitor unit**

- Replace the fan in the display.(see 4.3.1.2 and 4.3.2.6)  
Note: Diferent fans are used in NWZ-170 and NWZ-173.

---

---

### 7.2.2.10 Fan(PROC)

---

---

#### [1] Content

---

There is a problem with the cooling fan for the radar process circuit of the display unit.

---

#### [2] Problem location

---

##### [2]-1 Fan for the radar process circuit

- Check the fan cable in the radar process unit.  
J4313 and J4314 for CQD-2097
- Replace the fan in the radar process unit.(see 4.3.3.10 )

---

---

### 7.2.2.11 TT(Boot)

---

---

#### [1] Content

---

There is a problem with the ARPA circuit in the radar process unit of the display unit.

When this error appears, it is not possible to use the target tracking function (TT, ARPA/ATA).

---

#### [2] Problem location

---

##### [2]-1 CDC-1186D in radar process unit (in display unit)

- Replace ARPA process circuit board CDC-1186D in the radar process unit.
- Replace ARPA process circuit board CDC-1186D in the radar process unit.(see 4.3.3.5)

##### [2]-2 CDC-1324 in radar process unit (in display unit)

- Replace Radar process circuit board CDC-1324 in the radar process unit. (see 4.3.3.2)

---

---

### 7.2.2.12 ASIC1 to TT

---

---

#### [1] Content

---

There is a problem with the signal from the radar process circuit board in the display unit to the ARPA circuit board.

If this error appears, the target tracking function (TT, ARPA/ATA) cannot be used.

**[2] Problem location**

---

**[2]-1 CDC-1186D in radar process unit (in display unit)**

- Replace ARPA process circuit board CDC-1186D in the radar process unit.
- Replace ARPA process circuit board CDC-1186D in the radar process unit.(*see 4.3.3.5*)

**[2]-2 CDC-1324 in radar process unit (in display unit)**

- Replace Radar process circuit board CDC-1324 in the radar process unit. (*see 4.3.3.2*)

---

---

**7.2.2.13 TT to ASIC2**

---

**[1] Content**

---

There is a problem with the signal from the ARPA circuit board in the radar process unit of the display unit to the radar process circuit board.

If this error appears, the target tracking function (TT, ARPA/ATA) cannot be used.

**[2] Problem location**

---

**[2]-1 CDC-1186D in radar process unit (in display unit)**

- Replace ARPA process circuit board CDC-1186D in the radar process unit.
- Replace ARPA process circuit board CDC-1186D in the radar process unit.(*see 4.3.3.5*)

**[2]-2 CDC-1324 in radar process unit (in display unit)**

- Replace Radar process circuit board CDC-1324 in the radar process unit. (*see 4.3.3.2*)

---

---

**7.2.2.14 ASIC(INT)**

---

**[1] Content**

---

There is a problem with the signal in the radar process circuit board in the radar process unit of the display unit.

If TXRX (Trigger), TXRX (Data), or PROC (Trigger) appears, resolve that problem first.

If this error appears, the radar image cannot be displayed.



---

**[2] Problem location**

---

**[2]-1 CDC-1324 in radar process unit (in display unit)**

- Replace Radar process circuit board CDC-1324 in the radar process unit. (*see 4.3.3.2*)

---

---

**7.2.2.15 ASIC1 to RADAR**

---

---

**[1] Content**

---

There is a problem with the signal from the radar process circuit board in the radar process unit of the display unit to the DSP circuit board.

Normally, the system does not contain a DSP circuit board, so this message will not appear.

If this error appears, this radar image cannot be displayed.

**[2] Problem location**

---

**[2]-1 CDC-1186D in radar process unit (in display unit)**

- Replace ARPA process circuit board CDC-1186D in the radar process unit.
- Replace ARPA process circuit board CDC-1186D in the radar process unit. (*see 4.3.3.5*)

**[2]-2 CDC-1324 in radar process unit (in display unit)**

- Replace Radar process circuit board CDC-1324 in the radar process unit. (*see 4.3.3.2*)

---

---

**7.2.2.16 RADAR to ASIC2**

---

---

**[1] Content**

---

There is a problem with the signal from the DSP circuit in the radar process unit of the display unit to the radar process circuit board.

Normally, the system does not contain a DSP circuit board, so this message will not appear.

If this error appears, this radar image cannot be displayed.

**[2] Problem location**

---

**[2]-1 CDC-1186D in radar process unit (in display unit)**

- Replace ARPA process circuit board CDC-1186D in the radar process unit.

- Replace ARPA process circuit board CDC-1186D in the radar process unit.(*see* 4.3.3.5)
- [2]-2 CDC-1324 in radar process unit (in display unit)**
- Replace Radar process circuit board CDC-1324 in the radar process unit. (*see* 4.3.3.2)

---

### 7.2.2.17 ASIC to Local CPU

---

#### [1] Content

---

There is a problem with the signal in the radar process circuit board in the process unit of the display unit.

If this error appears, this radar image cannot be displayed.

#### [2] Problem location

---

- [2]-1 CDC-1324 in radar process unit (in display unit)**
- Replace Radar process circuit board CDC-1324 in the radar process unit. (*see* 4.3.3.2)

---

### 7.2.2.18 AIS PROC(Data)

---

#### [1] Content

---

There is a problem with the signal from the AIS process circuit board in the radar process unit of the display unit to the radar process circuit board.

If this error appears, AIS information cannot be displayed.

#### [2] Problem location

---

- [2]-1 CDC-1325 in radar process unit (in display unit)**
- Check the installation status of AIS process circuit board CDC-1325 in the radar process unit.
- Replace AIS process circuit board CDC-1325 in the radar process unit.(*see* 4.3.3.4)
- [2]-2 CDC-1324 in radar process unit (in display unit)**
- Replace Radar process circuit board CDC-1324 in the radar process unit. (*see* 4.3.3.2)

---

---

## 7.2.2.19 GYRO I/F (Data)

---

---

### [1] Content

---

There is a problem with the communication signal from the GYRO I/F circuit board in the radar process unit of the display unit and the radar process circuit board.

If this error appears, the true azimuth cannot be displayed.

It is possible that there is a fault in the GYRO I/F circuit board, the terminal block circuit board, or the radar process circuit board.

You can check the status of communication between the GYRO I/F circuit board and the radar process circuit board by looking at the terminal block circuit board operation monitor LED GYRO.

### [2] Problem location

---

#### [2]-1 CMJ-462E in the radar process unit (in the display unit)

- Check the installation status of GYRO I/F circuit board CMJ-462E in the radar process unit.
- Check the lighting status of the LED on circuit board CMJ-462E.
- Replace GYRO I/F circuit board CMJ-462E in the radar process unit. (see 4.3.3.6)

#### [2]-2 CQD-2097 in display unit

- Check the insertion status of the connectors on terminal board circuit CQD-2097 in the radar process unit.  
J4301、J4302、J4303
- Replace CQD-2097. (see 4.3.3.9)

#### [2]-3 CDC-1324 in display unit

- Replace Radar process circuit board CDC-1324 in the radar process unit. (see 4.3.3.2)

---

---

### 7.2.2.20 Battery Low

---

#### [1] Content

---

The battery for memory backup used in radar process circuit board CDC-1324 is about to run out.

#### [2] Problem location

---

##### [2]-1 CDC-1324 BT1

- Replace the battery. (*see 4.3.3.3*)

---

---

### 7.2.2.21 Battery Dead

---

#### [1] Content

---

The battery for memory backup used in radar process circuit board CDC-1324 has died.

#### [2] Problem location

---

##### [2]-1 CDC-1324 BT1

- Replace the battery. (*see 4.3.3.3*)

## 7.2.3 Error messages related to external input/output

---



---

### 7.2.3.1 GYRO I/F (GYRO)

---

#### [1] Content

---

The GYRO I/F circuit board in the display unit cannot recognize the GYRO signal.

If this error appears, the true azimuth cannot be displayed.

It is possible that there is a blown fuse in the GYRO I/F circuit board, or that there is a fault in the GYRO I/F circuit board or the terminal block circuit board.

It is also possible that there is no output from the GYRO side or that the GYRO signal amplitude is low.

#### [2] Problem location

---

##### [2]-1 Installation cable

- Check the connection status of the installation cable for terminal block circuit board CQD-2097.

TB4701

##### [2]-2 CMJ-462E in the radar process unit (in the display unit)

- Check the installation status of GYRO I/F circuit board CMJ-462E in the radar process unit.
- Check the switch settings of CMJ-462E.
- Check fuses F1 - F4 on CMJ-462E. (*see 4.3.3.7*)
- Replace GYRO I/F circuit board CMJ-462E in the radar process unit. (*see 4.3.3.6*)

##### [2]-3 CQD-2097 in display unit

- Check the insertion status of the connectors on terminal board circuit CQD-2097 in the radar process unit.
- J4301、J4302、J4303
- Replace CQD-2097. (*see 4.3.3.9*)

---



---

### 7.2.3.2 Heading(Data)

---

#### [1] Content

---

The radar process circuit board in the display unit cannot recognize true azimuth data.

If this error appears, the true azimuth cannot be displayed.

It is possible that there is a fault in the terminal block circuit board or the radar process circuit board.

It is possible that the baud rate of the serial port for the Heading is not set correctly.

It is also possible that there is no output from the GYRO side.

---

**[2] Problem location**

**[2]-1 Installation cable**

- Check the connection status of the installation cable for terminal block circuit board CQD-2097.

**[2]-2 TB4501 HDGRX+/HDGRX-  
CQD-2097 in display unit**

- Check the insertion status of the connectors on terminal board circuit CQD-2097 in the radar process unit.

- J4301、J4302、J4303
- Replace CQD-2097. (*see 4.3.3.9*)

**[2]-3 CDC-1324 in display unit**

- Check the baud rate on the serviceman menu.
- Replace Radar process circuit board CDC-1324 in the radar process unit. (*see 4.3.3.2*)

---

**7.2.3.3 Position(Data)**

---



---

**[1] Content**

Position data cannot be recognized by the radar process circuit board in the display unit.

If this error appears, the latitude and longitude cannot be displayed.

It is possible that the terminal block circuit board or radar process circuit board is faulty.

It is possible that the baud rate of the GPS serial port is not set correctly.

It is possible that the receiving port connected to the GPS is not set for use.

Alternatively, it could be that there is no output from the GPS side.

---

**[2] Problem location**

**[2]-1 Installation cable**

- Check the connection status of the installation cable for terminal block circuit board CQD-2097.

- 
- [2]-2** TB4501 NAV1RX+/NAV1RX-  
**CQD-2097 in display unit**
- Check the insertion status of the connectors on terminal board circuit CQD-2097 in the radar process unit.
    - J4301、J4302、J4303
  - Replace CQD-2097. (*see 4.3.3.9*)
- [2]-3** **CDC-1324 in display unit**
- Check the baud rate on the serviceman menu.
  - Check the receiving port used in the serviceman menu.
  - Replace Radar process circuit board CDC-1324 in the radar process unit. (*see 4.3.3.2*)

---

### 7.2.3.4 Date(Data)

---

#### [1] Content

---

Position data cannot be recognized by the radar process circuit board in the display unit.

If this error appears, the automatic time offset function cannot be used.

It is possible that the terminal block circuit board or radar process circuit board is faulty.

It is possible that the baud rate of the GPS serial port is not set correctly.

It is possible that the receiving port connected to the GPS is not set for use.

Alternatively, it could be that there is no output from the GPS side.

#### [2] Problem location

---

- [2]-1** **Installation cable**
- Check the connection status of the installation cable for terminal block circuit board CQD-2097.
    - TB4501 NAV1RX+/NAV1RX-
- [2]-2** TB4501 NAV1RX+/NAV1RX-  
**CQD-2097 in display unit**
- Check the insertion status of the connectors on terminal board circuit CQD-2097 in the radar process unit.
    - J4301、J4302、J4303
  - Replace CQD-2097. (*see 4.3.3.9*)
- [2]-3** **CDC-1324 in display unit**
- Check the baud rate on the serviceman menu.
  - Check the receiving port used in the serviceman menu.
  - Replace Radar process circuit board CDC-1324 in the radar process unit. (*see 4.3.3.2*)

---

---

### 7.2.3.5 GPS(Status)

---

---

#### [1] Content

---

GPS information received by the radar process circuit board in the display unit is not correct.

If this error appears, latitude and longitude cannot be displayed.

It is possible that the GPS receiver is not able to perform position fixing.

---

#### [2] Problem location

---

##### [2]-1 GPS receiver

- Adjust the GPS receiver so that it can measure position information.

---

---

### 7.2.3.6 Speed(Log)

---

---

#### [1] Content

---

Where Log is selected as the ship speed information to use, the log signal is abnormal.

If this error appears, the ship speed cannot be displayed.

The GYRO I/F (Data) or GYRO I/F (Log) message commonly appears at the same time as this message. If so, resolve that problem.

If another ship speed information format is selected, this error will stop appearing.

---

#### [2] Problem location

---

##### [2]-1 Ship speed device problem

- Use another form of ship speed information (MAN, 2AXG, 2AXW, GPS).

---

---

### 7.2.3.7 Speed(2AXG) Speed(2AXW)

---

---

#### [1] Content

---

Where 2AXG or 2AXW is selected as the ship speed information to use, the serial log signal is abnormal.

If this error appears, the ship speed cannot be displayed.



It is possible that the terminal block circuit board or radar process circuit board is faulty.

It is possible that the baud rate for the serial port for the log is not set correctly.

It is possible that the receiving port connected to the log is not set for use.

Alternatively, it could be that there is no output from the log side.

If another ship speed information format is selected, this error will stop appearing.

## [2] Problem location

### [2]-1 Installation cable

- Check the connection status of the installation cable for terminal block circuit board CQD-2097.

### [2]-2 TB4501 LOGRX+/LOGRX- CQD-2097 in display unit

- Check the insertion status of the connectors on terminal board circuit CQD-2097 in the radar process unit.

J4301、J4302、J4303

- Replace CQD-2097. (*see 4.3.3.9*)

### [2]-3 CDC-1324 in display unit

- Check the baud rate on the serviceman menu.
- Check the receiving port used in the serviceman menu.
- Use another form of ship speed information (MAN, GPS, Log).
- Replace Radar process circuit board CDC-1324 in the radar process unit. (*see 4.3.3.2*)

## 7.2.3.8 Speed(GPS)

### [1] Content

Where GPS is selected as the ship speed information to use, the GPS signal is abnormal.

If this error appears, the ship speed cannot be displayed.

The GPS (Data) or GPS (Status) message commonly appears at the same time as this message. If so, resolve that problem.

If another ship speed information format is selected, this error will stop appearing.

## [2] Problem location

### [2]-1 Ship speed device problem

- Use another form of ship speed information (MAN, 2AXG, 2AXW, GPS).

---

---

### 7.2.3.9 AIS(Data)

---

---

#### [1] Content

---

The AIS process circuit board in the display unit cannot recognize the AIS data.

If this error appears, AIS information cannot be displayed.

It is possible that there is a problem with the terminal block circuit board, AIS process circuit board, or radar process circuit board.

It is possible that the baud rate is not correctly set for the AIS serial port.

It is possible that the receiving port for AIS is not set for use.

Alternatively, it could be that there is no output from the AIS side.

You can check the AIS data reception status by looking at the operation LED AIS on the terminal block circuit board.

#### [2] Problem location

---

##### [2]-1 Installation cable

- Check the connection status of the installation cable for terminal block circuit board CQD-2097.

TB4601 AISRX+/AISRX-

##### [2]-2 CQD-2097 in display unit

- Check the insertion status of the connectors on terminal board circuit CQD-2097 in the radar process unit.

J4301、J4302、J4303

- Replace CQD-2097. (*see 4.3.3.9*)

##### [2]-3 CDC-1324 in display unit

- Check the baud rate on the serviceman menu.
- Check the receiving port used in the serviceman menu.
- Replace Radar process circuit board CDC-1324 in the radar process unit. (*see 4.3.3.2*)

##### [2]-4 CDC-1325 in display unit

- Check the installation status of AIS process circuit board CDC-1325.
- Replace AIS process circuit board CDC-1325. (*see 4.3.3.4*)

---



---

### 7.2.3.10 AIS Alarm \*\*\*

---

#### [1] Content

---

The AIS data received by the system includes alarm information. A three-digit number appears for "\*\*\*", showing the type of the alarm (alarm number).

This message appears when there is a problem with the AIS equipment.

It is not possible to resolve this problem from the radar equipment side. Resolve the problem with the AIS equipment. For the meaning of the number, see the instruction manual for the AIS equipment connected to the system.

In many cases, the problem is that navigation equipment such as the GYRO or GPS equipment is not connected to the AIS equipment.

#### [2] Problem location

---

##### [2]-1 AIS equipment

- Resolve the problem in the AIS equipment.

---



---

### 7.2.3.11 Depth(Data)

---

#### [1] Content

---

Where water depth data is received by the serial port, there is a problem with the serial data.

If this error appears, the water depth cannot be displayed.

It is possible there is a problem with the terminal block circuit board or the radar process circuit board.

It is possible that the baud rate for the water depth serial port is not correctly set.

It is possible that the receiving port connected to the depth measurement device is not set for use.

Alternatively, it is possible that there is no output from the depth measurement equipment.

#### [2] Problem location

---

##### [2]-1 Installation cable

- Check the connection status of the installation cable for terminal block circuit board CQD-2097.

TB4501

- TB4501 Port connected to the depth measurement equipment (Ex. NAV2RX+/NAV2RX-)
- [2]-2 CQD-2097 in display unit**
  - Check the insertion status of the connectors on terminal board circuit CQD-2097 in the radar process unit.
    - J4301、J4302、J4303
  - Replace CQD-2097. (*see 4.3.3.9*)
- [2]-3 CDC-1324 in display unit**
  - Check the baud rate on the serviceman menu.
  - Check the receiving port used in the serviceman menu.
  - Replace Radar process circuit board CDC-1324 in the radar process unit. (*see 4.3.3.2*)

---

### 7.2.3.12 TEMP.(Data)

---

#### [1] Content

---

Where water temperature data is received by the serial port, there is a problem with the serial data.

If this error appears, the water temperature cannot be displayed.

It is possible there is a problem with the terminal block circuit board or the radar process circuit board.

It is possible that the baud rate for the water temperature serial port is not correctly set.

It is possible that the receiving port connected to the water temperature measurement device is not set for use.

Alternatively, it is possible that there is no output from the water temperature measurement equipment.

#### [2] Problem location

---

- [2]-1 Installation cable**
  - Check the connection status of the installation cable for terminal block circuit board CQD-2097.
    - TB4501
  - Port connected to the depth measurement equipment (Ex. NAV2RX+/NAV2RX-)
- [2]-2 CQD-2097 in display unit**
  - Check the insertion status of the connectors on terminal board circuit CQD-2097 in the radar process unit.

- J4301、J4302、J4303
- Replace CQD-2097. (see 4.3.3.9)

### [2]-3 CDC-1324 in display unit

- Check the baud rate on the serviceman menu.
- Check the receiving port used in the serviceman menu.
- Replace Radar process circuit board CDC-1324 in the radar process unit. (see 4.3.3.2)

---

## 7.2.3.13 Wind(Data)

---

### [1] Content

---

Where wind direction and wind speed data is received by the serial port, there is a problem with the serial data.If this error appears, the wind direction and wind speed cannot be displayed.

It is possible there is a problem with the terminal block circuit board or the radar process circuit board.

It is possible that the baud rate for the wind direction and wind speed serial port is not correctly set.

It is possible that the receiving port connected to the wind direction and wind speed measurement device is not set for use.

Alternatively, it is possible that there is no output from the wind direction and wind speed measurement equipment.

### [2] Problem location

---

#### [2]-1 Installation cable

- Check the connection status of the installation cable for terminal block circuit board CQD-2097.

TB4501

- Port connected to the wind direction and wind speed equipment (Ex: NAV2RX+/NAV2RX-)

#### [2]-2 CQD-2097 in display unit

- Check the insertion status of the connectors on terminal board circuit CQD-2097 in the radar process unit.

J4301、J4302、J4303

- Replace CQD-2097. (see 4.3.3.9)

#### [2]-3 CDC-1324 in display unit

- Check the baud rate on the serviceman menu.
- Check the receiving port used in the serviceman menu.
- Replace Radar process circuit board CDC-1324 in the radar process unit. (see 4.3.3.2)

---

---

### 7.2.3.14 Current(Data)

---

---

#### [1] Content

---

Where current data is received by the serial port, there is a problem with the serial data.

If this error appears, the current cannot be displayed.

It is possible there is a problem with the terminal block circuit board or the radar process circuit board.

It is possible that the baud rate for the current serial port is not correctly set.

It is possible that the receiving port connected to the current measurement device is not set for use.

Alternatively, it is possible that there is no output from the current measurement equipment.

---

#### [2] Problem location

---

##### [2]-1 Installation cable

- Check the connection status of the installation cable for terminal block circuit board CQD-2097.

TB4501

- Port connected to the current measurement equipment (Ex: NAV2RX+/NAV2RX-)

##### [2]-2 CQD-2097 in display unit

- Check the insertion status of the connectors on terminal board circuit CQD-2097 in the radar process unit.

J4301、J4302、J4303

- Replace CQD-2097. (*see 4.3.3.9*)

##### [2]-3 CDC-1324 in display unit

- Check the baud rate on the serviceman menu.
- Check the receiving port used in the serviceman menu.
- Replace Radar process circuit board CDC-1324 in the radar process unit. (*see 4.3.3.2*)

---

---

### 7.2.3.15 ROT(Data)

---

---

#### [1] Content

---

Where Rate of Turn (ROT) data is received by the serial port, there is a problem with the serial data.

If this error appears, the ROT cannot be displayed.

It is possible there is a problem with the terminal block circuit board or the radar process circuit board.

It is possible that the baud rate for the ROT serial port is not correctly set.

It is possible that the receiving port connected to the ROT measurement device is not set for use.

Alternatively, it is possible that there is no output from the heading equipment.

## [2] Problem location

### [2]-1 Installation cable

- Check the connection status of the installation cable for terminal block circuit board CQD-2097.

TB4501

- Port connected to the ROT equipment (Ex: NAV2RX+/NAV2RX-)

### [2]-2 CQD-2097 in display unit

- Check the insertion status of the connectors on terminal board circuit CQD-2097 in the radar process unit.

J4301、J4302、J4303

- Replace CQD-2097. (*see 4.3.3.9*)

### [2]-3 CDC-1324 in display unit

- Check the baud rate on the serviceman menu.
- Check the receiving port used in the serviceman menu.
- Replace Radar process circuit board CDC-1324 in the radar process unit. (*see 4.3.3.2*)

---



---

## 7.2.3.16 RSA(Data)

---

### [1] Content

Where rudder angle sensor data is received by the serial port, there is a problem with the serial data.

If this error appears, the rudder angle cannot be displayed.

It is possible there is a problem with the terminal block circuit board or the radar process circuit board.

It is possible that the baud rate for the rudder angle serial port is not correctly set.

It is possible that the receiving port connected to the rudder angle measurement device is not set for use.

Alternatively, it is possible that there is no output from the rudder angle measurement equipment.

---

## **[2] Problem location**

### **[2]-1 Installation cable**

- Check the connection status of the installation cable for terminal block circuit board CQD-2097.

TB4501

- Port connected to the rudder angle sensor (Ex: NAV2RX+/NAV2RX-)

### **[2]-2 CQD-2097 in display unit**

- Check the insertion status of the connectors on terminal board circuit CQD-2097 in the radar process unit.

J4301、J4302、J4303

- Replace CQD-2097. (*see 4.3.3.9*)

### **[2]-3 CDC-1324 in display unit**

- Check the baud rate on the serviceman menu.
- Check the receiving port used in the serviceman menu.
- Replace Radar process circuit board CDC-1324 in the radar process unit. (*see 4.3.3.2*)



# 7.3 Sample Problems

## 7.3.1 Internal circuit

### 7.3.1.1 Screen remains dark even when brightness knob turned to maximum

#### [1] Content

If the display is faint when viewed under bright external lighting conditions, it is possible that there is a problem with the backlight or the brightness adjustment circuit board.

If the screen is completely black, it is possible there is a problem with the LCD module or the radar process unit.

Under the high temperature environment, the brightness of the LCD backlight is dimmed by a protection circuit about half of the maximum brightness. It is normal operation and the equipment is not faulty.

#### [2] Problem location

##### [2]-1 Backlight

- Replace LCD module in NWZ-170. (*see 4.3.1.2*)
- Replace LCD panel, replace LCD operation circuit in NWZ-173. (*see 4.3.2.3*)
- Replace inverter circuit in NWZ-173. (*see 4.3.2.5*)

##### [2]-2 Monitor unit

- Replace LCD module in NWZ-170. (*see 4.3.1.2*)
- Replace interface circuit in NWZ-173. (*see 4.3.2.4*)

##### [2]-3 CDC-1324 in display unit

- Replace Radar process circuit CDC-1324. (*see 4.3.3.2*)

### 7.3.1.2 The brightness nonuniformity is visible on the LCD panel at night condition

#### [1] Content

If you adjust the brightness knob to minimum, you will see the brightness nonuniformity. It is specific characteristics of CCFL backlight, so the equipment is not faulty.

**[2] Problem location**

---

**[2]-1 The brightness knob**

- Adjust the brightness not to visible the brightness nonuniformity.

---

---

**7.3.1.3 No sound**

---

**[1] Content**

---

If you perform a buzzer test and you can confirm that the buzzer sounds, the equipment is not faulty. Check the volume setting.

If you perform a buzzer test and cannot hear a buzzer, it is possible that there is a problem with operation circuit D.

**[2] Problem location**

---

**[2]-1 Setting**

- Check that the volume is not set to zero.

**[2]-2 Operation circuit D CCK-976 in operation unit**

- Replace CCK-976. (*see 4.3.4.4*)

---

---

**7.3.1.4 Track ball does not move cursor**

---

**[1] Content**

---

The cursor does not move when the track ball is operated.

**[2] Problem location**

---

**[2]-1 Setting**

- Is the mode set for operation using EBL and VRM? Press and hold the EBL button to return to the normal mode.

**[2]-2 Trackball**

- If operation is impossible even using EBL and VRM, replace the track ball.

---

---

**7.3.1.5 "Scanner Rotating" message displayed, scanner unit does not stop when transmission stops**

---

**[1] Content**

---

The scanner keeps rotating even when transmission is stops. The "Scanner Rotating" warning appears in yellow.

---

**[2] Problem location**

---

**[2]-1 Setting**

- The unit is set to ICE CLASS standby mode. If this is not necessary, clear the setting.

---

---

**7.3.1.6 Display unit layout shown on inter switch menu is mirror image of actual layout**

---

---

**[1] Content**

---

It was not possible in the installation work to number the display units left to right from No. 1.

---

**[2] Problem location**

---

**[2]-1 Terminal board circuit CQD-2097 in the display unit**

- Switch the flat cable connections of J4306 and J4307 (using NQE-3141-2).
- If the ISW has a 4-block configuration (using NQE-3141-4/8), switch the terminal blocks on the ISW side.

---

---

**7.3.1.7 Displayed echo does not match distance / azimuth of actual ship**

---

---

**[1] Content**

---

At close range, the displayed echo does not match the distance / azimuth of the actual ship.

---

**[2] Problem location**

---

**[2]-1 CCRP setting error**

- Set the CCRP correctly. See Section 7.1.9 in the Instruction Manual.

**[2]-2 Bearing setting error**

- Set the bearing correctly. See Section 7.1.4 in the Instruction Manual.

**[2]-3 Range setting error**

- Set the range setting correctly. See Section 7.1.5 in the Instruction Manual.

**[2]-4 GPS antenna position error**

- Set the GPS antenna position correctly. See Section 7.1.9 in the Instruction Manual.

---

### 7.3.1.8 Cannot use CompactFlash®<sup>1</sup> card

---

#### [1] Content

---

The CompactFlash cards of the major manufacturers have been confirmed to work with the system. However, some cards do not work. Given the large number of CompactFlash card manufacturers, it is not possible to confirm the compatibility of all available products. The manufacturers of cards that have been confirmed to be compatible are shown below. The use of these cards is recommended.

SanDisk: 512MB / 1GB / 2GB / 4GB  
 Lexar Media: 512MB / 1GB / 2GB  
 Transcend: 2GB  
 HAGIWARA SYS-COM: 4GB  
 IO DATA: 512MB / 1GB / 2GB  
 BUFFALO: 512MB / 1GB / 2GB

#### [2] Problem location

---

##### [2]-1 Adapter used

- Are you using a CF card adapter to insert a different type of medium, such as an SD card? It is not possible to use another type of memory card by using an adapter.

---

### 7.3.1.9 The light blue straight line is displayed on the center of the own ship.

---

#### [1] Content

---

The light blue straight line is displayed on the center of the own ship.

This is PI (Parallel Index line) and displayed interval as 0 NM. Any equipments are not faulty.

#### [2] Problem location

---

##### [2]-1 PI

The PI is sometimes appeared when the VRM dial is involuntarily pressed. Follow the procedure below to return the normal operation quickly.

|                             |  |
|-----------------------------|--|
| The PI menu is appeared     | Press the VRM dial twice.<br>Or click to off the PI button on the display. |
| The PI menu is not appeared | Press the VRM dial once.<br>Or click to off the PI button on the display.  |

---

<sup>1</sup>.CompactFlash® is a registered trademark of SanDisk Corporation in the U.S.

## 7.3.2 External equipment

### 7.3.2.1 Cannot connect to external equipment for NMEA output

#### [1] Content

It is possible that there is a problem in the connection polarity, the baud rate setting, the usage settings of the external navigation equipment, or that there is a fan-out problem with the output equipment.

#### [2] Problem location

##### [2]-1 Connection polarity

- If the connection is correct, , the reference of the oscilloscope is set to the minus side, the trace goes to the minus side when there is no signal.

##### [2]-2 Baud rate

- Set the baud rate to match the output spec, ication of the navigation equipment.。



If the display is incorrect even , the connection polarity and the baud rate are correctly set, contact the service department. If you include the log of the line monitor in your query, the problem can be resolved quickly.

##### [2]-3 Usage settings for external navigation equipment

- The connected equipment must be set up for use. Enable the equipment, following the instructions in Section 7.1.6 in the Instruction Manual.

##### [2]-4 External equipment fan-out

- Do you have more than one device connected to the same port on the external equipment? If so, the output capacity of the external equipment may be exceeded, preventing signals from arriving correctly. Follow the spec, ications of the external equipment.



It is possible to roughly determine polarity from the status of the LED on terminal block circuit board CQD-2097. See Section 2.5.1.



By using the Serviceman Menu → COM Port Setting → Line Monitor function, you can check the content of communication. Using this function and the screen capture function can be of help in resolving the problem quickly.



The line monitor function mentioned above displays data that is determined to be correct. If the communication content is not considered to be correct, it is not displayed. In such cases, obtain a log from a PC and check it. Connect J4310 of CQD-2097 to the PC with a serial cross cable. Use software such as Hyper Terminal to check the content of the communication. See Section 2.5.1.

## 7.3.2.2 Cannot display true bearing

### [1] Content

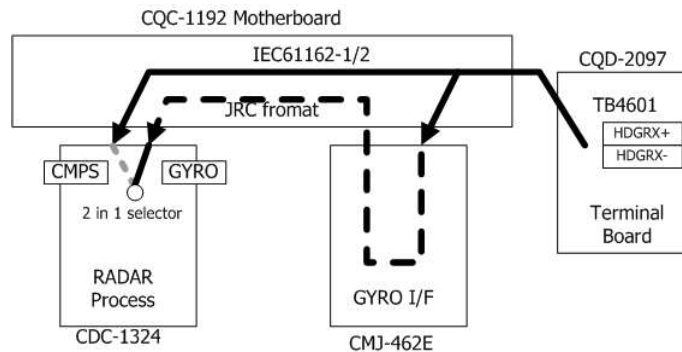
In such cases, there is always some error that appears, such as:GYRO I/F (DATA), GYRO I/F (GYRO), or Heading (DATA).

It is possible that settings have not been made correctly or that there is a problem on the azimuth sensor side.

### [2] Problem location

#### [2]-1 IEC61162-1/2

It is likely that the settings of the connected devices do not match the usage settings.



The diagram above shows the routes of signals output using IEC61162-1/2. If the azimuth sensor shows CMPS, the output signal from the external equipment is input directly to the radar process circuit. If it shows "GYRO", the output signal is input to the radar process circuit in JRC format via the GYRO I/F circuit. If the connection settings are correct, the azimuth is correctly displayed whichever mode is switched to.

If the azimuth is not displayed by switching between CMPS and GYRO, the settings are not correct. For the GYRO I/F circuit it is necessary to set the DIP-SW and jumper. If CMPS is selected, check the baud rates shown below.

If GYRO is selected, a baud rate of 4,800 bps, 9,600 bps, 19,200 bps, or 38,400 bps can be selected.

If CMPS is selected, a baud rate of 4,800 bps or 38,400 bps can be selected.

If the IEC61162-1/2 signal is received via the GYRO I/F circuit, an error results, the data updating rate is too slow. Data must be updated within 50 ms.

If CMPS is selected, even, the data updating is slow it does not cause an error, but it is possible that the target being tracked may be lost. As a rule, it is necessary to update data within 50 ms.

**[2]-2 GYRO(DATA) STEP**

- In the step type of gyro, where the signal amplitude is small, errors can occur. Errors are often seen when multiple devices are connected to a single port, and the output capacity of the gyro-compass is exceeded.
- When this happens, the potential of the LOW level of the output signal may occasionally rise. The input specifications for the GYRO I/F circuit require the LOW level of  $\pm 2.5$  V or less. The HIGH level must be  $\pm 20$  V or more.



In the previous model, the JMA-9900, the GYRO I/F circuit continued to operate even when the power of the radar display unit was turned off, receiving power from the output signal of the gyro-compass.

In the JMA-9100/7100, the GYRO I/F circuit operates using the internal power supply of the display unit even when the display unit is turned off. This has reduced the output conditions on the gyro-compass side. From the perspective of the gyro-compass, the input resistance of the GYRO I/F circuit is maintained at a high level. (Reference:  $22k\ \Omega$  @24 Vdc, when the display unit is turned off.)

**[2]-3 GYRO(DATA) SYNCHRO**

If errors appear intermittently, the situation may improve, you switch No. 5 of DIP-SW S2 on the GYRO I/F circuit to ON. However, this S2(5) only extends the time it takes for an error to be identified, and it does not resolve the essential problem on the GYRO side.

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**7.3.2.3 Blurry image on the remote display**


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---

**[1] Content**

This problem occurs due to cable loss, long cables are used in connections or, there is a mismatch with the input impedance on the remote display side.

Correct operation has been confirmed using a 30 m cable to connect a JRC VDR, when using the CQD-1831 (VDR I/F kit) and a 3C-2V coaxial cable.

**[2] Problem location****[2]-1 Cable type**

If it is necessary to transfer signals over a long distance, use a coaxial cable (such as 3C-2V).

**[2]-2 Cable length**

If it is necessary to transfer signals over a distance of 30 m or more, use a buffer amp (sold separately) in between the main unit and the remote display.

**[2]-3 Remote display**

The signal quality is also affected by the monitor used for the remote display. If the display is still distorted when a coaxial cable is used, the situation may be improved by using a buffer amp.